

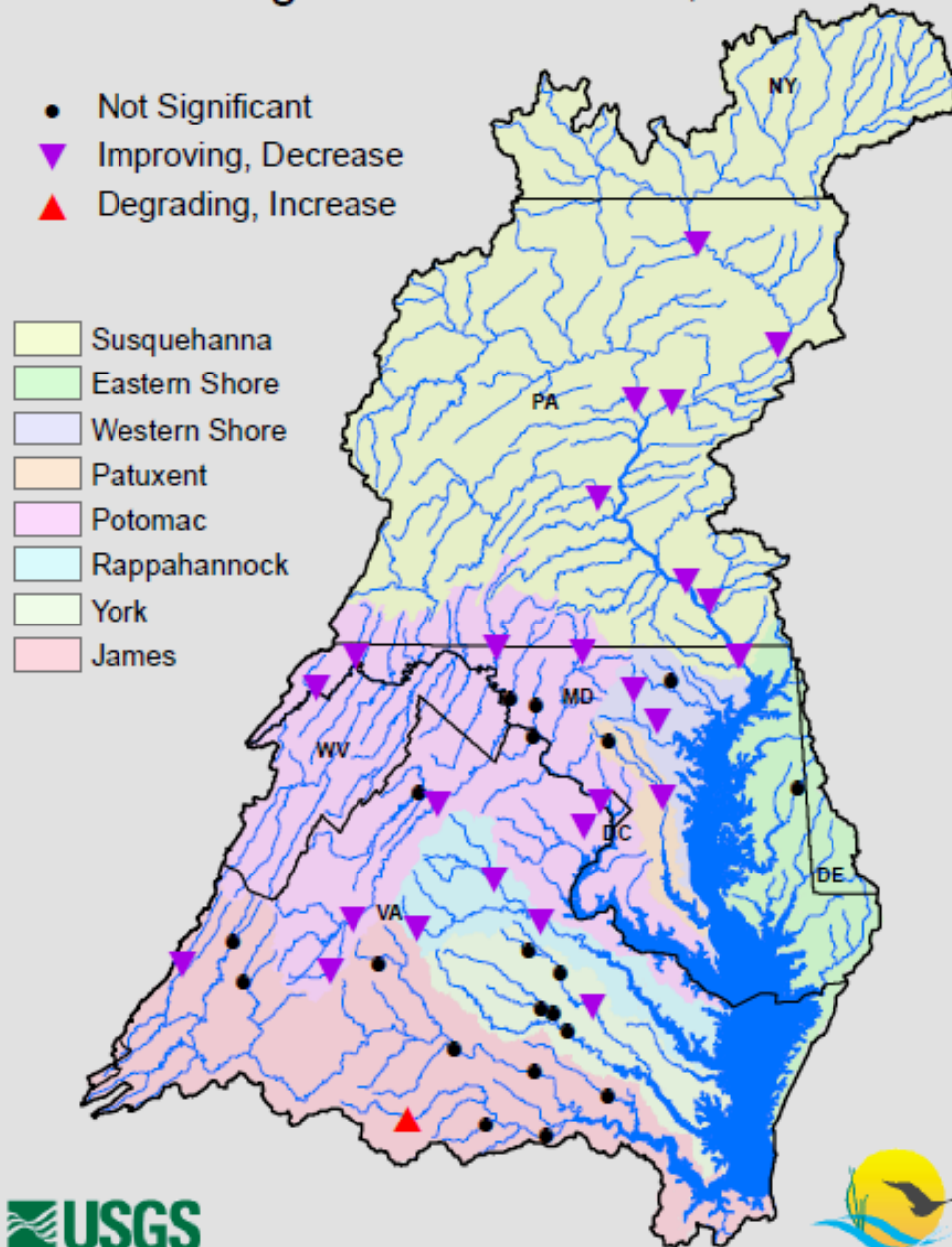
An aerial photograph of a rural landscape during autumn. A winding river flows through the center, surrounded by fields of golden-brown crops and trees with vibrant orange and red foliage. Several small farm buildings and a white silo are visible along the riverbank. The overall scene is peaceful and scenic.

