Introduction to TMDLs with Examples from the Chesapeake Bay

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What is a TMDL?

A calculation of a pollutant load that assures that, when implemented, an impaired segment will attain and maintain all applicable water quality standards.

What is a TMDL?

TMDL = WLA + LA + MOS

WLA = Sum of all point sources

LA = Sum of all nonpoint sources including natural background

MOS = Margin of safety accounting for uncertainty about the relationship between loads and water quality
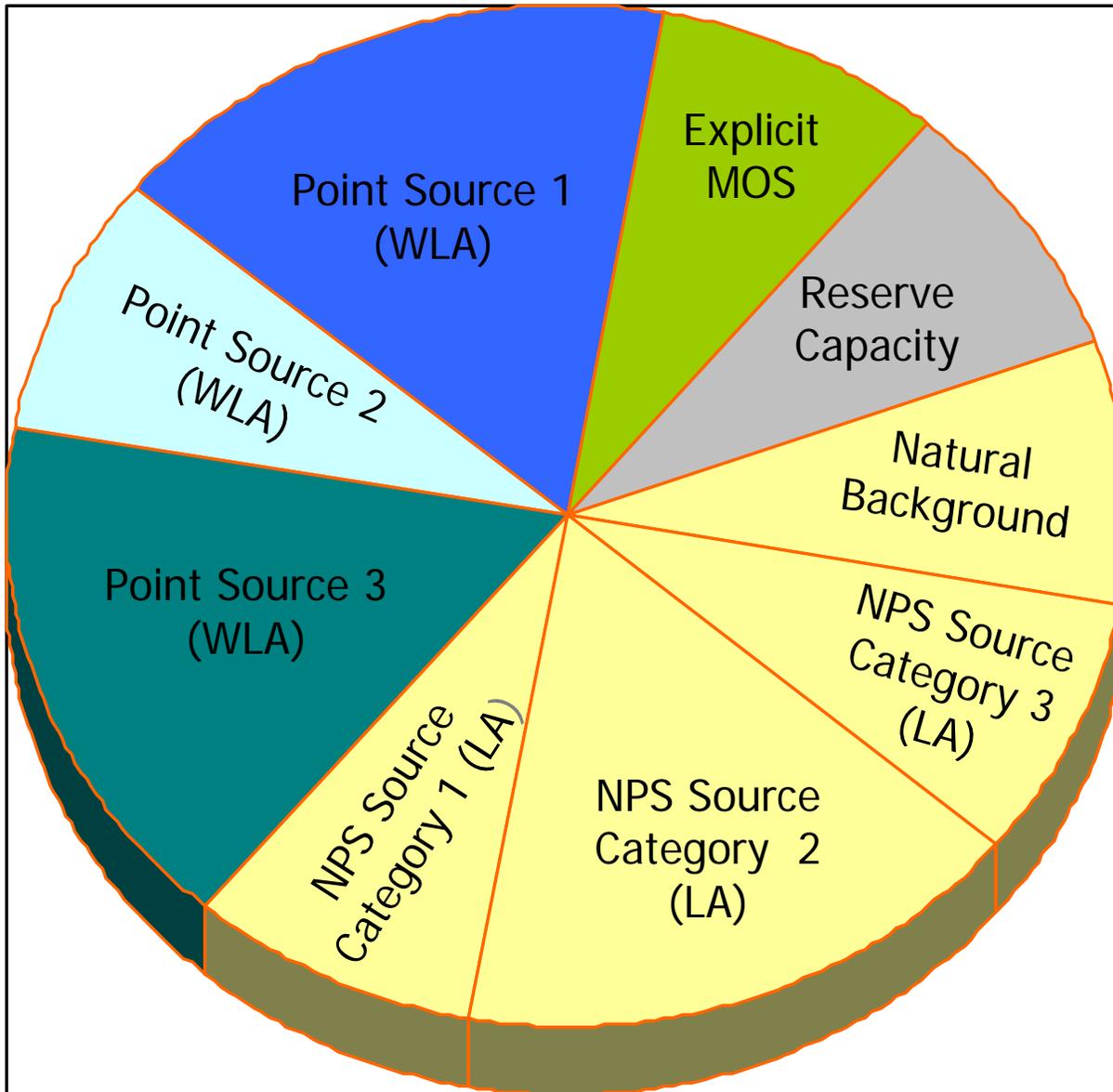
TMDL Allocation

Considerations when making allocation decisions:

- – Source of the pollutant (point source or runoff)
- – Controllability of the pollutant (i.e., atmospheric)
- – Regulatory authority to control pollutant
- – Cost of each allocation option
- – Certainty of water quality impact in receiving water
- – Reasonable assurance that allocation can be met
- – Stakeholders objectives

TMDL Allocation (cont.)

