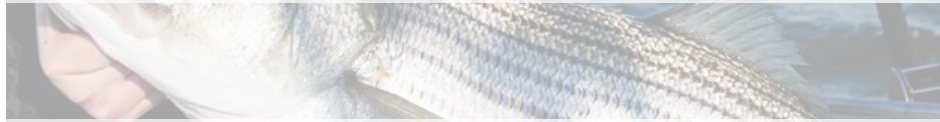
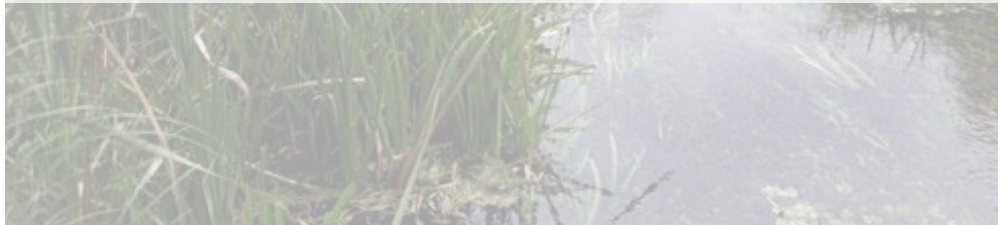



Chesapeake Bay Program Monitoring:
An Update for the Principal's Staff Committee






Lee McDonnell, EPA CBP

Principal's Staff Committee Meeting

April 6, 2023

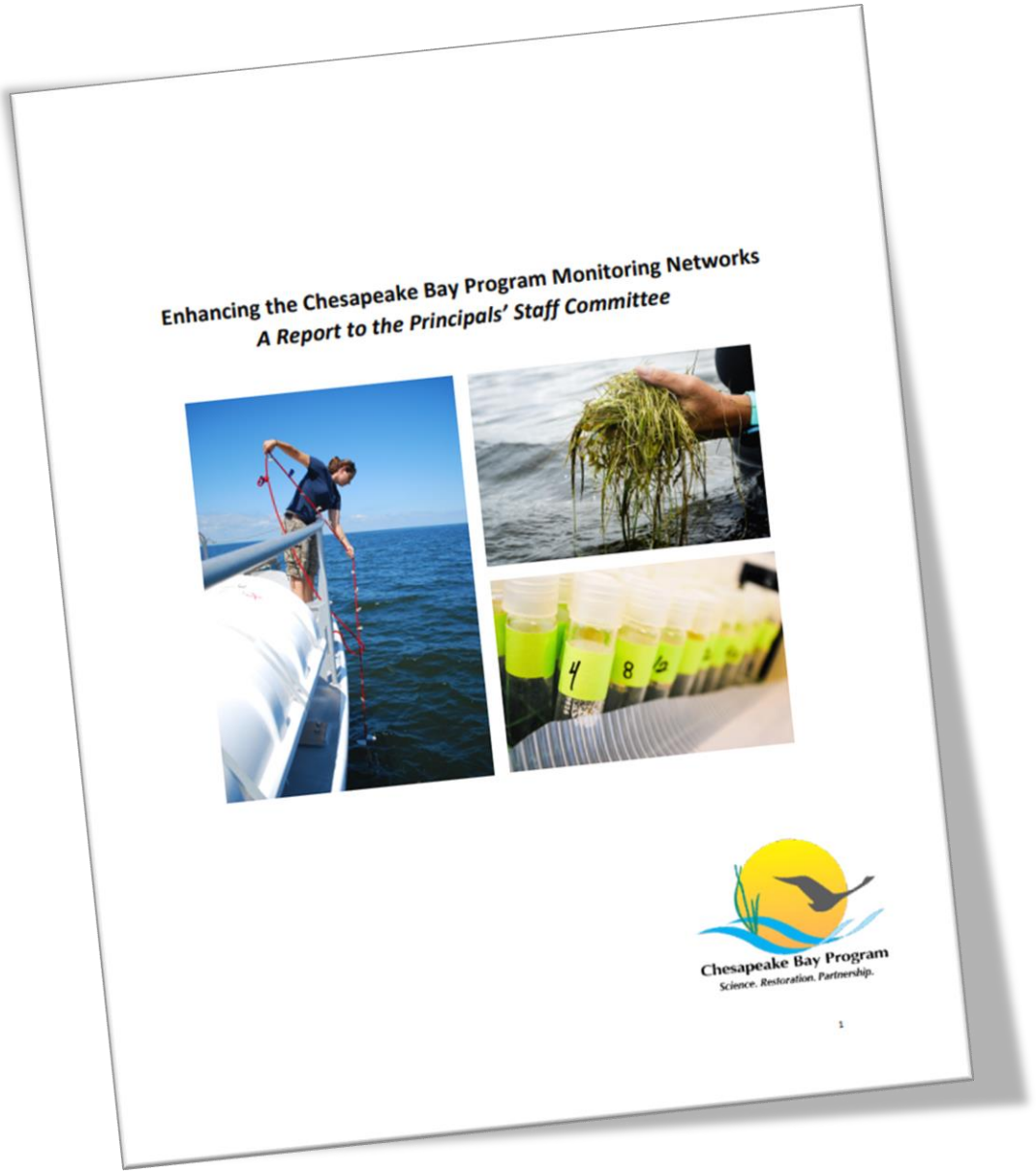
Chesapeake Bay Program
Science. Restoration. Partnership.

