



Finding Solutions for the Chesapeake Bay

Albert H. Todd,
Executive Director

OUR MISSION



... to lead, support, and inspire local action and build partnerships to restore and protect the health of the streams, rivers and lands of the Chesapeake watershed.

“Together, we will get the job done!”

Our Goals: *the way we work.*

- **Build strong partnerships** of individuals, communities, businesses, NGOs and governments across the watershed States and District of Columbia.
- **Inspire the people and communities** of the watershed **to be stewards** of their local streams and take part in the work of restoration.
- Create and launch **innovative local and regional programs** that produce measureable results.

Topics

What I will discuss...

1. **THE CHALLENGE:**
Why is the Bay so difficult to restore?
2. **FORESTS AND WATERSHEDS:**
What is the focus on the Bay Restoration effort?
3. **WORK OF THE ALLIANCE:** Our Chesapeake Forests Program.



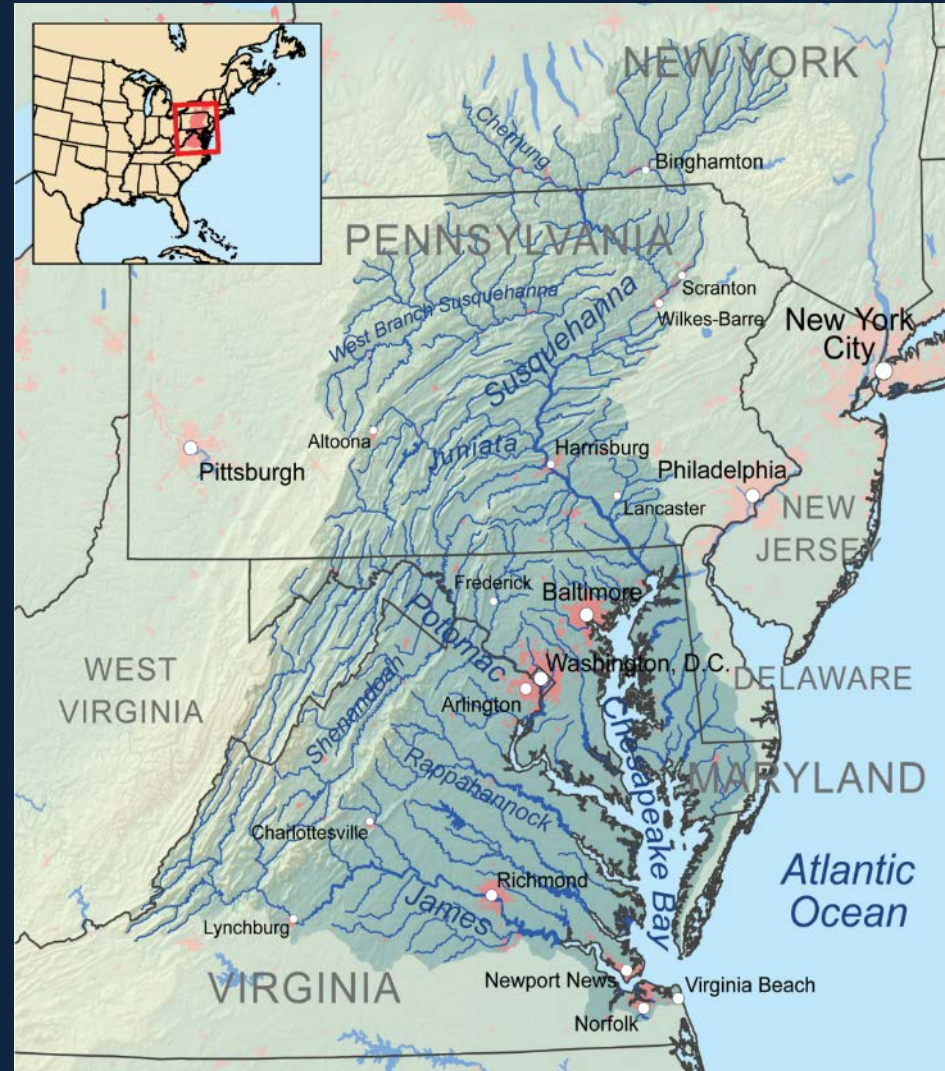


THE CHALLENGE

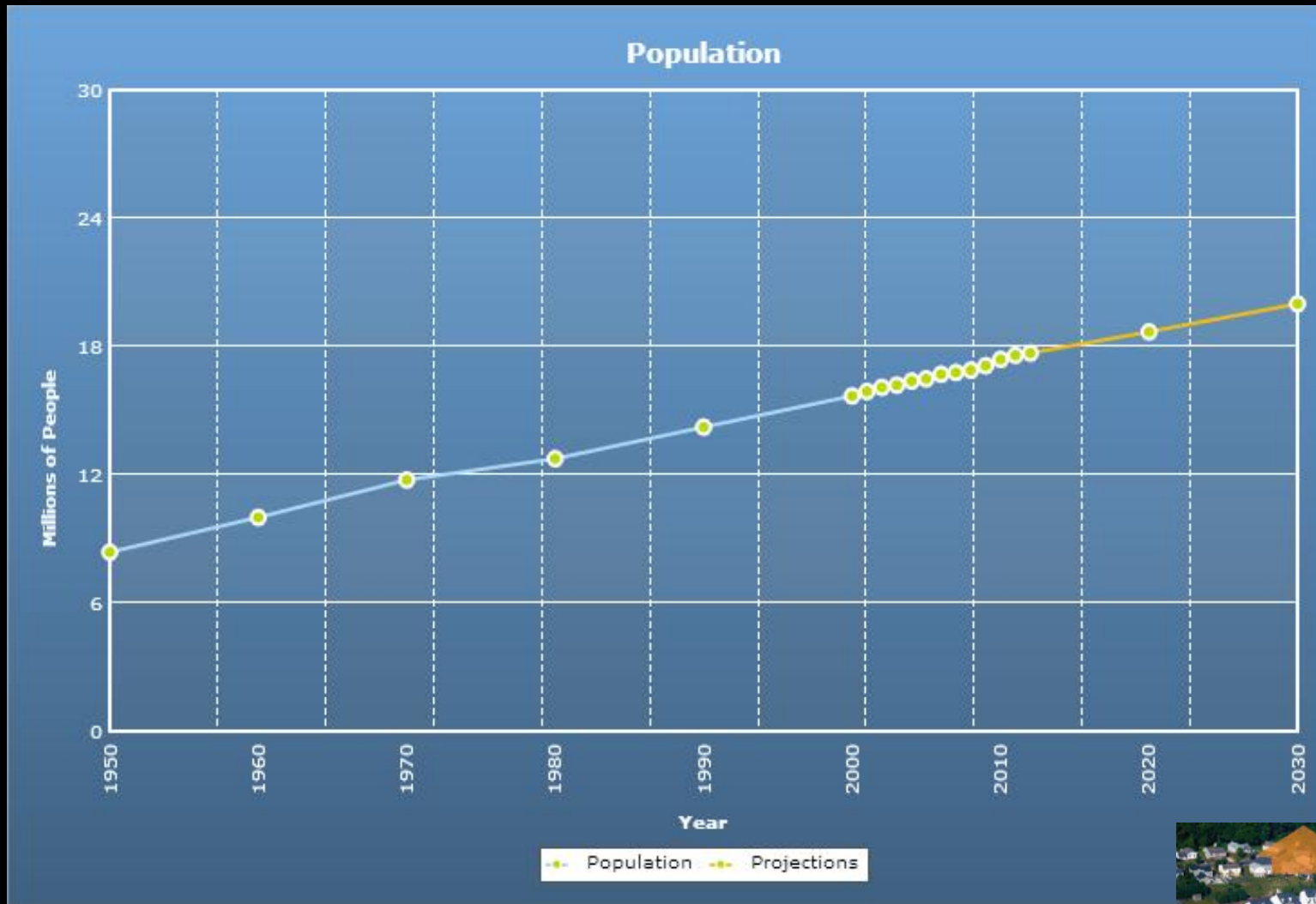
Why is the Bay so difficult to **RESTORE?**

✓ The Chesapeake Bay watershed is vast!

