

Conowingo Dam Impacts to the Chesapeake Bay



*Chesapeake Bay & Water
Resources Policy Committee
January 16, 2015*



MARYLAND

Smart, Green & Growing

*Bruce Michael
Maryland Department of
Natural Resources*

Presentation Outline

- Susquehanna River Facts
- Conowingo Dam Relicensing
- Lower Susquehanna River Watershed Assessment Study
- Results to be Incorporated into the Bay TMDL and the 2017 Mid Point Assessment

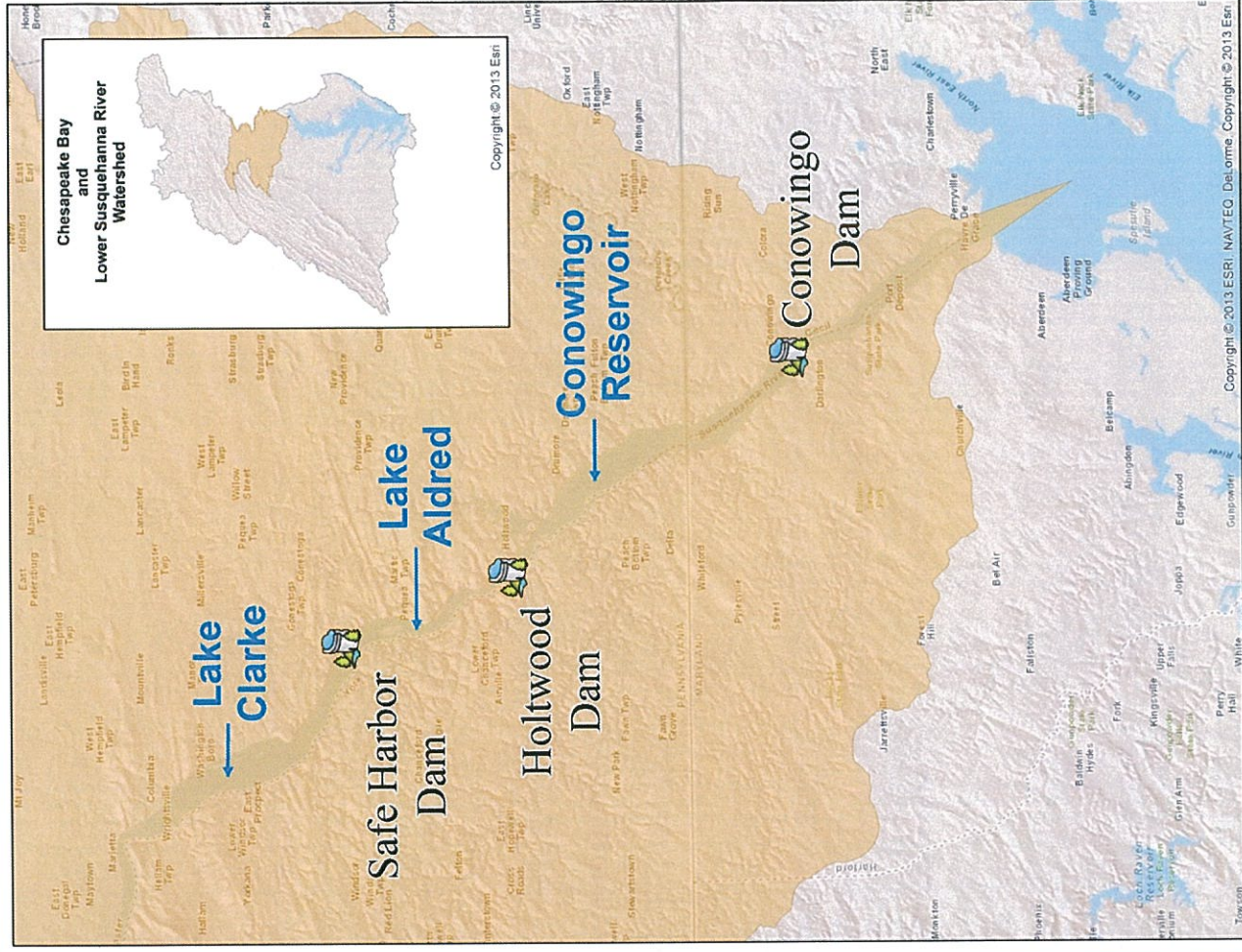
Lower Susquehanna Study Area



Graphic courtesy of SRBC

Susquehanna originates in NY, empties into Bay at Havre de Grace, a distance of 444 miles

Conowingo Dam Built in 1928





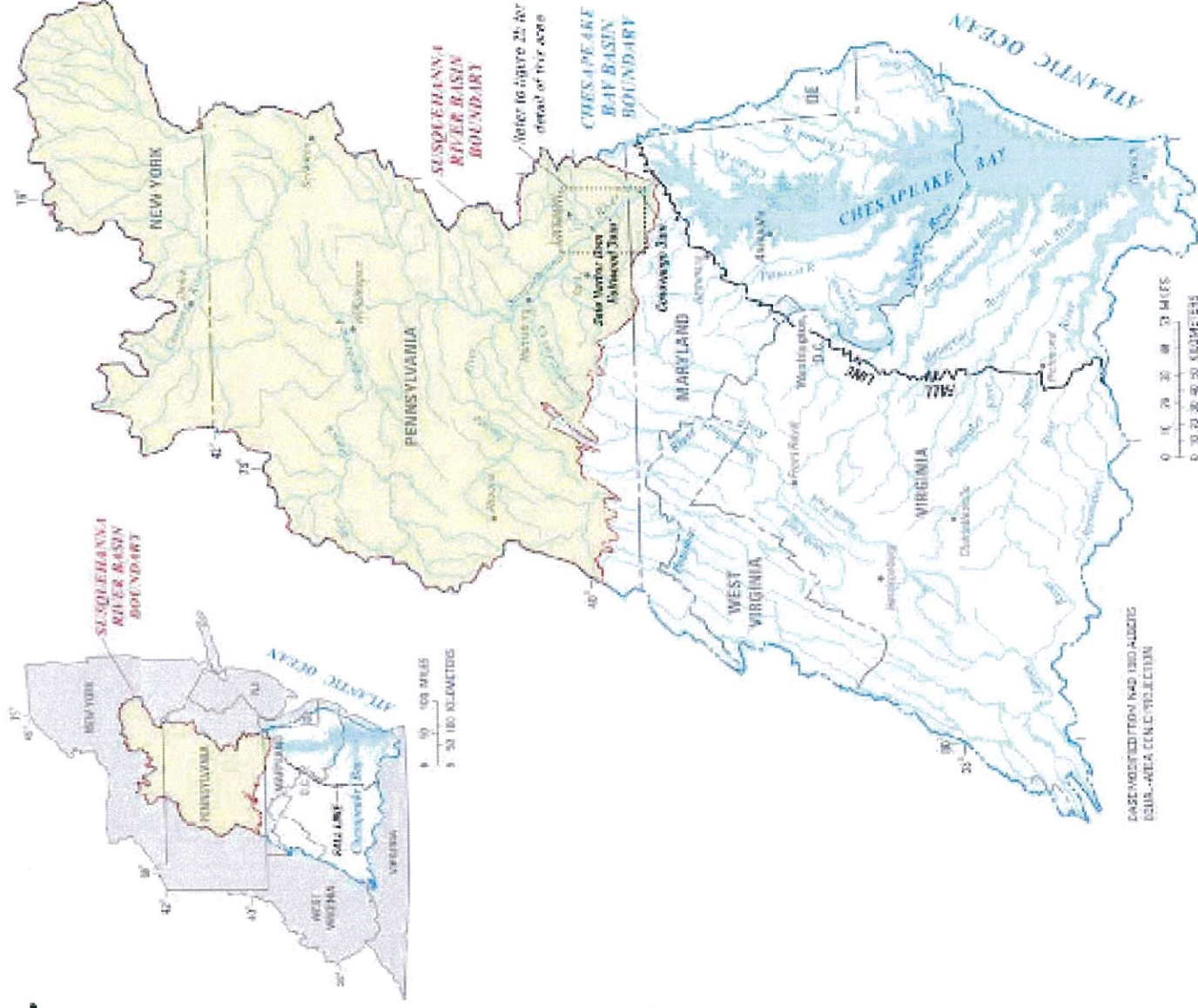
Susquehanna River As a % of Chesapeake Bay inputs