Report Key Findings

1. Continued monitoring is critical

2. Monitoring for many Chesapeake Bay Program (CBP) outcomes is insufficient

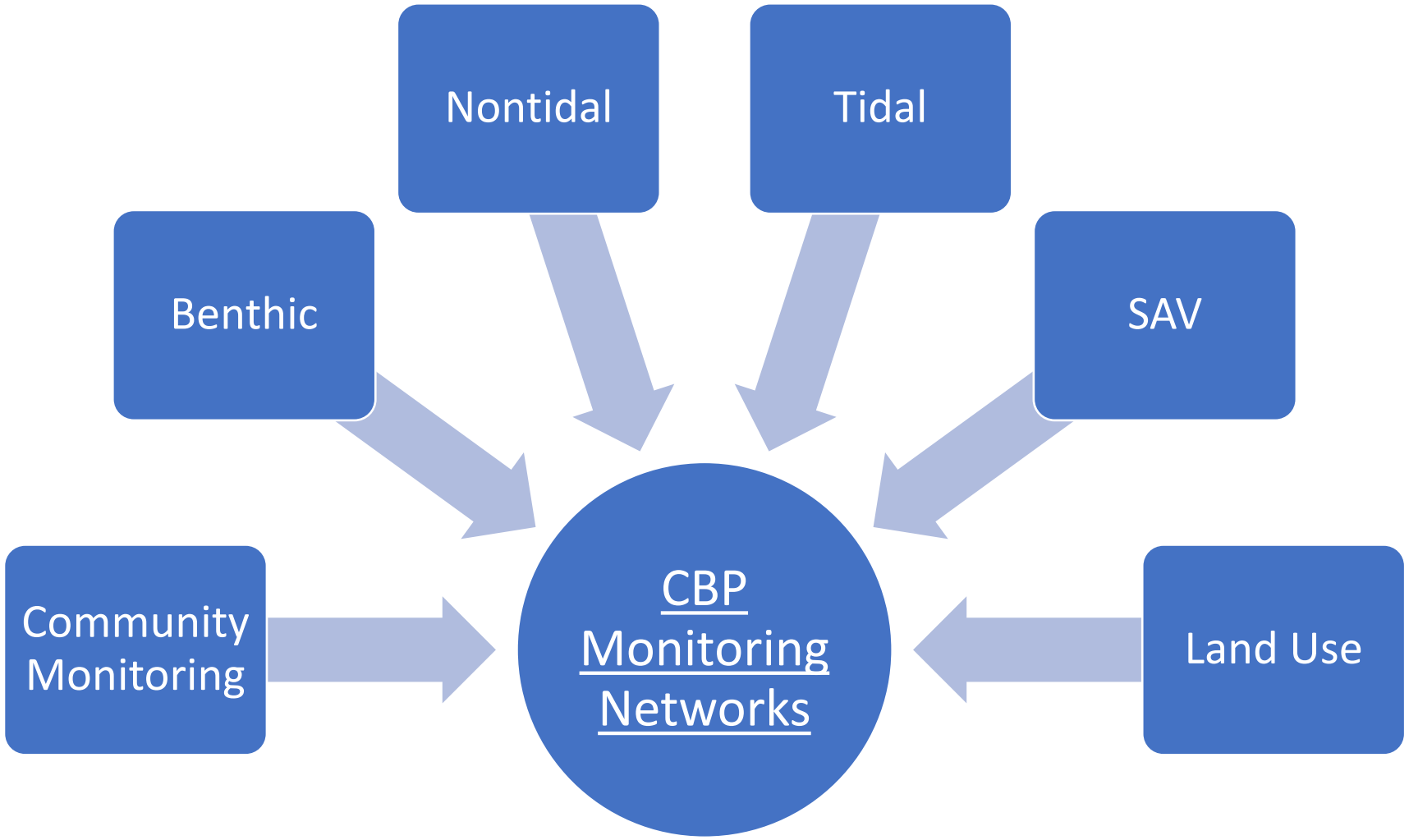
3. Opportunities for funding exist



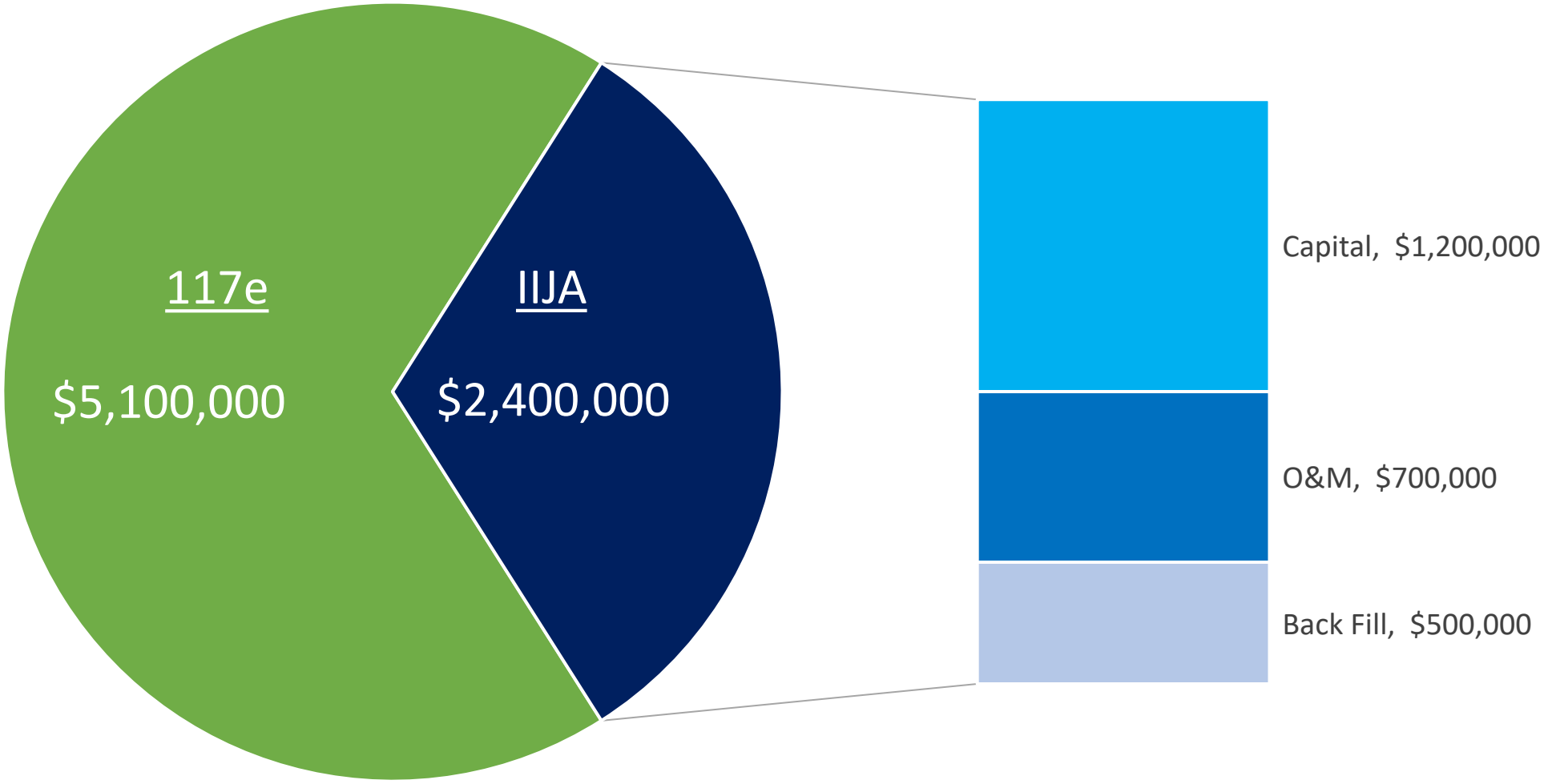
What Does Monitoring Tell Us?

Monitoring tells us how we are doing. Provides up-to-date information on how the watershed and the Bay react to mitigation efforts.

Monitoring provides data required to calibrate tools to make decisions for the future.


Nontidal
Tidal
Benthic
SAV
Community Monitoring
CBP Monitoring Networks
Land Use
Unknown

Monitoring Funds: FY22

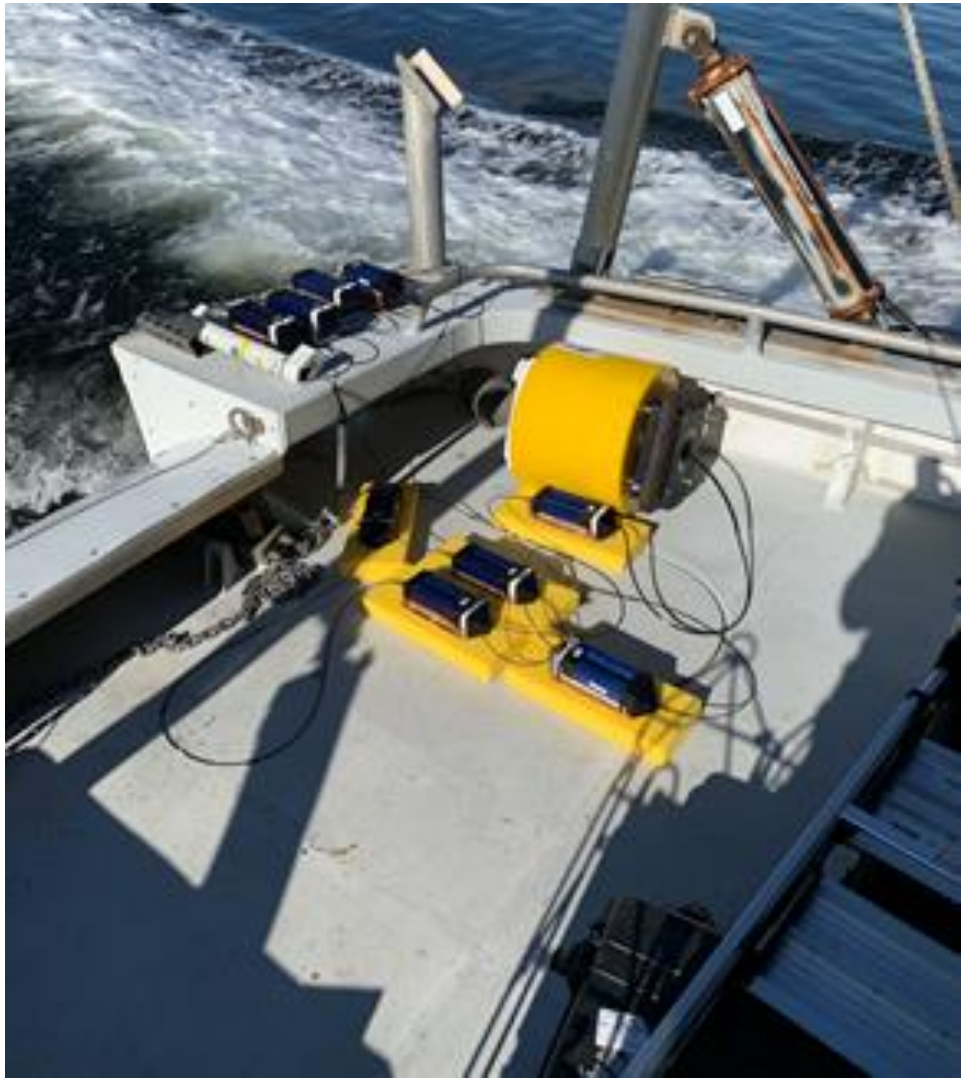


Monitoring Enhancements

- Infrastructure funds serve as an investment to support and enhance CBP monitoring. Additional investment is needed to support sustain CBP monitoring networks.
- Tidal: new tidal stations with continuous vertical monitoring arrays will provide additional high-resolution temporal data which will support water quality attainment assessment.
- Nontidal: the addition of continuous monitoring at River Input Monitoring (RIM) stations will increase knowledge of how different events in 78% of the watershed area affect Bay water quality
- Tidal: the integration of new technology provides cost effective improvements to SAV habitat estimates and ecosystems assessments.
- Nontidal: the addition of continuous monitoring in 5 small, agricultural watersheds.
- Tidal & Nontidal: further support for community (citizen) science monitoring enhances other monitoring networks and fosters stewardship across the CB watershed.