Restoring the Chesapeake Our Next Challenge: Phosphorus

CBC May Meeting
Washington D.C.
May 8, 2014

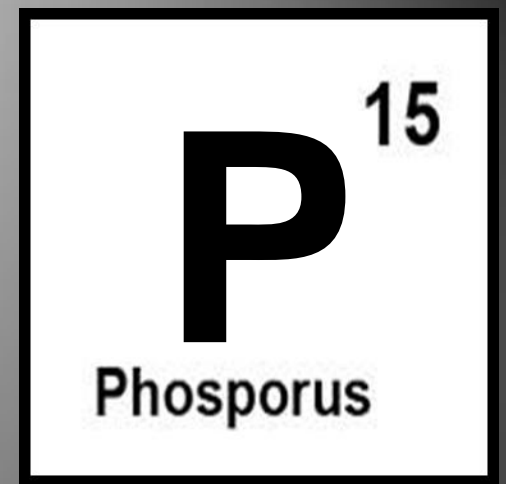
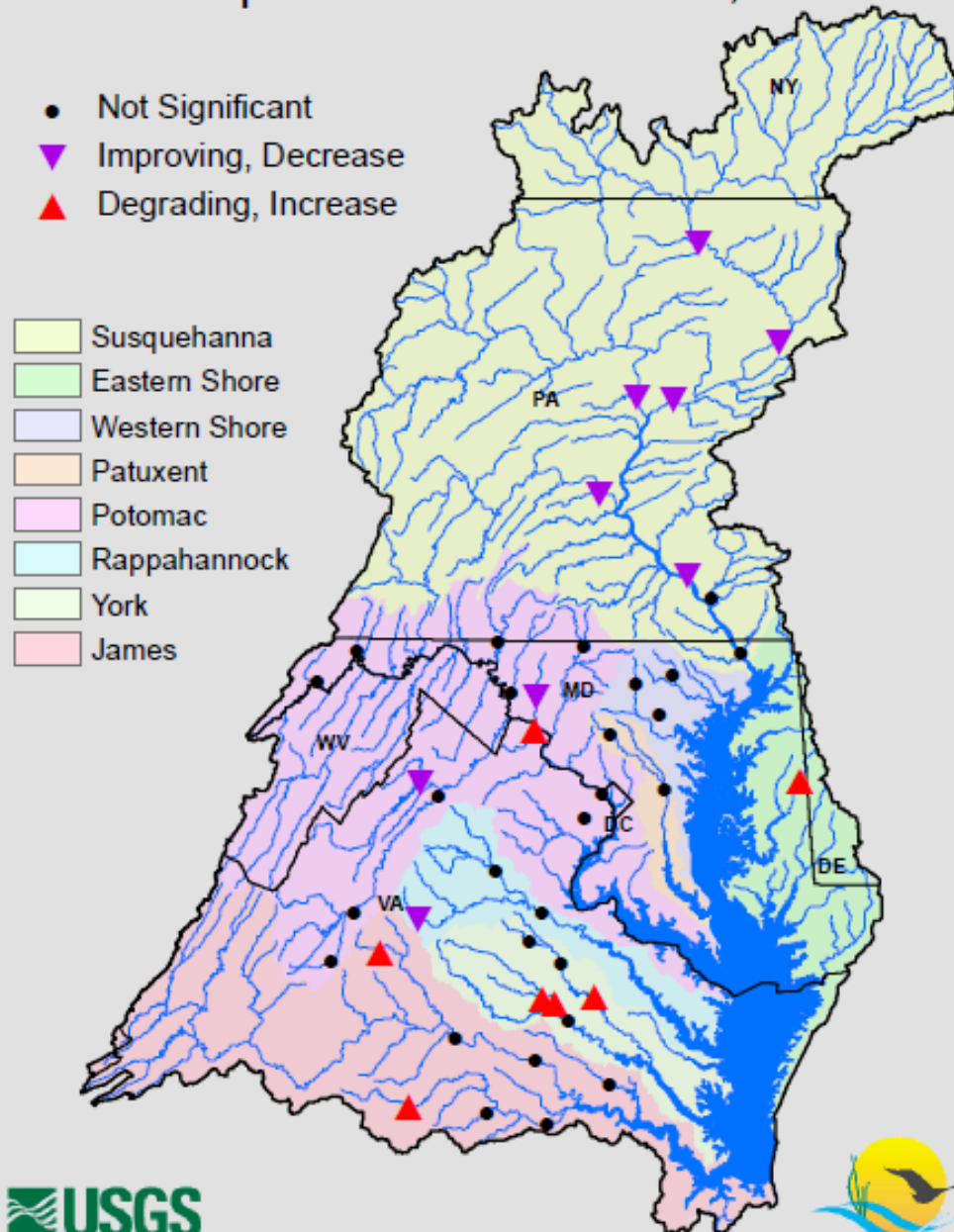
Staff Presentation &
Member Discussion

