

Potomac River

Water Quality and Habitat Assessment

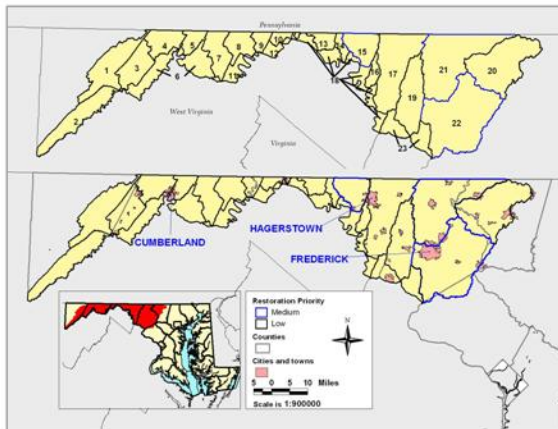
Potomac River

The Potomac River is divided into three basins: Upper Potomac, Middle Potomac, and Lower Potomac. The Upper Potomac basin, which includes the Shenandoah and Monocacy Rivers, drains approximately 10,500 square miles in parts of Maryland, Pennsylvania, West Virginia, and Virginia. In 2010 there were approximately 1.5 million people living in the basin. The dominant land use in the Upper Potomac is forest (44%), followed by agriculture (33%), and urban use (18%). Between 2000 and 2010, urban land use increased by 5% and impervious surfaces cover 4% of the Upper Potomac.

The Middle Potomac basin drains approximately 2,200 square miles in parts of Maryland, Virginia, and all of Washington DC. In 2010 there were approximately 4.3 million people living in the basin with dense population centers in metropolitan areas. The dominant land use in the Middle Potomac is urban (49%), followed by forest (24%), and agriculture (13%). Between 2000 and 2010, urban land use increased by 1% and impervious surfaces cover 13% of the Middle Potomac.

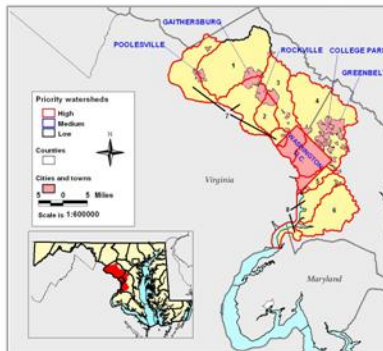
The Lower Potomac basin drains approximately 1,400 square miles in parts of Maryland and Virginia. In 2010 there were approximately 430,000 people living in the basin. The predominant land use in the Lower Potomac is forest (51%), followed by urban use (24%), and agriculture (19%). Between 2000 and 2010, urban land use increased by 9% and impervious surfaces cover 4% of the Lower Potomac.

Upper Potomac



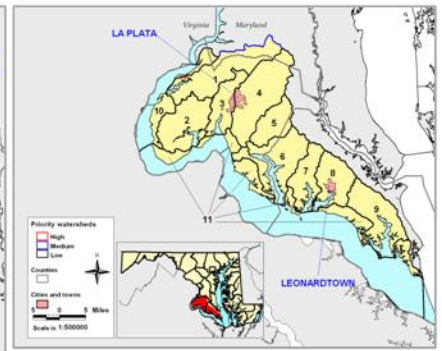
Sub-watersheds: 1-Savage River, 2-Potomac River Upper North Branch, 3-Georges Creek, 4-Wills Creek, 5-Evitts Creek, 6-Potomac River Lower North Branch, 7-Town Creek, 8-Fifteen Mile Creek, 9-Sideling Hill Creek, 10-Little Tonoloway Creek, 11-Potomac River Allegany County, 12-Tonoloway Creek, 13-Licking Creek, 14-Little Conococheague, 15-Conococheague Creek, 16-Marsh Run, 17-Antietam Creek, 18-Potomac River Washington County, 19-Catoctin Creek, 20-Double Pipe Creek, 21-Upper Monocacy River, 22-Lower Monocacy River, 23-Potomac River Frederick County

Middle Potomac



Sub-watersheds: 1- Seneca Creek, 2- Cabin John Creek, 3- Rock Creek, 4- Anacostia River, 5- Oxon Creek, 6- Piscataway Creek, 7- Potomac River Montgomery County, 8- Potomac River Upper tidal