- Each point source with an individual NPDES permit receives an individual wasteload allocation (WLA)

- Point sources covered under general permits may get a gross wasteload allocation (WLA)

- All other sources and background must be included in the load allocation (LA), which can be one gross number or subdivided among individual sources or categories.
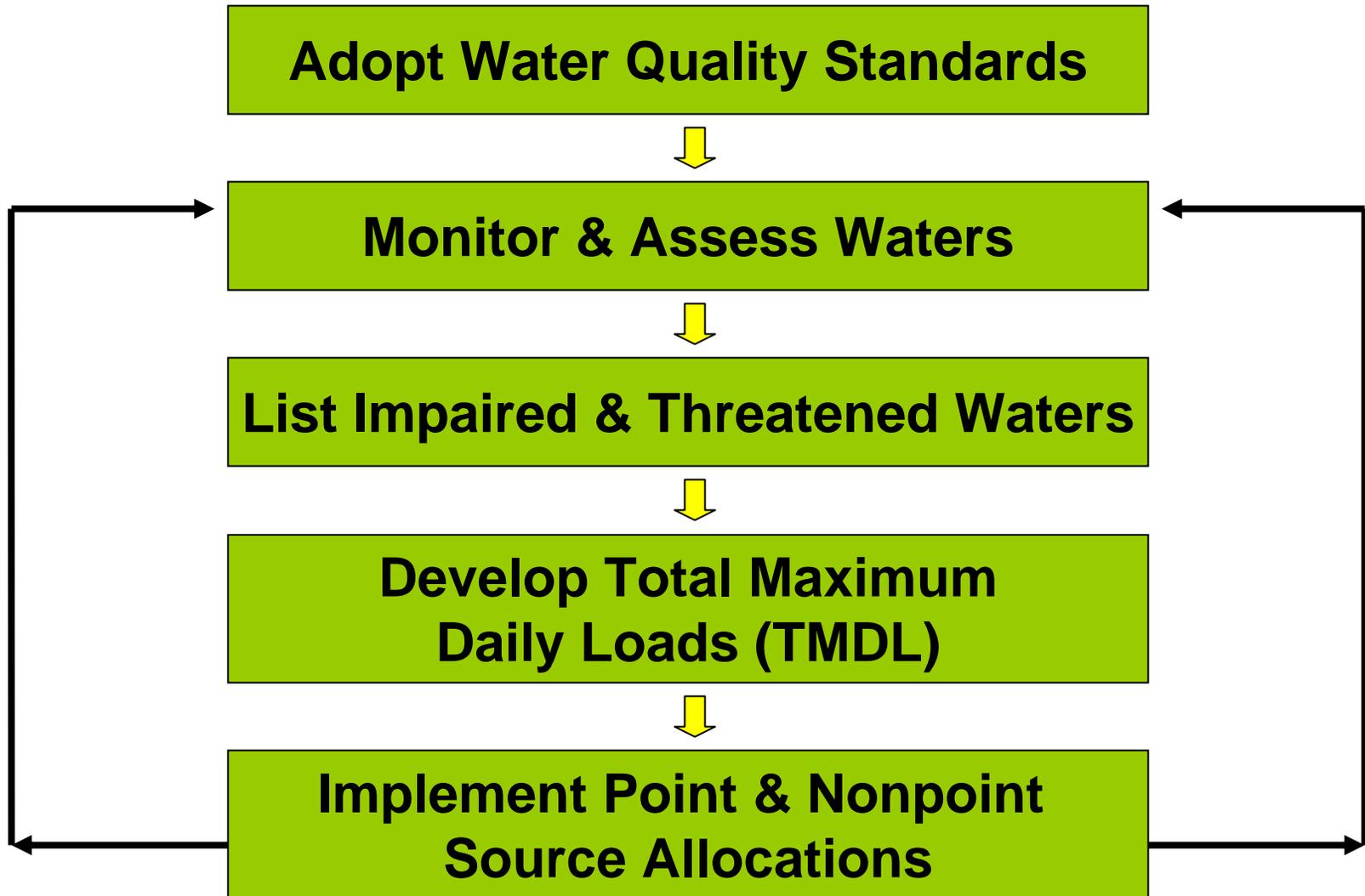
TMDL Allocation

Point Source 1 (WLA)

Explicit MOS

Point Source 2 (WLA)

Reserve Capacity

Point Source 3 (WLA)

Natural Background

NPS Source Category 1 (LA)

NPS Source Category 2 (LA)

NPS Source Category 3 (LA)