Short-Term Trend in Flow-Adjusted Total Nitrogen Concentration, 2003-2012



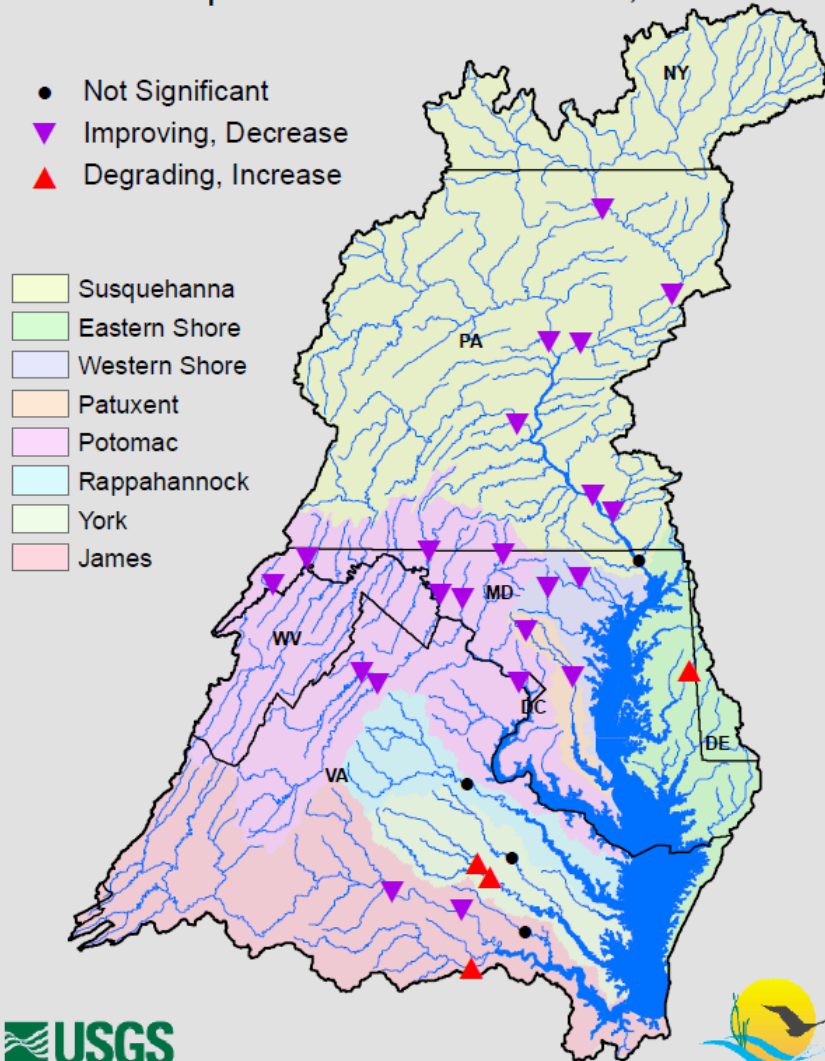
2003-2012

Short-Term Trend in Flow-Adjusted Total Phosphorus Concentration, 2003-2012

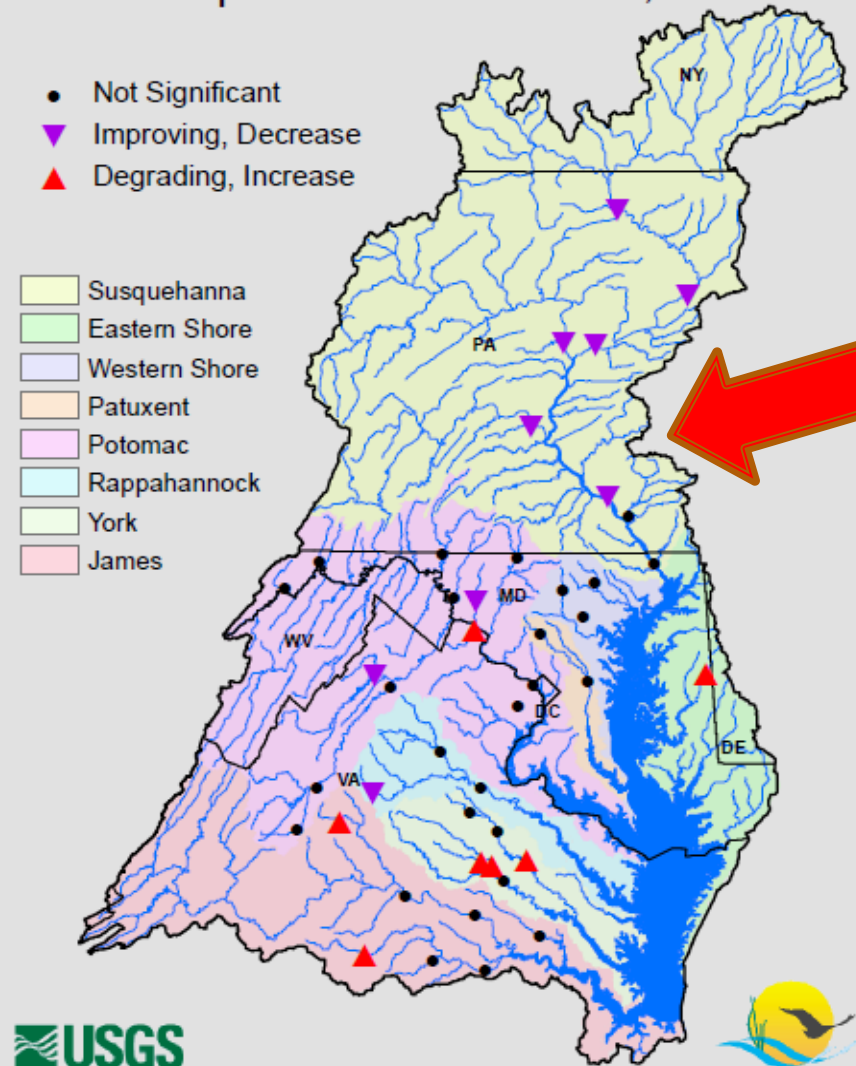


2003-2012