47% of freshwater

41% of nitrogen

25% of phosphorus

27% of sediment



What Does this mean to the Bay?

- 59% (more than half) of the nitrogen comes from outside the Susquehanna River Watershed
- 75% (3 quarters) of the phosphorus comes from outside the SR Watershed
- 73% (almost 3 quarters) of the sediment comes from outside the SR Watershed
- Jurisdictions outside the SR Watershed must continue to meet their nutrient and sediment reductions if we expect Bay and our tributaries to be restored

Conowingo Dam Relicensing Activities

- 2009 ▪ Exelon Filed Pre-Application Document
 - ▶ Maryland participated in the development of all study plans
 - ▶ FERC approved a total of 32 studies
 - ▶ Exelon conducted studies between 2010 and 2012

- 2012 ▪ Exelon Filed Final License Application (FLA): August 31, 2012

- 2013 ▪ FERC - Ready for Environmental Assessment (REA): April 29, 2013
 - FERC granted extension until December 15, 2013
 - MD can file comments on the FLA and preliminary fish and wildlife measures for protection, mitigation and enhancement (10j licensing recommendations)

- 2014 ▪ Maryland 401 WQC Application Submitted (1 year review period) State has to certify that the project will meet water quality standards – January 30, 2015

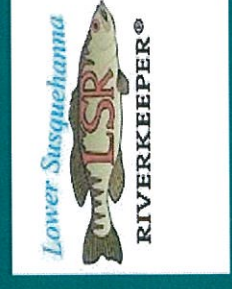
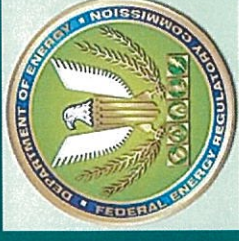
- FERC issues temporary license: September 1, 2014

MDE's 401 Water Quality Certification Process

- Exelon filed its 401 WQC Appl. on January 31, 2014
- State must act within 1 year of receipt of the WQC application or it waives its rights (there are ways to extend)
- Exelon withdrew WQC in December 2014
- Exelon intends to continue to withdraw and refile the Conowingo Hydroelectric Project section 401 application every year until the Enhanced Monitoring and Modeling study is complete
- FERC cannot grant long-term license without WQC from Maryland (1 year licenses are anticipated)

Relicensing Participants (Conowingo)

- Federal Energy Regulatory Commission (FERC)
- Exelon – Applicant / Owner
- Maryland – DNR & MDE
- Pennsylvania – PADEP, PAFBC
- USFWS / NOAA / NMFS
- National Park Service (NPS)
- Susquehanna River Basin Commission (SRBC)
- The Nature Conservancy (TNC)
- Lower Susquehanna Riverkeeper



Major Issues To Be Addressed Through Relicensing

- Proper Management of Sediment
- Improved Fish Passage
 - ▶ American Shad; Goal of 2M above York Haven
 - ▶ American Eel; Goal of 8.2M within 10 years
- Restore Freshwater Mussels
 - ▶ Water quality / filtration capabilities
- Enhance Flow Conditions
 - ▶ Improve downstream habitat
 - ▶ Reduce fish stranding
- Expand and Improve Recreational Opportunities
- BMP for Debris Management
- Land Preservation
- Protection of RTE Species



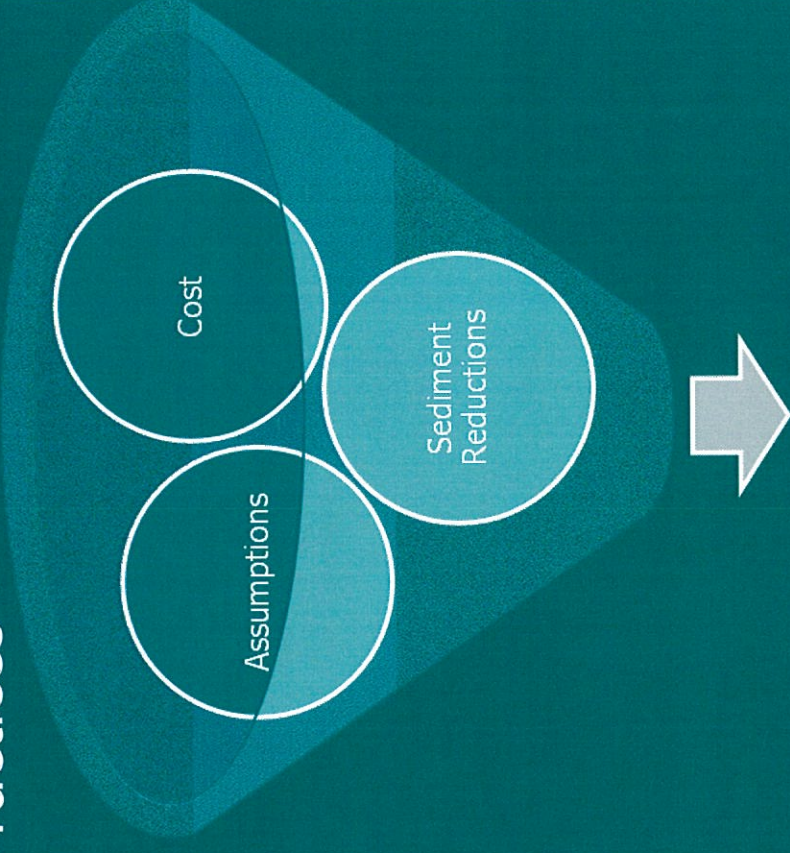
Lower Susquehanna River Watershed Assessment Study - Goals

