Demonstrating the Value and Building the Policy Architecture to Retain Forestland in the Chesapeake Bay Watershed

Healthy Watersheds Forest/TMDL Project

Chesapeake Bay Maintain Healthy Watersheds GIT Presentation

March 29th, 2016

Project Goals

PHASE I: Build economic case through regulatory and policy changes at the federal, state and local levels to stimulate forestland retention actions by localities and have those actions valued in the TMDL.

PHASE II: Build consensus from the locality level up on a toolbox of policies, practices and incentives necessary to stimulate land use decisions required to achieve CBWA healthy watershed goals by retaining high conservation value forestland

Project Partners: Phase I

1914 - 2014
VIRGINIA
DEPARTMENT OF
FORESTRY
100 YEARS SERVING AND PROTECTING

DEQ
VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

GEORGE WASHINGTON
REGIONAL COMMISSION

Virginia
WATER RESOURCES
Research Center

Be River Friendly
It's Your Backyard
The Rappahannock River Basin Commission

CHESAPEAKE BAY COMMISSION
MARYLAND · PENNSYLVANIA · VIRGINIA

The Nature Conservancy
Protecting nature. Preserving life.™

PHASE II: Additional Partners and Collaborators

pennsylvania
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DCR
Virginia Department of Conservation and Recreation

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

VCU
CENTER FOR ENVIRONMENTAL STUDIES

Local Government Advisory Committee
to the Chesapeake Bay Executive Council

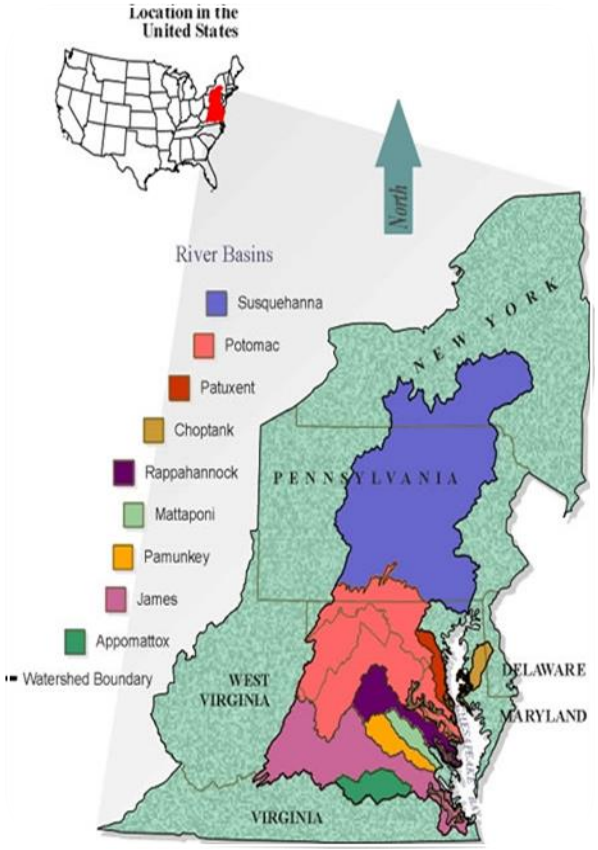
Alignment with 2014 CBWA Outcomes & Management Strategy Goals/Activities

- Healthy Watersheds
  - ✓ Maintain local watersheds at optimal health across a range of landscape contexts.
  - ✓ Vulnerability: Threat of land conversion and the ecological impacts of conversion
- Land Conservation
  - ✓ Protected Lands
  - ✓ Expanding federal, state and local funding and incentives for conservation
  - ✓ Land use methods and metrics development
- Protect and Restore Water Quality
  - ✓ Nutrient and sediments reduction
- Activity Categories
  - ✓ Regulation, Program Management, Information Management, Technical Support, Management Tool Development, TMDL Development, Enforcement, Assessment

The Challenge

- Forest cover is recognized as one of the best land uses for achieving Chesapeake Bay goals and outcomes.
- BUT - localities in the watershed say unless TMDL credit is given for retaining forestland, there is little local incentive for conserving forestland.
- This project addresses that issue.