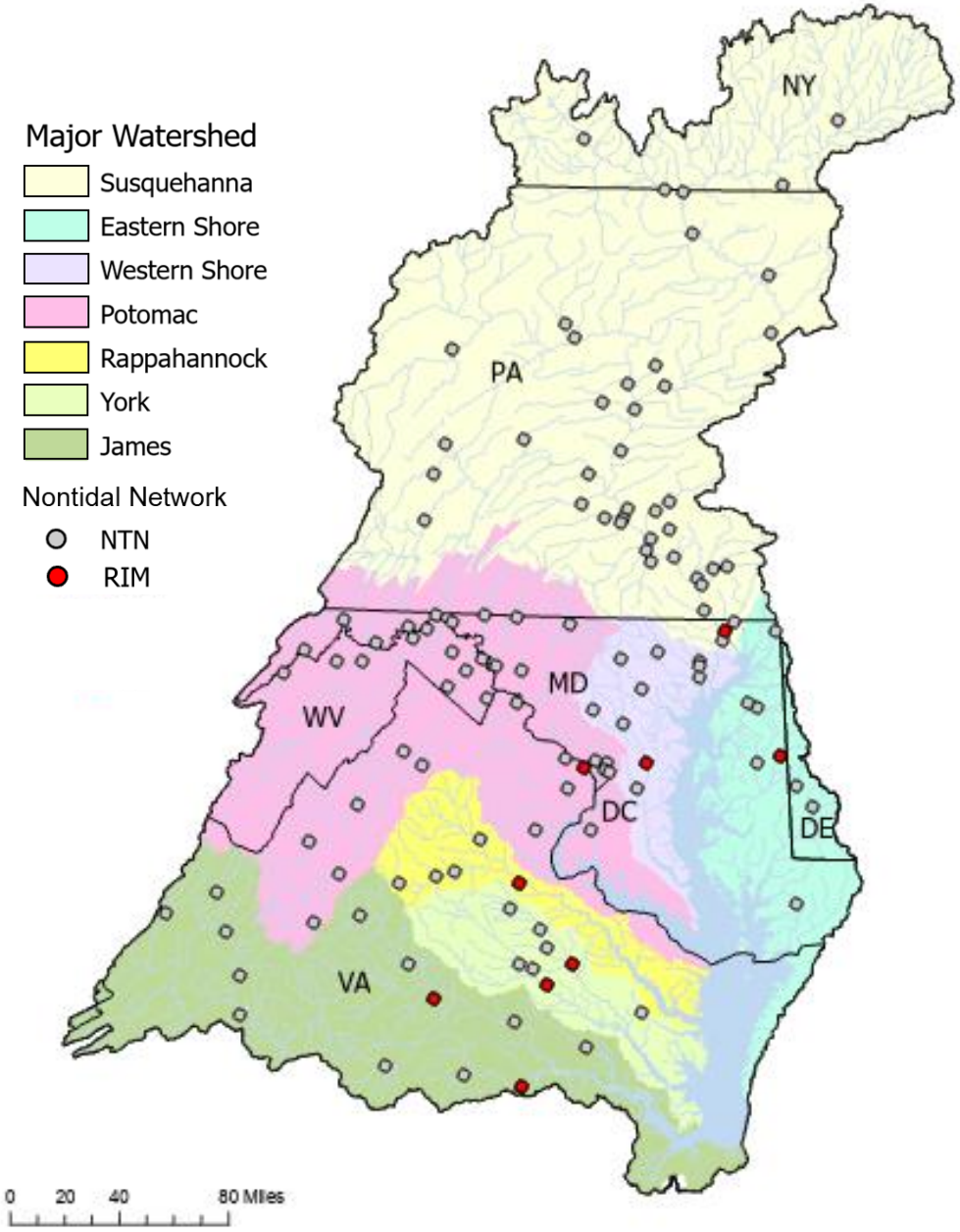
Monitoring Enhancements

- Vertical Profilers
  - New real-time buoy system for hypoxia monitoring in tidal waters
  - Will provide additional high-resolution temporal data which will support water quality attainment assessment
  - Continuous data will be used to assess dissolved oxygen criteria



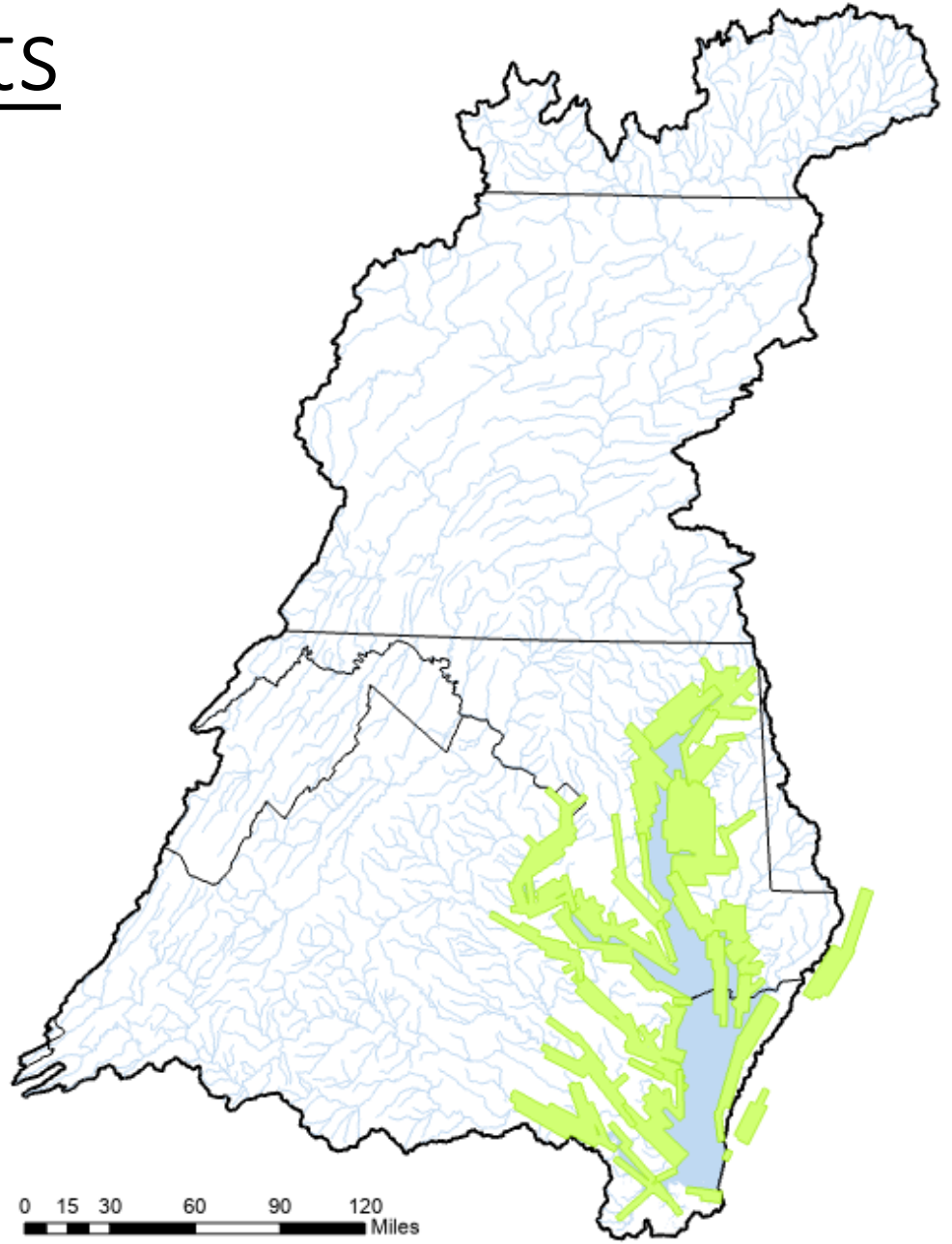
Monitoring Enhancements

- Continuous Monitoring Sensor Packages
  - Continuous monitoring will be added to River Input Monitoring (RIM) sites
    - RIM sites monitor 78% of the watershed area draining into the Bay
    - Part of the Nontidal Network (NTN)
  - Vast increase in knowledge of how different events affect Bay water quality



