

2015
Chester River
Report Card





Message From the Riverkeeper

Our vision is of a healthy Chester River for our communities and future generations – but how do we know if our river is healthy or not? With science! Our scientific water quality monitoring program provides the foundation for all our efforts to protect and restore the Chester.

In 2015 we revised our monitoring program to better understand the river's health. This new testing regime is reflected in this report card and on our new data website: River Watch.

Our monitoring shows that nutrient and sediment pollution increases in all of our tidal tributaries as you move upriver and away from the Chesapeake Bay – clear evidence the Chester is polluted from our own actions. The good news is that this means we hold the power to clean up our river. In 2015, CRA worked hard to do just that...

Through a partnership with Washington College, we installed a 2-acre wetland that will filter water and create habitat on a Millington farm.

We worked with the Environmental Group at Heron Point to develop a shoreline res-

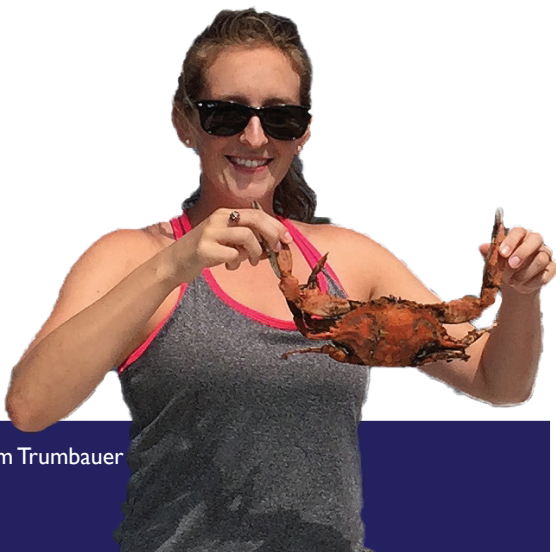
toration plan that meets Critical Area requirements and beautifies the property.

We testified in Annapolis against the proposed Four Seasons development on the shores of the Chester, and later joined a lawsuit against the development.

And when a citizen complaint alerted us to a Clean Water Act violation resulting in sediment-laden water rushing into the river, we worked with MDE's Water Compliance Division to bring the violator into compliance.

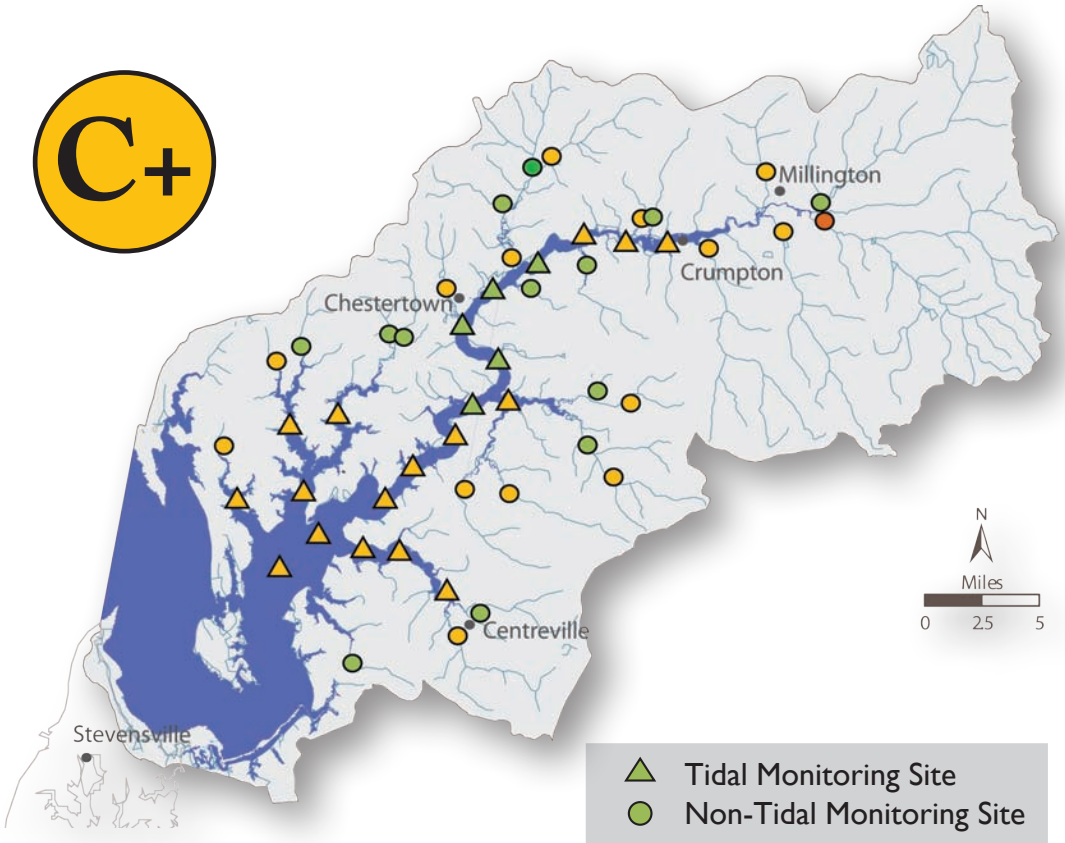
Pollution in the Chester comes from our own actions. Check out the stream's grade where you live; are you doing everything you can for a healthier Chester River?