Listing of Impaired Waters

1. States identify waters not meeting WQS based on "*all existing and readily available information*"

2. States establish priorities for TMDLs on basis of the use and severity of problem

3. States develop schedule of TMDLs to be developed within 2 years

4. States provide long term plan – complete TMDLs 8 to 13 years from first listing

5. EPA has 30 days to approve or disapprove list submitted April of each even year
   - If EPA disapproves State list, EPA has 30 days to develop list for the State
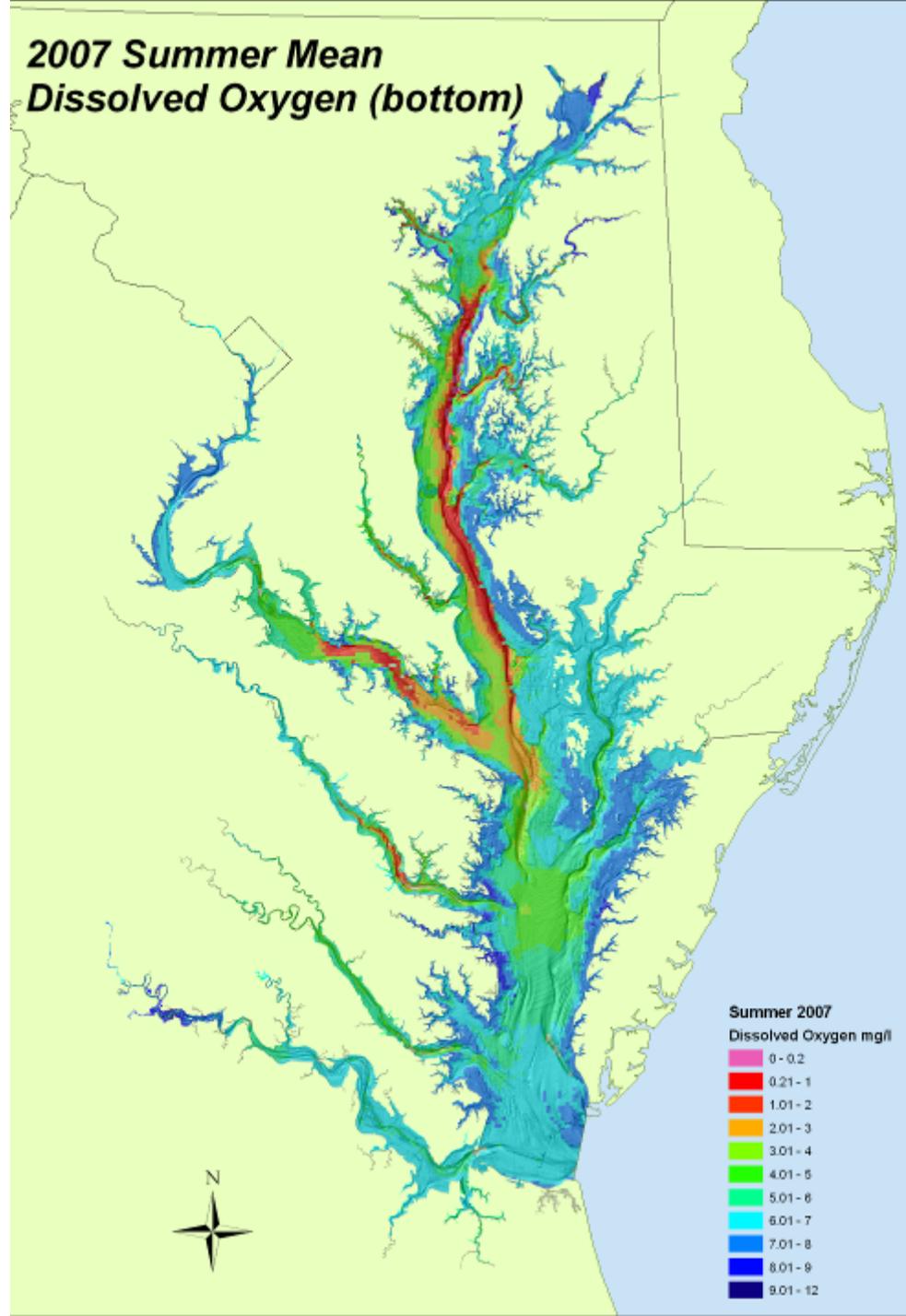
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CWA Restoration Framework

Adopt Water Quality Standards

⬇

Monitor & Assess Waters

⬇

List Impaired & Threatened Waters

⬇

Develop Total Maximum Daily Loads (TMDL)

⬇

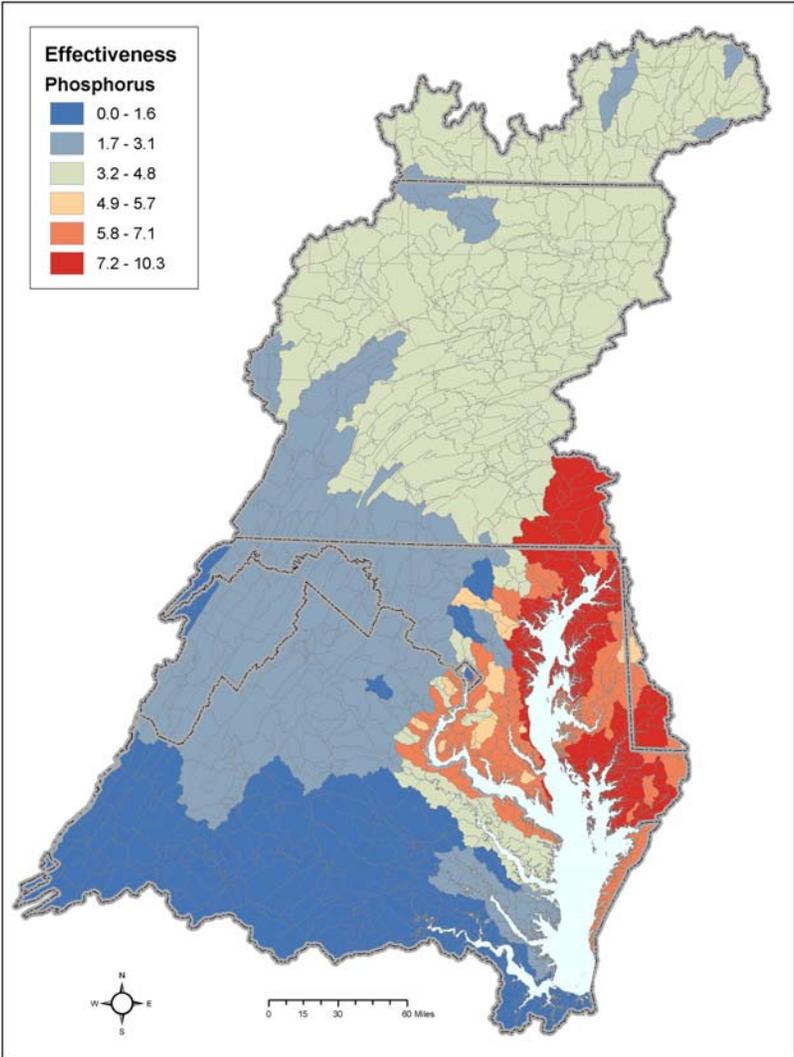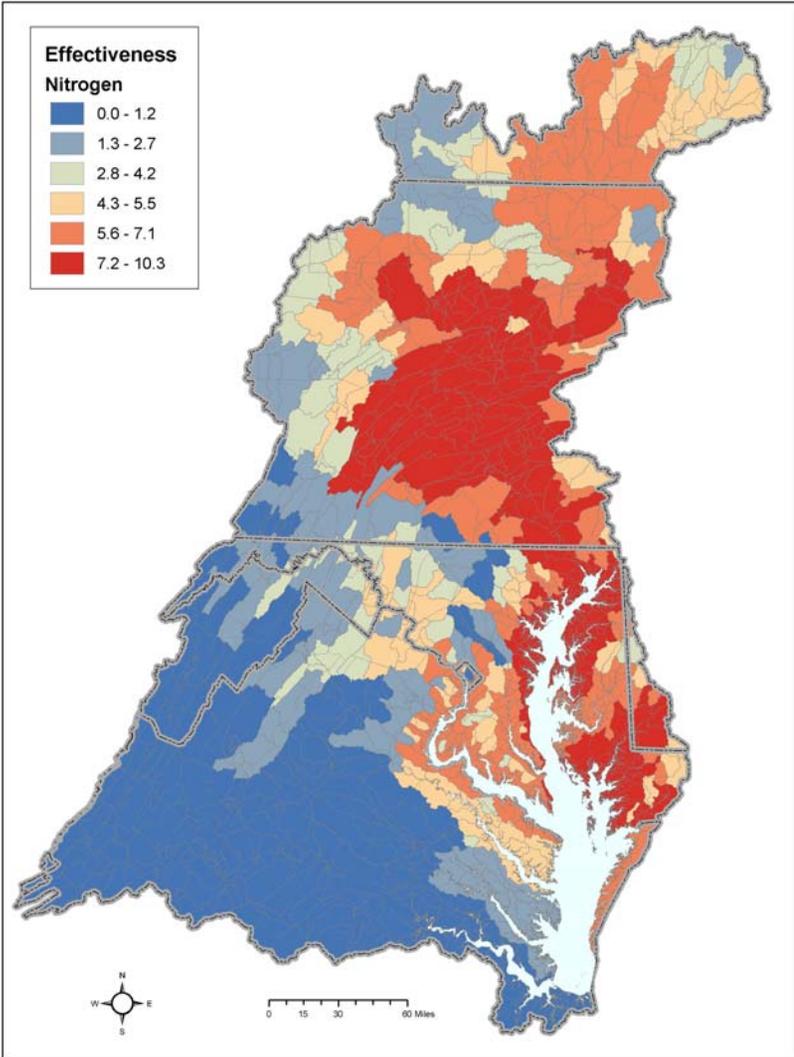**Implement Point & Nonpoint Source Allocations**