- Determine Bay health effects due to the loss of trapping capacity
- Describe sediment and associated nutrient transport effects during high flow storm events
- Evaluate sediment and associated nutrient load reduction strategies

Managing Sediment

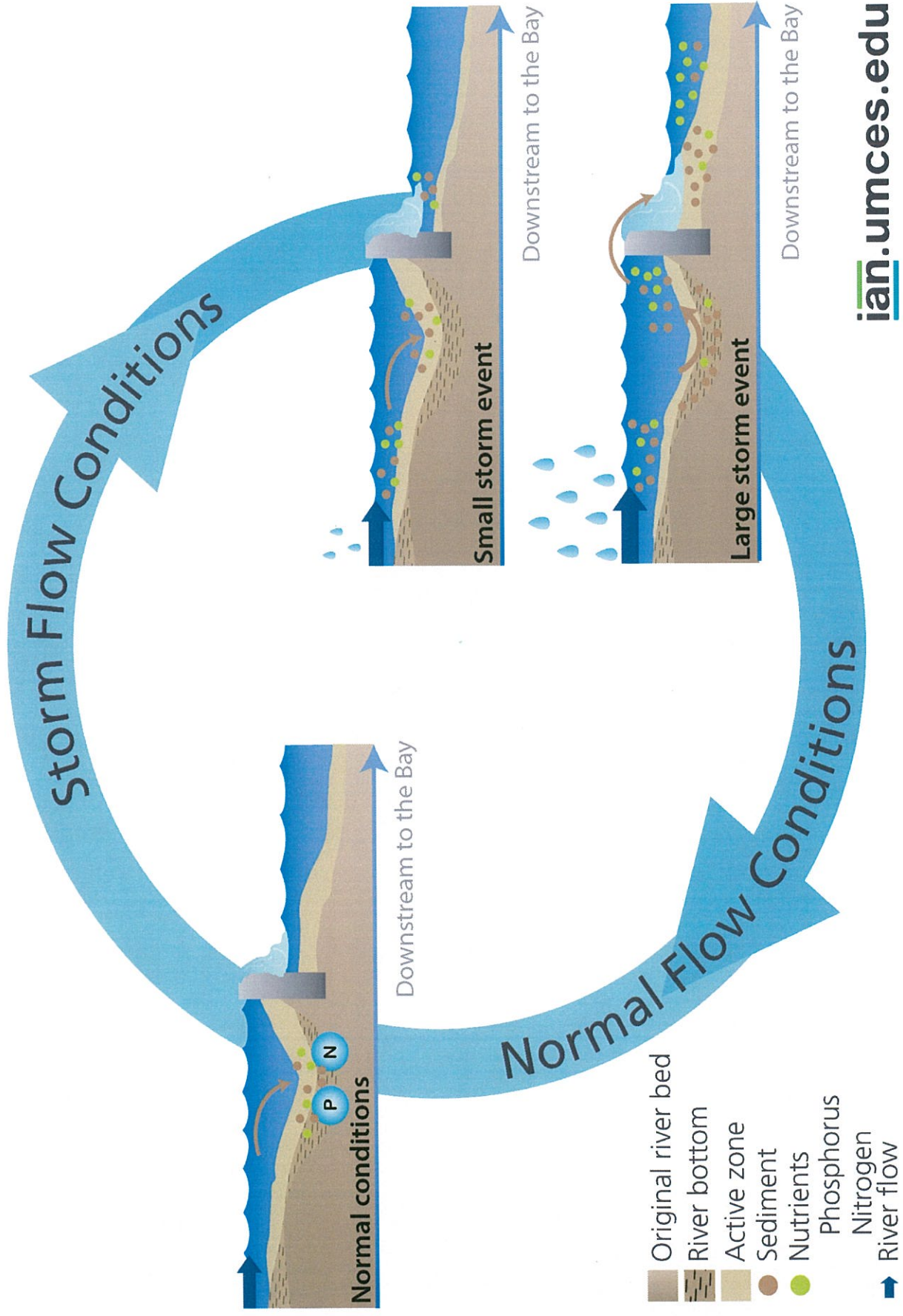


- In-Reservoir Options
- Evaluated over 38 Strategies
- Upstream Best Management Practices