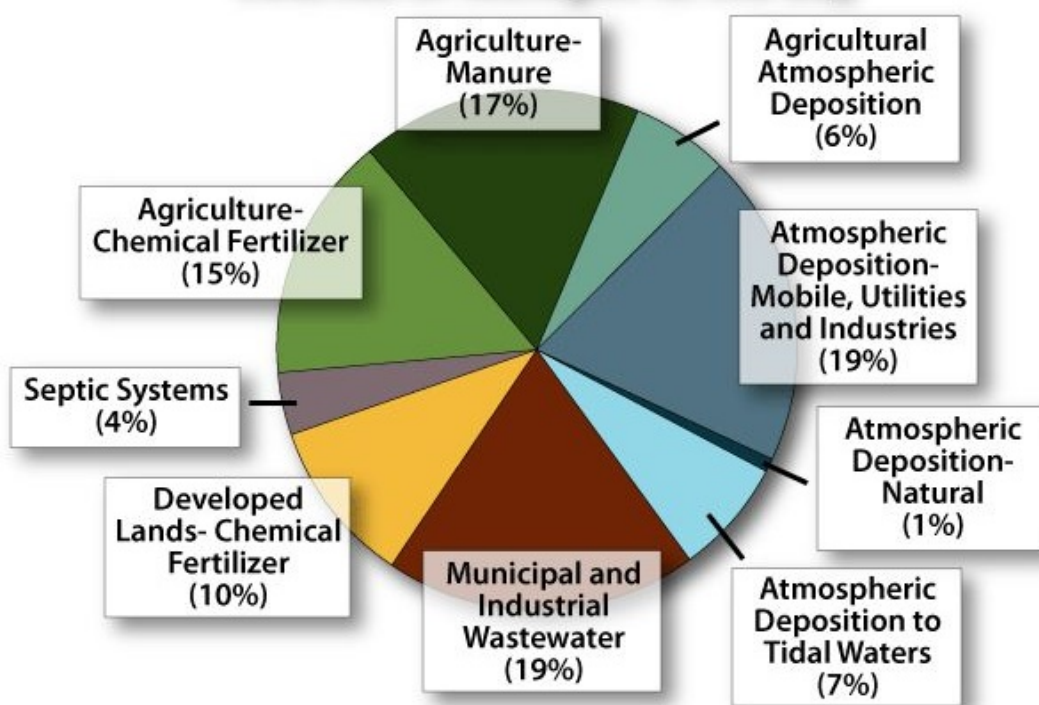
- Largest, most productive estuary on earth.
- 64,000 square mile/44 million acre watershed



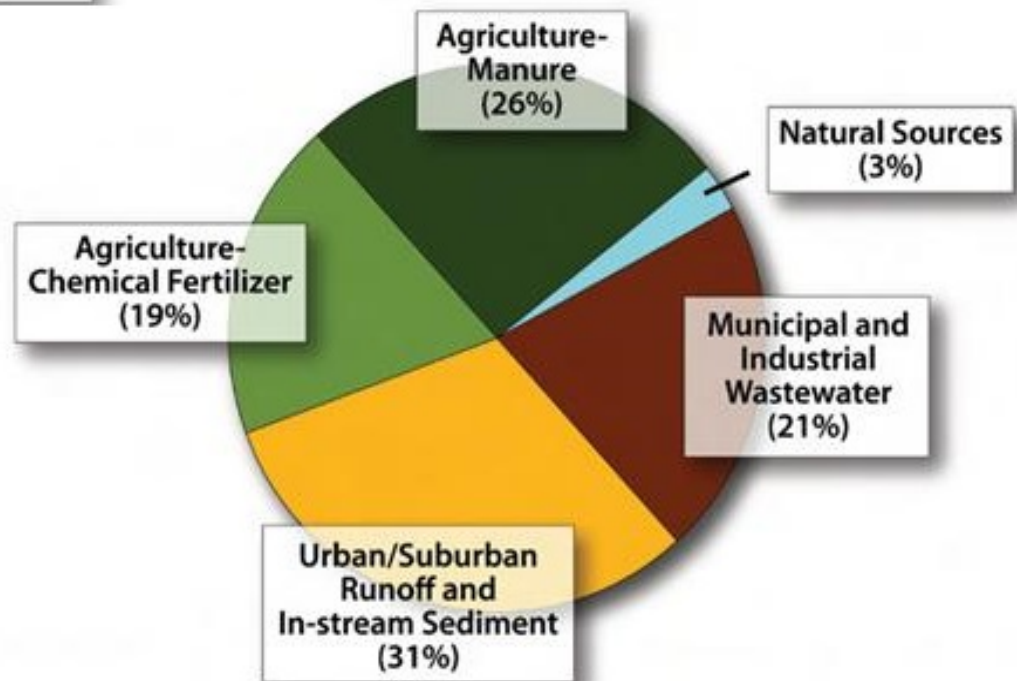
Watershed population has doubled since 1950