Isabel Junkin Hardesty
Chester **RIVERKEEPER**



Chester River Grades

C+



- ▲ Tidal Monitoring Site
- Non-Tidal Monitoring Site

2015 on the Chester Water quality on the Chester earned a C+ in 2015 - a slight improvement over 2014's C. Improvements are encouraging, but our river is still at risk. Our monitoring shows that there is more nutrient pollution, sediment pollution, and algae in our tidal tributaries than in the main channel of the river - this means that the pollution in our river is coming from within our watershed. **Everyone has a role to play in river restoration.**



Watershed	Dissolved Oxygen	Nutrients Nitrogen	Phosphorus	Clarity	Algae	Grade
Tidal Chester	85	59	31	40	52	C
Non-Tidal Chester	78	55	41	62	NA	C+

Indicators

Water Quality Index (WQI) Nearly 10,000 data points were collected by a combination of CRA staff and our citizen scientist Chester Tester volunteers in 2015. Report card grades are calculated using the WQI method, developed by independent scientific experts with the Mid-Atlantic Tributary Assessment Coalition (MTAC). The WQI represents the percentage of times a site is considered healthy for a given parameter when compared to biotic thresholds. All parameters are averaged for a final WQI and converted to a letter grade according to the below table.

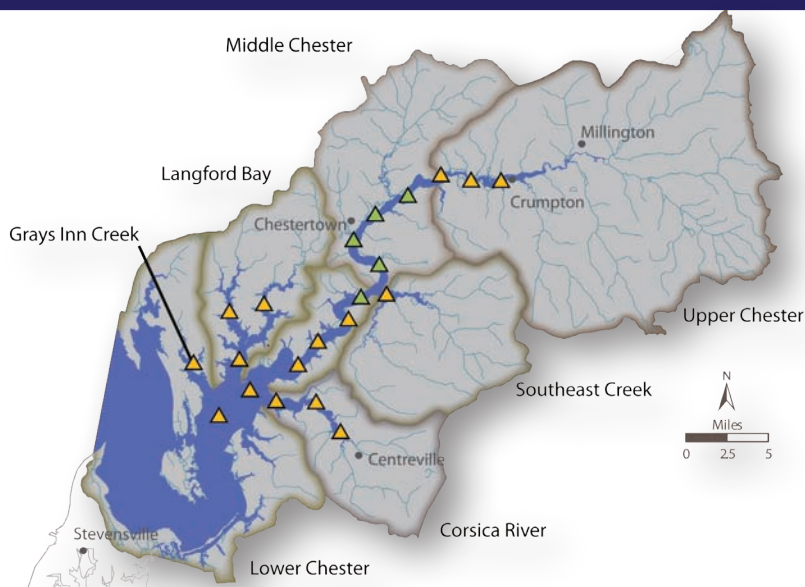


WQI	Grade
80-100	A (excellent)
60-79	B (good)
40-59	C (at risk)
20-39	D (degraded)
0-19	F (severely degraded)

Indicator	Water Quality Index (WQI)					Grade
	Dissolved Oxygen	Nutrients Nitrogen	Phosphorus	Clarity	Algae	
Tidal Chester	85	59	31	40	52	C
Non-Tidal Chester	78	55	41	62	NA	C+

