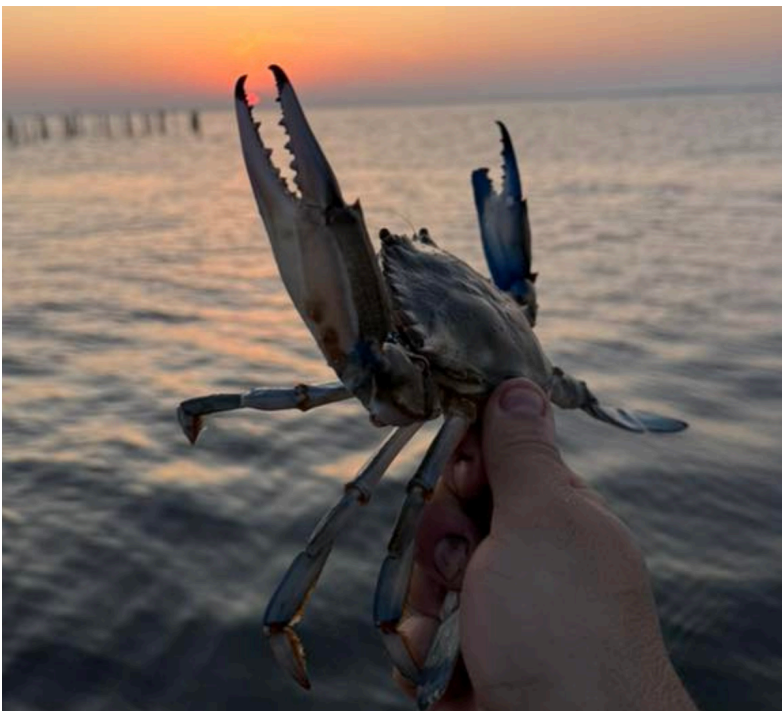


2025 River Report Card

For the South, West, and Rhode Rivers



Arundel Rivers Federation

ARUNDELRIVERS.ORG



Who is Arundel Rivers?

Deeply rooted in the **South, West, and Rhode Rivers**, Arundel Rivers Federation **heals and protects our waterways** and **champions clean water** across Maryland. We deliver this work through three program areas: Restoration, Education & Outreach, and Riverkeeper.

I'm pleased to present our 2025 River Report Card for the South, West, and Rhode Rivers: a snapshot of the health of the waterways that define our communities. This marks our second year of nutrient and algae monitoring, giving us an even clearer view of how conditions are changing from one monitoring season to the next. It's important to remember that year-to-year fluctuations are normal—especially as rainfall and weather patterns vary. **2025 water quality was worse than 2024, but overall our clarity and oxygen (which we have 10+ years of data on) are slowly improving.** That's why long-term data matters. Our goal is to conduct at least 5 years of consistent monitoring so we can begin to identify meaningful trends. Each year of monitoring will bring more clarity to our data.

New this year is a closer look at bottom oxygen scores. We tend to see higher oxygen levels on the surface of the rivers, where algae grow and release oxygen. However, once algae die, they sink to the bottom and decompose—removing oxygen and creating stressful conditions for aquatic life. Grading bottom oxygen separately gives us a clearer picture of when and where these conditions occur.

One of the clearest takeaways from this year's data is the role of total phosphorus. Total phosphorus concentrations increased this year, leading to lower phosphorus grades at almost every testing site. In contrast, total nitrogen showed notable improvement in many of our monitoring sites—especially those on the mainstems or near the mouths of the rivers.

Total phosphorus is often the "spark" that triggers algal blooms, particularly in waters that contain high nitrogen levels. One of the ways phosphorus can enter our waterways is through erosion—binding itself to sediment entering the river. At sites with increased phosphorus levels, we also observed an increase in chlorophyll a (algae), reduced water clarity (due to increased algae and sediment clouding), and a decline in bottom oxygen (a result of that algae dying). The upriver tributary sites saw more significant declines in grades this year, suggesting that pollution is coming from subwatershed runoff, erosion, and groundwater. The good news? These are solvable problems! **Restoration that targets nutrient and sediment reduction will improve downstream waterways.** Check out the end of this report to see how we're solving these problems through our restoration work.

See you on the river,



Elle Bassett
South, West &
Rhode Riverkeeper

A handwritten signature in black ink that reads "Elle Bassett".

Encouraging Results:

Pochanotas & Tenthouse Creeks saw a substantial improvement in oxygen and nitrogen.

Needs Improvement:

Upper South River and Beards Creek saw significant declines all around, scoring the poorest overall.

How do we test?



35 sites are tested across the South, West, and Rhode Rivers.



