2015
Chester River
Report Card

www.chesterriverassociation.org
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 restoration 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
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.

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Dissolved Oxygen</th>
<th>Nutrients</th>
<th>Clarity</th>
<th>Algae</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tidal Chester</td>
<td>85</td>
<td>59</td>
<td>31</td>
<td>40</td>
<td>52</td>
</tr>
<tr>
<td>Non-Tidal Chester</td>
<td>78</td>
<td>55</td>
<td>41</td>
<td>62</td>
<td>NA</td>
</tr>
</tbody>
</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 Description**
- **Dissolved Oxygen**
  - 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**
  - 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**
  - 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**
  - 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.**

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

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Dissolved Oxygen</th>
<th>Nitrates</th>
<th>Nutrients</th>
<th>Phosphorus</th>
<th>Clarity</th>
<th>Grade</th>
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<tbody>
<tr>
<td>Upper Creeks</td>
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<td>40</td>
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<td>52</td>
<td>68</td>
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</tr>
<tr>
<td>Middle Creeks</td>
<td>81</td>
<td>33</td>
<td>66</td>
<td>58</td>
<td>62</td>
<td>C+</td>
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<tr>
<td>Lower Creeks</td>
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<td>97</td>
<td>53</td>
<td>25</td>
<td>44</td>
<td>C+</td>
</tr>
<tr>
<td>Southeast Creeks</td>
<td>85</td>
<td>37</td>
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<td>C</td>
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<tr>
<td>Langford Creeks</td>
<td>96</td>
<td>65</td>
<td>76</td>
<td>41</td>
<td>37</td>
<td>B-</td>
</tr>
<tr>
<td>Corsica Creeks</td>
<td>100</td>
<td>40</td>
<td>77</td>
<td>17</td>
<td>85</td>
<td>B-</td>
</tr>
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</table>
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.

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Dissolved Oxygen</th>
<th>Nitrates</th>
<th>Nutrients</th>
<th>Ammonia</th>
<th>Phosphorus</th>
<th>Clarity</th>
<th>Grade</th>
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<tbody>
<tr>
<td>1. Andover Branch</td>
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<td>83</td>
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<td>29</td>
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<tr>
<td>2. Chesterville Branch</td>
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<td>81</td>
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<tr>
<td>3. Cypress Branch</td>
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<td>58</td>
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<td>74</td>
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<tr>
<td>4. Foreman Branch</td>
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<td>15</td>
<td>65</td>
<td>80</td>
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<tr>
<td>5. Harmony Woods Cr.</td>
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<td>19</td>
<td>88</td>
<td>31</td>
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<td>C+</td>
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<tr>
<td>6. Mills Branch</td>
<td>0</td>
<td>100</td>
<td>50</td>
<td>36</td>
<td>57</td>
<td>C</td>
<td></td>
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<tr>
<td>7. Red Lion Branch</td>
<td>38</td>
<td>26</td>
<td>91</td>
<td>30</td>
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<tr>
<td>8. Unicorn Branch</td>
<td>86</td>
<td>9</td>
<td>45</td>
<td>59</td>
<td>86</td>
<td>C+</td>
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</table>
**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.**

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Dissolved Oxygen</th>
<th>Nitrates</th>
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<th>Clarity</th>
<th>Grade</th>
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<tbody>
<tr>
<td>1. Morgan Creek</td>
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<td>29</td>
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<tr>
<td>2. Perkins Hill Branch</td>
<td>100</td>
<td>11</td>
<td>95</td>
<td>42</td>
<td>C+</td>
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<tr>
<td>3. Radcliffe Creek</td>
<td>67</td>
<td>32</td>
<td>37</td>
<td>47</td>
<td>C-</td>
</tr>
<tr>
<td>4. Rileys Mill Branch</td>
<td>100</td>
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<td>38</td>
<td>B-</td>
</tr>
<tr>
<td>5. Rosin Creek</td>
<td>100</td>
<td>5</td>
<td>95</td>
<td>86</td>
<td>B</td>
</tr>
<tr>
<td>6. Urieville Lake Branch</td>
<td>100</td>
<td>42</td>
<td>63</td>
<td>100</td>
<td>A-</td>
</tr>
</tbody>
</table>
**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.
### 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.

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

<table>
<thead>
<tr>
<th>Watershed</th>
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<th>Nitrates</th>
<th>Nutrients</th>
<th>Clarity</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Airy Hill Creek</td>
<td>100</td>
<td>53</td>
<td>74</td>
<td>47</td>
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</tr>
<tr>
<td>2. Brices Mill Pond Creek</td>
<td>100</td>
<td>5</td>
<td>95</td>
<td>48</td>
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<tr>
<td>3. Sandy Bottom Creek</td>
<td>100</td>
<td>100</td>
<td>73</td>
<td>59</td>
<td>B</td>
</tr>
<tr>
<td>4. Shipyard Creek</td>
<td>83</td>
<td>100</td>
<td>62</td>
<td>10</td>
<td>C</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Dissolved Oxygen</th>
<th>Nitrates</th>
<th>Nutrients Ammonia</th>
<th>Phosphorus</th>
<th>Clarity</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Three Bridges Branch</td>
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<td>88</td>
<td>88</td>
<td>6</td>
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</tr>
<tr>
<td>2. Old Mill Stream Br.</td>
<td>100</td>
<td>13</td>
<td>71</td>
<td>23</td>
<td>87</td>
<td>C+</td>
</tr>
</tbody>
</table>
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

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