New Tools to Support Restoration Management in the Chesapeake Bay and its Watershed

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The Watershed Implementation Plan Data Dashboard

The Data Dashboard consolidates and provides accessibility to technical and scientific information on the Chesapeake Bay and its watershed in one cohesive location.

What is the Dashboard?
Chesapeake Bay watershed jurisdictions are currently developing their third Watershed Implementation Plans (WIPs) detailing the practices and programs that will be put in place to reduce pollution to the Bay as part of the Bay's Total Maximum Daily Load (TMDL), or "pollution diet" for nutrients and sediment. As jurisdictions draft their WIPs they are engaging with local partners to develop plans at finer geographic resolutions than previous WIPs. The Data Dashboard consolidates, visualizes, and provides accessibility to scientific and technical information in one place for the first time, making it easier for partners at all levels to get information about their area of interest.

What can you do with the Dashboard?
Some uses of the Dashboard include:

- Targeting restoration efforts geographically, by sector, or by practice
- Developing scenarios to run on the Chesapeake Assessment Scenario Tool (CAST)
- Outreach and communication of water quality information
- Building local stories to engage with stakeholders

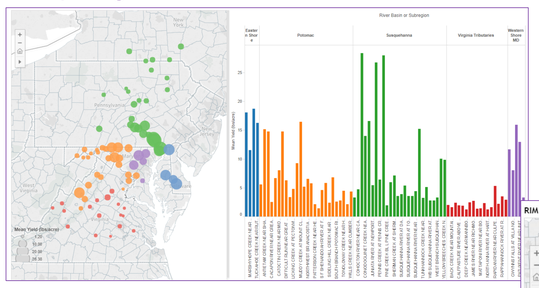
What information does it contain?
The Dashboard is organized in modules based on the type of information and the questions a planner may be trying to answer. The headings below reflect the modules and their individual sections.

Water Quality of Streams & Rivers

Streams & Rivers Water Quality

Information on the amount of nutrients and sediment at the monitoring stations throughout the watershed and trends over time that account for stream flow (flow-normalized).

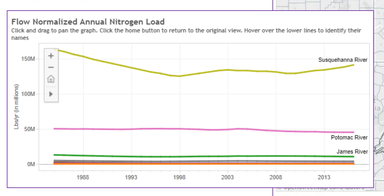
Comparing Watersheds

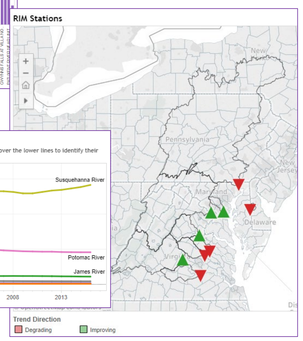


Provides the average amount of nutrients and sediment at monitoring stations accounting for watershed size (lbs pollutant/acre watershed), allowing for easy comparison across the region and within sub-regions.

River Contributions to Tidal Waters

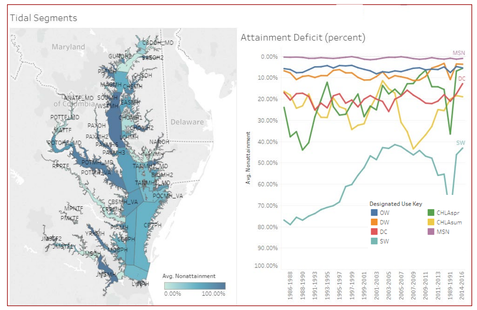
Trends accounting for stream flow (flow-normalized) of nitrogen and phosphorus in the nine major rivers at locations where they flow directly into the Bay's tidal waters.