Monitoring Enhancements

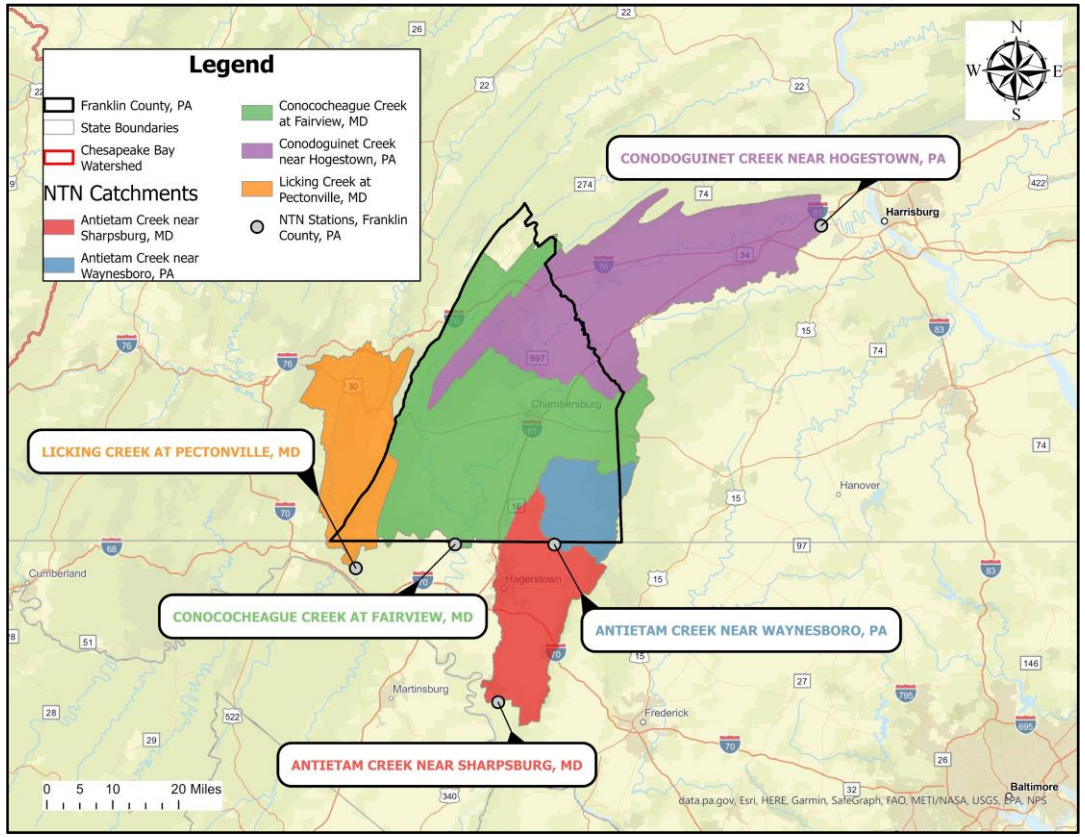
- Submerged Aquatic Vegetation (SAV) Network
- 181 Flightlines → 19 Polygons
- Using satellite data and artificial intelligence (AI) to do this analysis