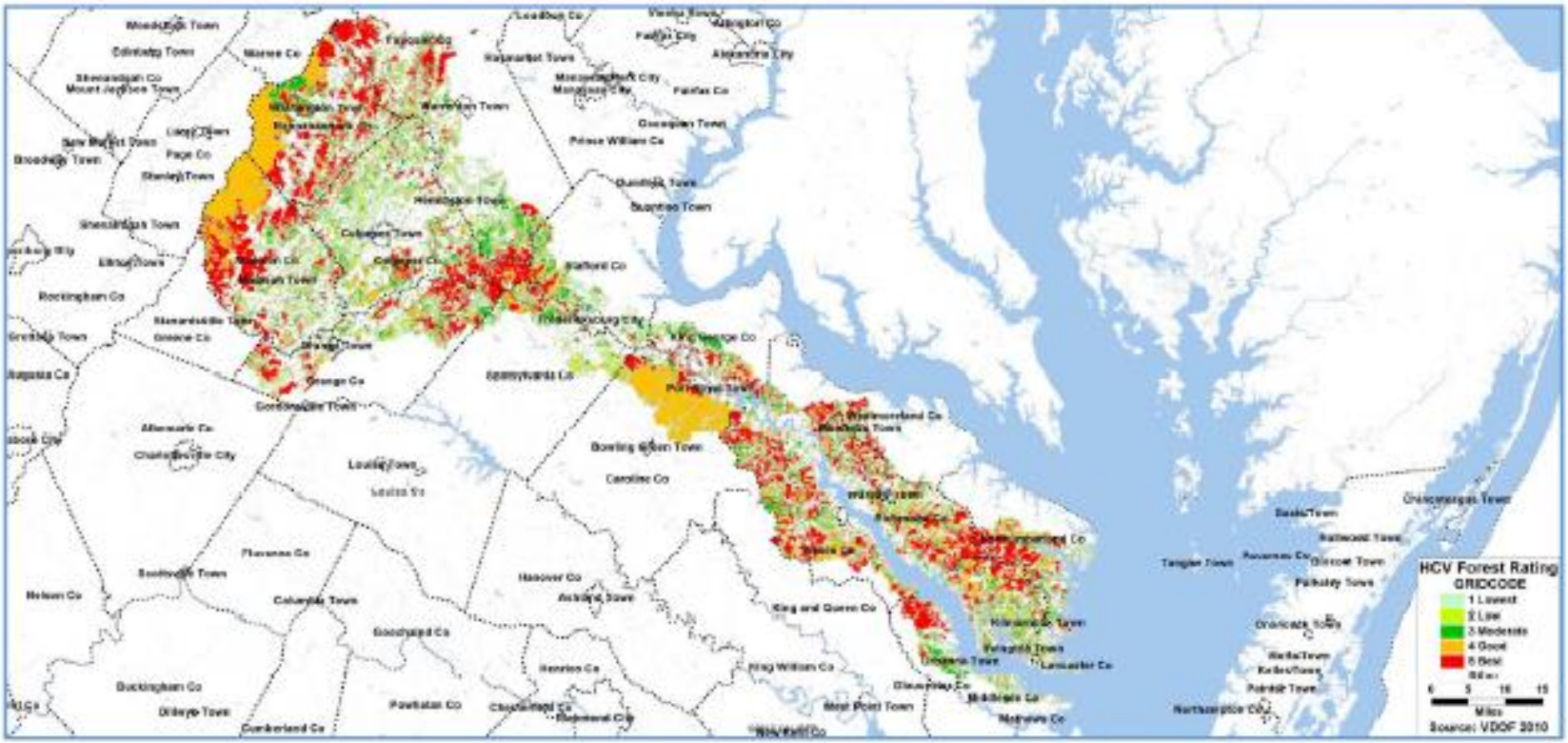
Project Approach



- Determine if forest retention actions by localities, private land owners and others will result in a decrease in actual load over the 2025 projected TMDL load allocation land cover and if so determine the associated costs and values.

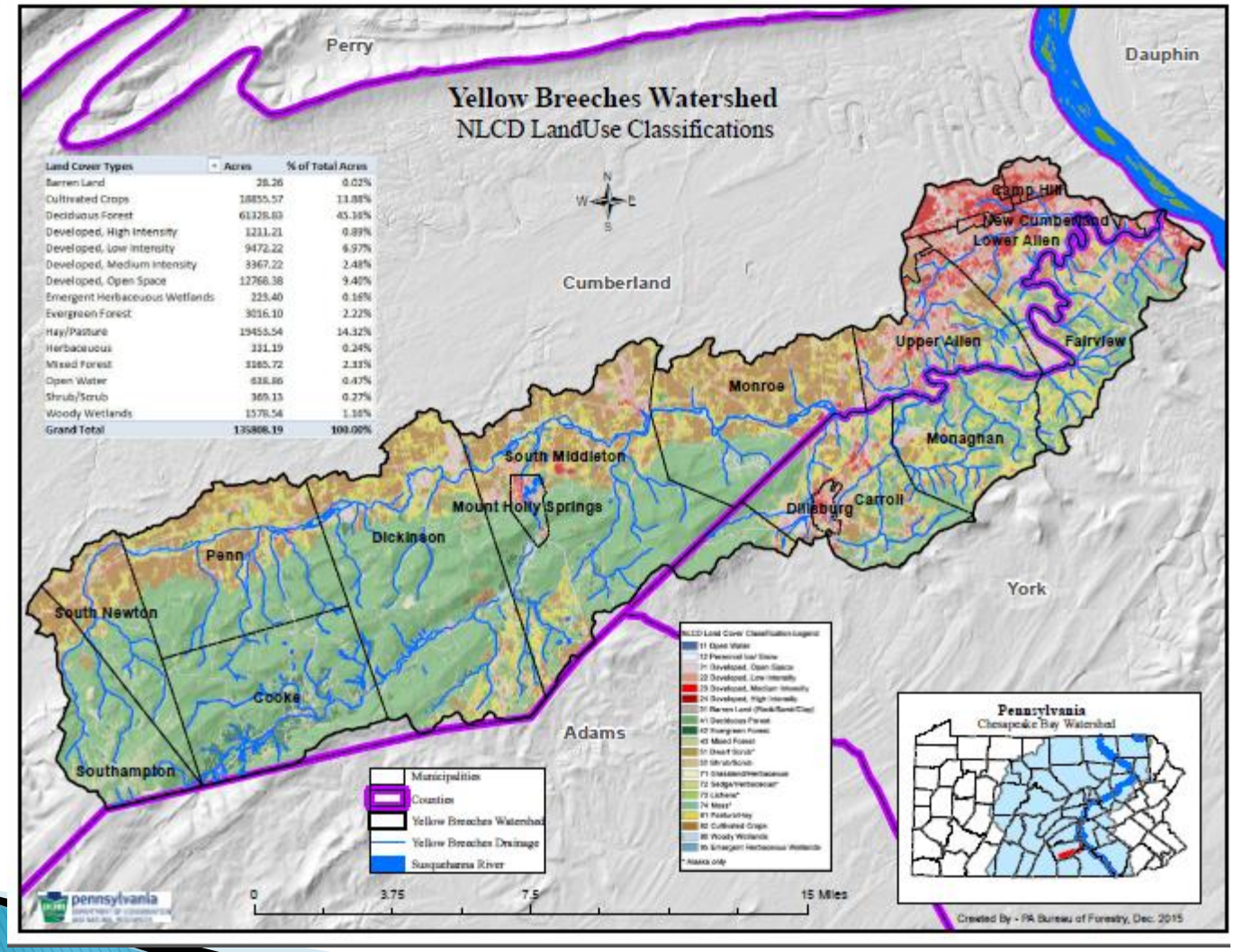
Virginia Study Area: Rappahannock River Basin