Long-Term Trend in Flow-Adjusted Total Phosphorus Concentration, 1985-2012



Short-Term Trend in Flow-Adjusted Total Phosphorus Concentration, 2003-2012



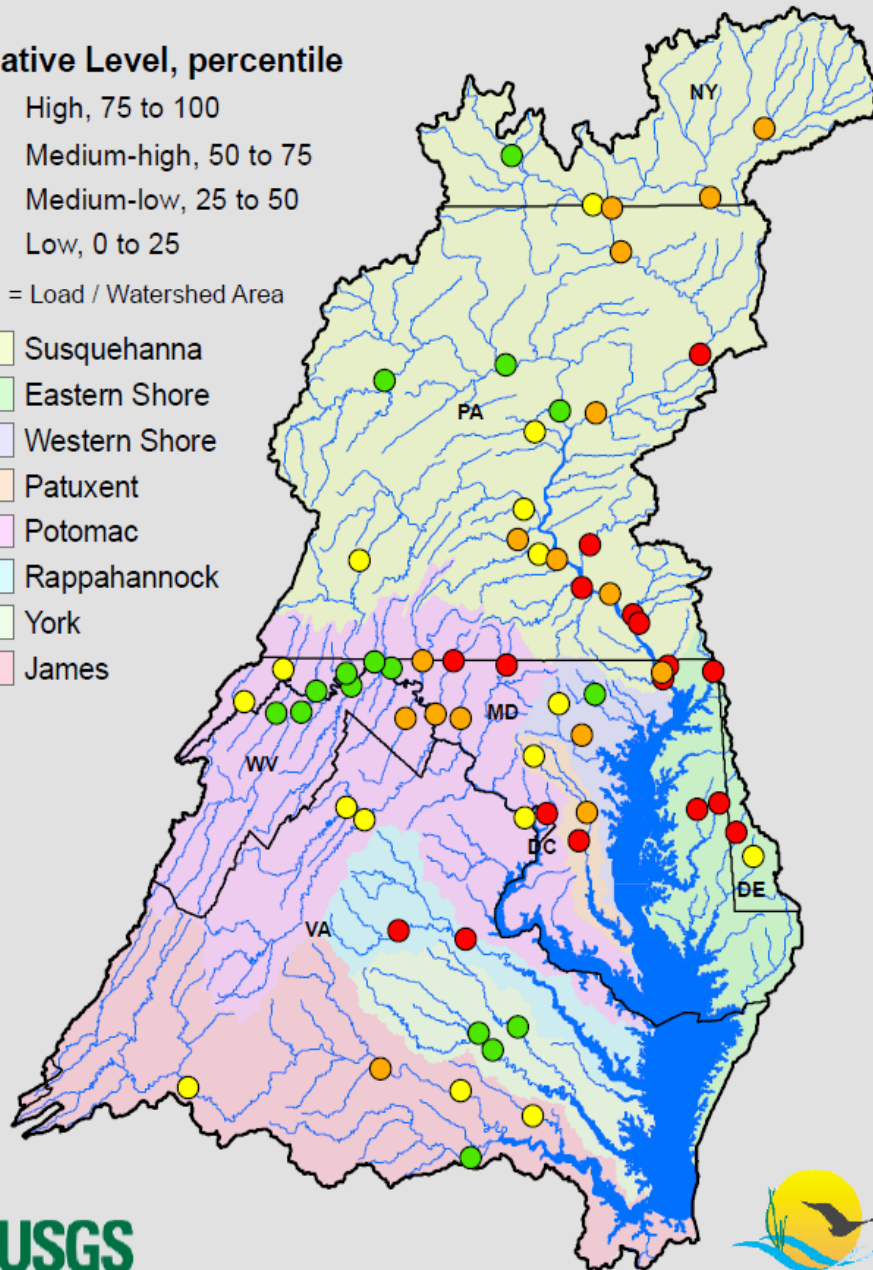
Total Phosphorus Yield, Mean 2008-2012

Relative Level, percentile

- High, 75 to 100
- Medium-high, 50 to 75
- Medium-low, 25 to 50
- Low, 0 to 25

Yield = Load / Watershed Area

- Susquehanna
- Eastern Shore
- Western Shore
- Patuxent
- Potomac
- Rappahannock
- York
- James



High Yield Sites
are found in
concentrated
agricultural and
urban areas.