TMDL Implementation

- TMDLs are implemented through other sections of the Clean Water Act

- Point Sources:
  - Permit limits consistent with WLA are enforceable under CWA through National Pollutant Discharge Elimination System (NPDES)
  - Issued by EPA or States w/ delegated authority

- Nonpoint Sources:
  - No federal regulatory enforcement program
 - Primarily implemented through State/local NPS management programs (limited number w/regulatory enforcement)

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Low to no dissolved oxygen in the Bay and tidal rivers every summer

2007 Summer Mean Dissolved Oxygen (bottom)

Summer 2007
Dissolved Oxygen mg/l

- 0 - 0.2
- 0.21 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- 5.01 - 6
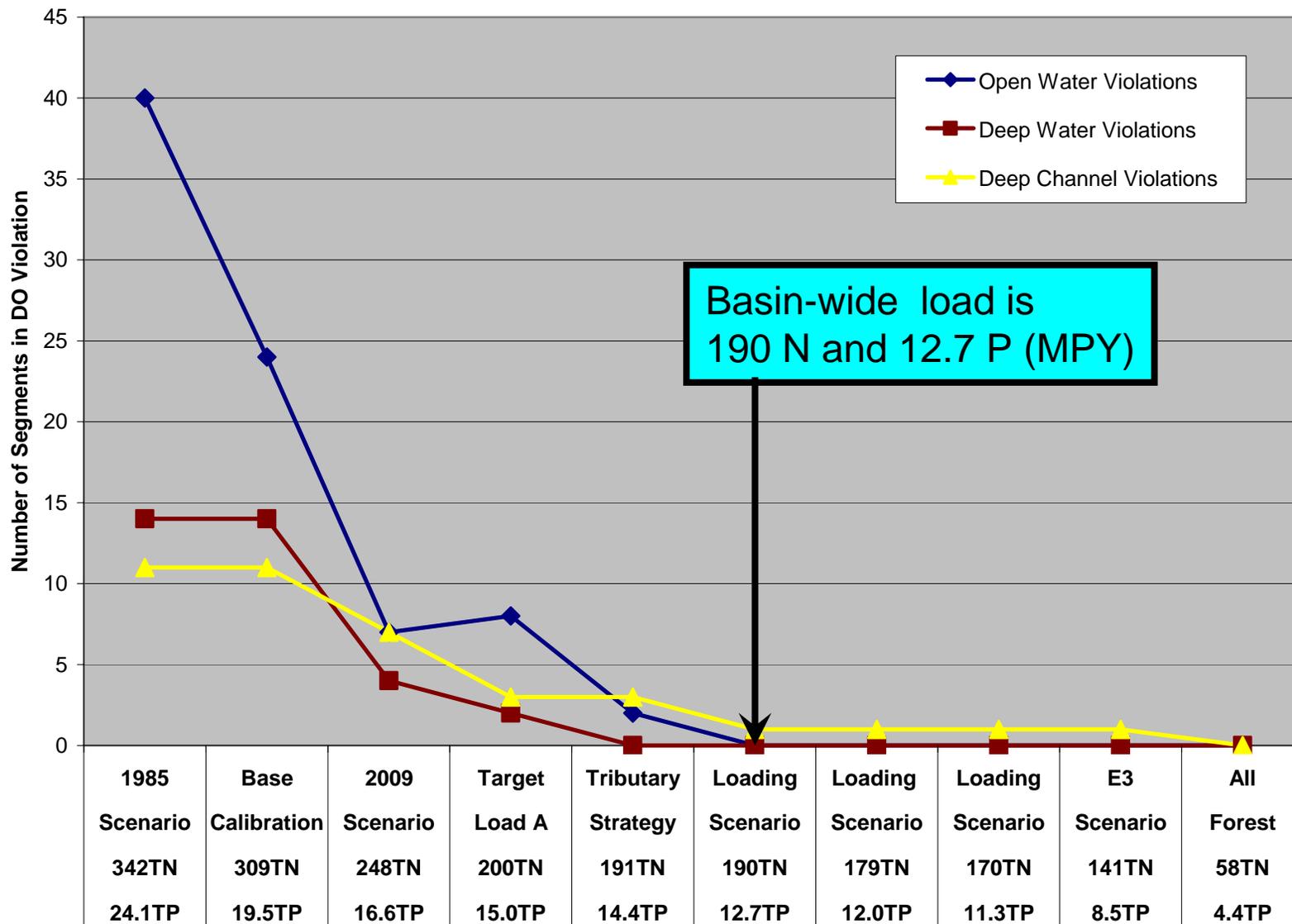- 6.01 - 7
- 7.01 - 8
- 8.01 - 9
- 9.01 - 12