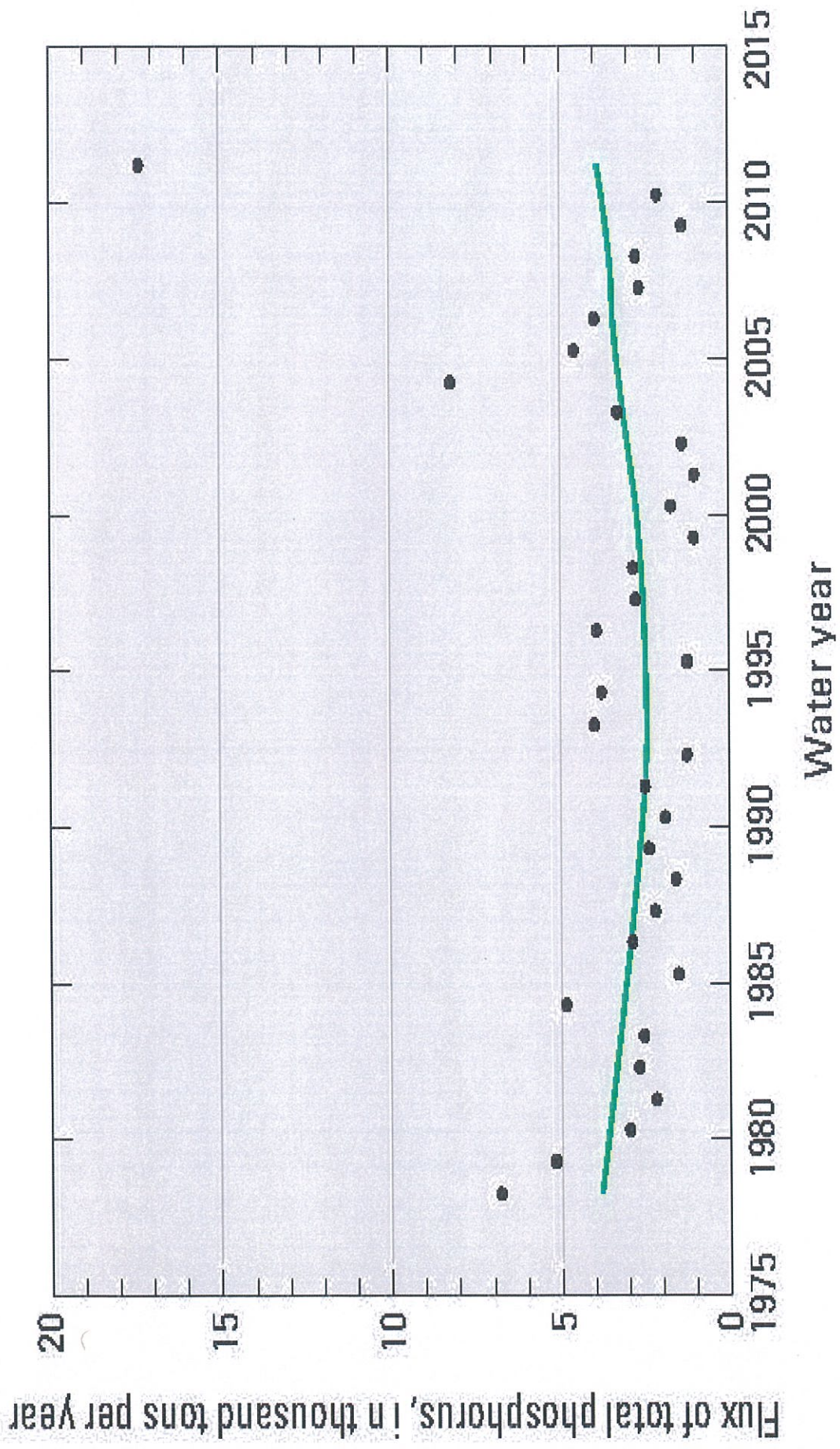


LSRWA Study 4 Major Findings

Finding 1: Conditions are Different Than Previously Understood



Finding 2: Loss of Long-Term Trapping Impacts the Bay



Graphic courtesy of USGS

Finding 2 Continued:

Excess Nutrients ↘

Algae Blooms ↘

Low Dissolved Oxygen ↘

Harm to Aquatic Life

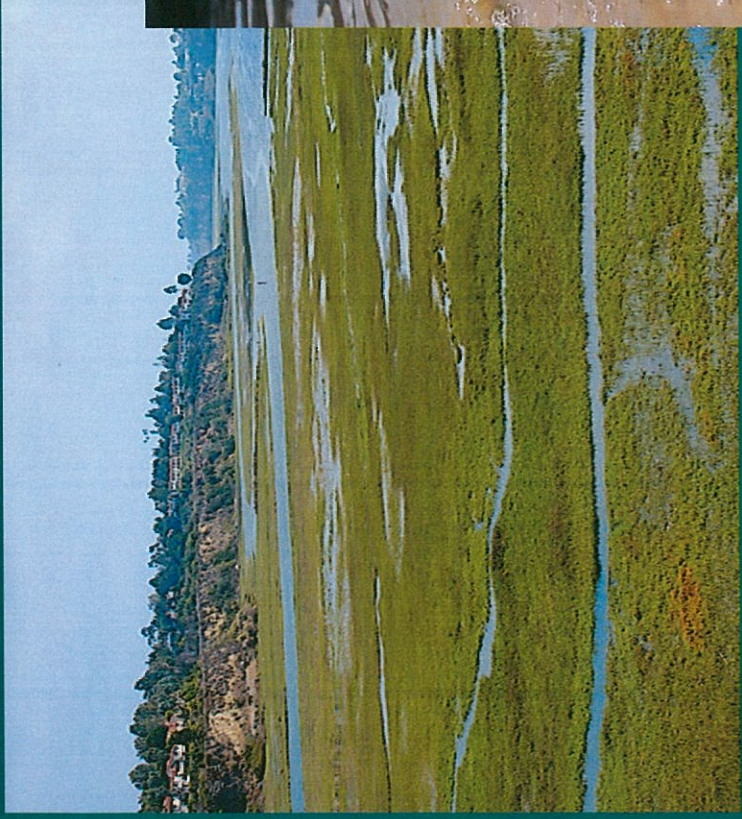


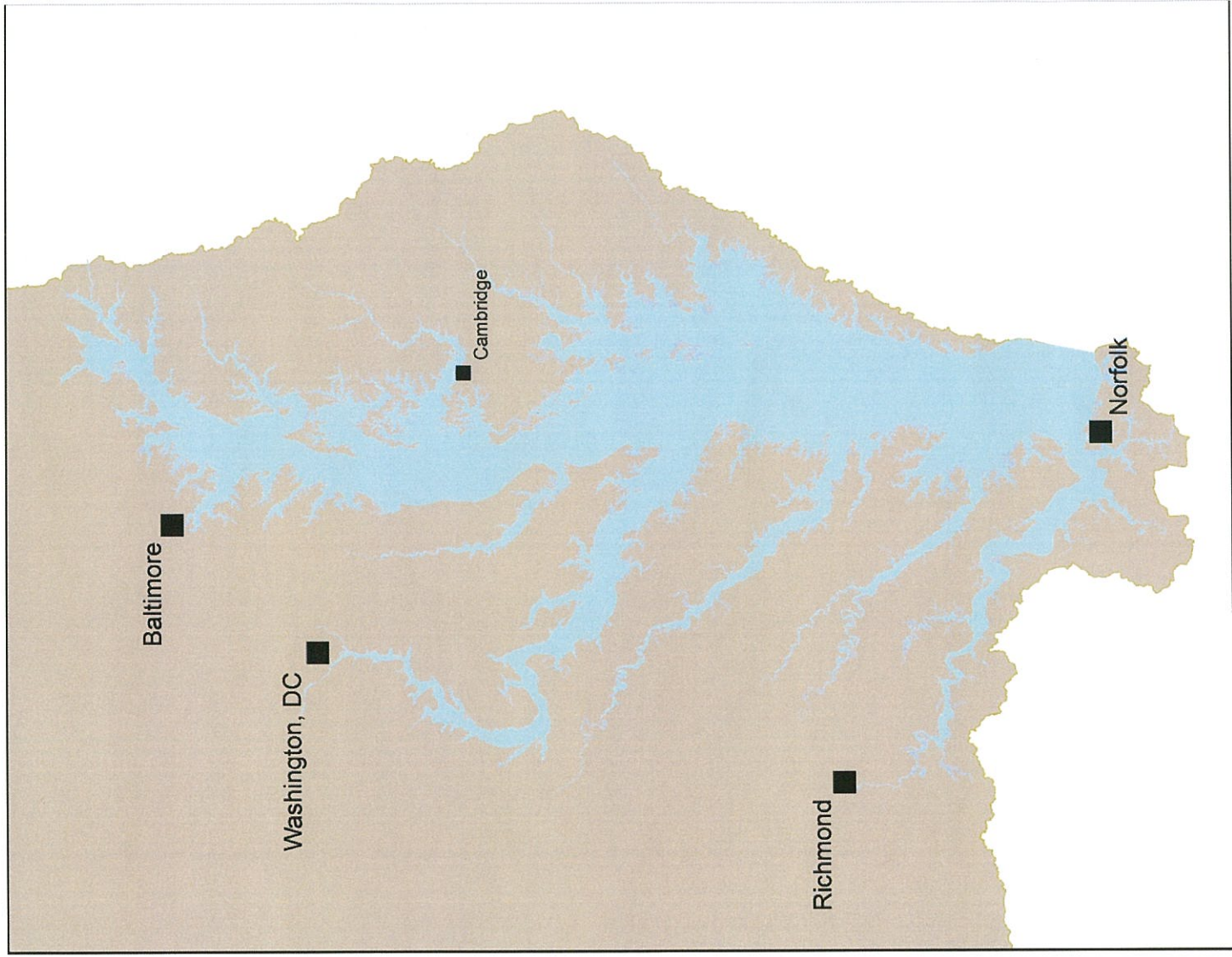
Photo: Wikimedia



Photo: Chesapeake Bay Program

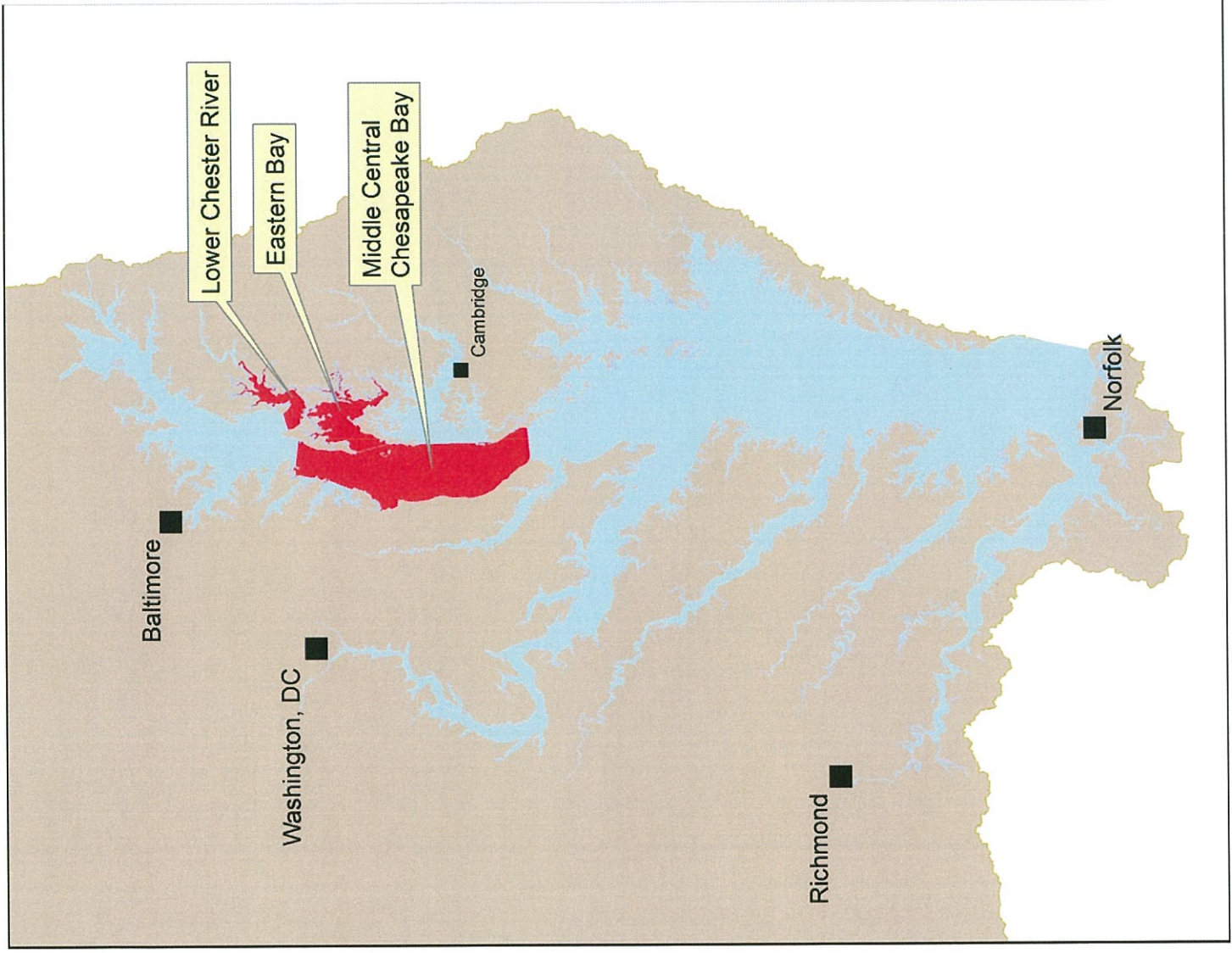
Finding 2 Continued:

**Chesapeake Bay
Water Quality Under
Watershed
Implementation Plans
Fully Achieved**



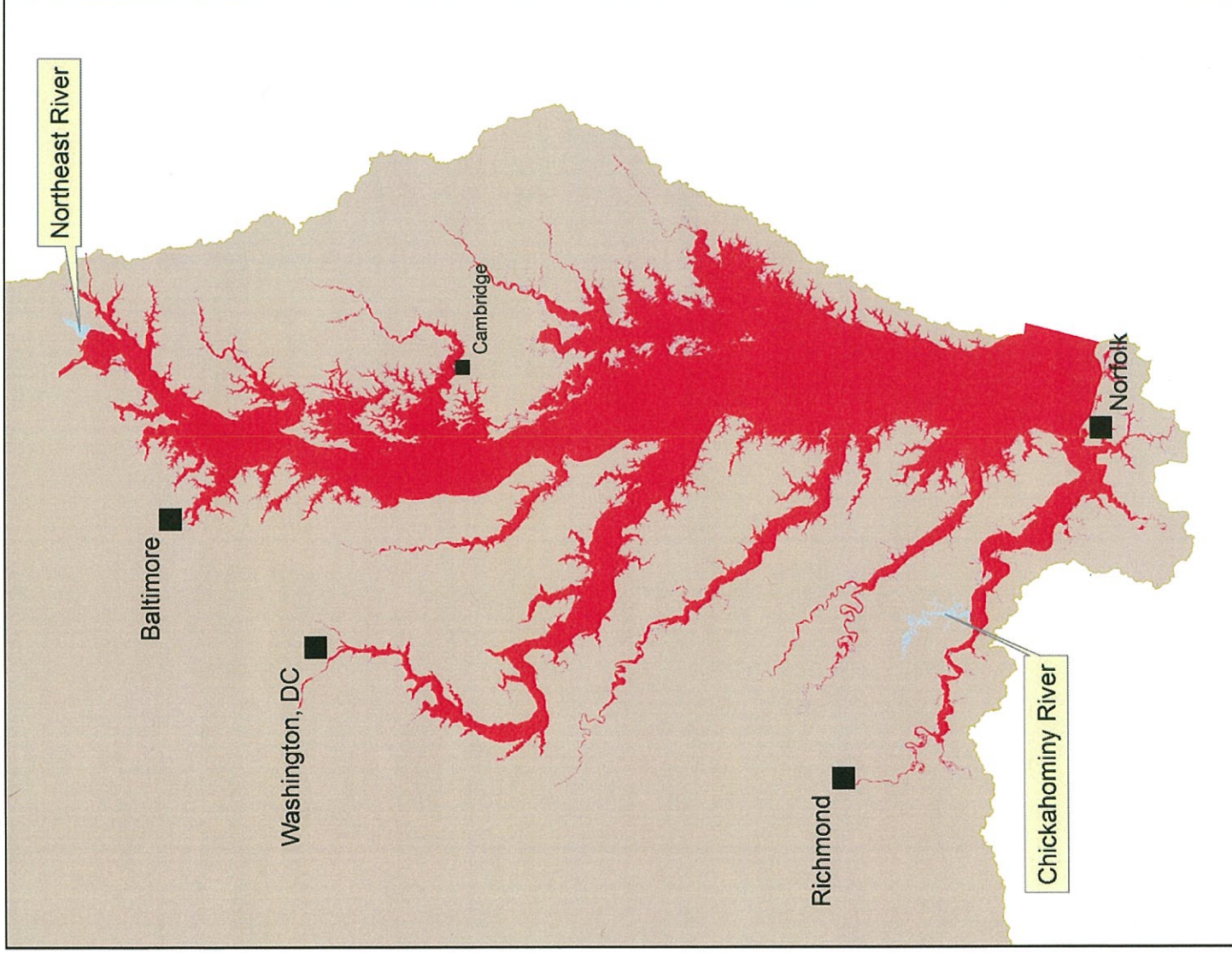
Finding 2 Continued:

**Chesapeake Bay
Water Quality Under
Watershed
Implementation Plans
Fully Achieved:
Dams in Dynamic
Equilibrium**

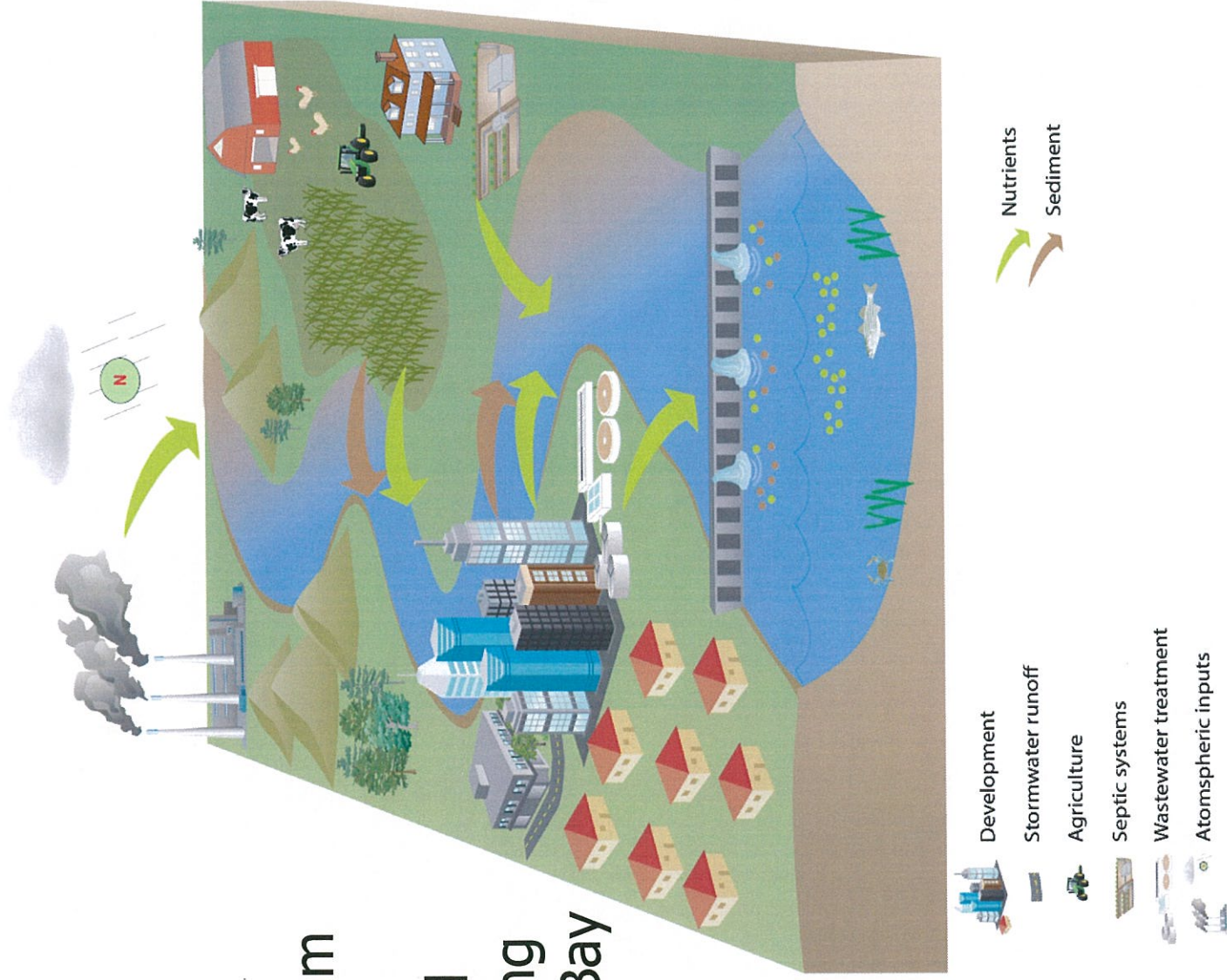


Finding 2 Continued:

**Chesapeake Bay
Water Quality if We
Don't Do Anything
More**



Finding 3: Sources Upstream Deliver More Sediments and Nutrients Causing More Impact to Bay