Tidal Water Quality & Living Resources

Water Quality Standards Attainment

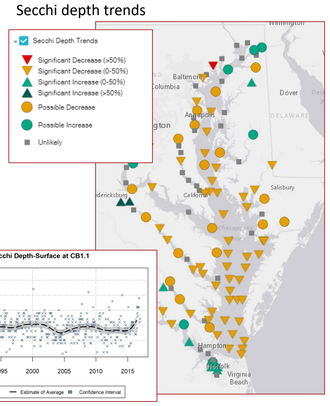


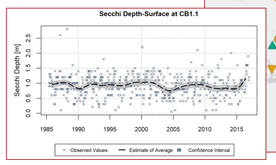
Information on attainment of water quality standards for protecting aquatic life in tidal areas. 'Attainment deficit' depicts how far away non-attaining areas are from meeting standards.

Tidal Water Quality Monitoring

Water quality monitoring data and trends at the Bay's tidal monitoring stations. These parameters include secchi depth for water clarity, concentrations of nitrogen, phosphorus, suspended sediment and dissolved oxygen, and temperature.

Secchi depth trends

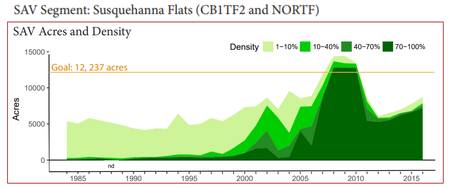




Submerged Aquatic Vegetation

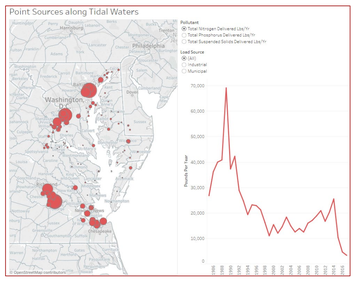
Provides fact sheets with annual acreage and density data for submerged aquatic vegetation for different areas of the tidal waters with similar vegetation populations, and timelines of events that influence, contribute to, or explain the changes.

SAV Segment: Susquehanna Flats (CB1TF2 and NORTF)



Wastewater Treatment Plant Discharges

Locations of wastewater treatment plants that discharge directly to tidal waters, and discharges of nutrient and sediment over time from these plants.



Most Effective Watersheds Influencing Bay

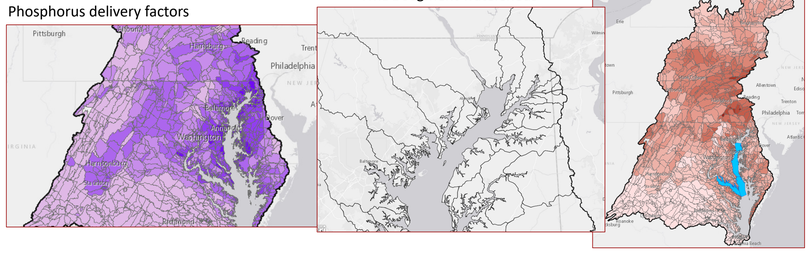
Provides maps that demonstrate influence of watershed on the tidal waters, including:

- The estimated effectiveness of different parts of the watershed on improving dissolved oxygen in the main stem of the Bay (relative effectiveness).
- The estimated proportion of locally generated pollution that makes it to the Bay's tidal waters (delivery factors).
- The discrete watersheds of the 92 Bay TMDL tidal segments.

Nitrogen relative effectiveness

Phosphorus delivery factors

TMDL segment watersheds

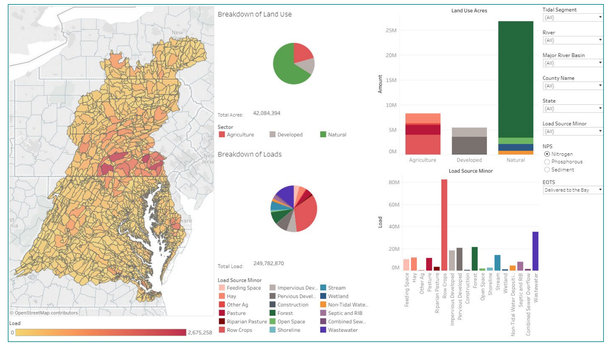


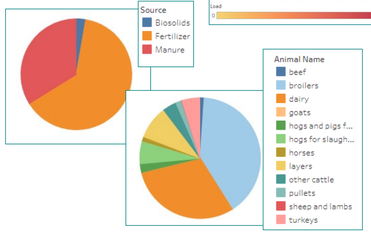
Check it Out Yourself!
http://gis.chesapeakebay.net/wip/dashboard

Targeting Restoration Efforts

Understanding Sources

Information on land use and estimated nutrient and sediment loads at different geographies across the Chesapeake Bay watershed from 2017 Progress run of the Phase 6 Watershed Model.