HCV Forest Rating in Rappahannock River Watershed



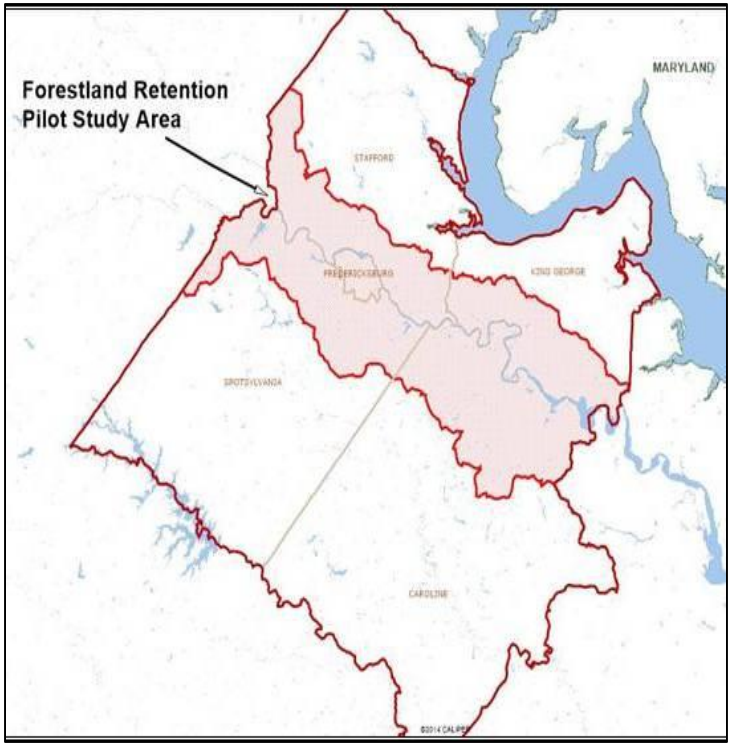
Source: Developed by RDS, LLC from 2010 HCV Forest data provided by Va. Dept. of Forestry.

Pennsylvania Study Area: Yellow Breeches Watershed



Land Cover Types	Acres	% of Total Acres
Barren Land	28.26	0.02%
Cultivated Crops	18855.57	13.88%
Deciduous Forest	61328.83	45.16%
Developed, High Intensity	1211.21	0.89%
Developed, Low Intensity	9472.22	6.97%
Developed, Medium Intensity	3367.22	2.48%
Developed, Open Space	12768.38	9.40%
Emergent Herbaceous Wetlands	223.40	0.16%
Evergreen Forest	3016.10	2.22%
Hay/Pasture	19455.54	14.32%
Herbaceous	331.19	0.24%
Mixed Forest	3185.72	2.33%
Open Water	638.86	0.47%
Shrub/Scrub	369.13	0.27%
Woody Wetlands	1578.54	1.16%
Grand Total	135808.19	100.00%

Phase I Pilot Study Area



- GWRC service area within RRB
  - Land Use: forest, agriculture, urban, rural
  - Areas of high density development growth
  - Home of George Washington Regional Commission
  - Much needed data already available
  - 100 percent in Virginia

Phase I Project Objectives

- Model alternative growth trend scenarios in pilot region to:
  - ✓ Determine load changes from conversion of forests to a mix of pervious and impervious lands.
  - ✓ Model resulting load increases
  - ✓ Compare to TMDL model projections and assess costs associated with offsetting these increases
- Conduct literature review of forest types and attributes to evaluate spatial variability of water related ecosystem service values
- Share findings with localities and state officials to inform land use planning and decision making
- Provide information to EPA for consideration in 2017 TMDL model revisions

Phase I Methodology

- Project partners coordinated with EPA to use datasets complementary to those used for the EPA CB TMDL 6.0 model to create synthetic estimates and forecasts of land cover
- Estimates reflected:
  - ✓Current estimates of forest cover by river segmentshed by locality
  - ✓Assumptions of urban BMP installations with any impervious surface area growth
  - ✓Consideration of the growing inventory of conserved lands

Phase I Alternative Land Use Modeling Scenarios

1. Current TMDL 2025 predictions for each pilot area locality: “Business as Usual/Decentralized Growth”

2. Comprehensive Plans Implementation Model: “Community Plans”

3. GWRC Green Infrastructure Model: “Greenprint/Forest Retention”

4. Hybrid Model between (2) and (3): “Phased Development Impact on Greenprint/Forest Retention”

In addition, 2010 and 2015 scenarios were run to identify trends.

Phase I Healthy Watershed Findings

- Produced regional demonstration of how alternative development methods that increase high value forestland retention can help reduce the offset requirements of development.

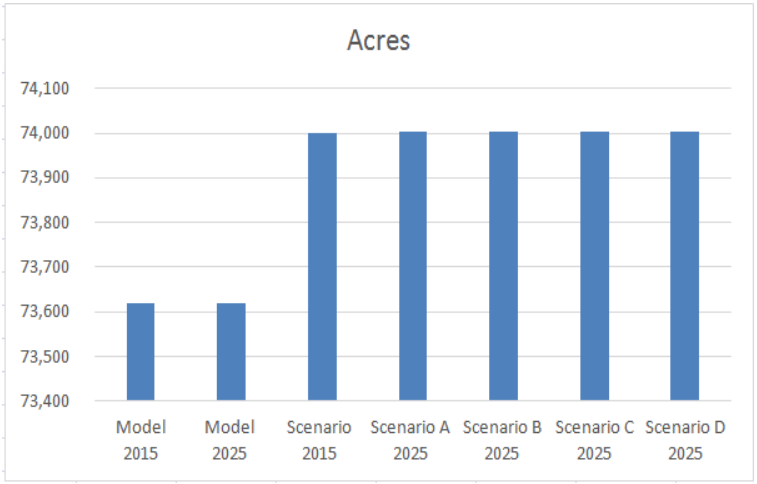
- Results confirm water quality and healthy watershed value of forestland retention and demonstrate range of potential offsets are possible depending on investment made early in BMPs that retain forestland.