Impact of a Pound of Nitrogen/Phosphorus on Bay Water Quality

Major Rivers by Jurisdiction Ranked by Pollution Impact on Bay
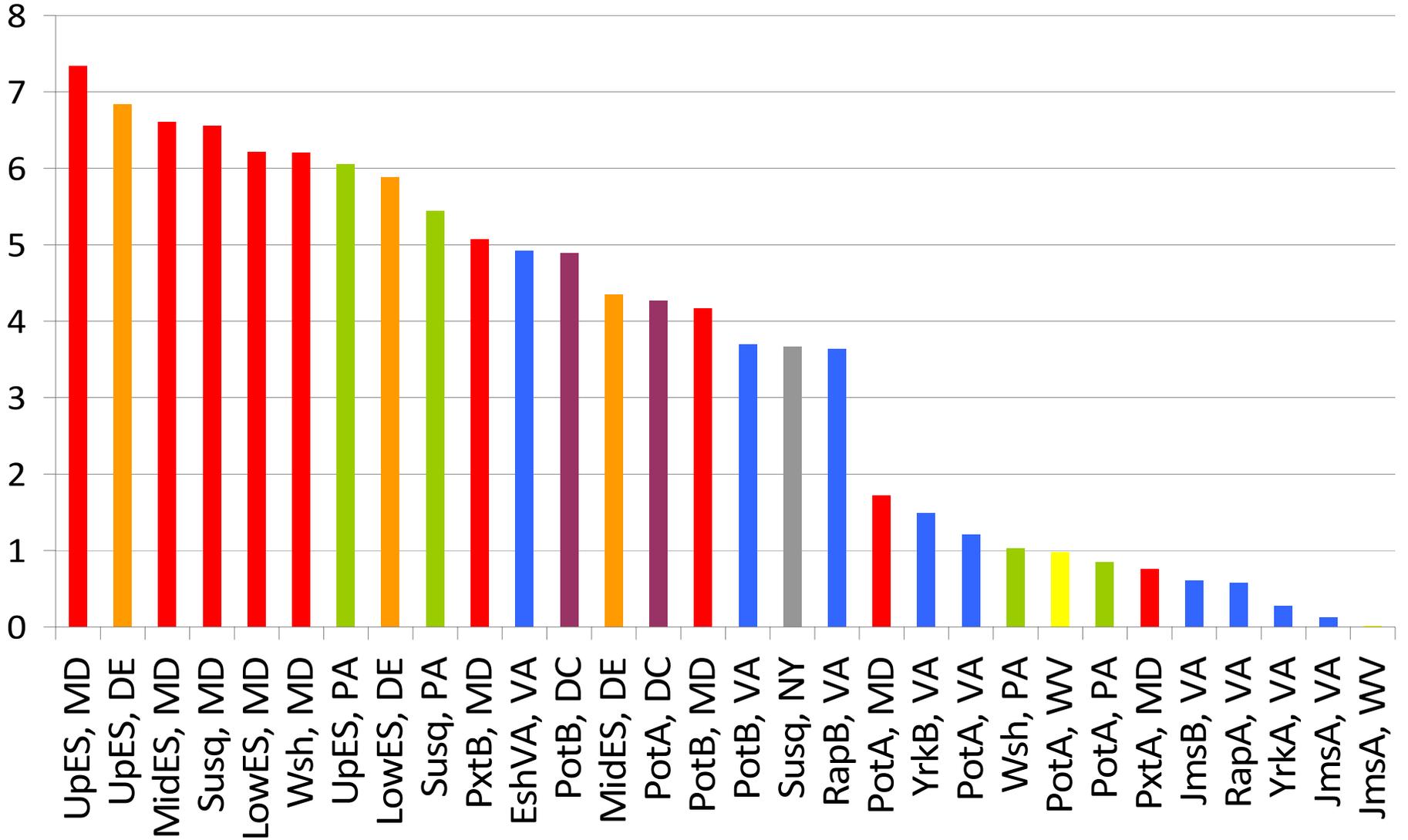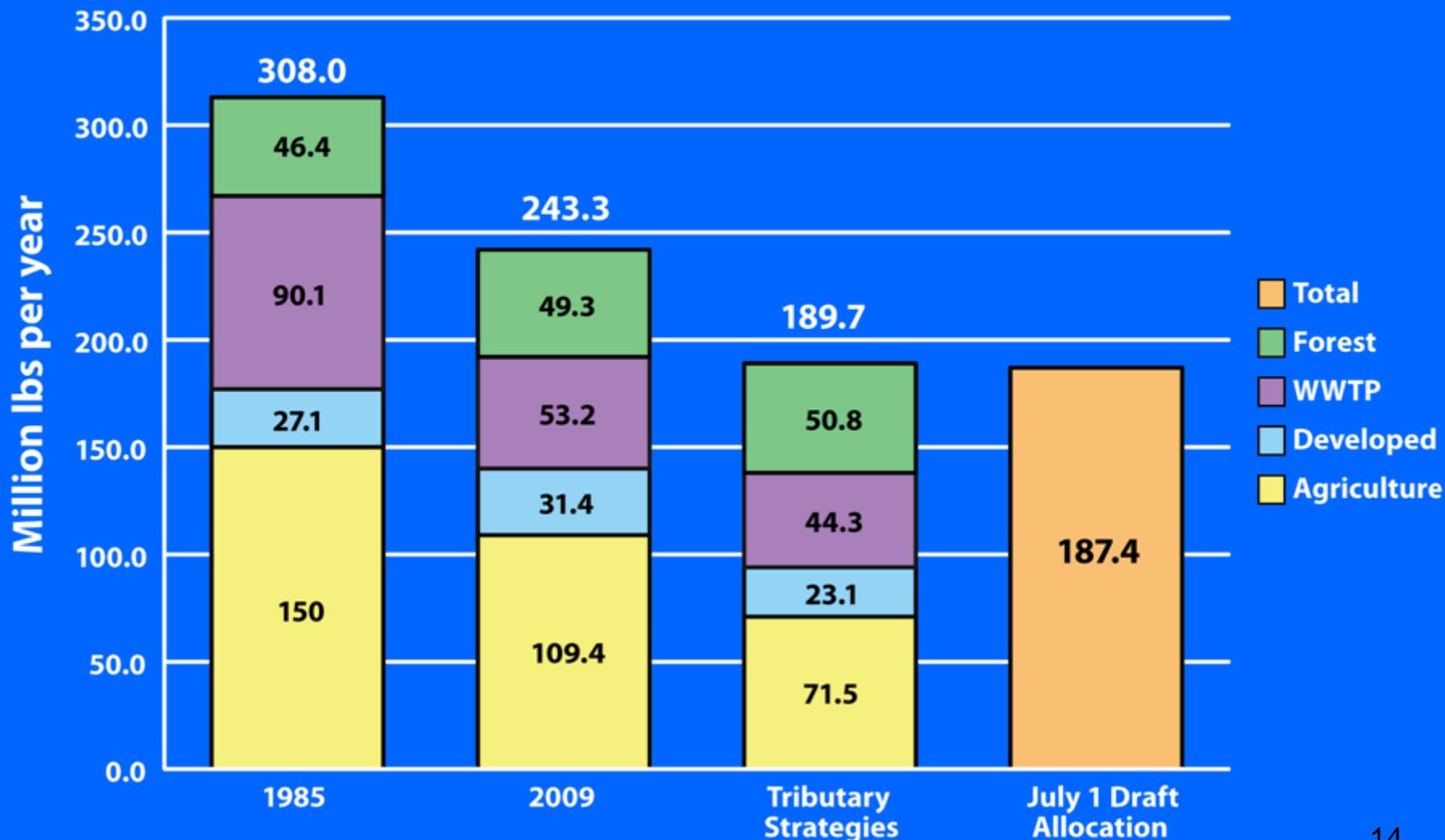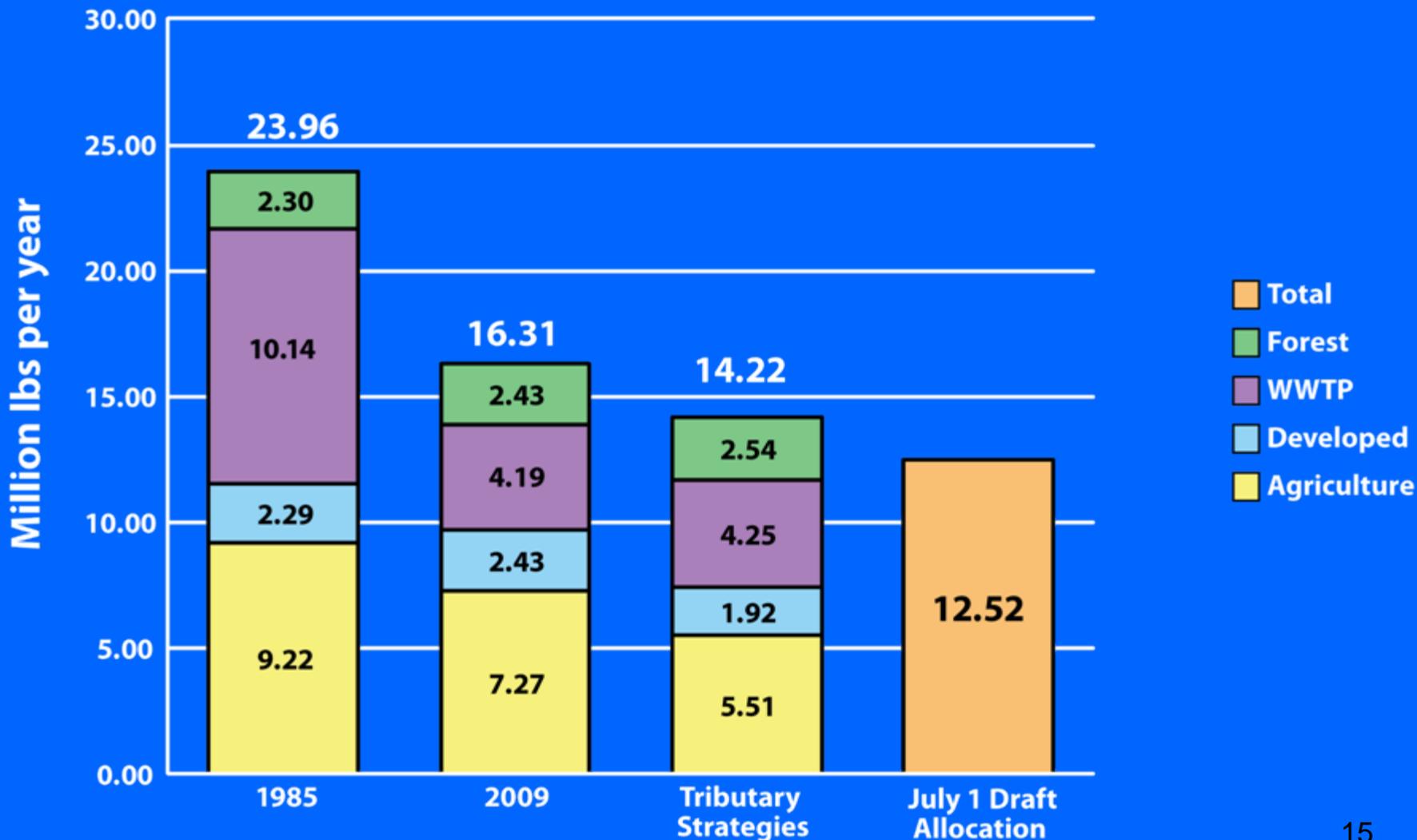
Dissolved Oxygen Criteria Attainment

