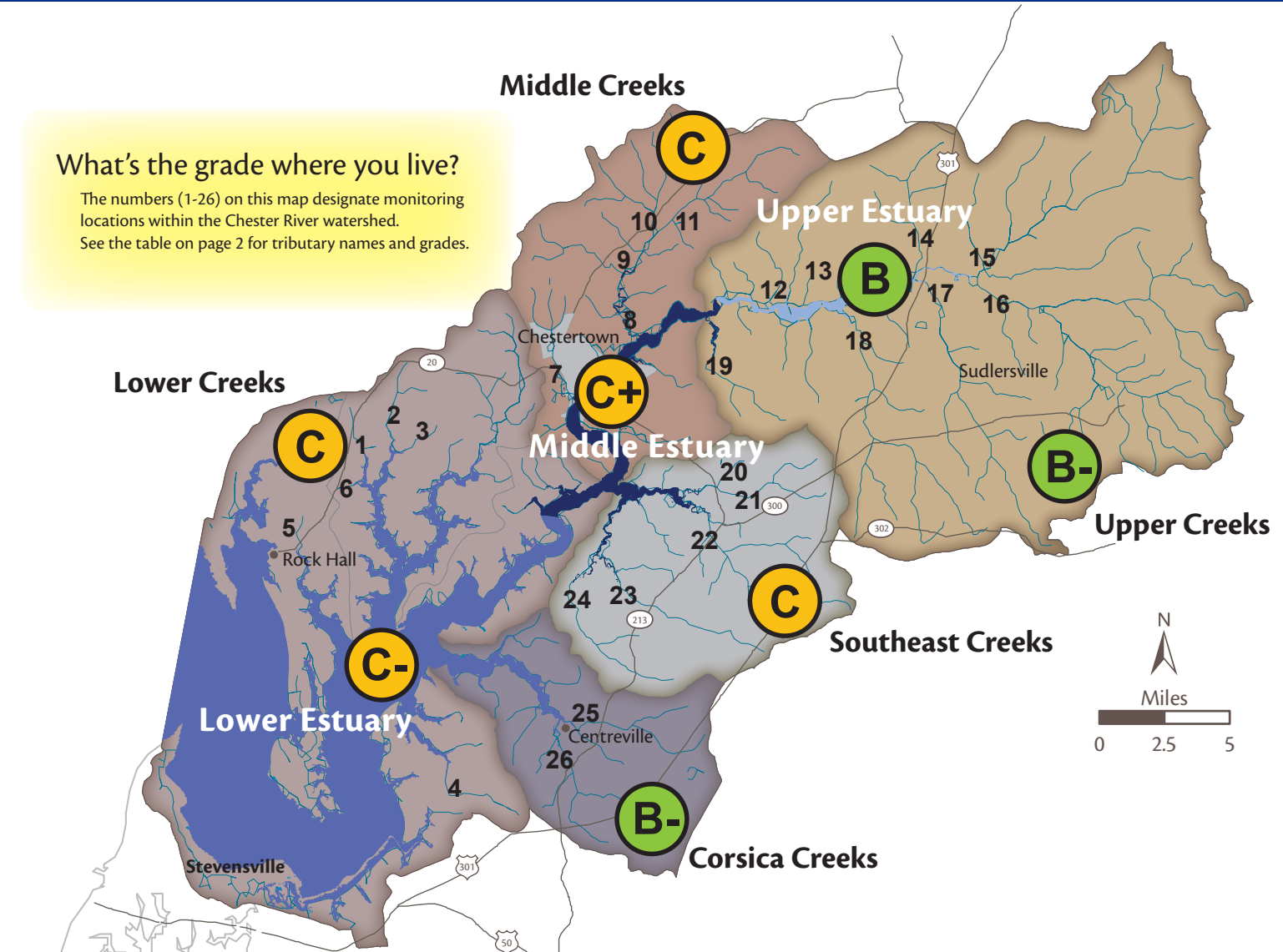


2010 Chester River Report Card



What's the grade where you live?

The numbers (1-26) on this map designate monitoring locations within the Chester River watershed. See the table on page 2 for tributary names and grades.