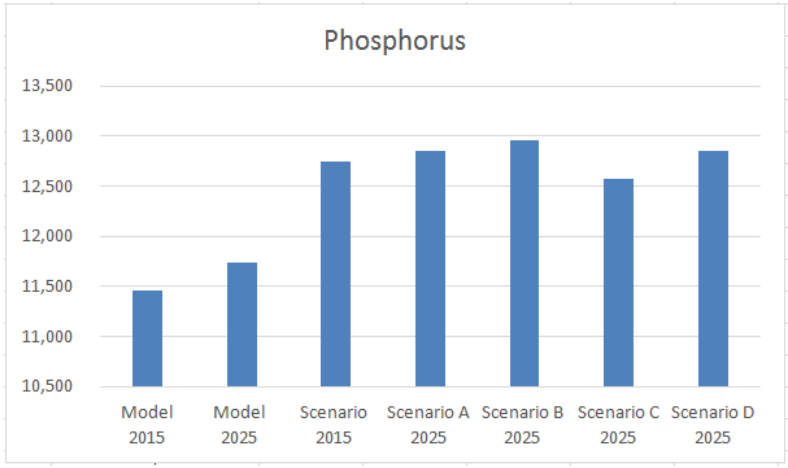
- This could in turn reduce BMP treatment costs needed to comply with Virginia's nutrient neutral stormwater regulations, while maximizing the ecosystem services provided by forests.

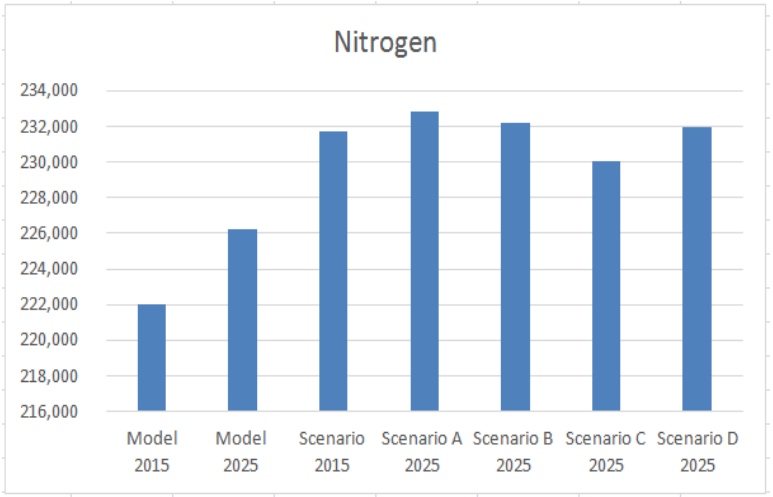
Phase I Economic Findings

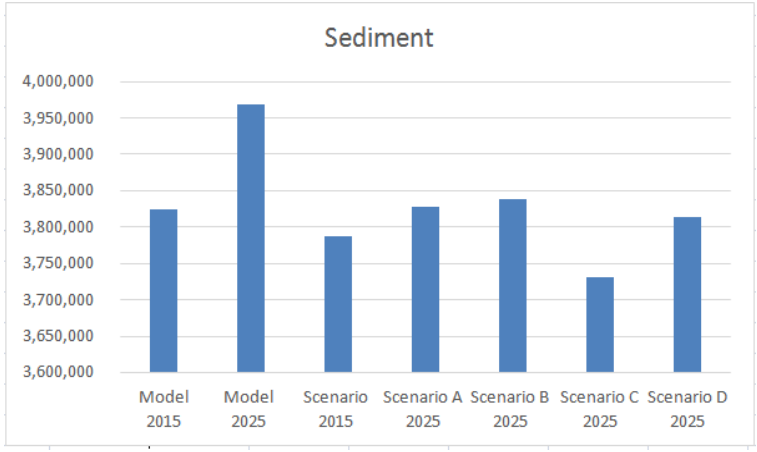
$125 Million in possible future offset savings among the four localities and one city in the Pilot Study Area compared to current EPA TMDL Model 2025 Projections