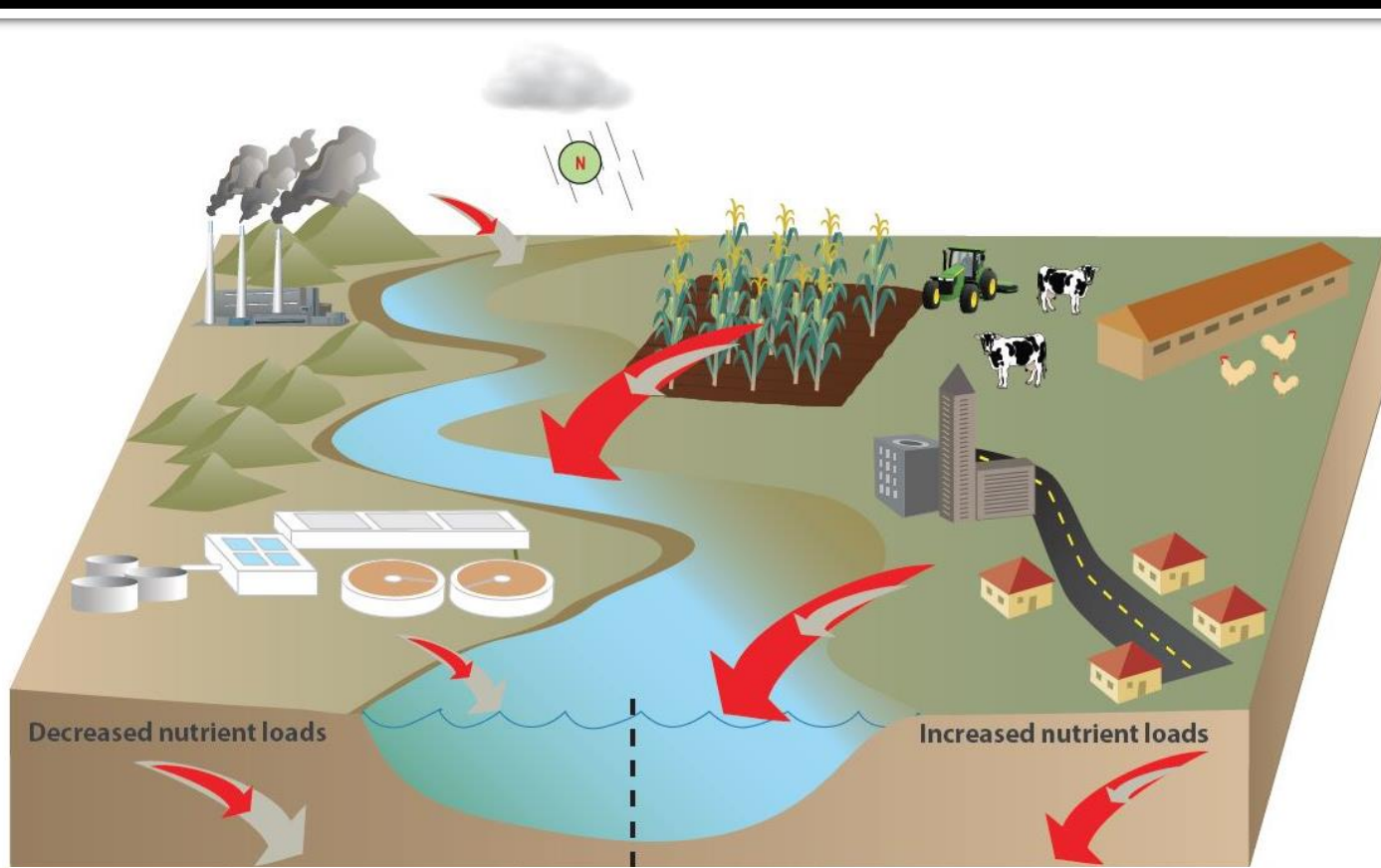
Watersheds with
High Yield Sites:

- Eastern Shore
- Susquehanna
- Potomac
- Rappahannock

Decreased loads Vs. Increased loads

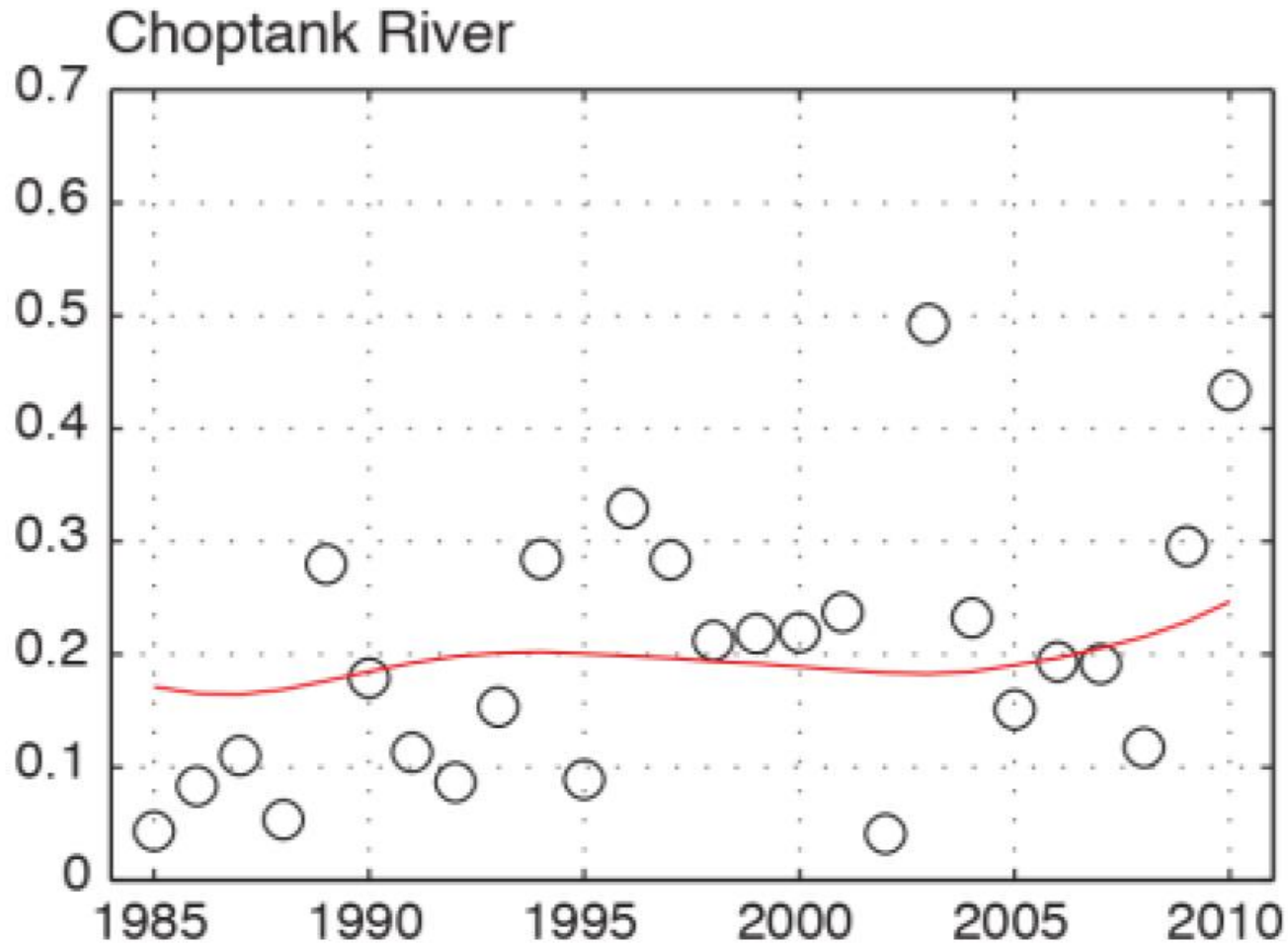
- ✓ Air emissions
- ✓ Waste treatment

- ✗ Agriculture
- ✗ Stormwater



Soils are P Saturated

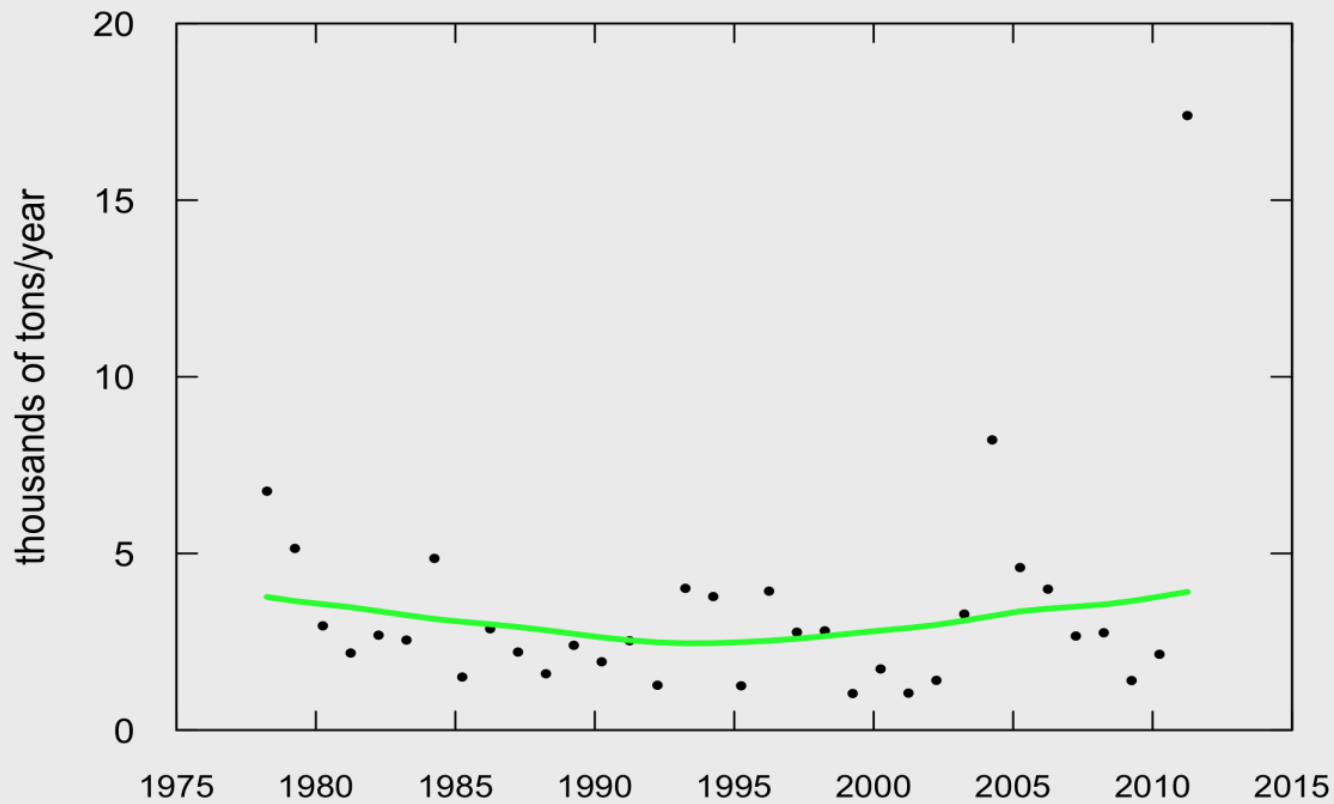
Yield in pounds per day per square mile



Stream banks are eroding



**Susquehanna River at Conowingo, MD Total Phosphorus
Water Year
Flux Estimates (dots) & Flow Normalized Flux (line)**



Causes of Stalled Progress



- MORE soils are P-saturated & manure production is INCREASING in agricultural areas
- INCREASE in runoff from urban /suburban
- INCREASE in stream erosion/sediment
- INCREASE in release of sediment from Conowingo Dam

P Policy Focus - Agriculture

Maryland, Pennsylvania and Virginia must increase Ag BMP's to meet 2017 & 2025 TMDL phosphorus reduction targets and practices must address elevated Phosphorus in soils.

- **STRATEGIES TO MEET TMDL**

- Nutrient Management
- Phosphorus Management Tool
- Manure Transport
- Stream Exclusion
- Manure to Energy
- Alternative uses of manure & biosolids
- New BMP's to treat legacy phosphorus

P Policy Focus - Stormwater

Stormwater is the only growing source of pollution in the Bay watershed.

- **STRATEGIES TO MEET TMDL**
 - MS4 permits requiring retrofit of impervious acres
 - Headwater Stream Channel Erosion Control
 - Stream Restoration
 - New BMP's- focus on Runoff Reduction/infiltration
 - Turf Fertilizer Legislation
 - Retrofit of non-regulated urban acres

THE ^P CHALLENGE

What policy initiatives should come next for CBC?