Estuary Final Grade

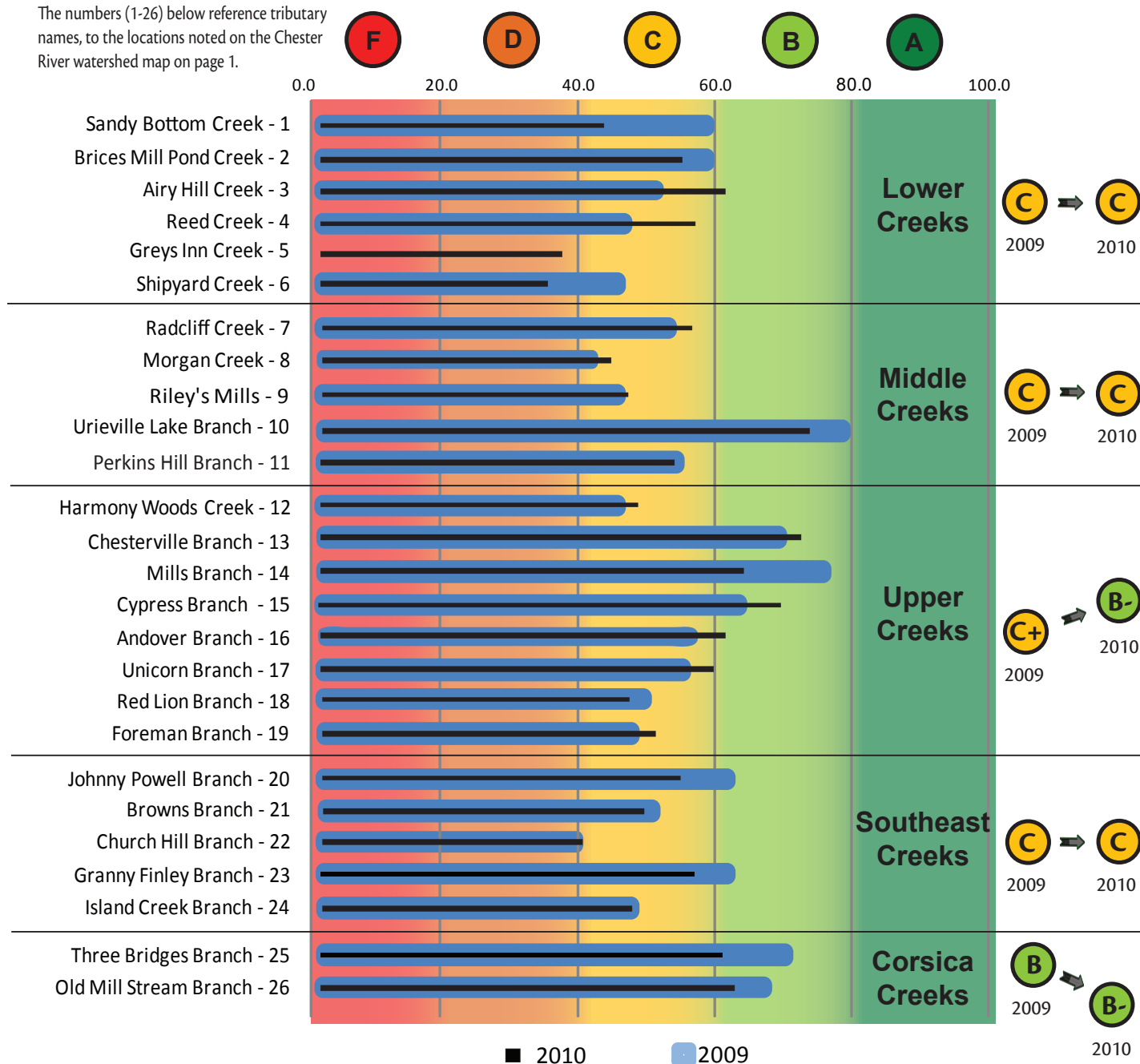
The final grade for the Estuary portion of the Chester River is a "C-". Dissolved oxygen and secchi (clarity) scores improved throughout all sections. Benthic and Phytoplankton Index indicators (provided by Chesapeake Bay Program) have also improved since 2008 in the Lower and part of the Middle Estuary, comprising 86% of the total estuary.

Creeks Final Grade

The final grade for the creeks of the Chester River is a "C+". The Corsica Creeks saw an increase in Nitrate – Nitrogen from the previous year, causing a slight decline in score. The Lower, Middle, and Southeast Creeks all showed minor improvements in their numerical percentage scores, however, the overall letter grade remains unchanged. The Upper Creeks score improved slightly, noting reduced Ammonia – Nitrogen in 4 of 8 creeks, and reduced turbidity, in 7 of 8 creeks.

Chester River Tributary Grades

The numbers (1-26) below reference tributary names, to the locations noted on the Chester River watershed map on page 1.