Caroline County TMDL Results

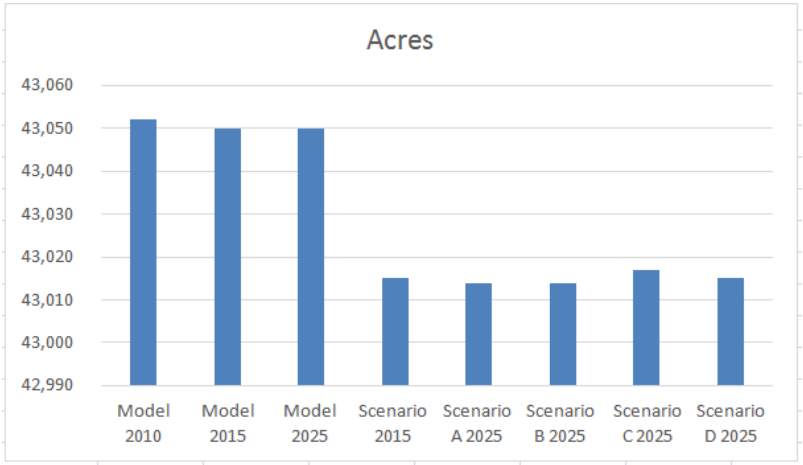


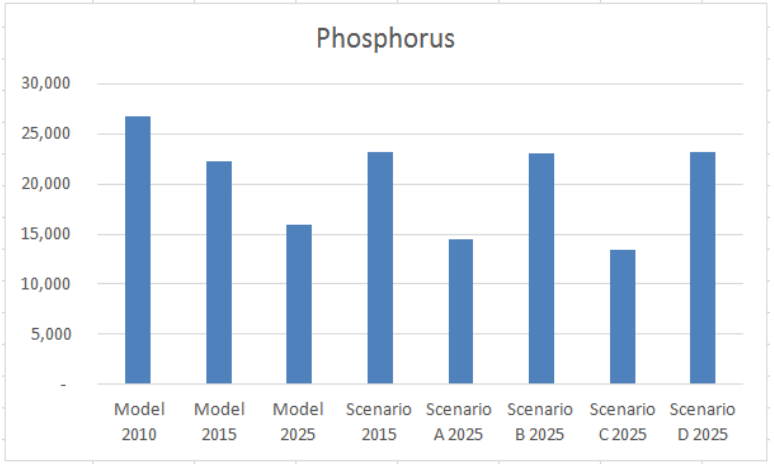


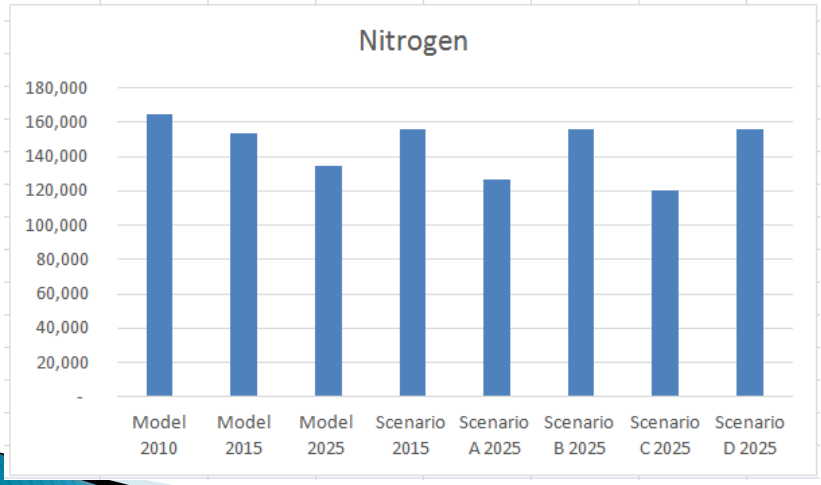


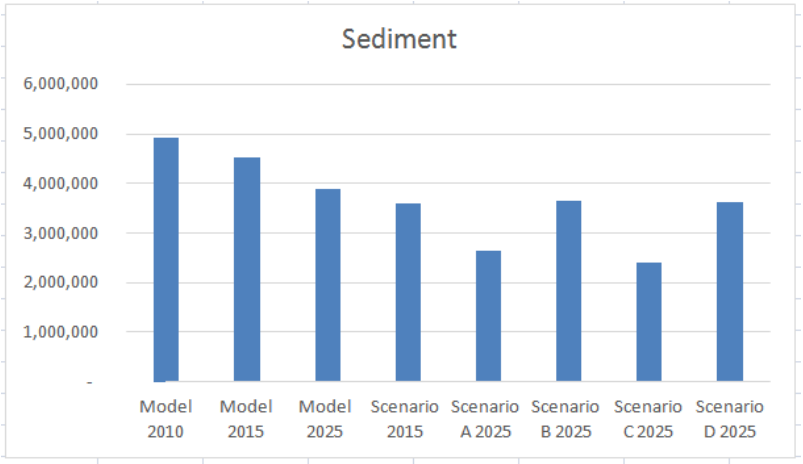


King George County TMDL Results

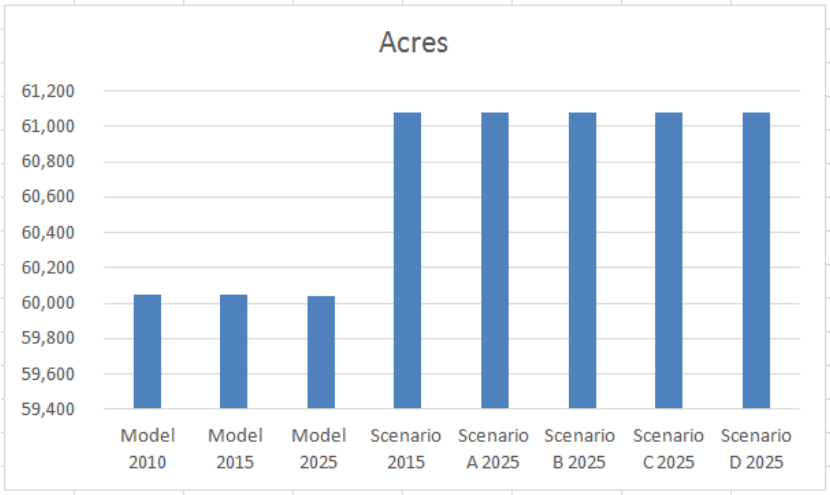


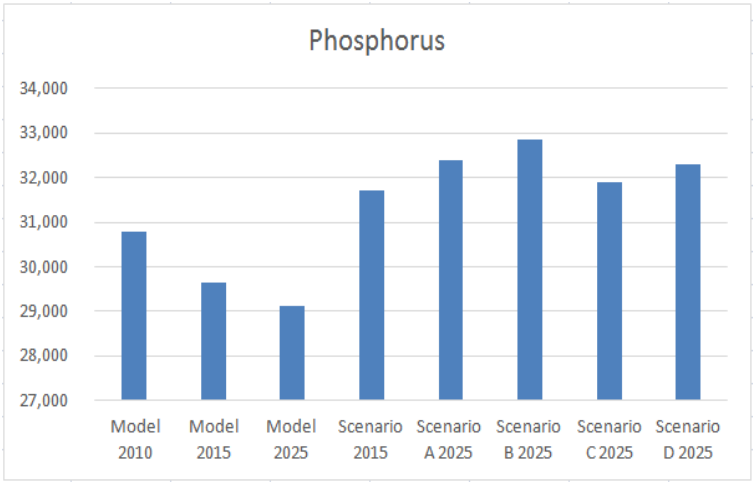


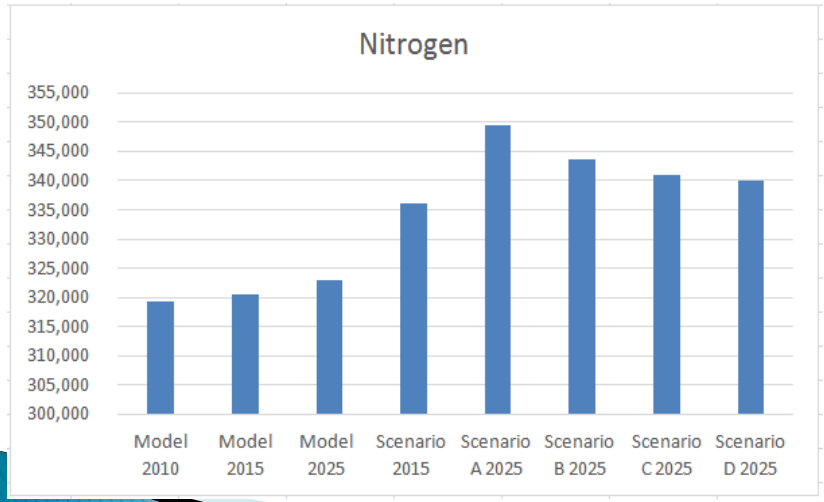


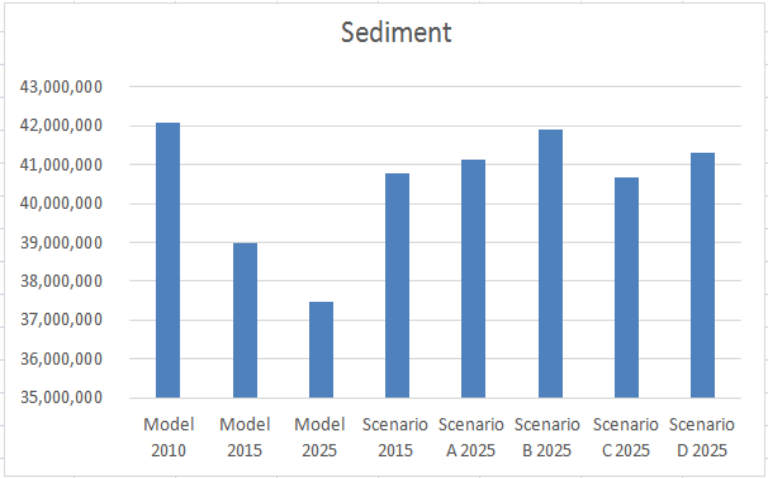