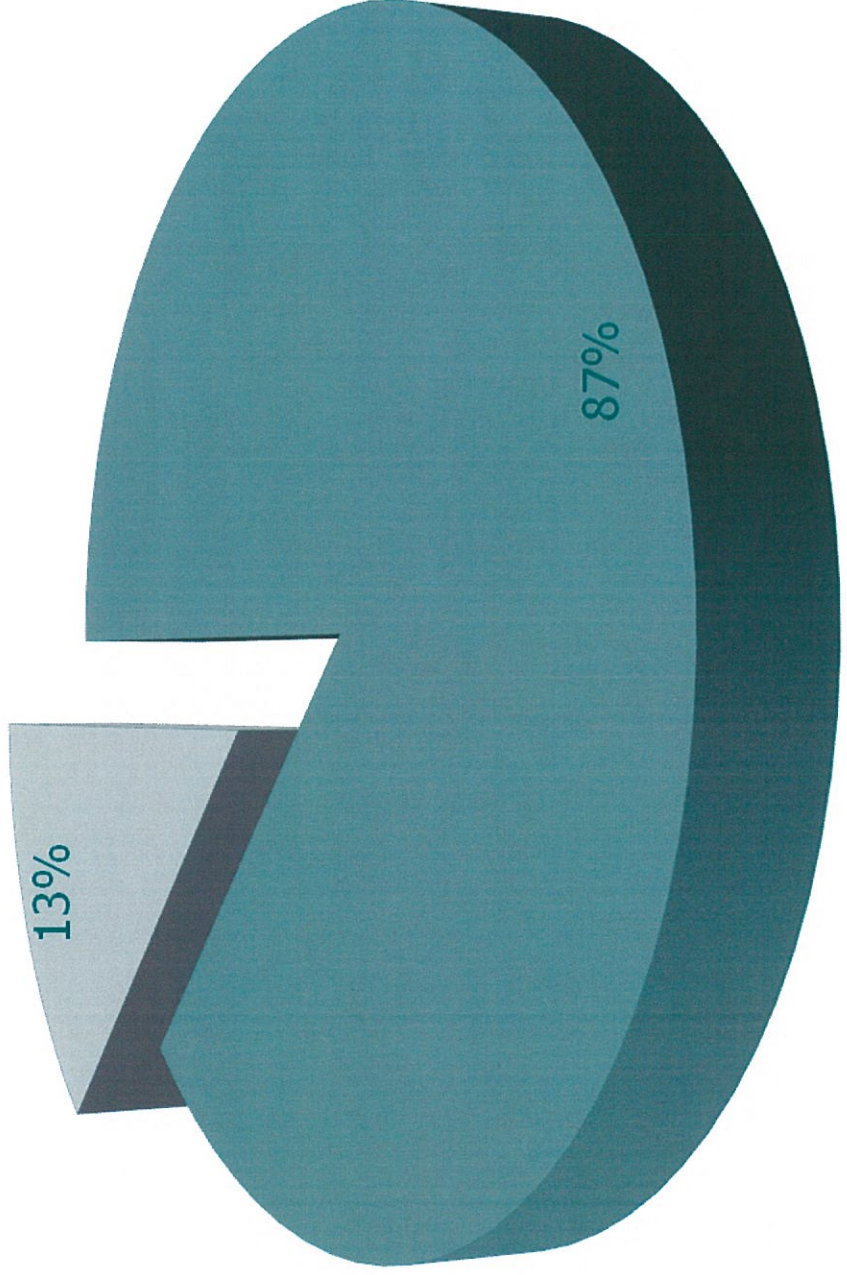


Graphic courtesy of UMCES

Finding 3 Continued:

Estimated Sediment Loads 2008-2011

■ Susquehanna Watershed ■ Conowingo



Finding 3 Continued:

With or Without the Dams,
Large Storms Will Continue
To Contribute Sediment
and Nutrients to the Bay



February 2013 Storm

Photo credit:
NASA

Finding 4: Dredging, Bypassing, and Dam Operational Changes, By Itself, Does Not Provide Sufficient Benefits to Offset Impacts From the Loss of Long-Term Trapping Capacity

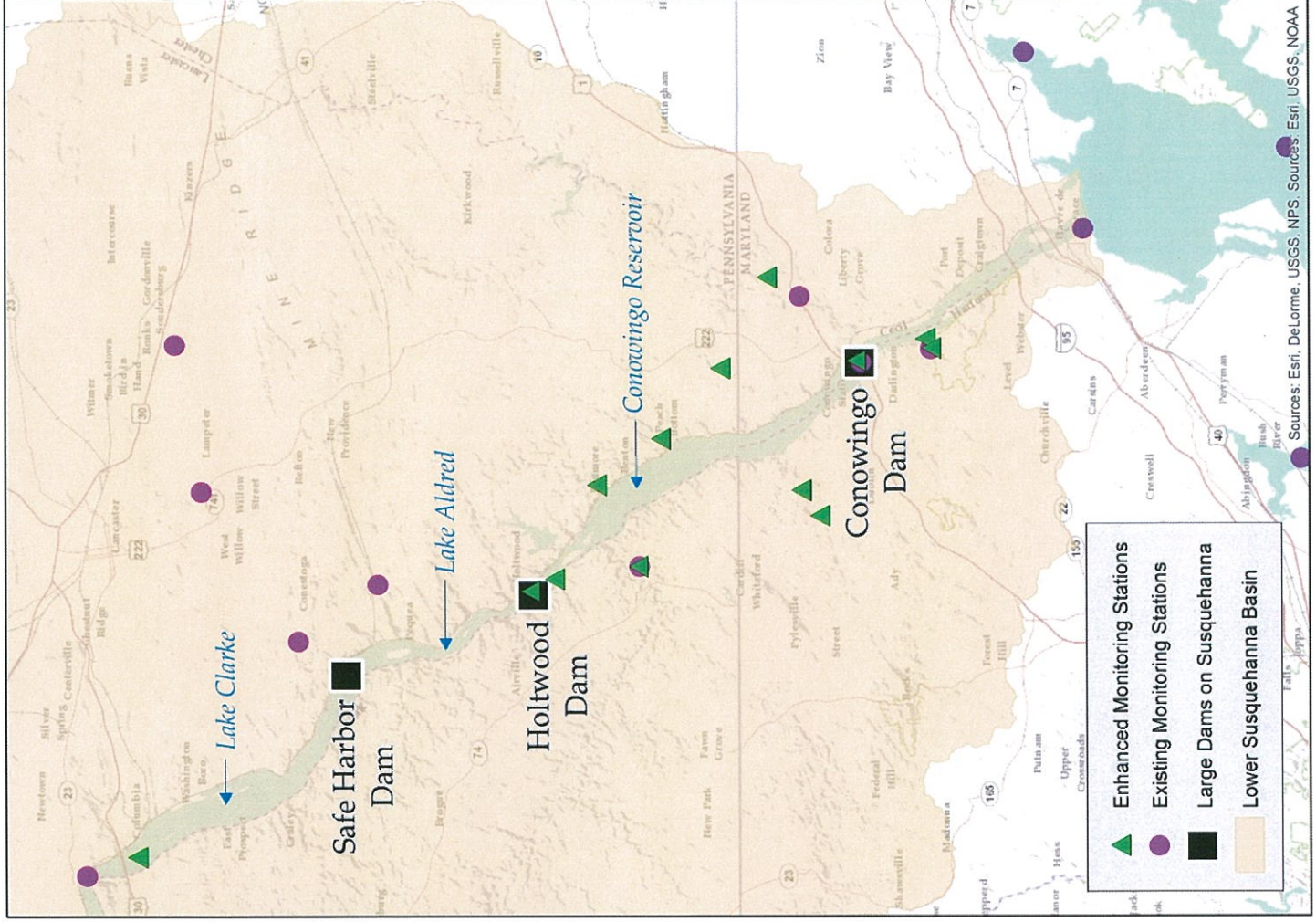
- Dredging = Minimum, Short Lived Water Quality Benefits
- Cost: \$15-270 Million Every Year
- Back to Mid-1990's = \$496 million to \$2.8 billion
- Only 'Keeping Up' With Inflowing Sediment
- Reducing Nutrients at Their Source More Effective



