

DRBC Monitoring Programs

Commission Meeting
December 8, 2011

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Delaware River Basin Commission

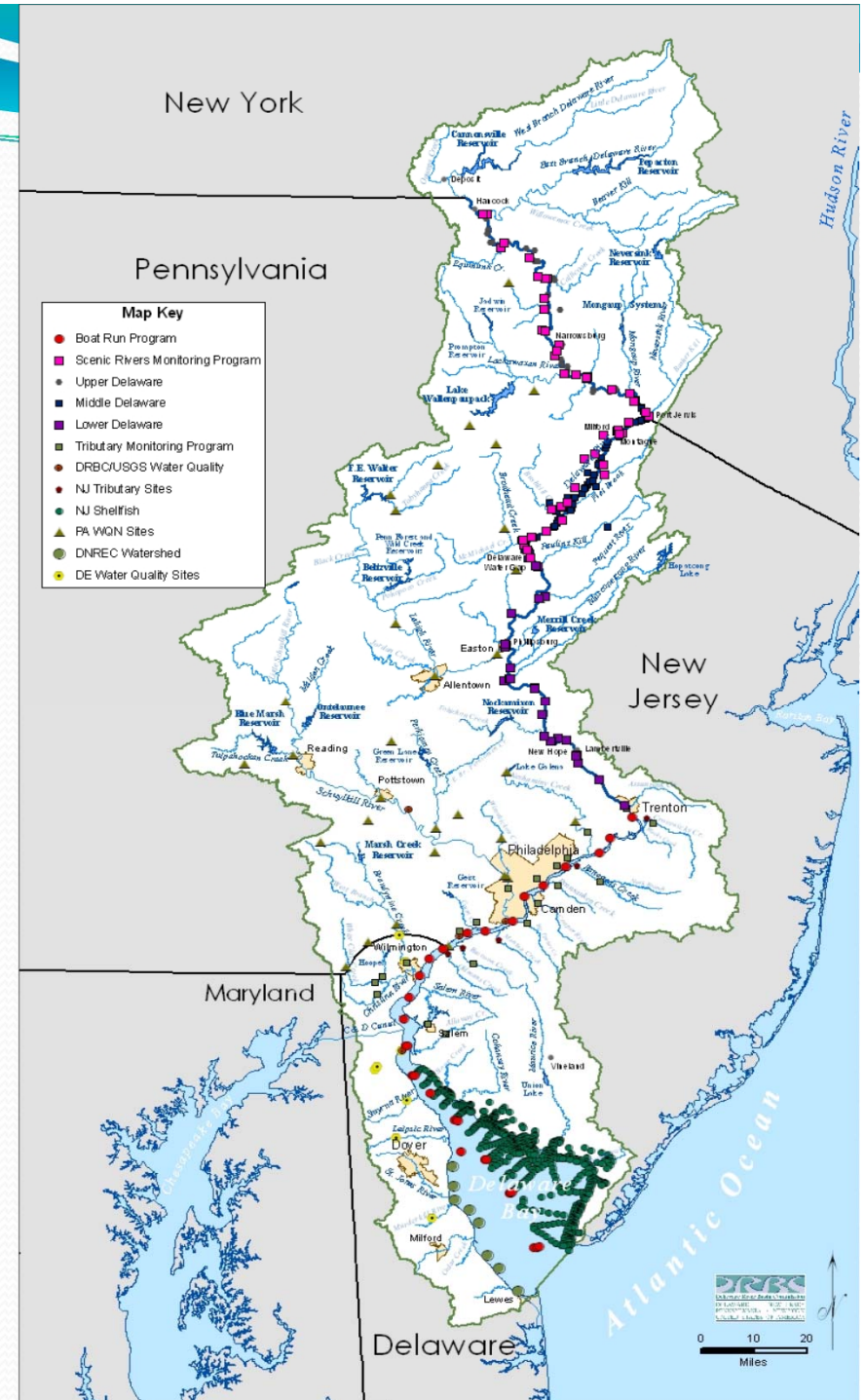


Monitoring Objectives

- ❑ Monitoring is conducted to achieve two main objectives:
 - ✓ To support management programs of the Commission including:
 - Compliance with water quality standards,
 - Compliance with Existing Water Quality (EWQ) in Special Protection Waters,
 - To develop TMDLs and assimilative capacity determinations,
 - To establish and calibrate water quality models, and
 - To track the salt front for reservoir operations.
 - ✓ To evaluate emerging threats to the water resources of the Basin.
- ❑ Monitoring is focused on the mainstem.