Each site is tested **twice a month** from April through October.



At each site...



1

Clarity is measured by lowering a secchi disk into the water until the difference between the white and black sections is no longer visible.

0.3 m

2

Dissolved oxygen, pH, temperature, and salinity are measured by a water quality probe. Measurements are taken 0.3 meters from the bottom of the river and 0.3 meters from the surface.

3

Nitrogen, phosphorus, and chlorophyll a (algae) are measured from water samples sent to the Chesapeake Biological Laboratory, a marine-certified lab.



0.3 m

What's in a score?

A total of **5 parameters** are factored into an **overall grade** for each tributary:

Glossary



Total Dissolved Oxygen is the average amount of oxygen in the water, critical to support life.



Clarity is how deep light can travel in the water column, vital for underwater grasses.



Chlorophyll a is the amount of algae in the water.



Total Nitrogen is the amount of nitrogen in the water, used to measure nutrient pollution.

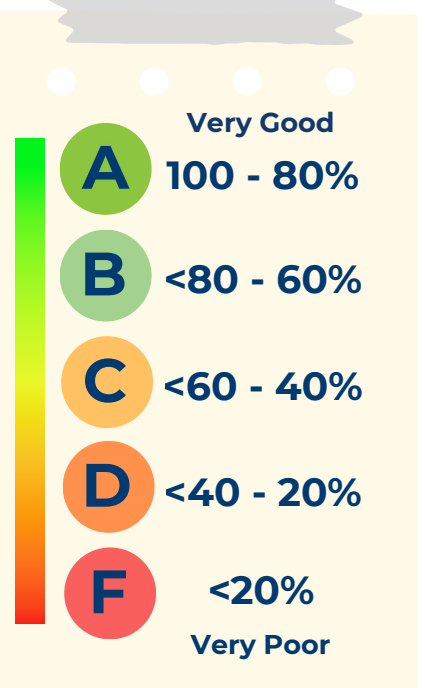


Total Phosphorus is the amount of phosphorus in the water, used to measure nutrient pollution.



Bottom Dissolved Oxygen is the amount of oxygen in the deepest part of the water, right above the sediment.

**Bottom DO is not factored into the overall grade.



The South River

South River



	Total Dissolved Oxygen	B	↓
	Clarity	C-	↓
	Chlorophyll a	D	↓
	Total Nitrogen	B	↑
	Total Phosphorus	C	↓
	Bottom Dissolved Oxygen*	C	↓

The most significant declines in the entire watershed occurred in the South River's upper tributaries, especially Beards, Broad, and Gingerville Creeks, along with our Upper River site. These sites saw a decline in every measured parameter compared to their 2024 scores.

From Thomas Point to Route 50, we have a total of 18 monitoring sites on the South River. Little Aberdeen Creek is a new site this year—funded by the community.