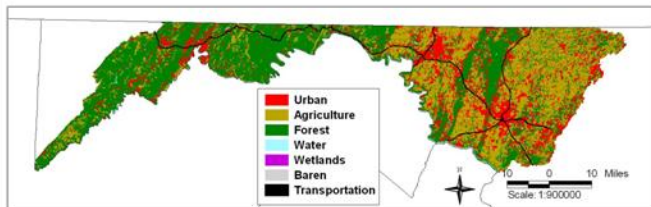
Lower Potomac



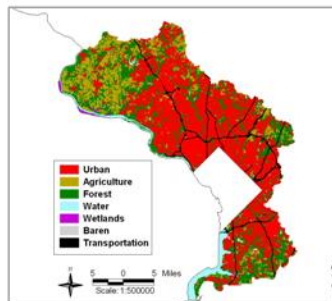
Sub-watersheds: 1- Mattawoman Creek, 2- Nanjamoy Creek, 3- Port Tobacco River, 4- Zekiah Swamp, 5- Gilbert Swamp, 6- Wicomico River, 7- St. Clements Bay, 8- Breton Bay, 9- St. Mary's River, 10- Potomac River Middle tidal, 11- Potomac River Lower tidal

Land Use/Land Cover

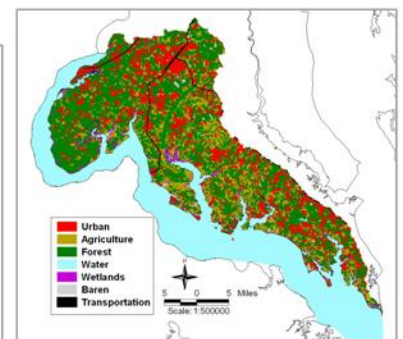
Upper Potomac



Middle Potomac

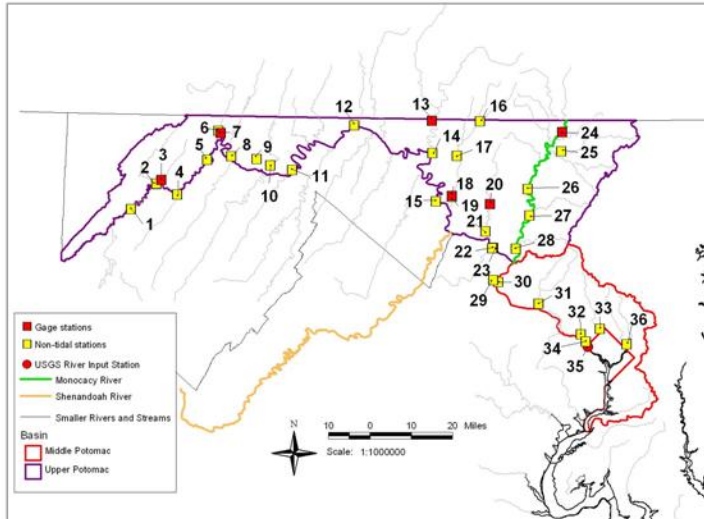


Lower Potomac

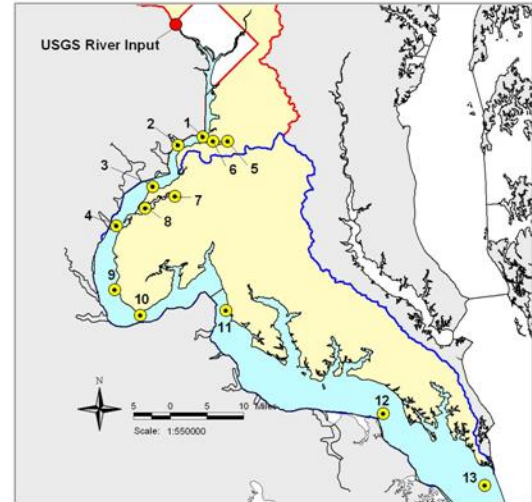


MD DNR Monitoring Stations

Non-tidal Stations



Tidal Stations



Overall Conditions

Upper Potomac

- Stream health varies from good (Savage River) to fair (Lower North Branch, Fifteen Mile Creek, Siding Hill Creek, Upper Monocacy River) to poor in rest of the areas
- Long-term decreases in nitrogen and phosphorus loadings from Maryland tributaries, but recent increases in sediment levels, as well as nitrogen and phosphorus in some areas
- Newer concerns include acid mine drainage, algal blooms in the farthest upstream region, and presence of harmful invasive species such as *Didymo*