Indicator	Description
Dissolved Oxygen	<ul style="list-style-type: none"> Rockfish, oysters, crabs, and underwater species require oxygen. If the dissolved oxygen is too low (dead zone) aquatic species become stressed, evacuate the area, or die. Low dissolved oxygen is caused by nutrient pollution and algae blooms.
Nutrients	<ul style="list-style-type: none"> Nutrient pollution, primarily in the form of nitrogen and phosphorus, enter our waterways through fertilizers (farms and lawns), failing septic systems, and wastewater treatment plants. Nutrient pollution causes harmful algae blooms.
Clarity	<ul style="list-style-type: none"> Sediments washing off the land and algae blooms reduce water clarity. Muddy waters block out sunlight, preventing growth of aquatic grasses. Excessive sediments fall to the bottom and can smother bottom dwellers like oysters.
Algae	<ul style="list-style-type: none"> Algae blooms are caused by nutrient pollution. Algae clouds the water and blocks out sunlight for aquatic grasses. Decomposing algae depletes the water of oxygen. Some algae can be harmful to human health.

Tidal Grades

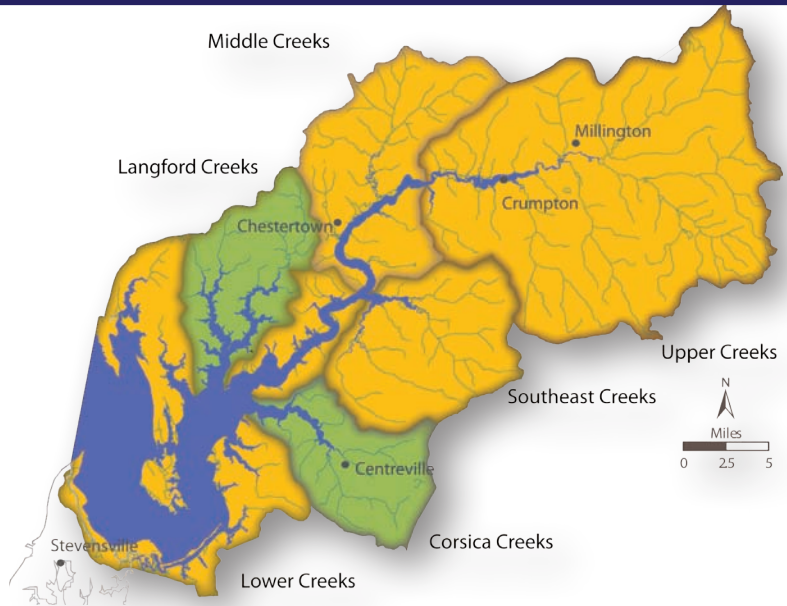


Tidal Story The tidal portion of the Chester is impaired by nutrient pollution, excess sediment, poor clarity, and high algae levels. The tidal river continues to see aquatic grass improvements. In the fall, we saw record clarity, but unfortunately this gain was offset by poor clarity earlier in the year. **Collectively, we are making a difference, but there is work yet to be done.**



Watershed	Dissolved Oxygen	Nutrients		Clarity	Algae	Grade
		Nitrogen	Phosphorus			
Upper Chester	93	47	33	30	71	C
Middle Chester	89	64	43	52	79	B
Lower Chester	86	73	32	42	55	C-
Southeast Creek	89	69	40	35	60	C+
Langford Bay	76	49	17	31	35	C-
Corsica River	81	36	21	36	27	C-
Grays Inn Creek	83	71	41	39	40	C