Setting the Pollution Diet

Nitrogen Loads by Sector and Scenario—CBP Watershed Model P5.3

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Setting the Pollution Diet

Phosphorus Loads by Sector and Scenario—CBP Watershed Model P5.3
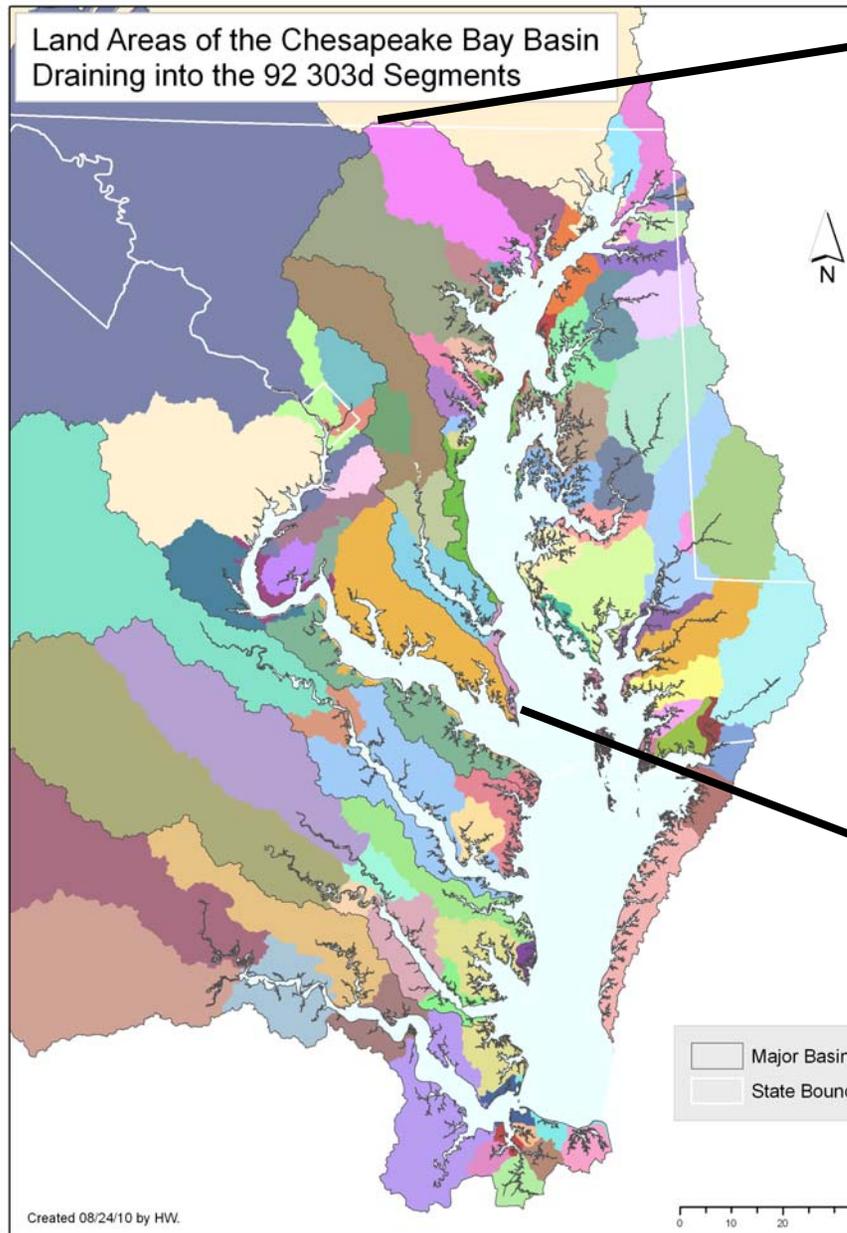
www.epa.gov/chesapeakebaytmdl