VIMS

Local Water Quality Example

- 5 stations monitor water that directly flows from Franklin County watersheds



Long Term (1985-2020); 2 Stations

TN: Improving at Conococheague & Sharpsburg

TP: Improving at Conococheague

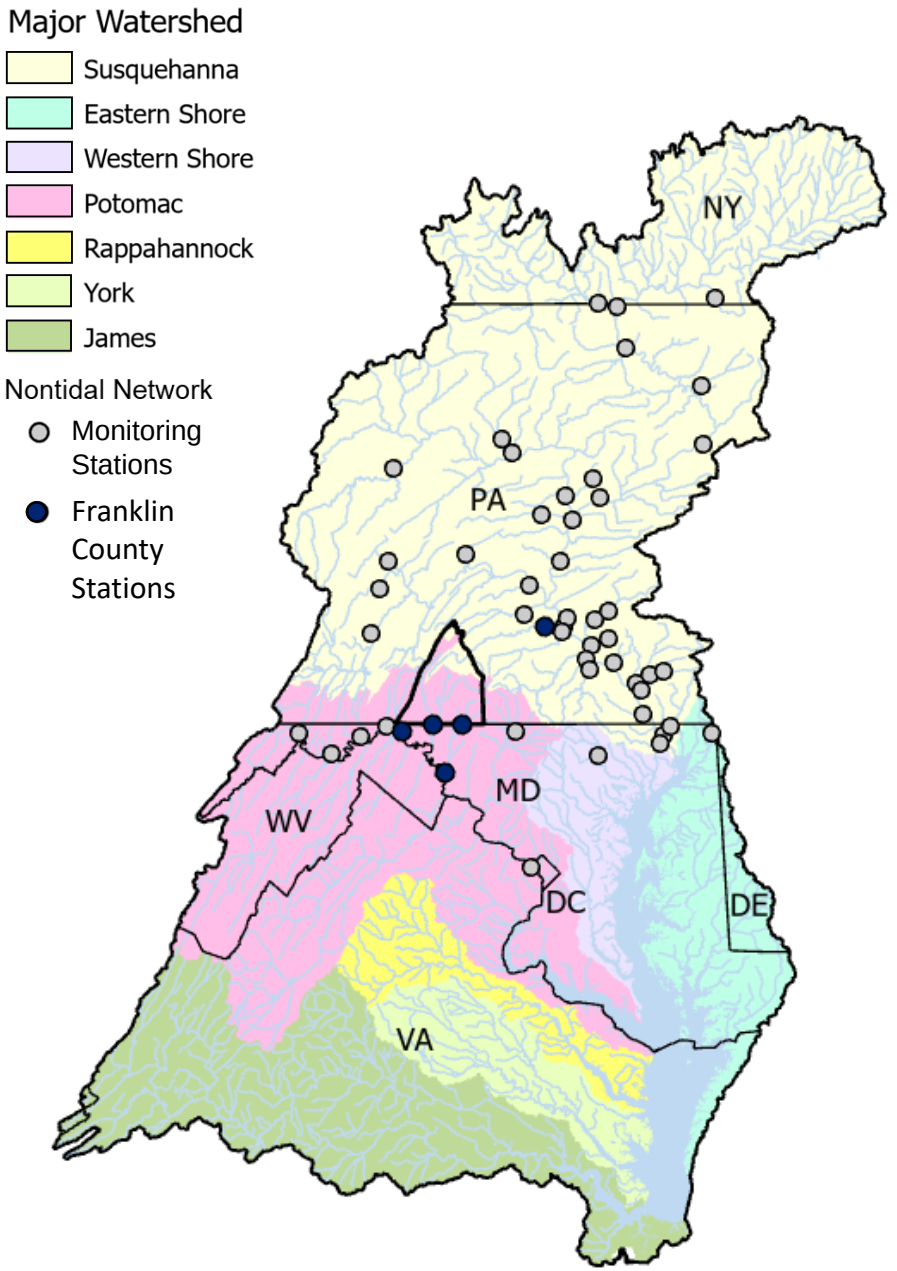
SS: Degrading at Conococheague

Short Term (2011-2020); 5 Stations

TN: 60% Improving, 40% Degrading

TP: 60% Improving, 20% Degrading, 20% No Trend

SS: 40% Improving, 20% Degrading, 40% No Trend

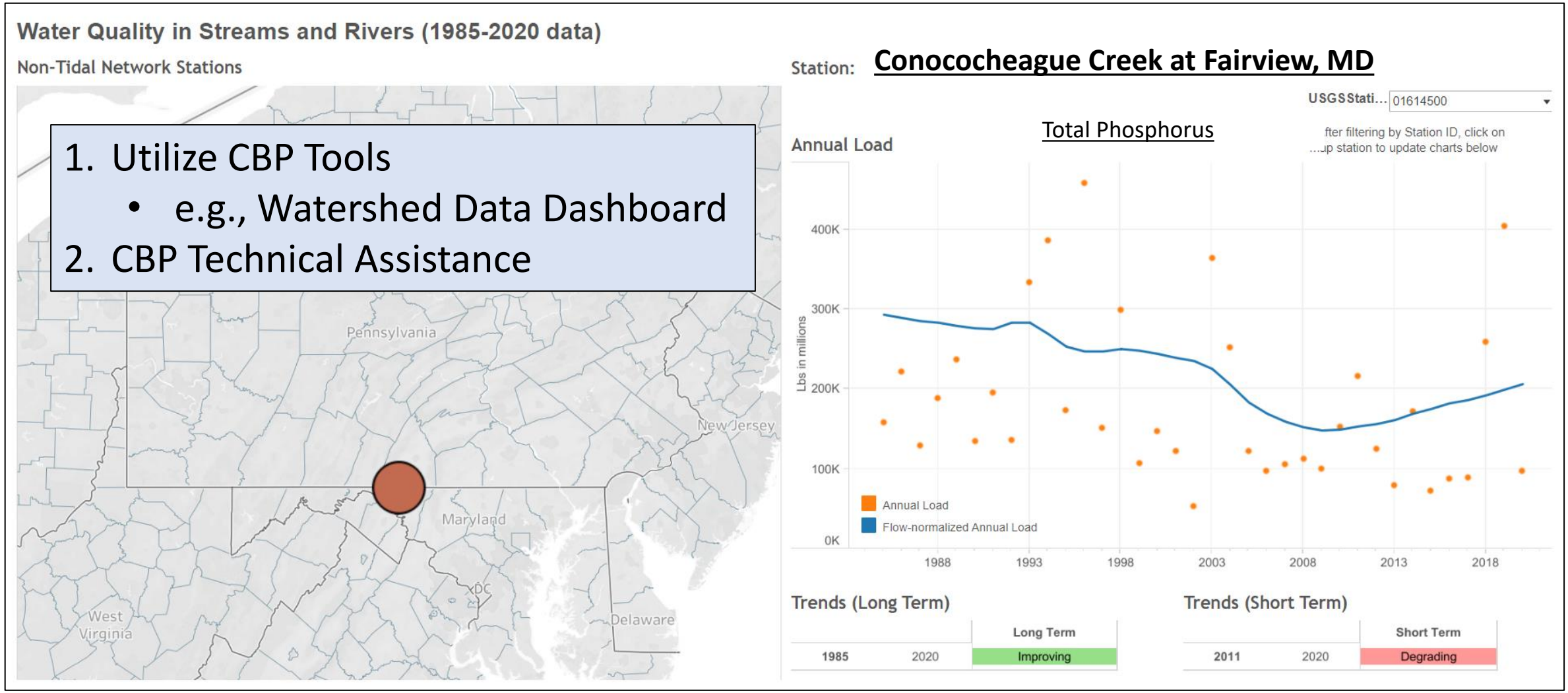


Comparing Local Trends to Regional Trends

- Long term water quality trends for Franklin County follow those for Pennsylvania waters
  - PA Waters = 52/123 Nontidal Network Stations
  - Total nitrogen and total phosphorus trends show improvement at most sites
  - However, there are fewer sites with long term trends (for now)

- Short term water quality trends show more improvements for Franklin County waters, relative to Pennsylvania waters
  - However, short term water quality trends show mixed success for total nitrogen, total phosphorus, and suspended sediment

How Can Jurisdictions Get More Information?