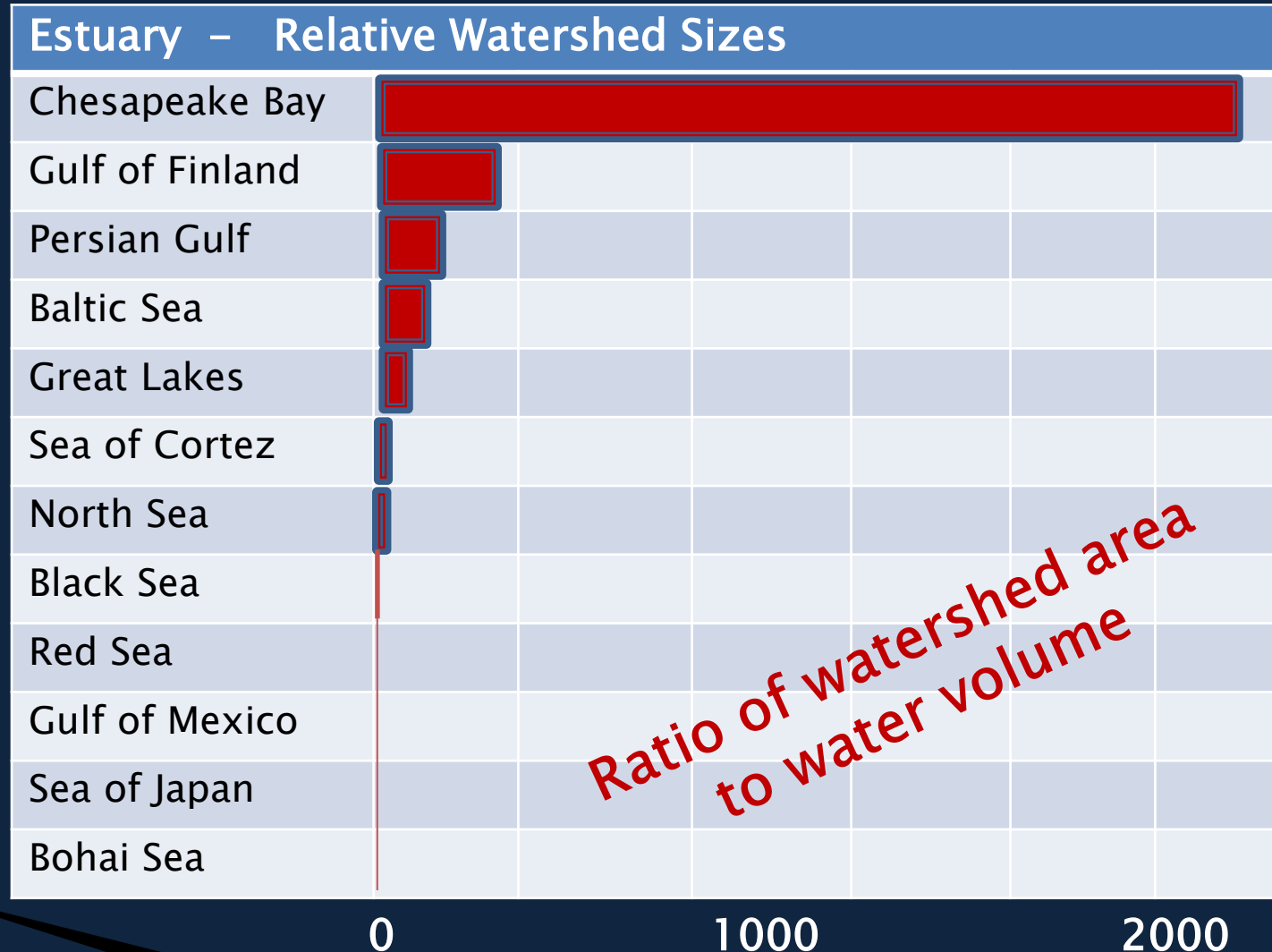
Many sources of Nitrogen to the Chesapeake Bay



Many sources of Phosphorus



✓ Lots of land influences very little water!

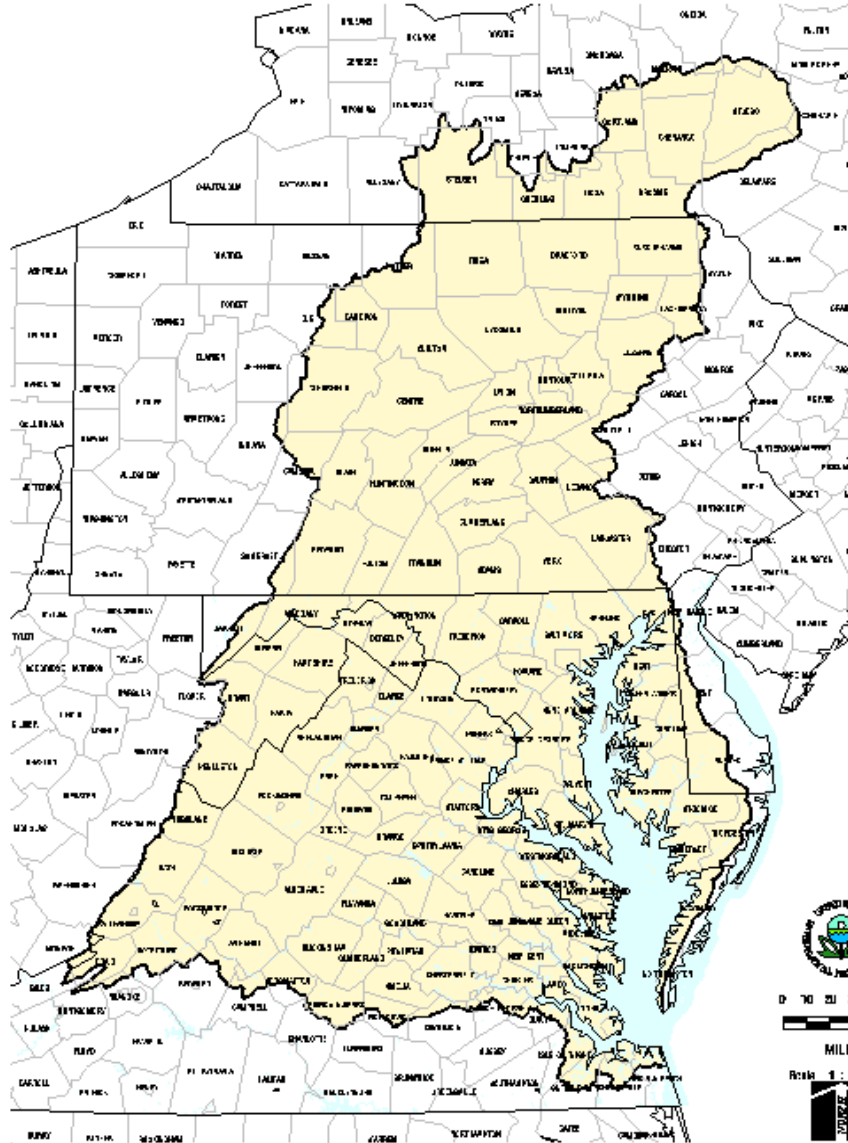




COMPLICATION:

**Exchange
with the ocean
is very
restricted!**

Counties Within the Chesapeake Bay Watershed



✓ **The watershed's government structure is complex!**

Alliance Programs

Focus on...

1. Building Stewardship
2. Reducing Stormwater Runoff
3. Conserving and restoring forests
4. Assisting local governments
5. Education and Networking





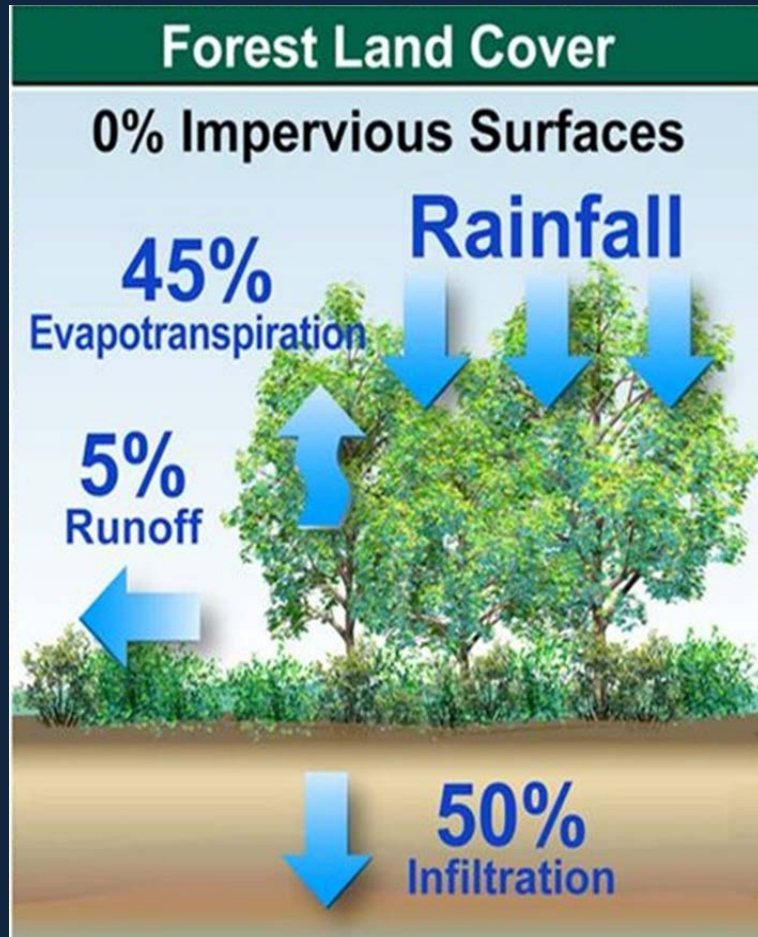
*How **FORESTS** help restore
Chesapeake **WATERSHED** health...*