Non-Tidal Grades

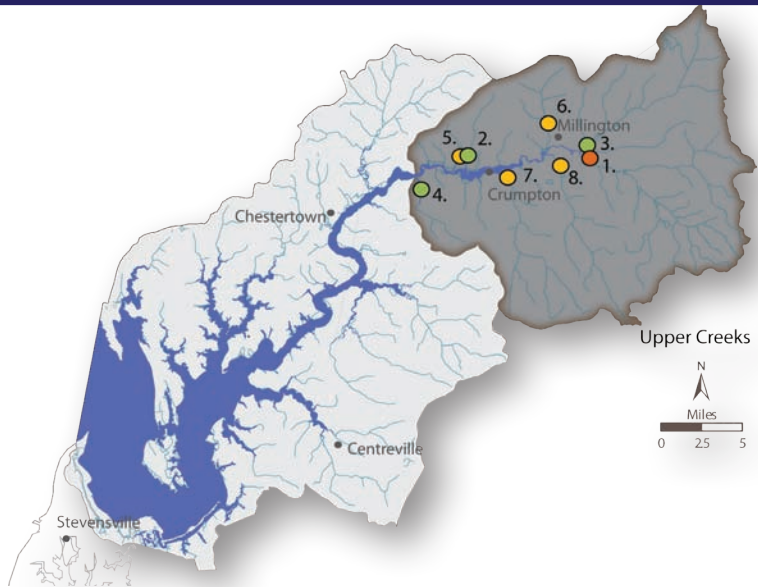


Non-Tidal Grades Water quality in our non-tidal creeks and streams has slightly improved year over year; however, lack of oxygen, nutrient pollution, and high sediment levels continue to threaten many creeks and streams. **To see the water quality in your backyard or favorite fishing spot, please find your local creek or stream on the following pages.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
Upper Creeks	61	40	62	52	68	C+
Middle Creeks	81	33	66	58	62	C+
Lower Creeks	69	97	53	25	44	C+
Southeast Creeks	85	37	52	23	69	C
Langford Creeks	96	65	76	41	37	B-
Corsica Creeks	100	40	77	17	85	B-

Upper Creeks

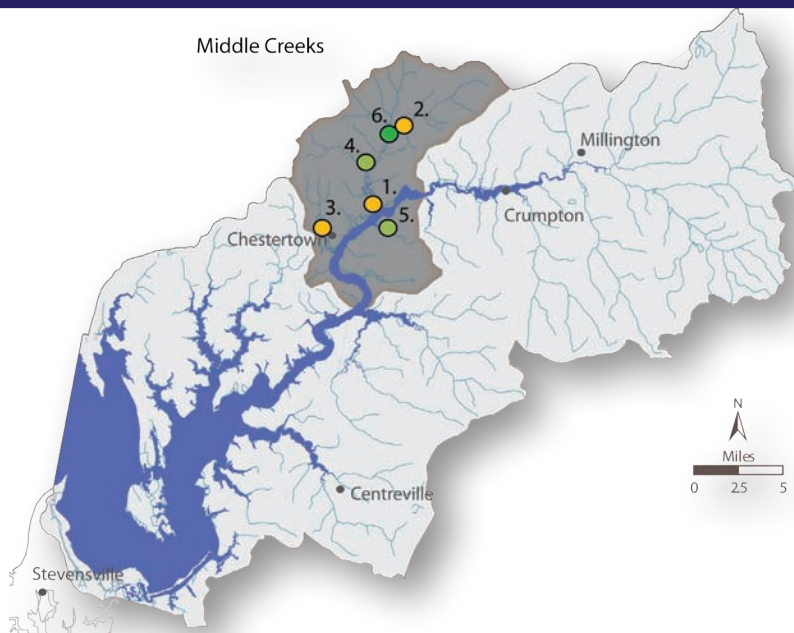


Upper Creeks Story Water quality varies greatly in our Upper Creeks, with low dissolved oxygen and nutrient pollution being the most common issues. Andover Branch (pictured) earned the lowest grade in our watershed in 2015, but neighboring Cypress Branch was one of our highest, showing how **local land use impacts stream health in similar geographies.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Andover Branch	0	83	21	29	4	D
2. Chesterville Branch	100	0	88	81	81	B
3. Cypress Branch	100	74	58	74	74	B+
4. Foreman Branch	100	15	65	80	95	B
5. Harmony Woods Cr.	80	19	88	31	69	C+
6. Mills Branch	0	100	50	36	57	C
7. Red Lion Branch	38	26	91	30	87	C
8. Unicorn Branch	86	9	45	59	86	C+