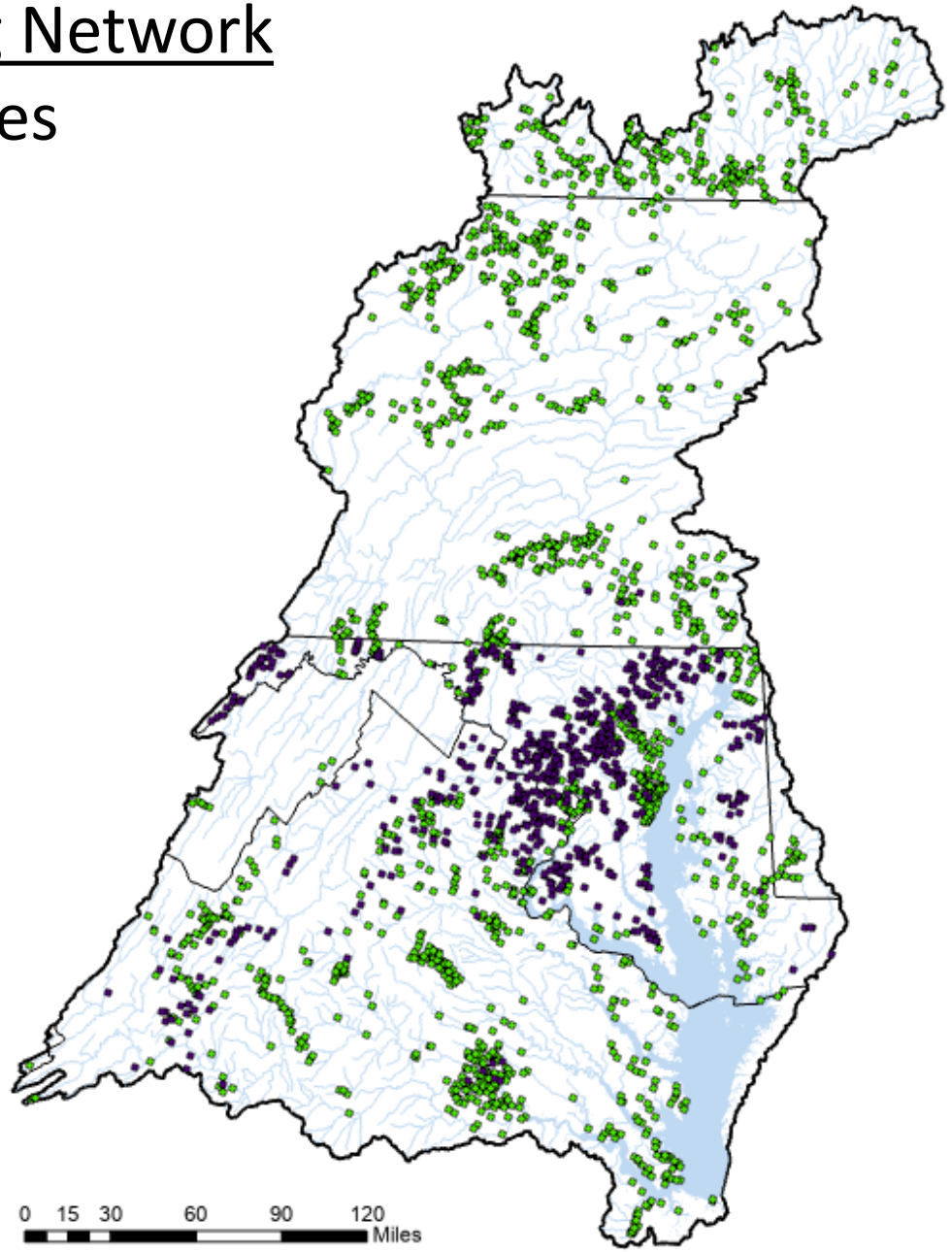


Additional Information About CBP Monitoring Networks

Community Monitoring Network

2,062 Water Quality Sites

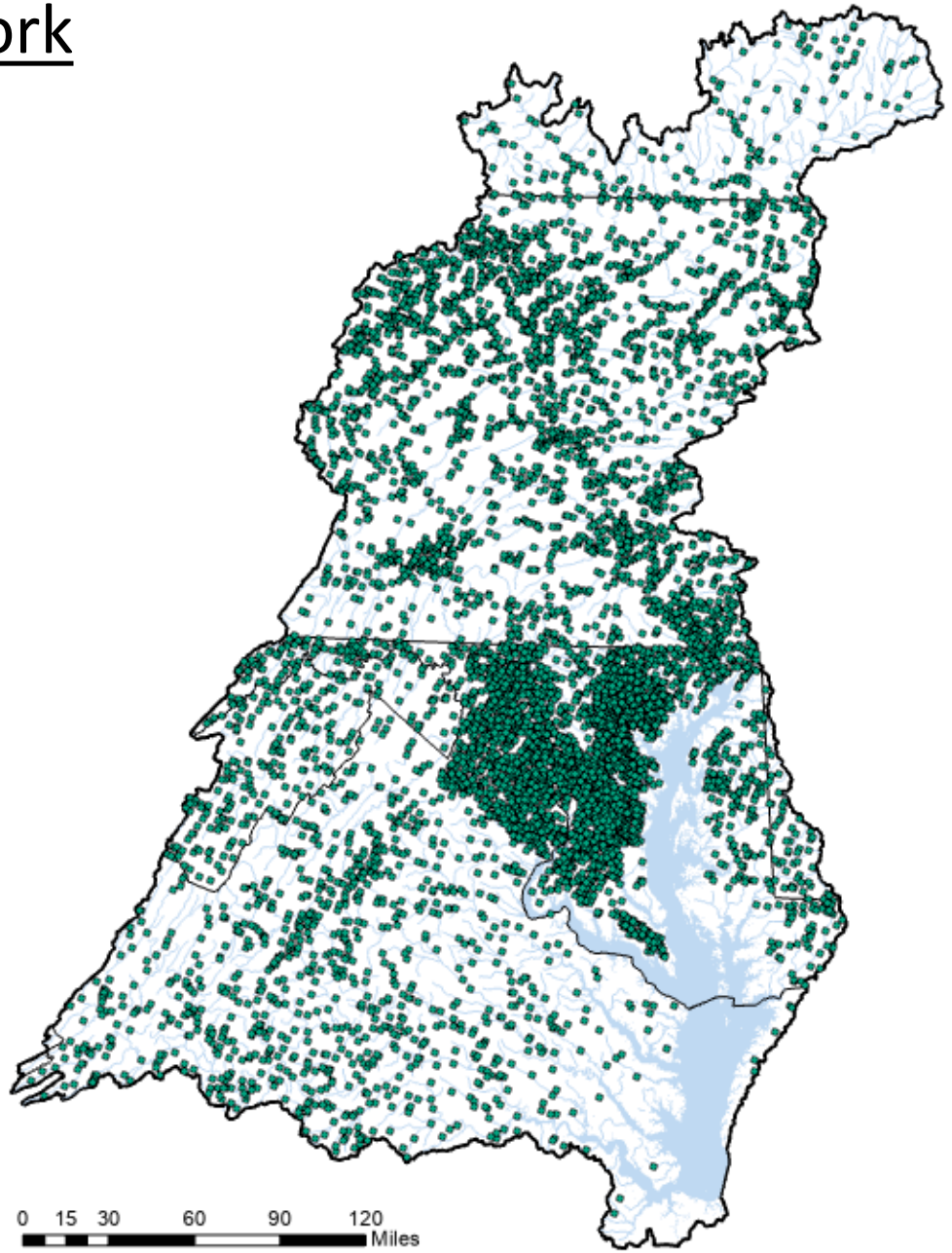
797 Benthic Sites



CMC

Nontidal Benthic Network