If you invented the
perfect BMP that could
optimize watershed
protection ...

*it would look like a
forest!*

Measuring Watershed health*



A healthy watershed...

- ✓ Intercepts and stores rainfall, prevents runoff
- ✓ Moderates stream flow
- ✓ Retains & recycles nutrients
- ✓ Soils protected from erosion
- ✓ Supports healthy aquatic systems
- ✓ Has capacity for self-repair

**Forests, water and climate change, USDA Forest Service 2008*

Watershed health is linked to forest...

- Extent - *amount of forest in watershed or urban tree cover*
- Location - *“critical” forests*
Riparian forests
Wet woods/wetlands
Steep slopes and erodible soils
- Condition - *age, growth, health, etc.*
- Stewardship – *ownership/management*

Forests are the best land cover for sustaining water quality

Chesapeake Bay Program Water Quality Goals

	Current Nutrient Loads	Chesapeake 2017 Goals	If All Watershed Land Use Was Forest
Nitrogen (million pounds per year)	268	237	60.6
Phosphorus (million pounds per year)	18	16.4	1.1
Sediment (million tons per year)	4.1	3.9	1.5

Influence of forests and imperviousness on the health of streams (IBI)



(Goetz, et.al, 2003)

Forest Retention...



THE CHESAPEAKE BAY PROGRAM

Governor of MD



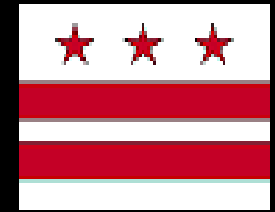
Governor of VA



Governor of PA



Mayor of DC



EXECUTIVE COUNCIL



EPA Administrator



Chair of Chesapeake Bay Commission



Governor of DE



Governor of WV



Governor of NY



Chesapeake Bay Restoration History

Key Events

1970s



2025

- 1970s **Decline in Bay resources**
- 1982 **EPA completes 5-year Bay study**
- 1983 **First Bay Agreement - Bay Program created**
- 1987 **Second Bay Agreement – WQ Goals**
- 1992 **Tributary Strategies – focus on watershed**
- 1994 **Riparian Forest Buffer Goals**
- 2000 **Protect Contiguous forests**
- 2003 **Expand RFB Goals & Urban Tree Canopy**
- 2007 **Forest Conservation Goals**
- 2000 **Third Bay Agreement (C2K)- Comprehensive**
- 2010 **Chesapeake Bay TMDL established**
- 2014 **Watershed Agreement –all States**
- 2025 **TMDL practices fully implemented**

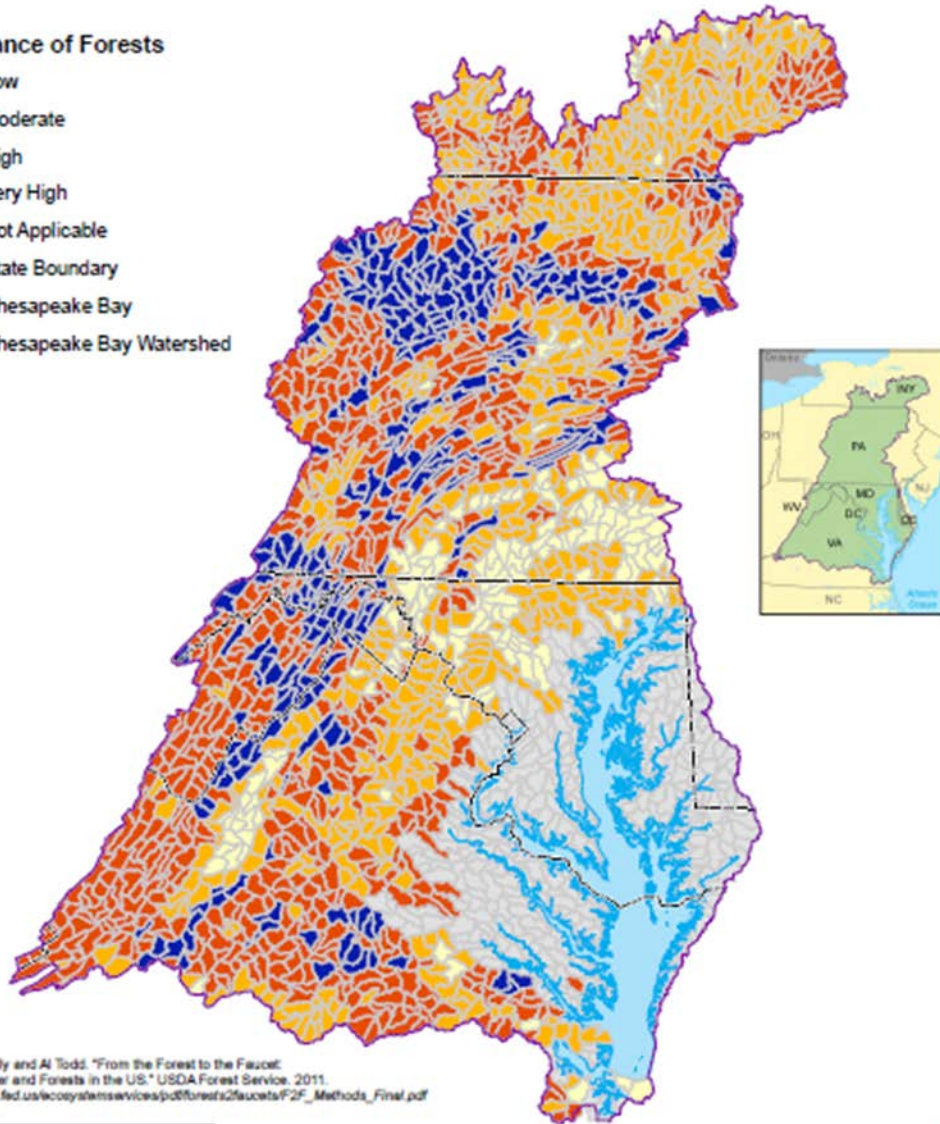


Programs: *Conserving and*
restoring **CHESAPEAKE FORESTS**

Importance of Forest to Surface Drinking Water Supplies



- Importance of Forests**
- Low
 - Moderate
 - High
 - Very High
 - Not Applicable
 - State Boundary
 - Chesapeake Bay
 - Chesapeake Bay Watershed