Middle Potomac

- Over the long-term, nitrogen decreased at all non-tidal stations, phosphorus decreased at most stations, and sediment decreased at upstream stations
- Stream health in non-tidal areas is poor in all but Seneca Creek, which is fair
- Water quality in tidal areas ranges from fair (e.g. Piscataway Creek) to poor due to high but decreasing nitrogen levels and poor water clarity
- Phosphorus levels are good, but sediment levels in shallow waters and algal densities in main river are too high
- Summer dissolved oxygen levels are good but bottom dwelling animals are unhealthy
- Underwater grass habitat has decreased and grass coverage is 40% of restoration goal in Maryland; coverage in Piscataway Creek is 32% of goal

Lower Potomac

- Stream Health is fair, good water quality in Mattawoman Creek, and fair water quality in open tidal waters with moderate nutrient levels
- Decreasing nitrogen levels throughout basin and decreasing phosphorus levels in upstream areas
- Algal densities are high in open waters but harmful algal blooms have become less frequent and severe
- Poor water clarity and declining underwater grass habitat—grass coverage is 10% of restoration goal; coverage in Mattawoman Creek is 68% of goal
- Summer bottom dissolved oxygen levels were fair to good in upper portion; severely depleted in lower portion with unhealthy bottom dwelling animals

Improving Water & Habitat Quality: What's been done and what needs to be done?

- Upgrades to the largest wastewater treatment plant in the basin, Blue Plains, have reduced nitrogen loadings by more than two-thirds and reduced phosphorus levels by a third since the mid-1990s
- Approximately 175 septic system upgrades have been completed and more than 41,000 stormwater retrofits have been completed
- 81,000 acres of cover crops have been planted between growing seasons to absorb excess nutrients and prevent sediment erosion
- Fencing on over 13,700 acres of farmland was used to keep livestock out of streams and prevent streambank erosion and over 22,000 acres of stream buffers are in place to reduce runoff and erosion
- More than 1,250 containment structures have been built to store animal wastes and allow these nutrients to be applied to the land in the manner most effective to reduce runoff
- Almost 52,000 acres have been protected and preserved through various programs such as Program Open Space, the Rural Legacy Program, the Maryland Environmental Trust, and the Maryland Agricultural Land Preservation Program
- Upgrades that reduce nitrogen and phosphorus loadings are scheduled to be completed at additional wastewater treatment plants within the basin by 2020
- Reducing sediment loadings from urban areas can be accomplished by retrofitting existing structures with alternatives to conventional building materials and methods that reduce the amount of impervious surfaces
- The full assessment is available through the link: <http://bit.ly/POTwhq10> or by scanning:



Washington DC is located within the Middle Potomac Basin.

What Can You Do?

There are many things you can do to help improve water and habitat quality of the Potomac River.

- **Plant trees along streamside property.** Tree roots will slow erosion and absorb the flow of nutrient runoff.
- **Pump out septic tanks regularly (every 3-5 years).** A failing system can contaminate groundwater.
- **Conserve water.** Use rainwater for plants, take shorter showers, and turn off the faucet when brushing your teeth.
- **Drain gutter spouts into rain barrels or grassy areas.** This will reduce erosion, which adds sediment to rivers.
- **Carpool, or try biking or walking.** Exhaust fumes contain nitrogen oxides, which can end up in rivers and bay.
- **Dispose of household chemicals properly.** Toxic chemicals poured down the drain could end up in rivers.
- **Use fertilizer sparingly.** If you must fertilize, try doing it in autumn, when it will have less of an impact on rivers.
- **Support land protection initiatives.** Preserving existing green space is much easier than restoring degraded areas.
- **Get involved.** Let county, state, and local officials know that water and habitat quality is important to you.

Water quality data from the Potomac River are available at:

www.eyesonthebay.net

Please report fish kills, algal blooms, or any other events or problems to the toll-free Chesapeake Bay Safety and Environmental Hotline at 1-877-224-7229

Martin O'Malley, Governor

Joseph P. Gill, DNR Secretary



Maryland Department of Natural Resources; Taves State Office Building; 580 Taylor Avenue; Annapolis, Maryland 21401
 Toll free : 1-(877)-620-8DNR(8638) in Maryland Out of state call: 410-260-8638 TTY users call via the Maryland Relay
www.dnr.maryland.gov



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This document prepared by members of the DNR Tidewater Ecosystem Assessment Division

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