Demonstrating the Value of Retaining Forestland in the Chesapeake Bay Watershed

Healthy Watersheds Forest/TMDL Project

George Washington Regional Commission
Board Presentation
October 19, 2015
Project Goal

- Build case for crediting forestland retention actions by localities in the TMDL model and through regulatory and policy changes at the federal, state, and local levels
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 preserving forestland.

This project addresses that issue.
Determine if forest retention actions by localities, private land owners and others will decrease load over the 2025 projected land cover and loads

If the answer is “yes” determine way to credit them for retaining forestland through the Chesapeake Bay TMDL Model
Phase 1 Project Plan: Completed

1. Evaluate growth trends in pilot region
2. Compare to TMDL model land use change projections
3. Model alternative growth scenarios
4. Conduct literature review and factor in findings
5. Share findings with localities and state officials
6. Provide data to EPA for possible 2017 TMDL model revisions
Study Area: Proxy for Bay Watershed

Rappahannock River Basin
- Geography: headwaters to coast
- Land Use: forest, agriculture, urban, rural
- Areas of high density development growth
- Home of Rappahannock River Basin Commission (RRBC)
- 100 percent in Virginia so watershed issues outside of Virginia control are minimal (other than air)
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
Alternative Land Use Modeling Scenarios Run

1. Current TMDL 2025 predictions for each pilot area locality

2. GWRC Green Infrastructure Model

3. Comprehensive Plans Implementation Model

4. Hybrid Model between (2) and (3)

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

- Project partners coordinated with EPA to use datasets complementary to those used for the EPA CB TMDL model to create synthetic estimates and forecasts of land cover.

- Estimates reflected:
  - Current estimates of forest cover by river segment by locality.
  - Assumptions of urban BMP installations with any impervious surface area growth.
  - Consideration of the growing inventory of conserved lands.
Phase I Preliminary Findings

- 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.

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

- Could mean up to $125M in possible offset savings among GWRC localities.

- 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.
Results By Locality: CAROLINE COUNTY

[Bar chart showing results by locality for different models and scenarios.]
Caroline County TMDL Results

**Acres**

<table>
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<tr>
<th>Scenario</th>
<th>Model 2015</th>
<th>Model 2025</th>
<th>Scenario A 2025</th>
<th>Scenario B 2025</th>
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**Phosphorus**

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**Nitrogen**

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**Sediment**

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Results By Locality: KING GEORGE COUNTY
King George County TMDL Results

**Acres**

- Model 2010
- Model 2015
- Model 2025
- Scenario 2015
- Scenario A 2025
- Scenario B 2025
- Scenario C 2025
- Scenario D 2025

**Phosphorus**

- Model 2010
- Model 2015
- Model 2025
- Scenario 2015
- Scenario A 2025
- Scenario B 2025
- Scenario C 2025
- Scenario D 2025

**Nitrogen**

- Model 2010
- Model 2015
- Model 2025
- Scenario 2015
- Scenario A 2025
- Scenario B 2025
- Scenario C 2025
- Scenario D 2025

**Sediment**

- Model 2010
- Model 2015
- Model 2025
- Scenario 2015
- Scenario A 2025
- Scenario B 2025
- Scenario C 2025
- Scenario D 2025
Results By Locality: SPOTSYLVANIA COUNTY
Spotsylvania TMDL Results

**Acres**

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Results By Locality: STAFFORD COUNTY
Stafford County TMDL Results

**Acres**

**Phosphorus**

**Nitrogen**

**Sediment**
Results By Locality:
CITY OF FREDERICKSBURG
City of Fredericksburg TMDL Results

- **Acres**
  - Model 2010, Model 2015, Model 2025, Scenario 2015, Scenario A 2025, Scenario B 2025, Scenario C 2025, Scenario D 2025

- **Phosphorus**
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- **Nitrogen**
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- **Sediment**
  - Model 2010, Model 2015, Model 2025, Scenario 2015, Scenario A 2025, Scenario B 2025, Scenario C 2025, Scenario D 2025
Phase II Goal: Engagement

- Work extensively through the RRBC, with local government officials within the Basin, as well as Pennsylvania Representatives 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 Plan

- 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.

- RRBC will 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 Objectives

- Work with EPA and CB GITs to frame options for developing Forestland retention BMP in TMDL model
- Carry out discussions/negotiations across basin with localities to build, test and implement elements of tool kit to drive more consideration of forestland retention in land use policies and decisions
- Ask Pennsylvania to join project in peer review and testing capacity and coordinate on lessons learned and tool kit elements
- Make teams available to other CB jurisdictions to provide advice on implementing toolbox elements
For further information

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