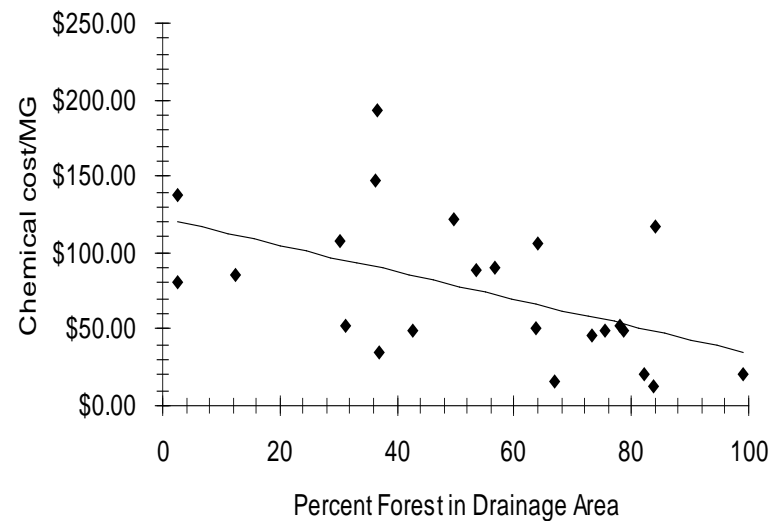


Weldner, Emily and Al Todd. "From the Forest to the Faucet: Drinking Water and Forests in the US." USDA Forest Service, 2011. http://www.fs.fed.us/cecosystemservices/pdf/forests2faucetsF2F_Methods_Final.pdf

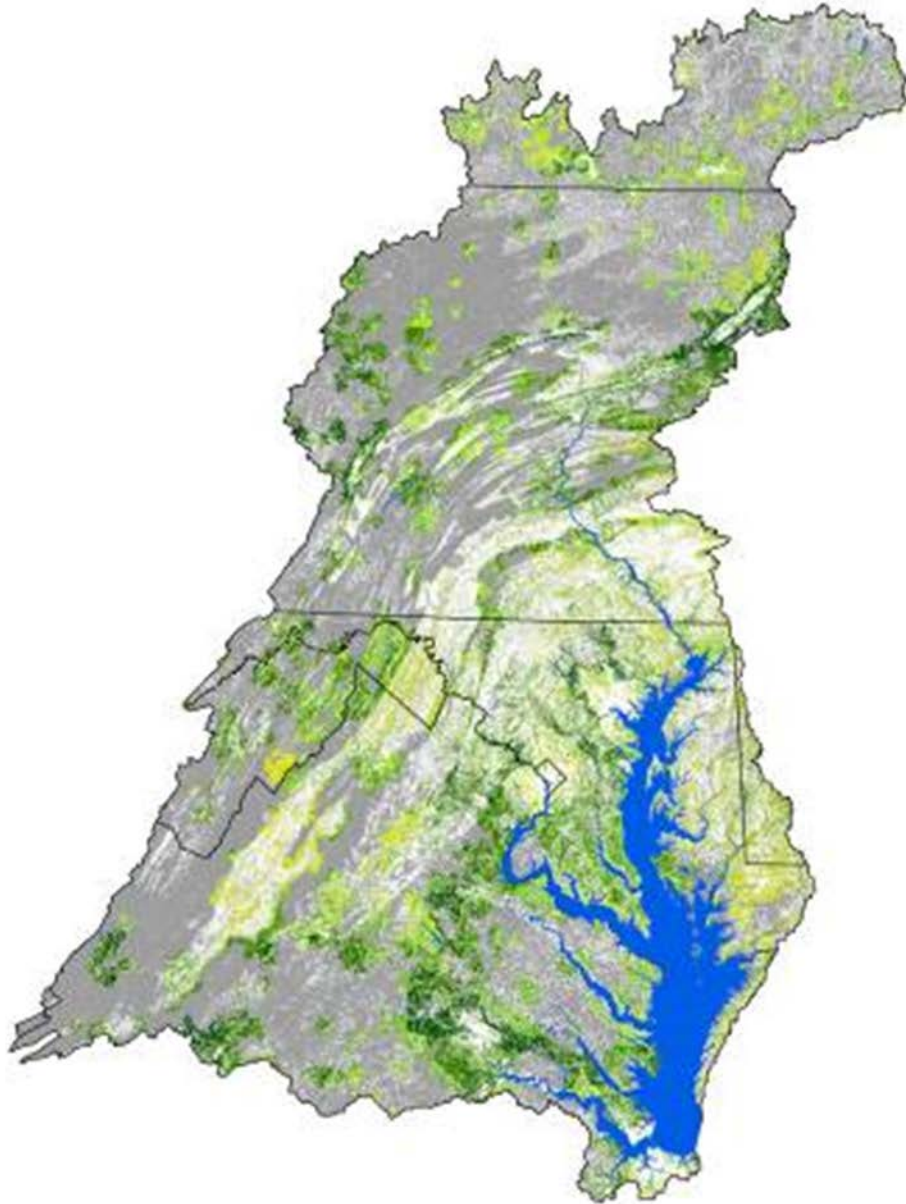
Data Source: USDA Forest Service
For more information, visit www.chesapeakebay.net
Disclaimer: www.chesapeakebay.net/terms_of_use.htm



Impact of Forest Cover on Chemical Treatment Costs



Vulnerability of Forests Most Important to Water Quality



Conservation Goal

By 2025, protect an additional **two million acres** of lands throughout the watershed—currently identified as high-conservation priorities at the federal, state or local level—including **225,000 acres** of wetlands and **695,000 acres** of forest land of highest value for maintaining water quality.

Chesapeake Forest Fund

Leveraging private investment, the Alliance plants over 100,000 trees across the watershed annually. In 2016, 4,000 mTCO₂ stored, 10,000 # N prevented from entering streams. *#ChesapeakeTreeChallenge*



Woodland Crediting Platform

STEP 1:
Project
Information

STEP 2:
Project
Baseline

STEP 3:
Project
Design

STEP 4:
Project
Verification

STEP 5:
Project
Certification

STEP 6:
Registration

STEP 7:
Issuance

PROJECT:
MFF- Bill Radford

[Project Boundary](#)

[Map Units](#)

[Field Datasheets](#)



- ✓ Permanently protected new forest
- ✓ Bank set up costs: \$5,200/ac
- ✓ Current FCA credit price: \$15,000/ac

Maryland Forest Mitigation Program



Woodland Crediting Platform

[My Projects / Add a Project](#)

[My Account](#)

[Admin Dashboard](#)

STEP 1:
Project Information

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STEP 3:
Project Design

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STEP 5:
Project Certification

STEP 6:
Registration

STEP 7:
Issuance

STEP 8:
Project Monitoring

PROJECT:

Shenandoah University's Cool Spring...