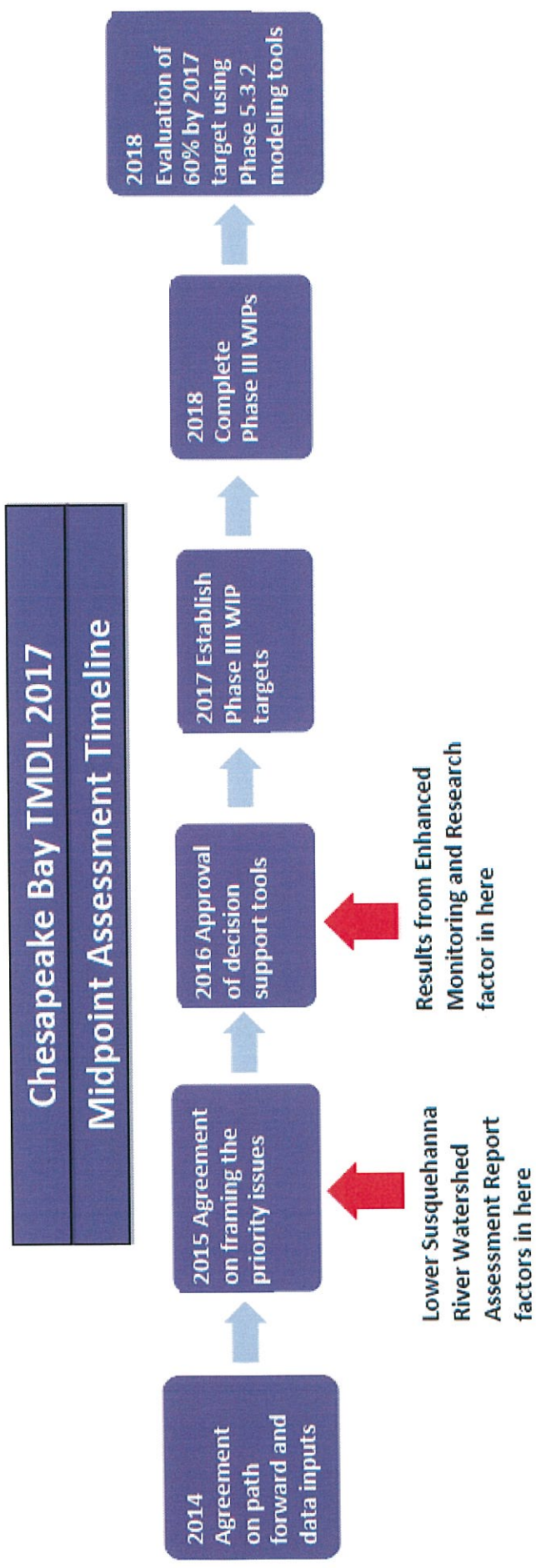
LSRWA Study Recommendations

Enhanced Monitoring and Modeling

- Short-Term
- Long-Term



Integrate LSRWA Findings into Bay Total Maximum Daily Load Midpoint Assessment



LSRWA Study Report Peer Review

- Multiple report peer reviews by Federal and State agencies
- Stakeholder reviews
- Chesapeake Bay Program Scientific Technical Advisory Committee (STAC) provided thorough report review
 - ▶ STAC review is included as Appendix I-7
 - ▶ STAC supported the report conclusions and recommendations

LSRWA Draft Report

- Draft Report Available.
 - Available: <http://bit.ly/LSRWA>
 - Comments were submitted to:
 - Email: LSRWAccomments@usace.army.mil
 - Mail : U.S. Army Corps of Engineers, Baltimore District
- Attn: Anna Compton
P.O. Box 1715
Baltimore, MD 21203
- **Comment Period:** November 13, 2014 – January 9, 2015
 - **Final Report:** Anticipated for Summer 2015



Questions?

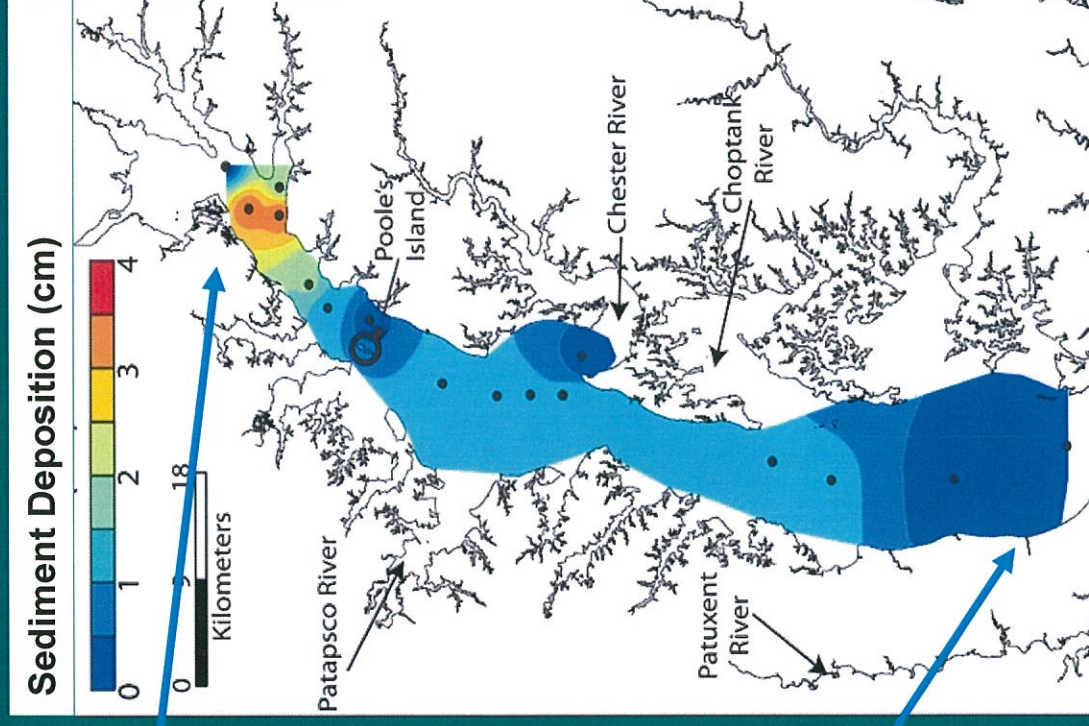
Contact Bruce Michael
Bruce.Michael@Maryland.Gov

Satellite Photo of Tropical Storm Lee



Photo Credit: NASA

What the Data Shows



Graphic courtesy of UMCES