Nutrient Application Management

Provides estimates of nutrient application across the Chesapeake Bay watershed by county and by nutrient source (fertilizer, manure, biosolids), and animal sources of manure.

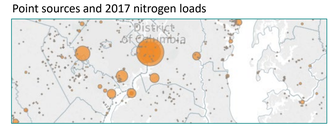
Geographic Targeting

Provides spatial information across the watershed that can be utilized to geographically identify areas for restoration.

Wastewater Treatment Plants

Locations of wastewater treatment plants throughout the Chesapeake Bay watershed and annual nutrient and sediment discharges reported from 2017.

Point sources and 2017 nitrogen loads



Management Practice Implementation

Management Practice Implementation

Provides information on the current reported implementation (2017 Progress), cost-effectiveness, and pollution reduction efficiency of Chesapeake Bay Program best management practices (BMPs) in each county.

BMP Effectiveness

BMP Name	Avg. Nitrogen $/lb reduced/ye...	Avg. Phosphorus $/lb reduced/...
Advanced Grey Infrastructure Nutrient Discove...	406	1,299
Agricultural Stormwater Management	33	356
Algal Flow-way Non-Tidal	168	2,682
Algal Flow-way Tidal	99	1,193
Alternative Crops	1	-4
Animal Waste Management System	740	10,510
Barnyard Runoff Control	15	188
Biofilters	234	0
Bioretention/raingardens - C/D soils, underdrain	557	4,411
Bioswale	173	2,203
Cover Crop Commodity Normal	31	0
Cover Crop Traditional Wheat Late Other	40	0
Cover Crop Traditional with Fall Nutrients Whe...	46	0

BMP Implementation

Summary BMP Name1	Avg. Percent Implementation	Units Implemented*
Abandoned Mine Reclamation	3	
Ag Stormwater Management	0	0
Alternative Crops	0	493
Ammonia Emission Reductions (Biofilters)	0	0
Ammonia Emission Reductions (Lagoon Covers)	0	0
Ammonia Emission Reductions (Litter Amendments)	0	20,706
Barnyard Runoff Control + Loafing Lot Management	40	8,326
BioRetention	0	7,880
BioSwale	0	3,493
Capture & Reuse	0	0

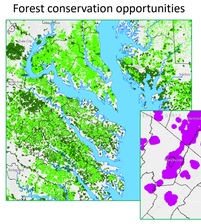
*All BMPs measured in acres except the following: Stream restoration, shoreline, & dirt and gravel BMPs – feet; Animal waste and mortality composting, ammonia emissions, and dairy precision feeding BMPs – animal units; Manure transport and treatment BMPs– dry tons; Storm drain cleanout – lbs TSS; Oyster aquaculture – oysters; Septic BMPs – systems

Planning for Change

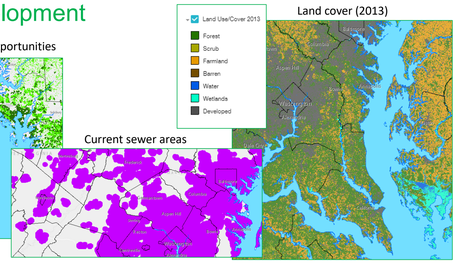
Planning for Urban Growth & Development

Provides information relevant to growth and development including current land use (2013 high-resolution) and current county-level zoning data (if available). Provides information to help identify opportunities across the watershed for Forest Conservation, Agriculture Conservation, and Growth Management.

Forest conservation opportunities



Land cover (2013)



Current sewer areas