[Design Boundary](#)

[Map Units](#)

[Design Data](#)

[Credit Estimates](#)

[Release Schedule](#)

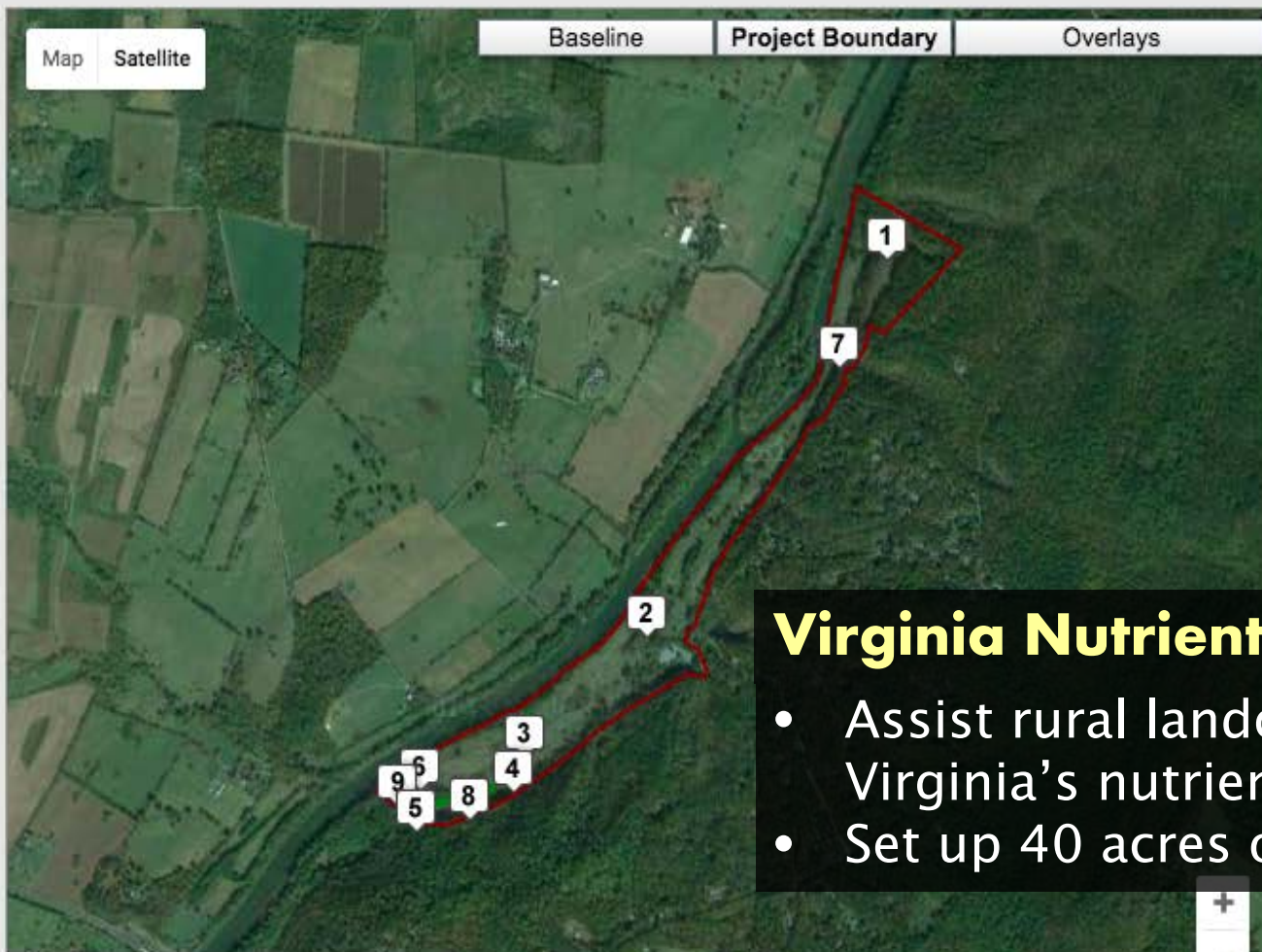
[Submit Design](#)

Map Satellite

Baseline

Project Boundary

Overlays



Map Units

The map units within a project may change from baseline to design as modifications to existing conditions expand and contract habitat or create new natural features that must be recorded. Certain credit types restrict the extent of these modifications, while others create no such restrictions. Please reference your credit calculation manuals and field data-sheets for more information.

[Add a Map Unit](#)

[Upload KML Data](#)

1. North Zone Area 1

[EDIT](#)

[CREDIT TYPES](#)

[DELETE](#)

2. Central Zone Area 1

[EDIT](#)

[CREDIT TYPES](#)

[DELETE](#)

3. South Zone Area 1

[EDIT](#)

[CREDIT TYPES](#)

[DELETE](#)

5. South Zone Area 5

[EDIT](#)

[CREDIT TYPES](#)

[DELETE](#)