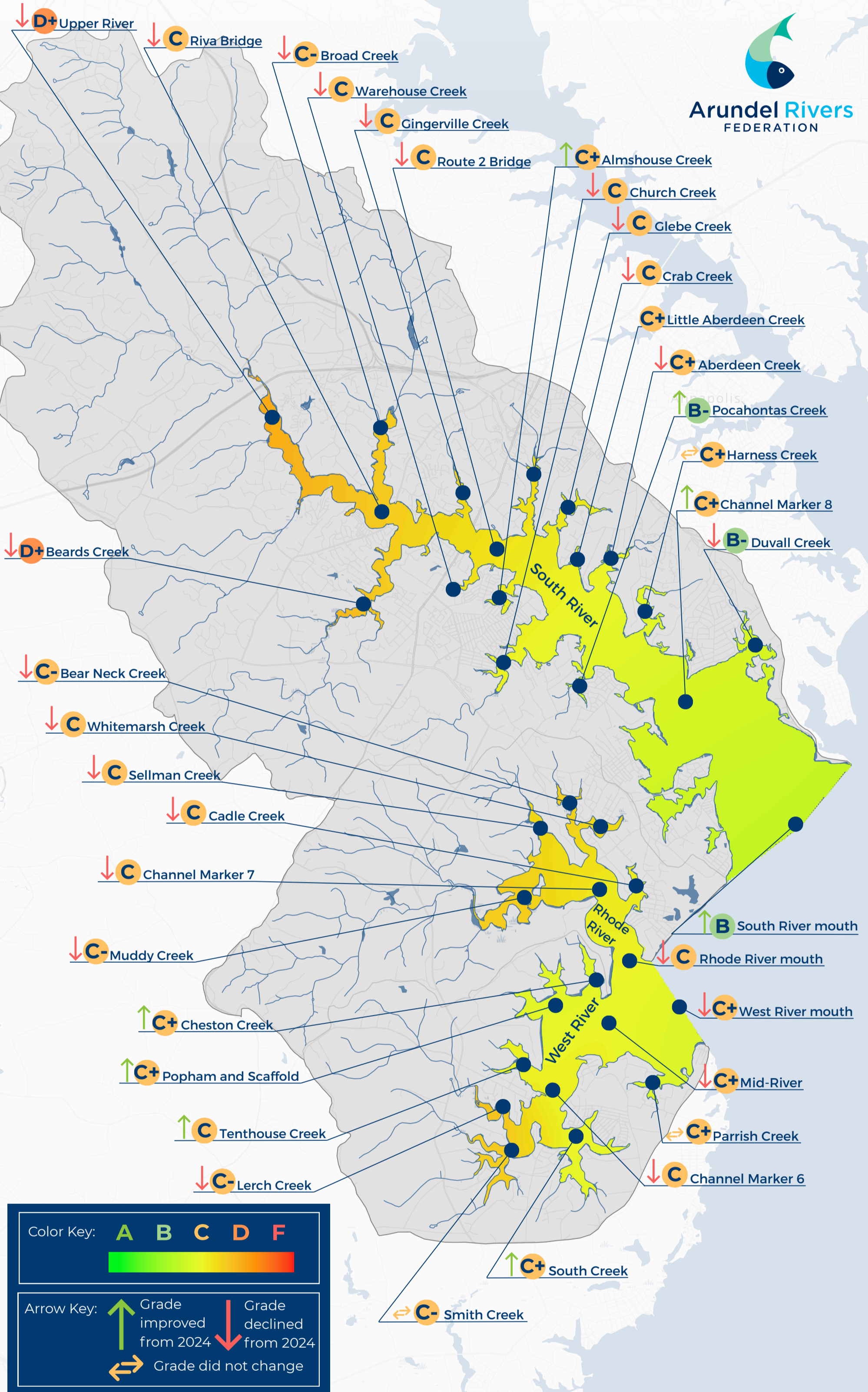
*Bottom Dissolved Oxygen is not factored into the overall grade.

The South River earned a C (52 out of 100) in 2025, unchanged from 2024. Despite the same letter grade, many tributaries saw a decline in overall score. One bright spot: nitrogen scores increased this year from a B- to a B.

It was a particularly bad year for bottom dissolved oxygen and phosphorus on the South River. Every sampling site but one (Pochahontas Creek) saw a decline in phosphorus score (or an increase in the pollutant phosphorus). Beards Creek received a score of F, or 14% out of 100, the lowest score for phosphorus in the entire watershed. Crab, Gingerville, Broad, and Beards Creek, and Upper River and Riva Bridge sites all declined in phosphorus score by over 10 percentage points.



Photo Credit: left photo (Amelia Whitman) and right photo (Dottie Rodda)



The West and Rhode Rivers

The West River earned a C (53 out of 100) in 2025, the same grade as 2024. Despite the same score, the West River actually saw a slight improvement in dissolved oxygen and nitrogen. In fact, the West River outperformed the South and Rhode Rivers in phosphorus, algae, and oxygen. Lerch Creek saw the largest decline this year, dropping 7 percentage points, driven largely by a spike in phosphorus pollution.

We're always on the lookout for our local watermen on the West! From the crab pot line to the Swamp Circle Saloon, we monitor 10 sites across the West River.

Rhode River



	Total Dissolved Oxygen	↓ A
	Clarity	↓ D
	Chlorophyll a	↓ D-
	Total Nitrogen	↑ B-
	Total Phosphorus	↓ C-
	Bottom Dissolved Oxygen*	↓ B

The Rhode River also received a C (49 out of 100) in 2025. The Rhode River received the poorest scores for all parameters except for oxygen compared to the other rivers. Similar to the South River, nitrogen showed some improvement, particularly near the mouth. All of our stations on the Rhode declined in 2025, most notably in oxygen and algae. Conditions were especially challenging in the headwaters, where clarity and phosphorus scores fell by more than 20%!

Wave hello to the banana boats at Camp Letts! We have 7 sites on the Rhode between Camp Wabanna and the Smithsonian Environmental Research Center.