Spotsylvania TMDL Results

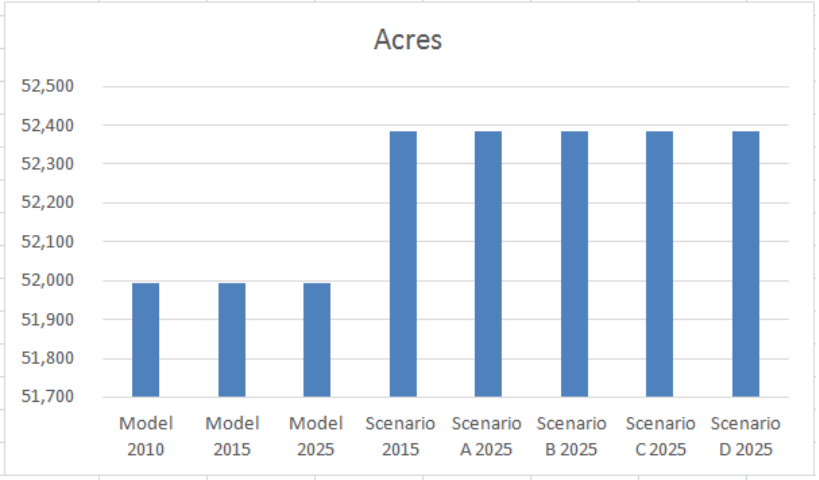


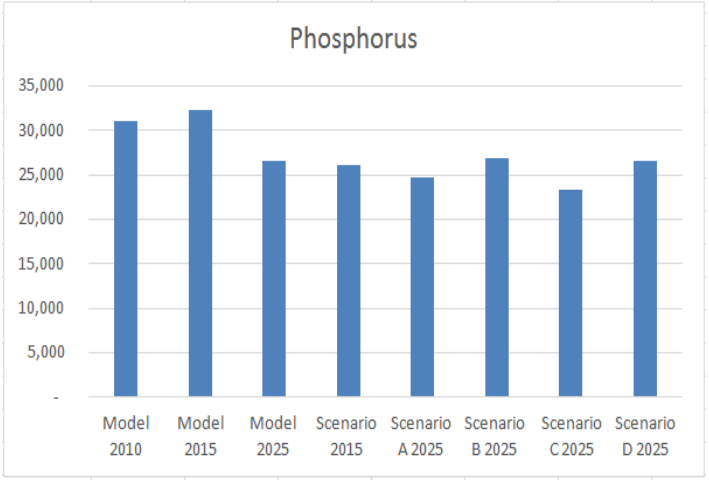


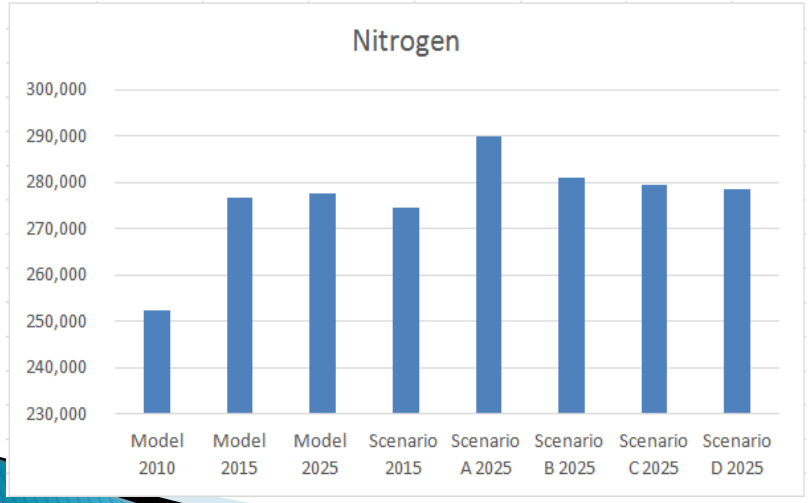


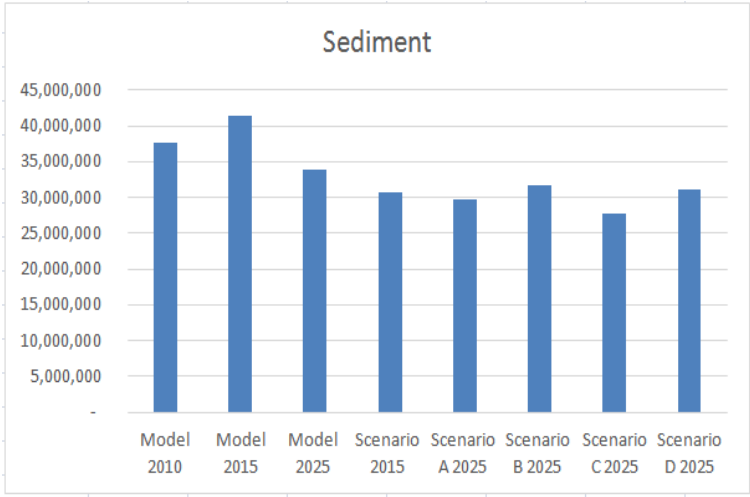


Stafford County TMDL Results

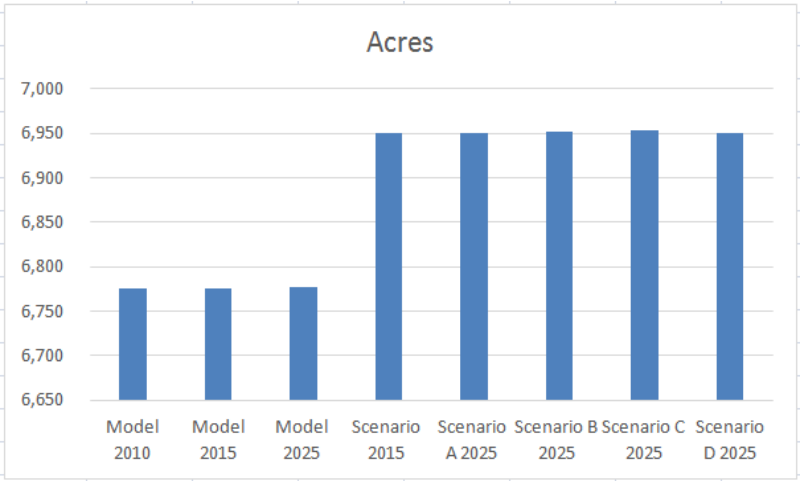


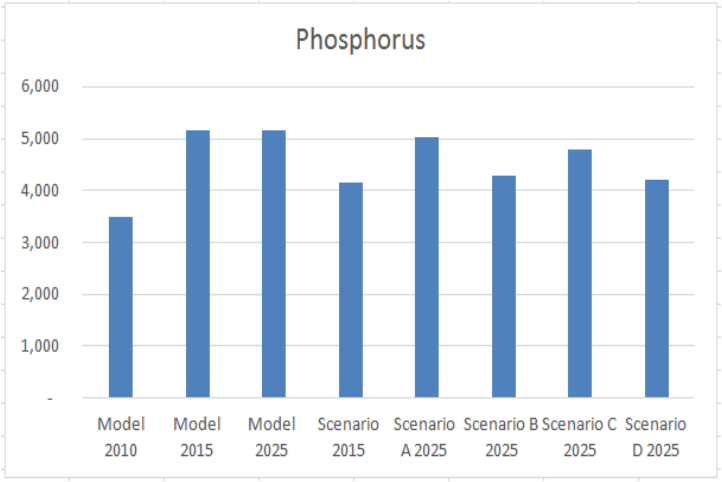


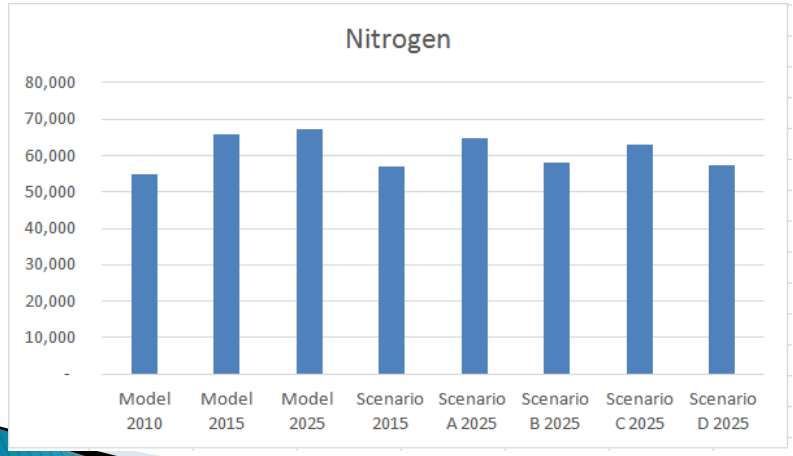


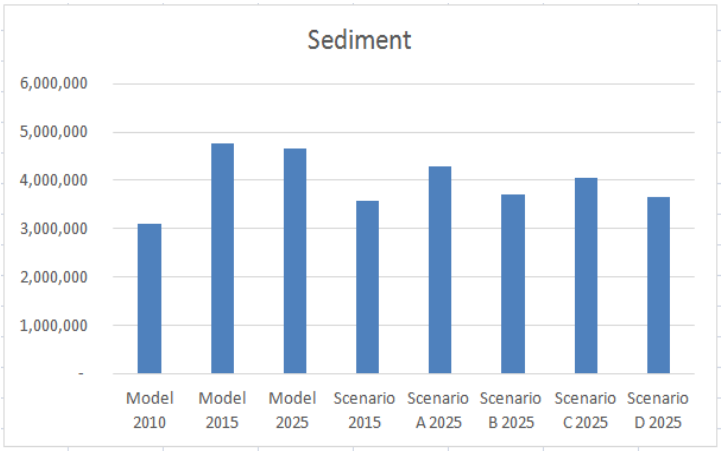


City of Fredericksburg TMDL Results









Phase II Goal: Engagement

- Work extensively with local government officials and community leaders in both VA and PA study areas to develop the tool box of criteria, incentives, etc. that could be used in land use policy and zoning situations to accurately identify and assign appropriate values to high conservation value forest lands.