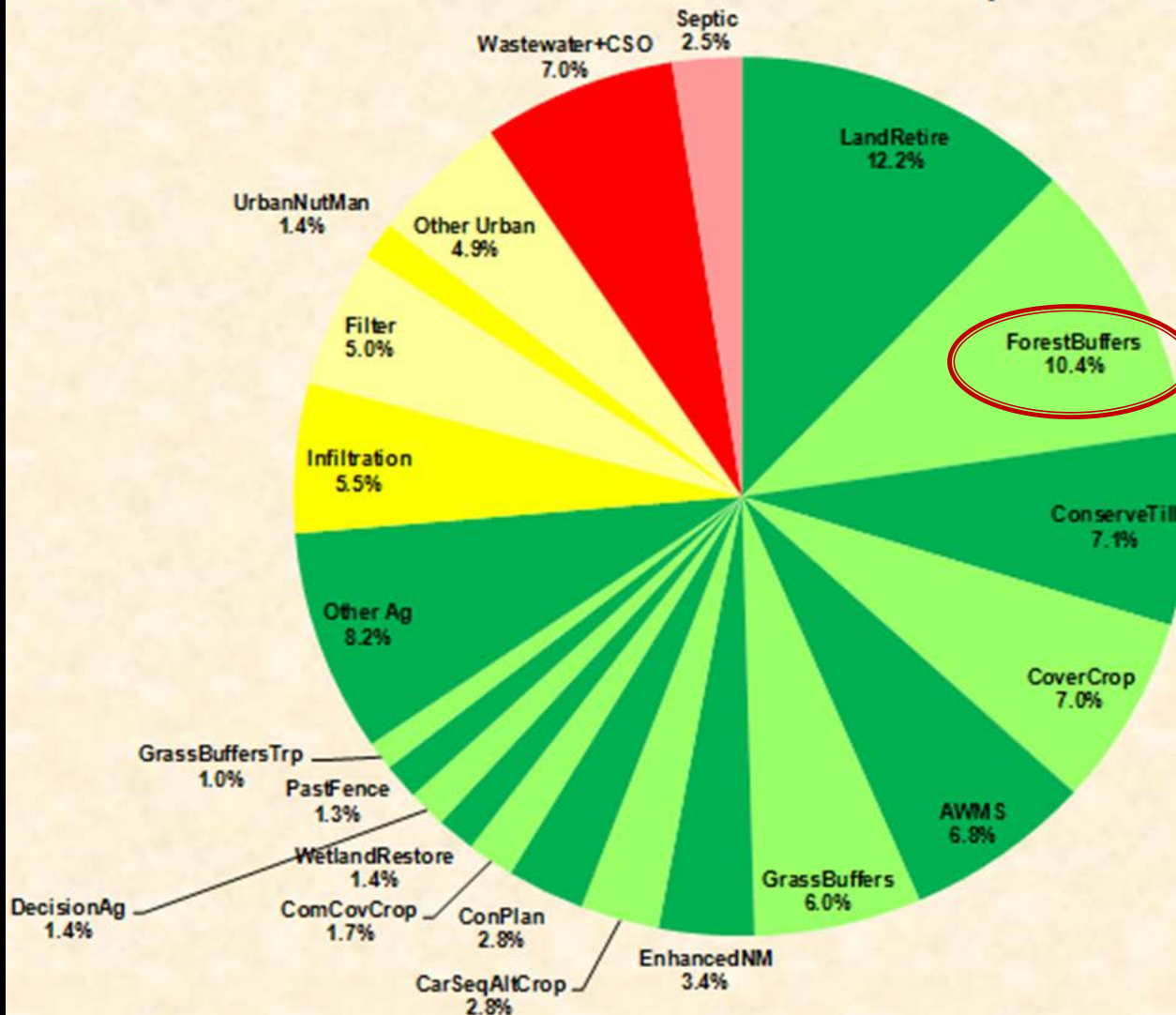
Virginia Nutrient Trading Program

- Assist rural landowners in accessing Virginia's nutrient trading programs.
- Set up 40 acres of bank in 2015.

Critical Forest Restoration -Riparian Buffers



Nitrogen Relative Load Reductions CB Watershed – as percent



Forest Buffers rank second of all nonpoint source BMPs proposed to meet TMDL targets.

Each slice represents the percent of the total load reduction attributable to planned implementation levels for that BMP.

Accomplishments (all)

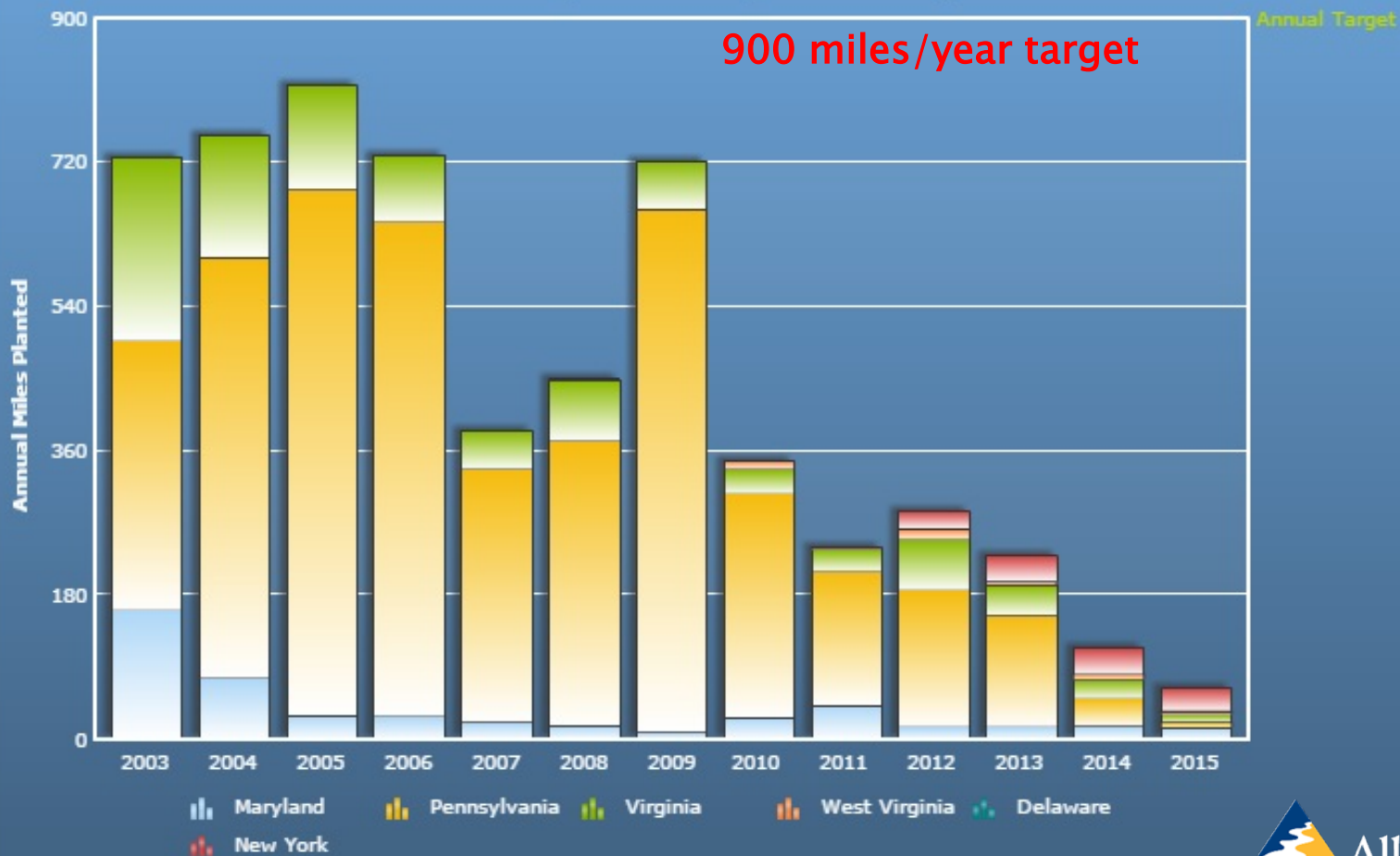
- Acceptance of Forest Buffers as a BMP
- Over 8000 miles planted to Forest
- CREP (and other) programs in each state
- Experience with planting practices
- Emergence of the private and NGO sector
- Innovations



Miles of Riparian Forest Buffer Planted in Chesapeake Bay watershed

Restoring Forest Buffers (Annual Efforts*)

*Prior to 2010, data from MD, PA and VA only



A photograph of a farm scene. In the background, there is a large white barn with a dark arched entrance. The foreground shows a green field with several cows grazing. A stream flows through the middle ground, bordered by a green fence. The overall scene is bright and green, suggesting a healthy environment.

Healthy Streams

Farm Stewardship Program

Outreach and Training

- ▶ Farm workshops – improving herd and stream health through fencing and forest buffers.
- ▶ Assist with access to public and private funding sources available to implement practices.

Incentives

- ▶ Help farmers access financial assistance to meet whole farm conservation goals
- ▶ *Voucher program* –Farmers generate \$2–4,000 for every acre of forest buffer with exclusionary fencing
- ▶ Priority for Conservation funding available (USDA NRCS EQIP)
- ▶ 140 acres of riparian forest buffer in 2015–16.

Critical Forest Restoration- Urban trees for stormwater

Tree Planting as MS4 and TMDL BMPs

	Forest	Urban Impervious		Urban Pervious	
	Annual pollutant load/acre	Annual pollutant load/acre	% reduction in load with tree planting	Annual pollutant load/acre	% reduction in load with tree planting
Total Nitrogen (#)	3.16	10.85	71%	9.43	66%
Total Phosphorus (#)	.13	2.04	94%	.57	77%
Sediment (tons)	.03	.46	93%	.07	57%

Chesapeake *RiverWise* Communities



Reducing Stormwater Using a Green Infrastructure Approach



Planting Urban Trees

TreeBaltimore

Social Marketing: Will homeowners plant and maintain urban trees?