Middle Creeks

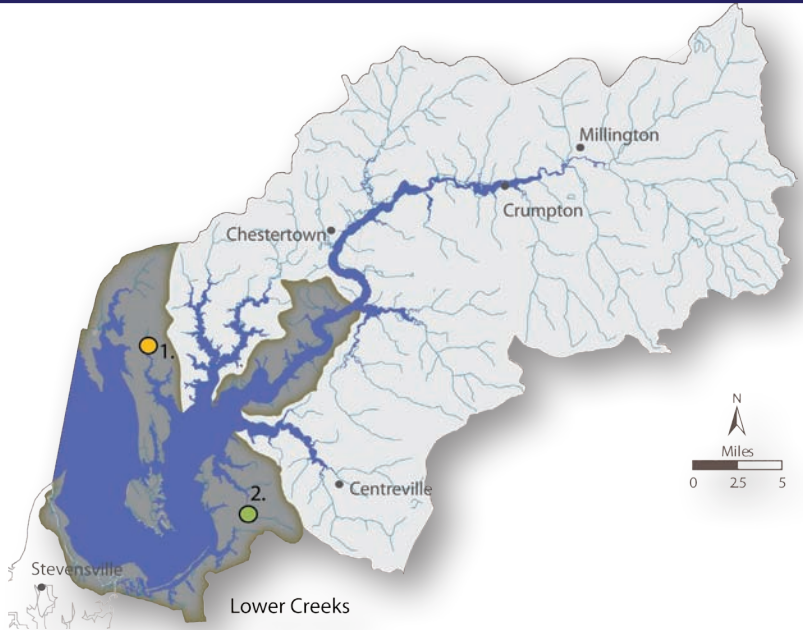


Middle Creeks Story CRA and partners planted over 10,000 trees, shrubs, and wildflowers in the improving Riley’s Mill watershed, a sign those restoration efforts are working. Rosin Creek, (pictured) on the other hand, shows how looks can be deceiving - Rosin Creek appears relatively healthy and scores well for all parameters except nitrates. This nitrate pollution leads to large algae blooms each summer. **For a healthy watershed, we must address all pollution sources in all creeks and streams.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Morgan Creek	29	81	29	33	43	C-
2. Perkins Hill Branch	100	11	95	42	44	C+
3. Radcliffe Creek	67	32	37	47	26	C-
4. Rileys Mill Branch	100	24	76	38	86	B-
5. Rosin Creek	100	5	95	86	76	B
6. Urieville Lake Branch	100	42	63	100	95	A-

Lower Creeks

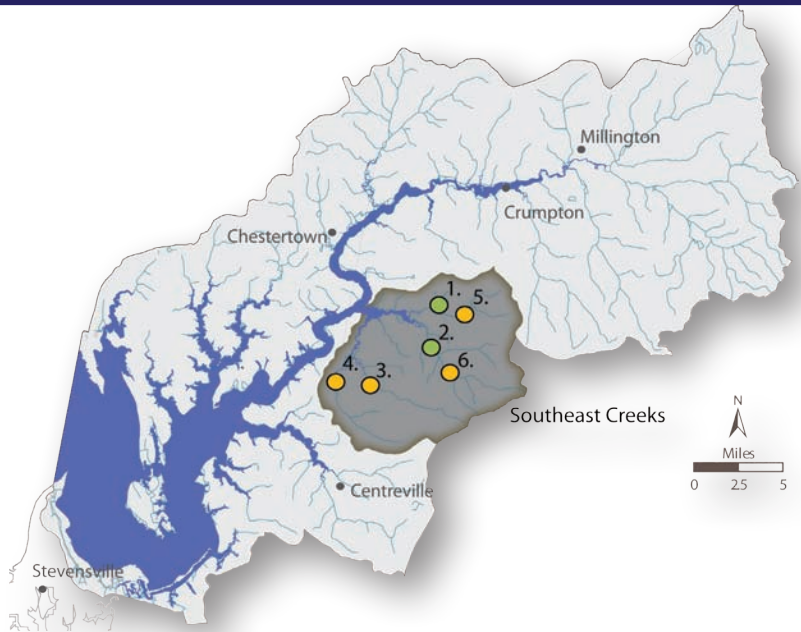


Lower Creeks Story Grays Inn Creek is an honor student in one subject, and one subject only - it has virtually no nitrate pollution. Otherwise, it is one of our most polluted creeks. Reed Creek has the opposite problem - an all around standout that just can't seem to figure out phosphorus. **To support native critters like this snapper, consider what you can do to help improve water quality.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Grays Inn Creek	43	100	27	32	32	C
2. Reed Creek	100	93	93	14	64	B

