

# Future Direction of Maryland's Watershed Management for Controlling Excessive Nutrient Enrichment of the Chesapeake Bay

April 4, 2017

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Maritime Conference Center  
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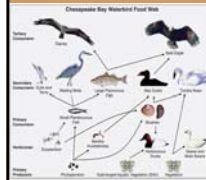
Presentation by:  
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1

## Nutrients & the Bay

Seminal 1982 Report: Excess nutrients are the main  
cause of the Chesapeake Bay's degradation:



Damages Food Chain

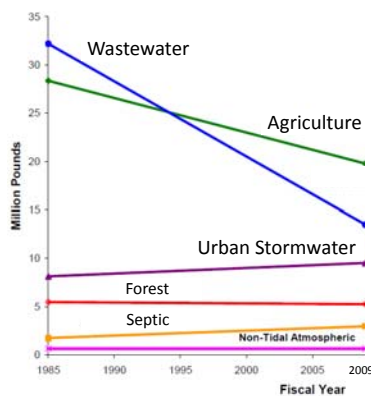
Kills Underwater Grasses

Fish Kills &  
Toxic Algal Blooms



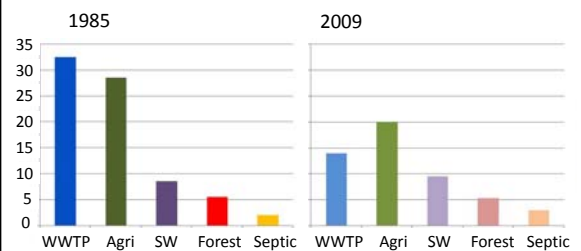
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## Nitrogen Changes: 1985 - 2009



3

## Nitrogen Changes: 1985 – 2009 (millions of pounds per year)



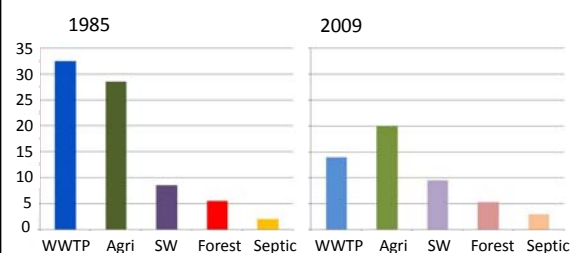
4

## Bay Reduction Strategies: Then and Now

### The Old Way: Optimize via Central Planning

- Chesapeake Bay Agreement → Tributary Strategies
- Reduce WWTP & Agriculture Loads
- **Why?** Costs:
  - Agriculture: \$200/lb
  - Wastewater: \$400/lb
  - Stormwater: \$3,800/lb
- **How?** Tax urban centers to pay for reductions from WWTPs & Agricultural sectors.

## Nitrogen Changes: 1985 – 2009 (millions of pounds per year)



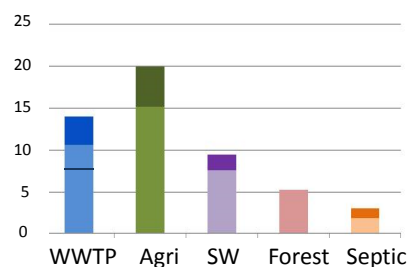
6

## Bay Reduction Strategies: Then and Now

### The New Way: Optimize via Market Competition

- Bay TMDL → Watershed Implementation Plans (WIPs)
- Reduce All Sector Loads:
  - Equitable allocation of Reduction Responsibility
- **Why?** Shared Responsibility
  - Consistent with Bay Program
  - Focus on Responsibility
  - Past Ag & WWTP Reductions
- **How?** High-cost sectors may Buy Reduction Credits from Low-cost sectors

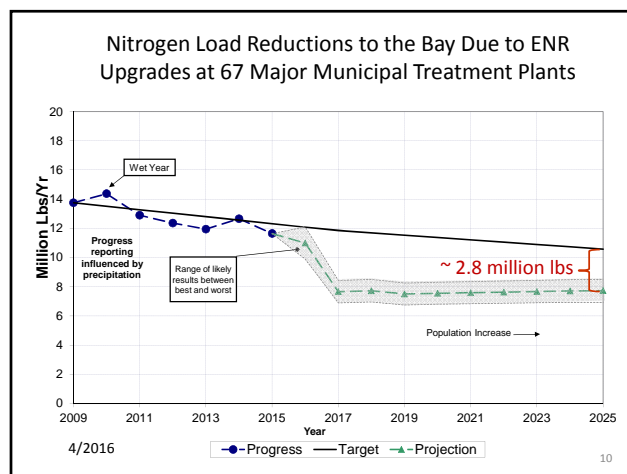
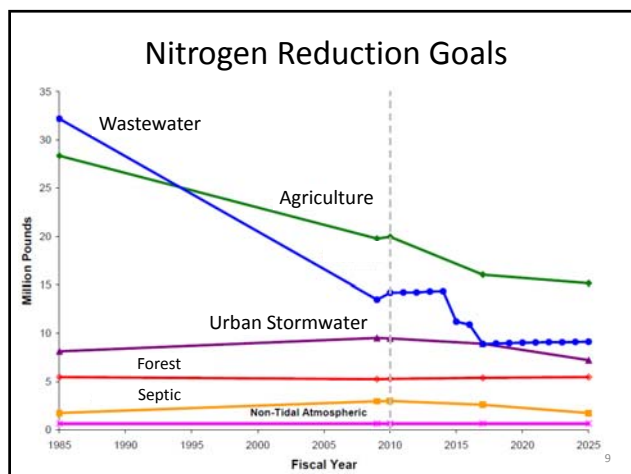
## TMDL Nitrogen Reduction Strategy: 2009 - 2025 (millions of pounds per year)



Issue is timing trading



8



## Trading and Stormwater

Two Pieces:

- 1. Outside of the Permit (WIP Plan):** Demonstrate that Maryland can achieve the 2025 Target in aggregate among sectors and in each of the five major basins.
- 2. Within the Permit:** Meet part of the stormwater sector 2025 ultimate Bay goal by trading, with the expectation of continuing to make progress in subsequent permit cycles beyond 2025.

Graphic: Marcella Studio

11

## Laundry List of Issues

- Inspection & Maintenance
- Innovative Financing
  - Public Private Partnerships
    - Efficiencies thru Large Scale: Prince George's County
    - Pay for Performance: Patrick Farm Stream Restoration
    - Homeowner BMPs: NGO Partnerships
- Pollutants
  - Near-field vs Far-field
  - Bacteria, Trash, Chlorides, PCBs (maintenance)

12



## Laundry List of Issues (Cont)

- Integrated Infrastructure
  - Re-development
  - Infrastructure Maintenance Coat-tails?
  - 2016 Chesapeake Bay Executive Council Resolution to Support Local Government Engagement:

*... the Principals' Staff Committee shall evaluate and pursue opportunities to increase public funding and private investment for local implementation of conservation and restoration activities that achieve local healthy streams, rivers and a vibrant Chesapeake Bay, particularly activities that reduce pollutants from stormwater runoff and address the problem of recurrent flooding.*

13

## End

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14