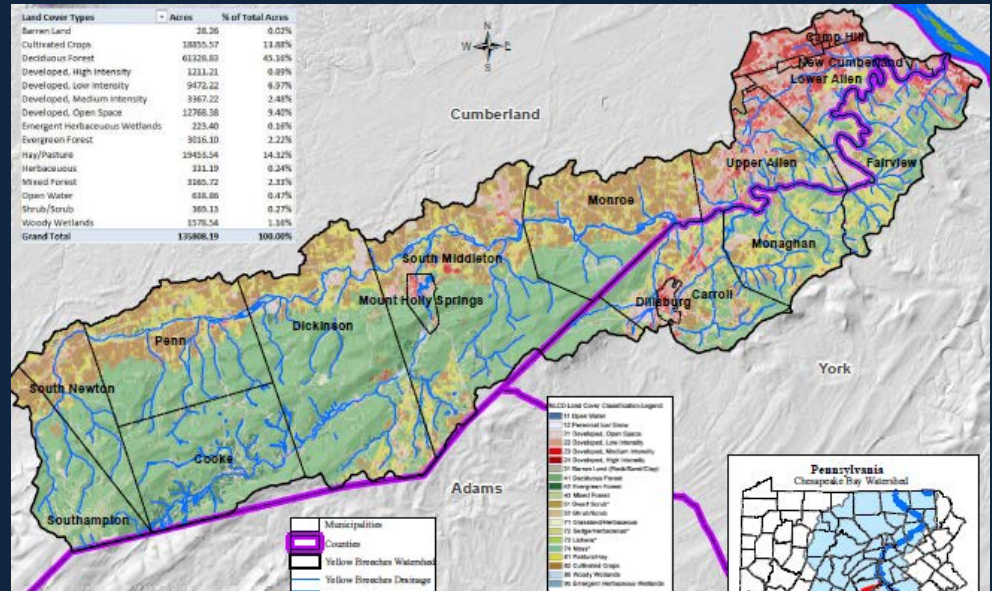
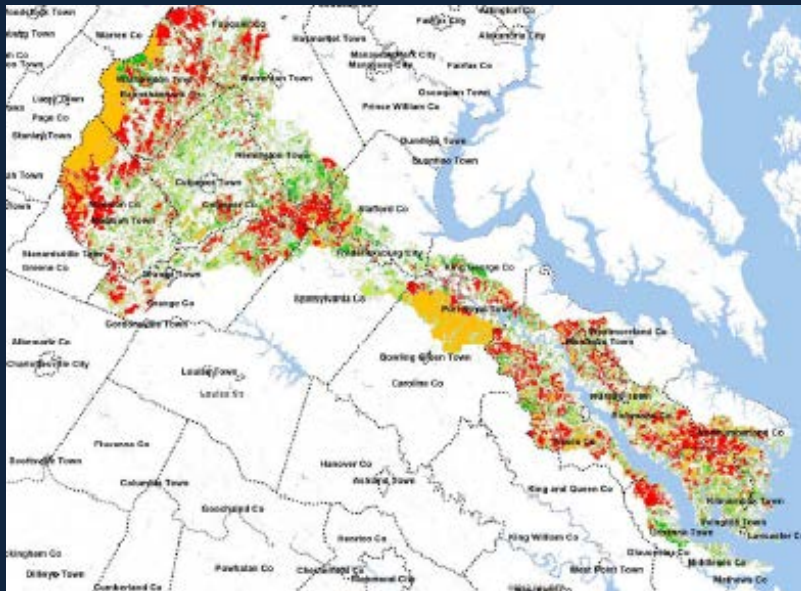
Trees for Sacred Places
Helping Houses of Worship
Reduce turf, expand forests



Urban Tree canopy goals
Local planning and
assistance with planting
trees; Regional Database



Build the economic case for forestland retention by localities in the TMDL



Virginia – Rappahannock River Basin

Pennsylvania– Yellow Breeches Watershed

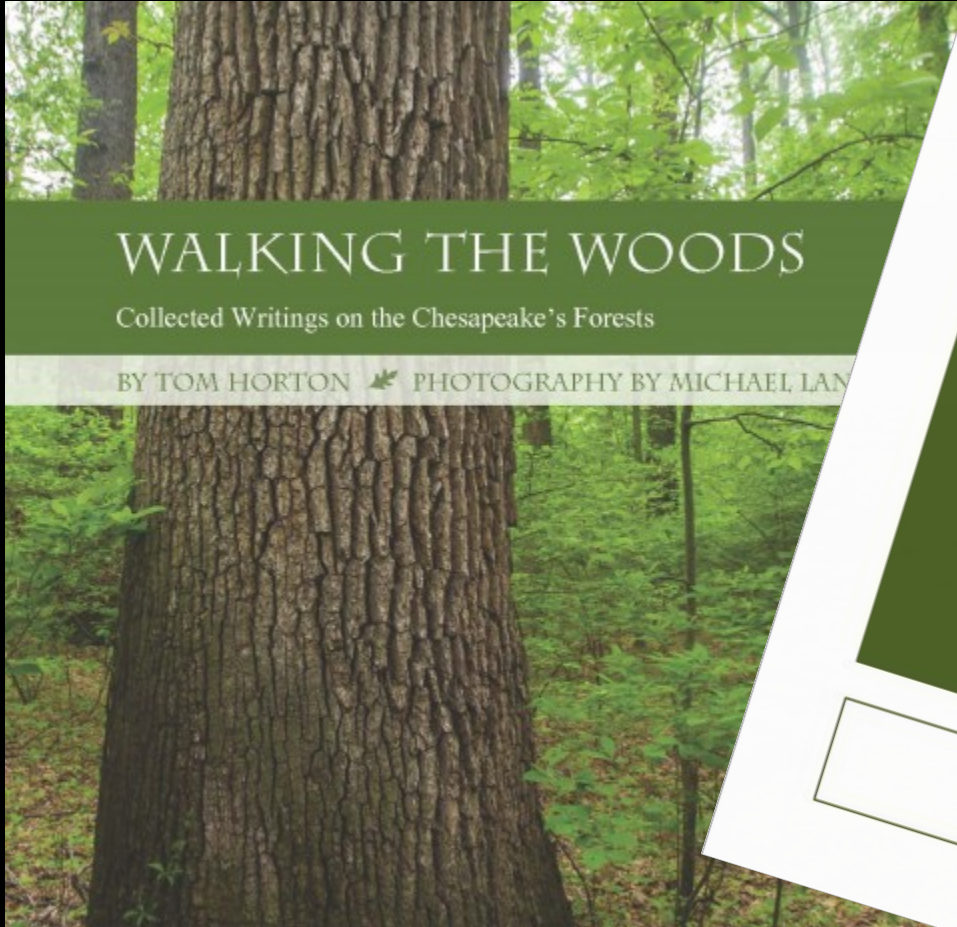
Findings: 4 communities could offset \$125 million in future pollution infrastructure costs



- **Build Network of Landowners**
- **Conduct Training**
 - ✓ Woods and Your Wallet
 - ✓ Real Forestry for Real Estate
 - ✓ Family Succession Planning
 - ✓ Forest Buffers
- **Provide Conservation Tools**
 - ✓ Landserver
 - ✓ Woodland Crediting Platform
 - ✓ Credit Assessments



Outreach & Training





"A town is saved, not more by the righteous citizens within it, than by the woods that surround it..."

–Henry David Thoreau, 1862



Questions?