8 Watershed Implementation Plan Elements

- Nutrient and Sediment Target Loads

- Current Program Capacity

- Mechanisms to Account for Growth

- Gap Analysis

- Commitment to Fill Gaps: Policies, Rules, Dates for Key Actions

- Tracking and Reporting Protocols

- Contingencies for Delayed or Incomplete Implementation
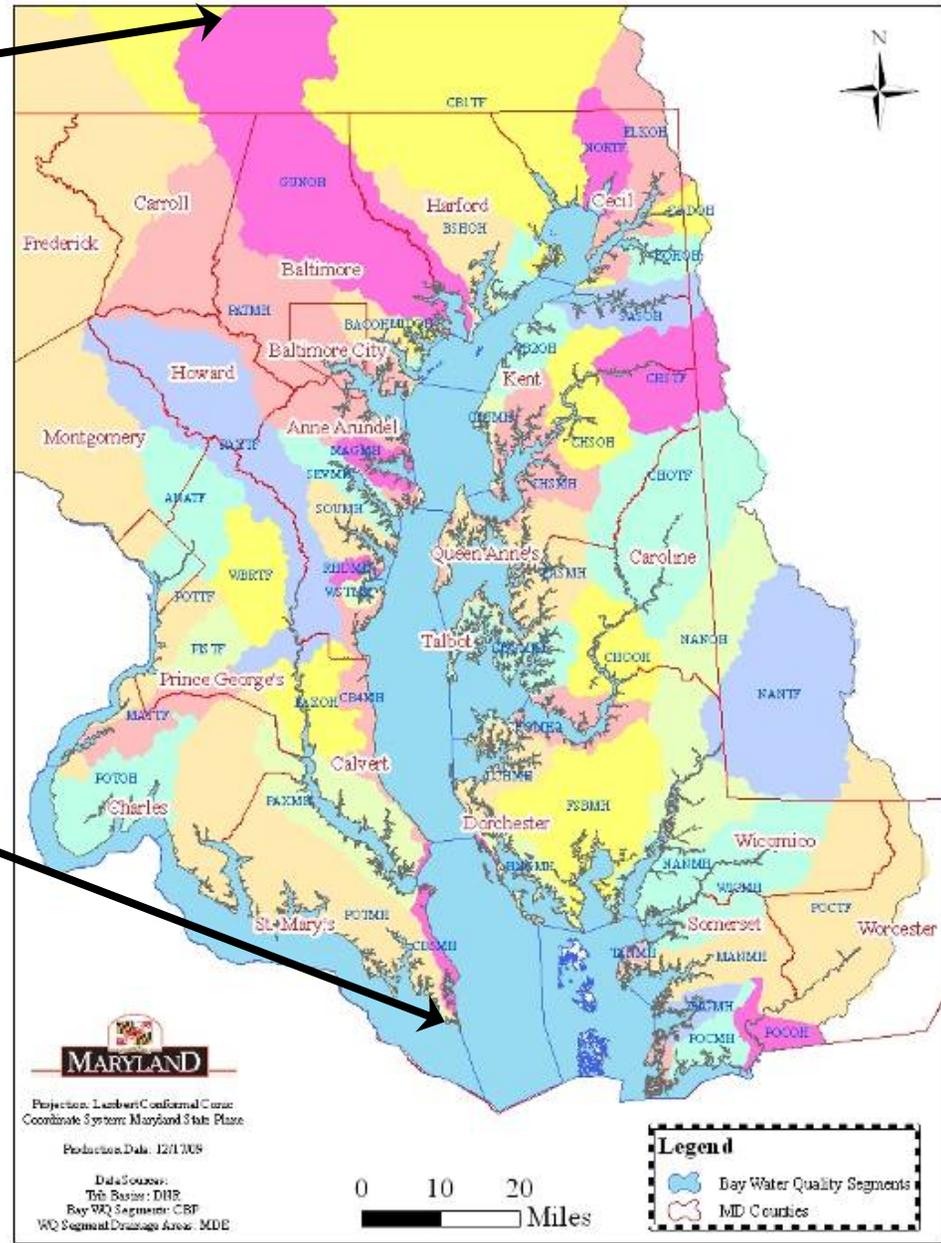
- Detailed Appendix Supporting Bay TMDL Allocations

Phase I: 92 Bay Segments
2010

Land Areas of the Chesapeake Bay Basin
Draining into the 92 303d Segments

Major Basin
State Bound

Created 08/24/10 by HW.

Phase II: Counties
2011

Agriculture and TMDLs

- Ensures all sources get their share of the reduction responsibility

- Reasonable assurance puts focus on regulated point sources

- Has lead to efforts to fully account for and credit non-cost shared conservation practices

- Creates the potential for a large marketplace for nutrient trading

- Provides a measure of certainty for producers

Questions & Comments