What do the grades mean?



All water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be very good, most often leading to very good habitat conditions for fish and shellfish.



Most water quality and biological health indicators meet desired levels (60% to 79%). Quality of water in these locations tends to be good, often leading to good habitat conditions for fish and shellfish.



There is a mix of healthy and unhealthy water quality and biological health indicators (40% to 59%). Quality of water in these locations tends to be fair, leading to inadequate habitat conditions for most fish and shellfish.



Some or few water quality and biological health indicators meet desired levels (20% to 39%). Quality of water in these locations tends to be poor, often leading to poor conditions for most fish and shellfish.



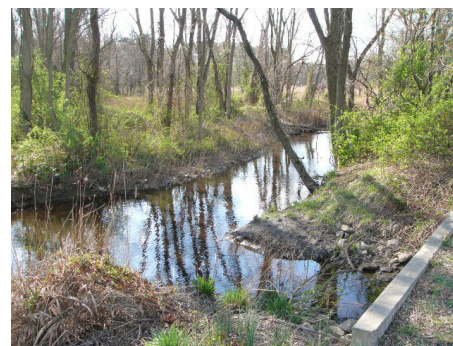
Very few or no water quality and biological health indicators meet desired levels. Quality of water in these locations tends to be very poor, most often leading to very poor habitat conditions for fish and shellfish.

TESTING THE HEALTH OF THE CHESTER RIVER



Our Chester Tester monitoring program maintains 26 testing sites equally distributed between Queen Anne's and Kent Counties. These sites are tested twice per month by over 50 volunteer "Chester Testers". Each site is monitored for dissolved oxygen, pH, nitrate-nitrogen, ammonia-nitrogen, orthophosphates, and turbidity (clarity) levels. Water and air temperature, rainfall within 24 hours of testing, water color and odor, and aquatic life (such as fish or sub-aquatic vegetation) are also documented. The thresholds used to assess these parameters were derived from a state-wide scientific assessment conducted by the Maryland Department of Natural Resources. For more information, see www.dnr.state.md.us/irc/docs/00007267.pdf. The table below lists each parameter and its analysis threshold, as well as common sources of these pollutants on the Eastern Shore.

Parameter/Threshold	Primary Causes of Impairment
Nitrate-Nitrogen $\text{NO}_3 - \text{N}$ $< 2.0 \text{ ppm}$ & Ammonia-Nitrogen $\text{NH}_3 - \text{N}$ $< .35 \text{ ppm}$	Point sources: Waste water treatment plants, septic/sewage disposal systems, combined animal feeding operations, and chemical plants. Non-point sources: Fertilized cropland and pastures, parks, golf courses, lawns and gardens, as well as wild life and atmospheric deposition. While some atmospheric deposition is natural, this process is exacerbated by combustion processes such as power generation and automobiles. Other non-point sources include household ammonia-containing cleaning products and on-lot septic systems.
Orthophosphate PO_4 $< .15 \text{ ppm}$	Point sources: Wastewater treatment plants, septic tanks and permitted industrial discharges. Non-point sources: Include runoff from farms as well as lawns, parks and golf courses. Other sources include storm water runoff, wildlife, house pets, and natural decomposition of rocks and minerals.
Dissolved Oxygen DO $\geq 5.0 \text{ mg/l}$	Reduced DO: Is primarily caused by excess nutrients (Nitrogen and Phosphate) in the water, which through a process known as eutrophication, can lead to excess growth of algae. When the algae dies, bacteria feeds on the algae, depleting oxygen which otherwise would be available for fish and shellfish in the water. This problem is particularly serious when temperatures rise and the water is less able to retain oxygen.
Turbidity $< 25 \text{ FTU}$	Turbidity (water clarity): Is primarily caused by soil erosion and storm water runoff. During storm events, soil particles and debris from streets as well as industrial, commercial, agricultural, and residential areas are washed into the streams. Turbidity is also increased when plants and animals present in a water body die and decay. As turbidity increases, less sunlight filters through the water leading to still further death and decay of valuable sub-aquatic vegetation and animals.