Southeast Creeks



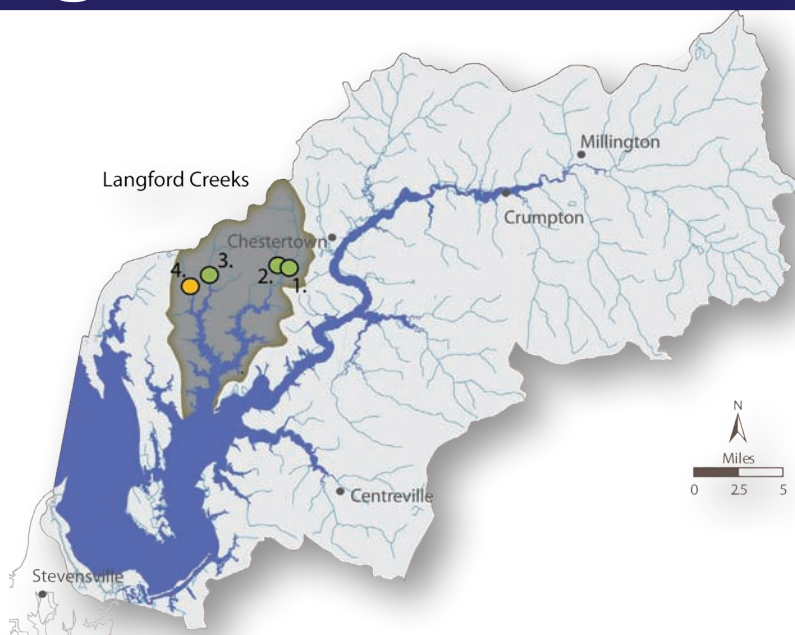
Southeast Creeks Story The Southeast Creeks have the highest levels of nutrient pollution anywhere in our watershed. Research shows this is primarily due to **legacy nutrients** in the groundwater from outdated farm practices 20-30 years ago. This is typical in geographies with heavy farming and sandy soils. The Church Hill area is also growing rapidly with several new subdivisions - **fertilized lawns and other development impacts are also contributing to poor water quality.**



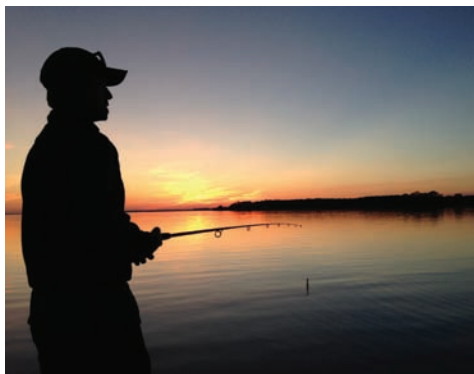
Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Browns Branch	100	17	83	17	83	B-
2. Church Hill Branch	100	14	38	14	86	C
3. Granny Finley Branch	100	39	87	13	70	B-
4. Island Creek Branch	67	95	26	16	63	C
5. Johnny Powell Branch	100	13	46	46	42	C
6. Rt. 405 Bridge	0	36	45	27	100	C-

Langford Creeks

B-



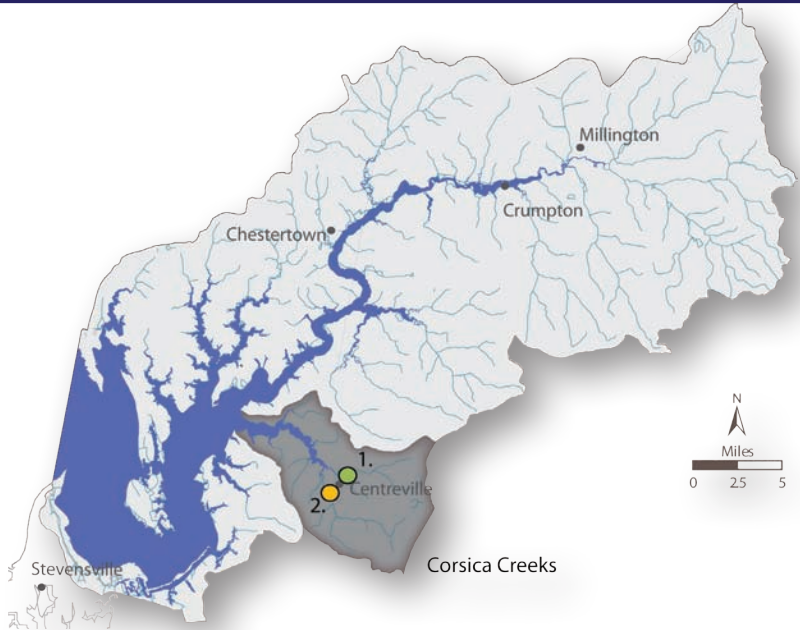
Langford Creeks Story Overall, our Langford Creeks have some of the best water quality in our watershed. The main issues in the watershed are water clarity and phosphorus pollution - which tend to go hand in hand. Any local can tell you that both the tidal and non-tidal portions of the Langford watershed have many fishing holes...**if you want those fish to see your lure, we must continue to improve water quality by planting native buffers to stabilize the soil and curb fertilizer use to reduce nutrient pollution.**