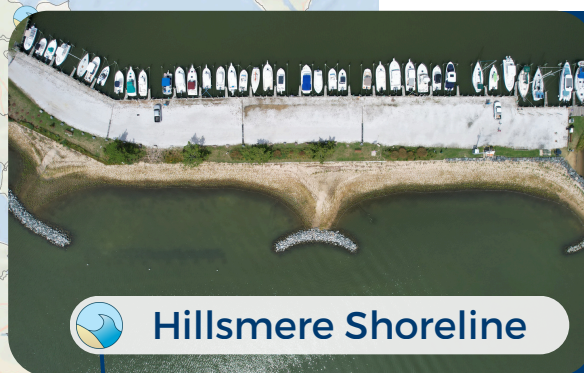
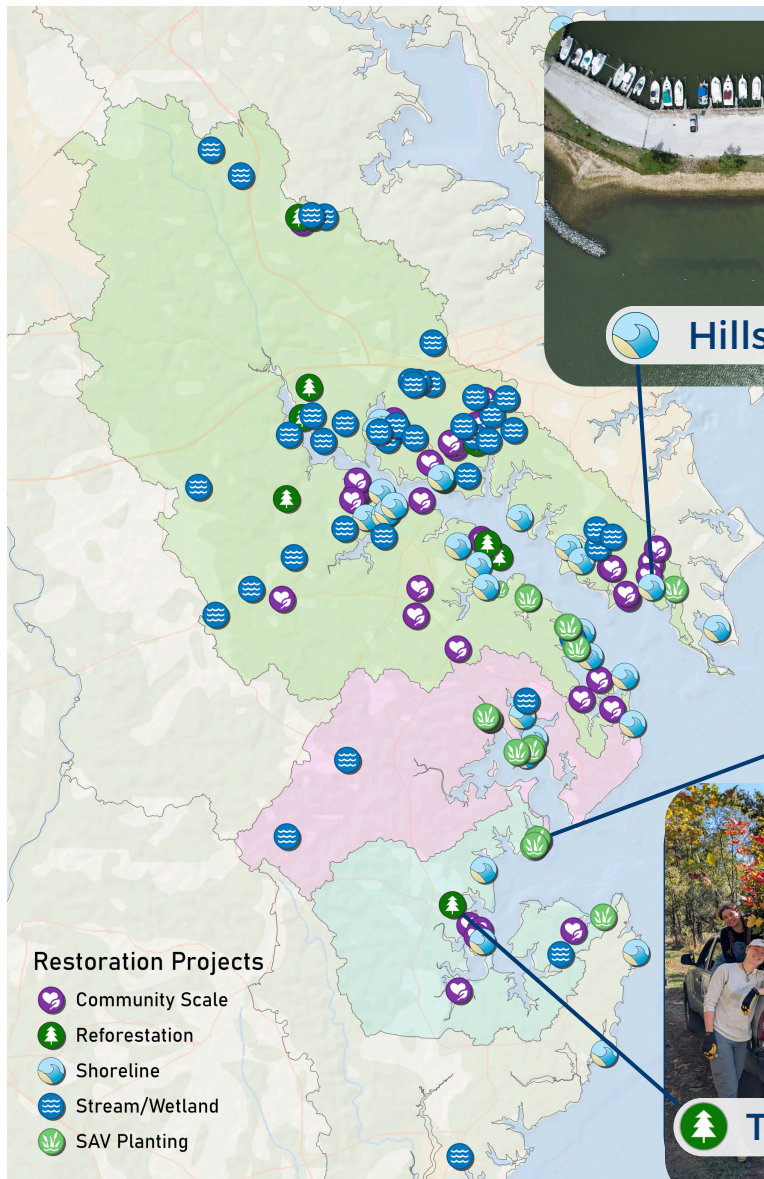
West River



	Total Dissolved Oxygen	↑ A
	Clarity	↓ D+
	Chlorophyll a	↓ D
	Total Nitrogen	↑ B-
	Total Phosphorus	↓ C
	Bottom Dissolved Oxygen*	↑ A-

Restoration Highlights

The Restoration and Monitoring programs at Arundel Rivers Federation work hand in hand to heal our rivers. Here are a few projects our team worked on this year...



What was once a hardened shoreline has been transformed into a living system, featuring oyster reef balls, woody debris, and native grasses. These elements dissipate wave energy and create valuable habitat for local wildlife.



We planted over 7 million submerged aquatic vegetation (SAV) seeds across our rivers in 2025. These underwater grasses are critical to improving water quality and providing underwater habitat.



A total of 654 trees have been planted along the edge of this farm, restoring 2.2 acres of stream buffer! Bordering Tenthouse Creek, this reforestation will help slow and filter runoff before it reaches the water—reducing pollution and protecting the health of the creek and the West River.

THANK YOU to our volunteers, supporters, and sponsors who made this report possible!



the **CAMPBELL FOUNDATION**

Trish Elberti
Kent McNew

John Flood
Tracy Wroe