Photos by Ron Melcer & Brent Walls

While we are quick to blame the factory, the farmer, or the city sewage system for the contamination of our streams, we often fail to recognize the problems right in our own backyards – the excess fertilizers that most of us ritually apply to our lawns. In fact, there is actually more fertilizer applied on lawns and turf grasses in the Chesapeake Bay watershed than on all farms combined. The primary consequences of this practice are twofold: (1) The grass needs more frequent mowing and (2) The algae in the streams grow more rapidly, ultimately decaying and depleting vital oxygen from the fish and shellfish that seek to live there. Fortunately, Maryland passed a law this year limiting the amount of phosphate contained in fertilizer for lawns and golf courses. It is important that everyone minimize fertilizer usage to reduce the amount of nutrients entering our waterways.

GOVERNOR RECOGNIZES WATERSHED FARMERS' COVER CROP EFFORT



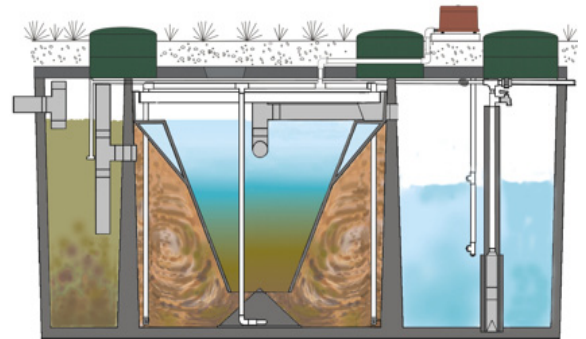
Photo by: Tyler Campbell

Thank a farmer in the Chester River watershed for their cover crop efforts, which play an important role in the overall health of the Chester River. Cover crops are a seasonal, nutrient absorbing green crop planted after traditional agricultural row crops have been harvested, prior to the next season. By absorbing residual soil nitrogen and phosphorus left from fertilizer applications and naturally produced soil nutrients, cover crops help reduce nitrogen and phosphorus infiltration to both ground and surface water. Cover crops also help to prevent soil erosion, reducing loss of valuable soil as well as reducing turbidity in receiving streams. Reduced turbidity is important to the growth and survival of sub-aquatic vegetation.

During 2010, farmers in Queen Anne's county planted 39,631 acres of cover crops and the farmers in Kent County planted 43,227 acres of cover crops. These two counties lead the charge in Maryland's record breaking cover crop planting that helped prevent an estimated 2.4 million pounds of nitrogen and over 80,000 pounds of phosphorus from entering the waterways. Maryland Governor Martin O'Malley announced in January 2011, "Our farmers continue to show their leadership in the Chesapeake Bay restoration efforts by planting a record number of acres of cover crops, exceeding their two-year goal by 20 percent. Cover crops are the workhorse of our Bay restoration efforts. Maryland is committed to achieving our Bay restoration goals by 2020, five years ahead of any other state in the watershed. The fact that farmers exceeded their goal and helped us get 60 percent of the way toward our overall two-year goal across all sectors shows that we can reach our early target." We encourage everyone in the Chester River watershed to join Governor O'Malley in thanking all farmers who planted cover crops and encourage those who have not yet done so to enroll next year.

REDUCE NUTRIENT LOADING THROUGH IMPROVED SEPTIC SYSTEMS

Since Maryland's Bay Restoration Fund was established in 2006, Chester River Association has been helping homeowners take advantage of the money available to upgrade their septic systems and reduce their nitrogen output. Biological Nutrient Removal (BNR) systems enhance conventional septic systems by adding oxygen and reducing nitrogen discharge by approximately 50%. In 2009, Maryland signed into law a bill that requires all new and existing septic systems needing repair within the Critical Area (land within 1000 ft. from mean high tide) to upgrade their septic systems with BNR technology – another victory for the Chester River and the Chesapeake Bay. To date, more than 100 BNR system upgrades in Kent County and 180 in Queen Anne's County have been completed.



MAKE A DIFFERENCE, SUPPORT THE CHESTER RIVER ASSOCIATION

Support the Chester River Association:

- Donate or become a member
- Become a Chester Tester
- Volunteer for other stewardship and environmental activities
- Encourage neighbors to help protect the Chester

Contact Us:

Email: info@chesterriverassociation.org
Phone: (410) 810-7556
Web: www.chesterriverassociation.org



Heath Kelsey
Caroline Wicks
Sara Powell



David LaMotte
Charlie Gloyd
Liz Anger



Myron Richardson

Science & Technology

Liz Anger
Heidi Anthony
Renee Bench
Charles Gloyd
Bob Ingersoll
Ron Melcer
Ladd Rutherford
Myron Richardson
Jon Stine

David Foster
Riverkeeper
Ron Melcer,
Watershed Coordinator
Paul Spies,
Conservation Planner
Jen Hicks,
Septic Specialist