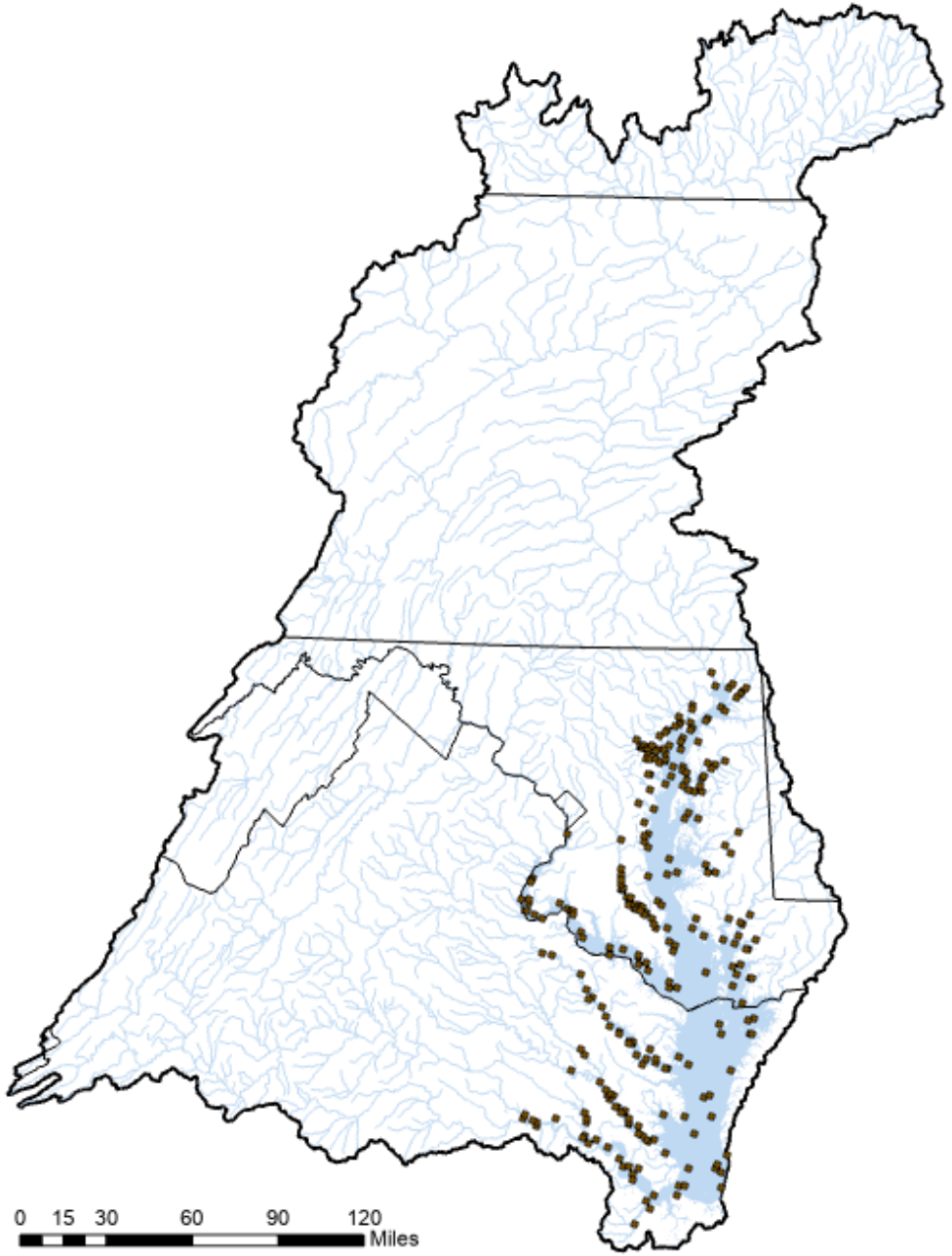
2009 - 2019



CBP

Tidal Benthic Network

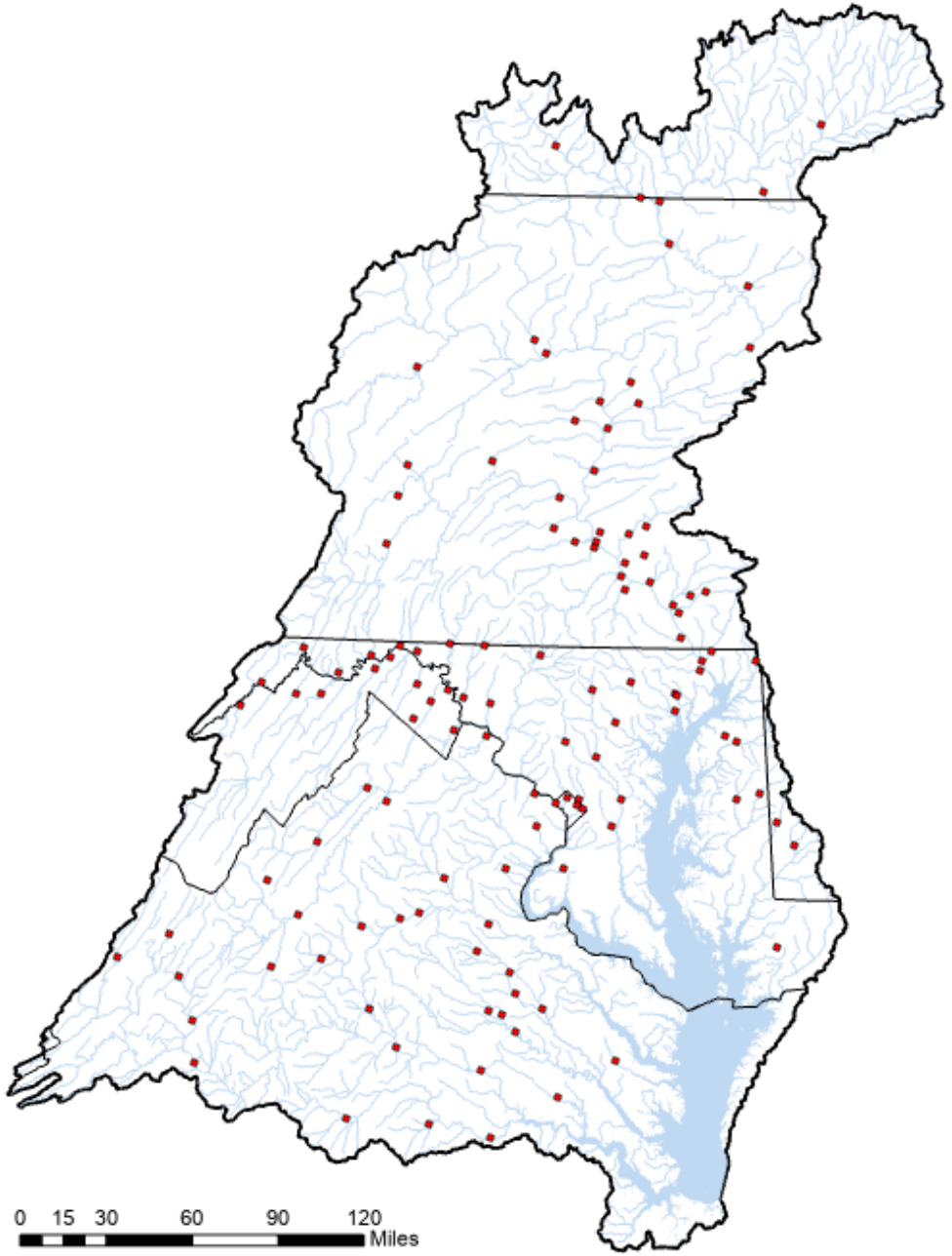
250 Sites



CBP

Nontidal Network

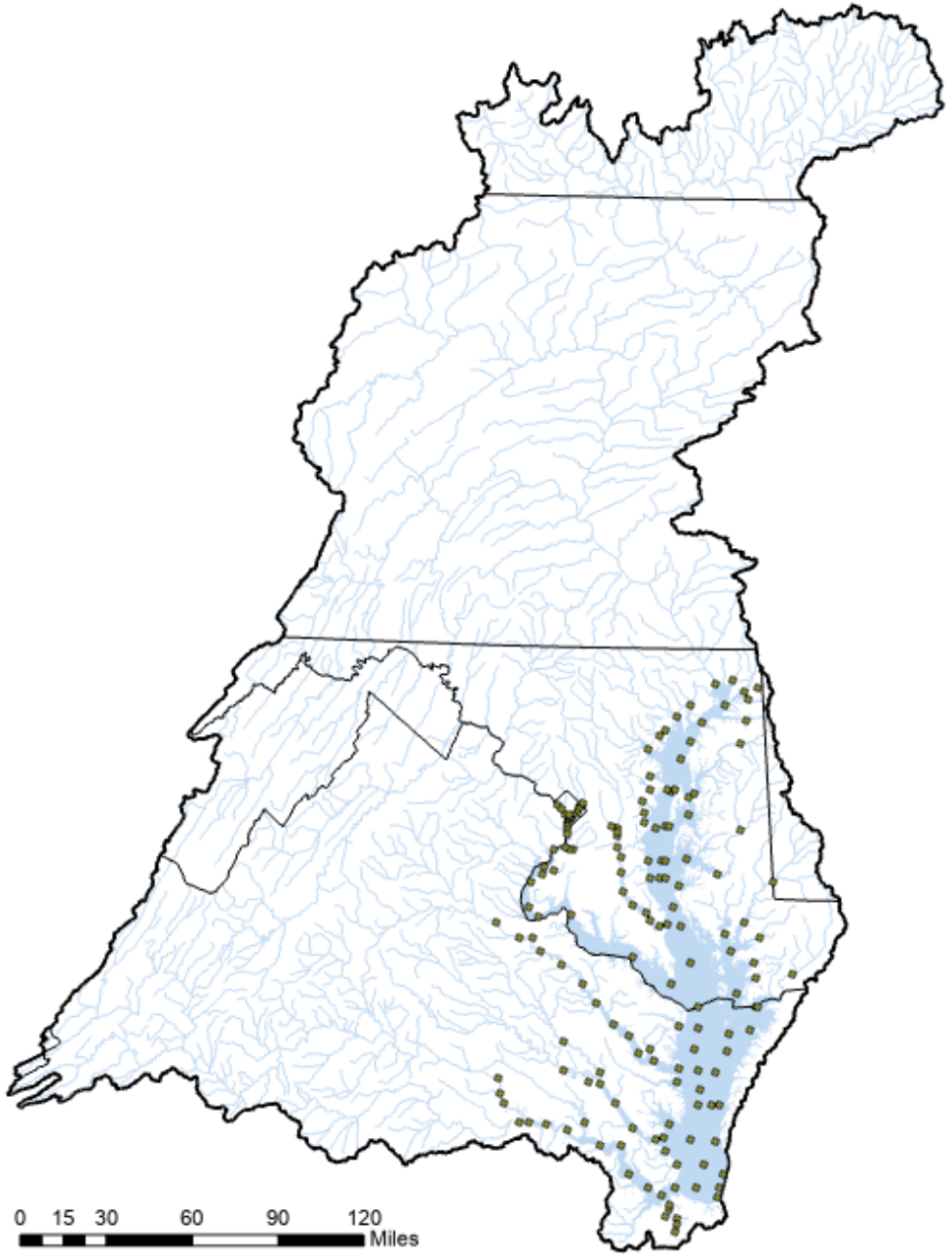
123 stations



USGS

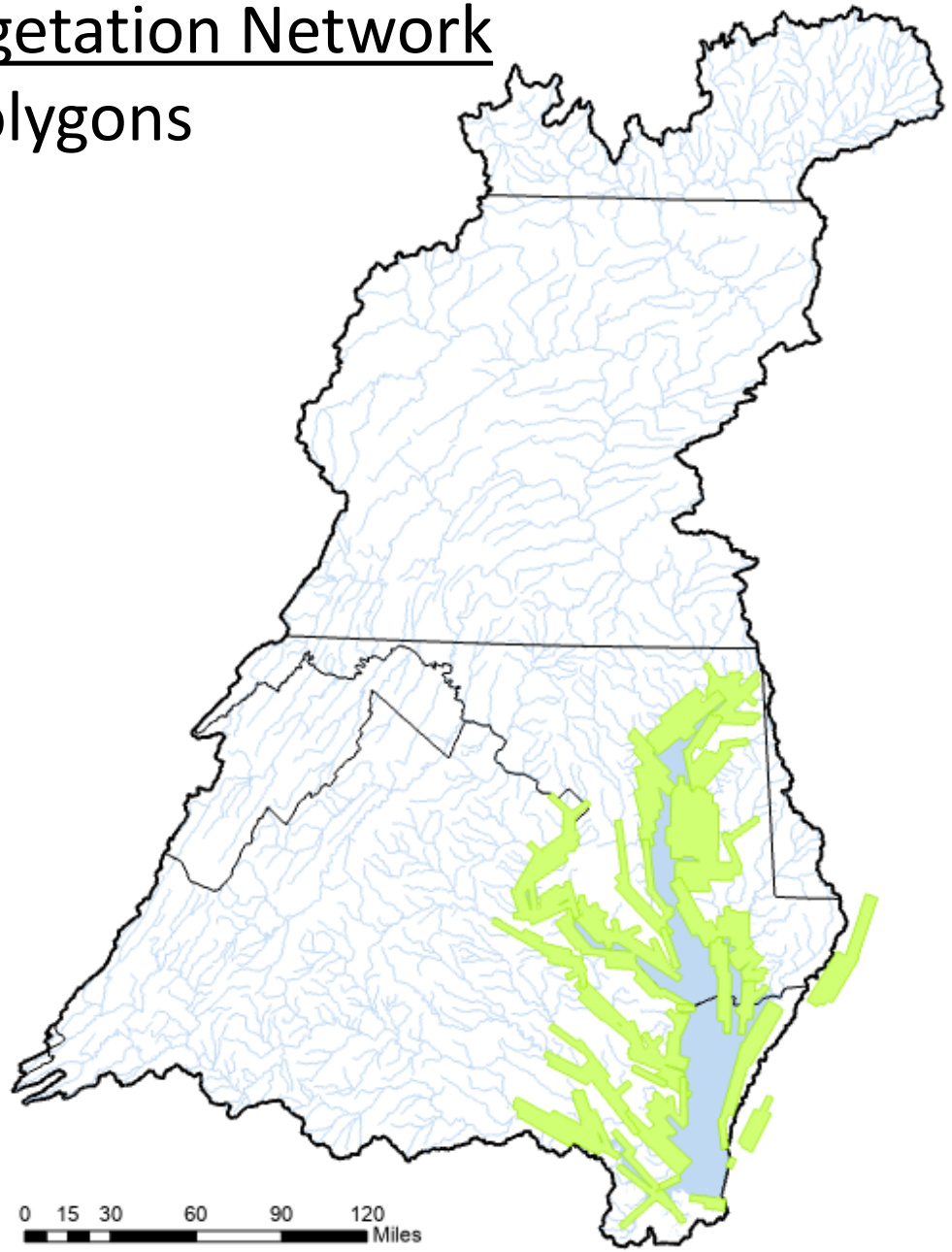