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Airy Hill Creek	100	53	74	47	47	B-
2. Brices Mill Pond Creek	100	5	95	48	67	B-
3. Sandy Bottom Creek	100	100	73	59	27	B
4. Shipyard Creek	83	100	62	10	10	C

Corsica Creeks

B-



Corsica Creeks Story Our Corsica Creeks are some of the healthiest in the watershed. Water quality is generally good, with the exception of excess phosphorus pollution in Three Bridges Branch and excess phosphorus and nitrate pollution in Old Mill Stream Branch. **The Centreville area has recently engaged in significant restoration efforts - installing rain gardens, restoring streams, and even removing a dam - positively impacting stream water quality.** Unfortunately, these positive impacts have not yet resulted in improved water quality in the tidal portion of the Corsica River. The tidal Corsica River has high nutrient levels and severe algae blooms.



Watershed	Dissolved Oxygen	Nitrates	Nutrients Ammonia	Phosphorus	Clarity	Grade
1. Three Bridges Branch	100	88	88	6	82	B
2. Old Mill Stream Br.	100	13	71	23	87	C+

In your Words



“I grew up on the Chester River, trotlining at dawn for fat river crabs, swimming at Cacaway Island, impatiently fishing for perch and sunfish with nightcrawlers. **It was my birthright** as a local kid— and one that has shaped my career, my writing, my connection with the land, and my sense of stewardship. My gratitude for the river and all it has given me is endless.”

Kate Livie
Educator; Author

I am writing a poem about swamps, because **swamps are great**. They sure do help clean up the river and the Chesapeake Bay, yup!

Alida Trumbauer
8-year old; Naturalist and Poet



My family has been enjoying this river since the 1800's and it is **a heritage to me that I feel important to pass on**. Lisa and I were married next to this river, we created our business while sitting on a Chester river dock, and we look forward to a day when we teach our future grandchildren how to be good stewards of our old friend, the river.

Jay and Lisa Yerkes
Professional Builders; River-Lovers



You Can...

Our **Chester Tester Citizen Scientists** monitor 10 scientific parameters at 27 stream sites, twice a month, year round - that is nearly **6500 data points per year!**

CRA staff and volunteers also analyze 12 scientific parameters at 21 tidal monitoring sites in the main-stem of the Chester River and its major tributaries every other week, April through October. That is almost another **4000 data points per year.**

With this much data and some expert analysis from our staff, the CRA Science and Tech Committee, and our partners at Washington College, we can begin to draw some conclusions, such as...

1. A significant amount of the pollution in the Chester River comes from sources within the watershed. Our scientific monitoring shows pollution increases as you move upriver away from the Chesapeake Bay and towards the source. This is true in the main-stem of the Chester River, and all the major tributaries - Langford Bay, the Corsica River, and Southeast Creek.



2. Pollution is damaging the Chester River watershed. Pollution, primarily nutrients and sediment, come from a variety of sources in our watershed, including poorly managed farms, failing septic systems, and lawn fertilizer. This pollution causes harm to our watershed in the forms of habitat loss, species stress, dead zones, and algae blooms (like this one in Rosin Creek).

3. Restoration works! In creeks and streams that we or others have installed restoration projects (tree plantings in Rileys Mill, rain gardens in the Corsica Creeks, or the Chestertown step-pools in Radcliffe Creek) water quality has consistently improved.



...Make a Difference

So what can you do to help the Chester River? **That Depends on who you are...**



Farmers

- Improve fertilizer efficiency with precision agriculture
- Create, expand, or maintain stream buffers
- Plant cover crops
- Plant no-till crops like native switchgrass in areas that are wet or have poor soils



Homeowners

- Reduce or eliminate lawn fertilizer
- Reduce lawn area and plant LOTS of native plants
- Install rain gardens and rain barrels to treat runoff from roofs and driveways



Everyone

- Be a voice for the river - talk to your neighbors about the river
- Engage - contact your local representatives and tell them you care about clean water
- Get Involved - support CRA by becoming a member or volunteering



Partners and Supporters



Our work is made possible by the generous support of our River Guardians, sponsors, members, foundations, and volunteers.

Thank you!



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