Phase II Objectives

- PA tests and validate VA's modeling approach
- PA and VA:
  - ✓ Raise benefit expectations among local governments and citizens regarding value of forestland retention in the design and planning of new development
  - ✓ Working with localities, build effective standards and guidance
  - ✓ Meet both development and water quality needs for localities
  - ✓ Pay attention to aesthetics and quality of life needs, e.g. views, recreation, etc.
  - ✓ Build consensus on incentives and land use planning decision drivers

Phase II Plan in Virginia

- Divide Rappahannock River Basin into three separate study areas –
  - Lower, middle and upper basins. Each area provides different political, economic, environmental and social perspectives
  - OBJECTIVE: learn how different dynamics change thinking about what works and doesn't work.

- Conduct peer-to–peer discussion sessions with geographically targeted focus groups of key elected officials, planning community senior staff and others
  - Identify obstacles, incorporate best practices and lessons learned elsewhere, develop solutions, and build tool box elements.

Phase II Plan in Pennsylvania

- Replicate VA Phase I land cover scenario analyses and related economic impact analyses corresponding to the different forestland retention scenarios
- Adapt them for application in the Yellow Breeches Creek demonstration area within Cumberland and York Counties
- Conduct peer-to–peer discussion sessions with geographically targeted focus groups of key elected officials and planning community senior staff
  - Identify obstacles, incorporate best practices and lessons learned elsewhere, develop solutions, and build tool box elements

Phase II Tasks

- Carry out discussions/negotiations across basins with localities in both Commonwealths to build, test and determine what works in order to populate tool kit and drive more consideration of forestland retention in land use policies and decisions
- Work with EPA and CB GITs to frame and address issues pertaining to policy implications of a forestland retention BMP in the TMDL model
- Following project period, provide counsel to other CB jurisdictions on implementing toolbox elements

Questions That Need Answers

- What is the most effective way to quantify and offset development impacts that go beyond the borders of one jurisdiction?
- What are the biggest challenges associated with designing TMDL credits resulting from forestland retention actions taken now that may result in reduced offset expenditures in 2025?
- What tools and policies do local governments need to encourage compact development patterns that conserve forestland resources, promote reforestation, and tree planting infill of RPA riparian buffer gaps?

Questions That Need Answers Continued

- What are some good examples of incentives, that could be used in land use policy and zoning situations to accurately identify and assign appropriate values to high conservation value forest lands and inform the development of a forest retention TMDL?

- What works and doesn't work?

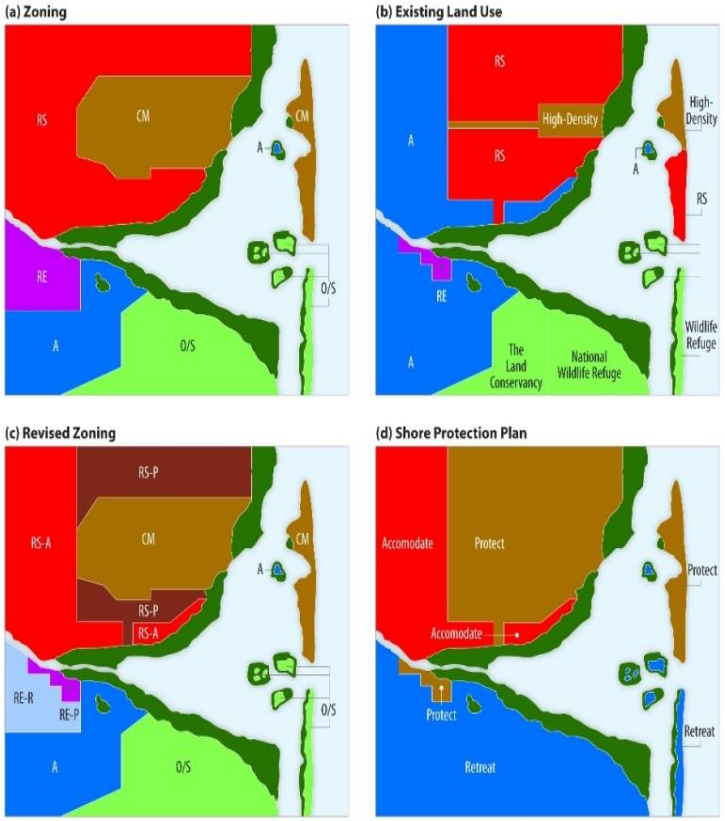
Key Benefit of VA/PA Partnership

Differences between PA's various municipal government environment and VA's Dillon Rule government environment mean the forest retention incentives toolbox resulting from these two State governance models is expected to be different

With both Commonwealths working on the same objective, if successful, the project should finish with a suite of planning, policy and land use decision tools that any state could choose from to develop its own land use decision architecture.

This information could then be made available to inform the national TMDL program

Success Outcomes



A: Zoning	B: Land Use	C: Revised Zoning	D: Shore Protection Plan
Commercial/High-Density Mixed Use (CM)			Protect
		RS-P	
Residential Single Family (RS)	RS-A	Accommodate	
Rural Estate (RE)		RE-P	
		RE-R	
Agriculture (A)			Retreat
Open Space and Conservation (O/S)			
Wetlands			

Adding R, A, or P to an abbreviation means "retreat," "accommodate," or "protect," respectively

- ✓ Governments empowered with planning tools and incentives to balance growth and forestland retention goals capable of initiating change locally to create quality communities and keep current healthy watersheds healthy.
- ✓ State and local regulations & statutes contain mix of incentives and requirements to promote forestland retention.
- ✓ TMDL Value for Forest Retention

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