Tidal Network

156 Stations



Submerged Aquatic Vegetation Network

181 Flightlines → 19 Polygons

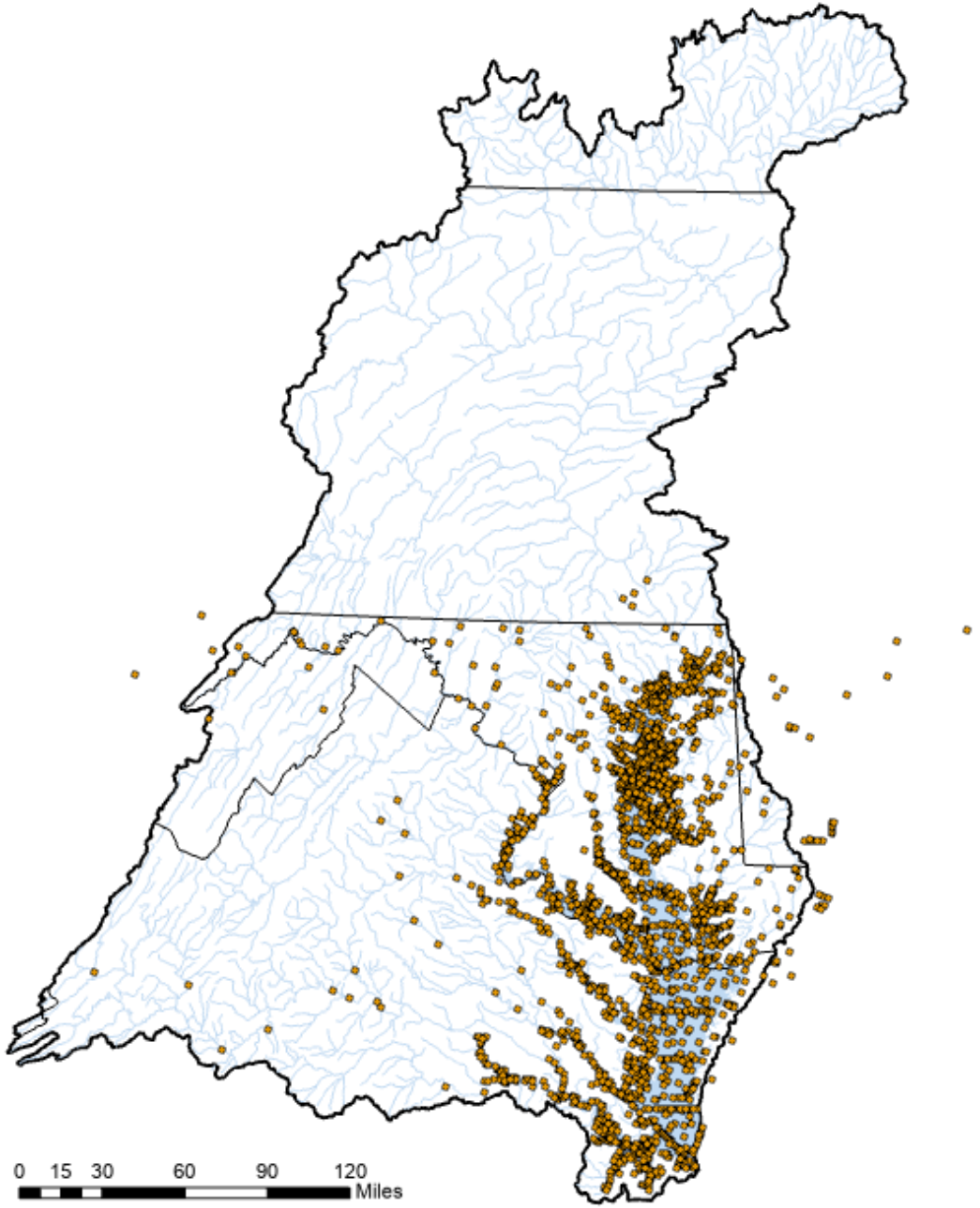


VIMS

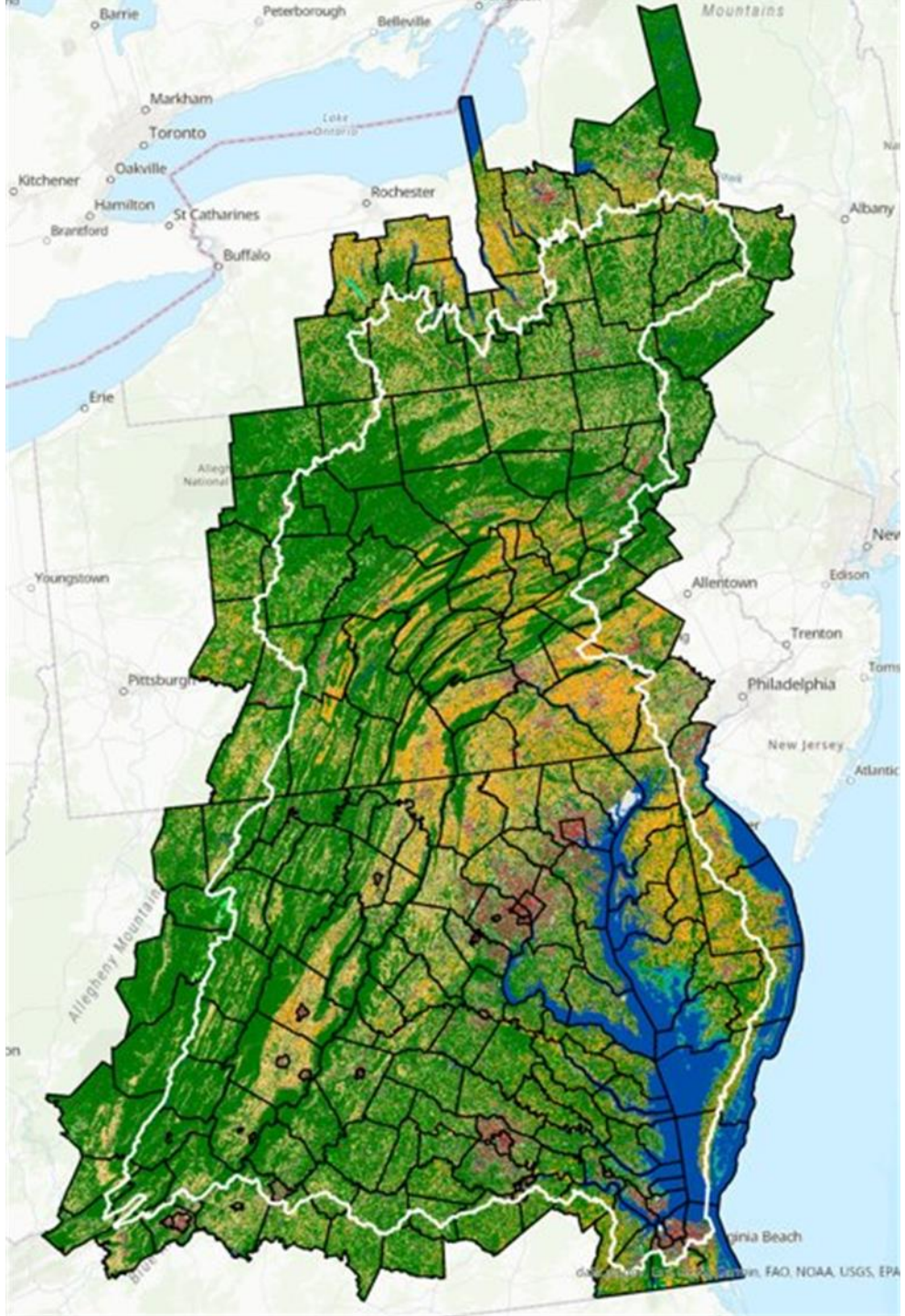
Toxics Network

3,000 Sites Sampled

1973-2001



Land Use/Land Cover



CBP