DRBC Monitoring Programs

1. Estuary Boat Run Program
2. Upper and Middle Delaware Scenic Rivers Monitoring Program
3. Lower Delaware SPW Monitoring
4. Special Studies
 - Fish Tissue Monitoring
 - Whole Effluent Toxicity
 - TMDL Monitoring Programs
 - PCBs
 - VOCs
 - Emerging Contaminants
5. USGS Flow and WQ Gages supported by DRBC



Monitoring for Management

- ❑ Initially focused on water quality-limited areas in the Delaware Estuary.
- ❑ Boat Run Survey
 - ✓ Initiated in 1968 as part of efforts to address low dissolved oxygen levels. Address a wide-range of conventional and toxic pollutants. ▶
- ❑ Special Protection Waters
 - ✓ Initially focused on Upper and Middle Delaware portions in cooperation with NPS in 1990s.
 - ✓ Extended to Lower Delaware in 2000s.

Boat Run Monitoring Program

Where:

- Delaware Estuary (mainstem);

Parameter Groups:

- Nutrients, DO and other conventionals, solids, metals, VOCs, bacteria, and chlorophyll a

How Often:

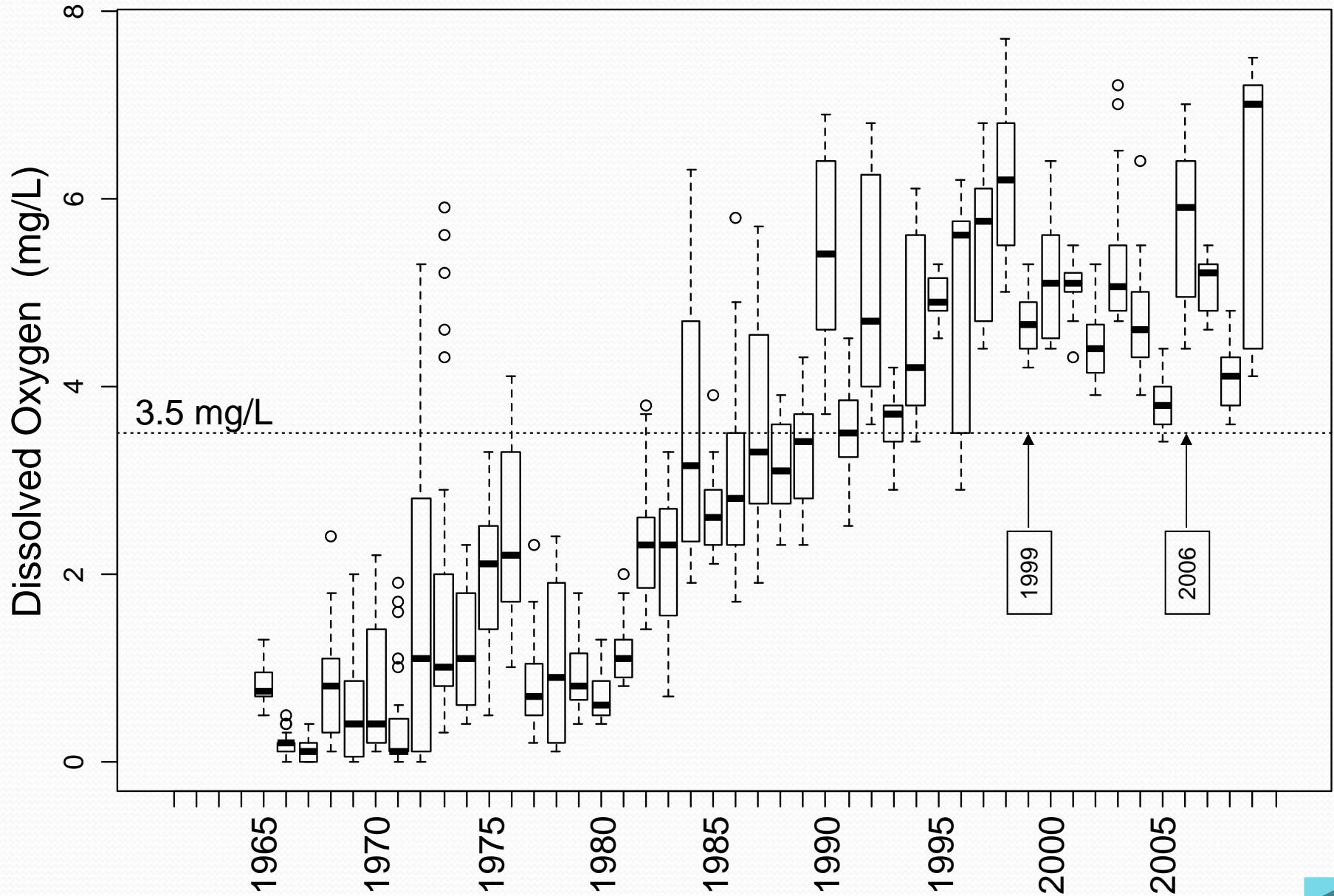
- 22 sites, currently 8 times per year, ongoing

Purpose:

- Assessment of compliance with water quality criteria.
- Special studies for dockets



Ben Franklin Bridge D.O. - July Data



Upper and Middle Delaware Scenic Rivers Monitoring Program

Where:

- The upper and middle non-tidal Delaware River, East and West Branches, and major tributaries.

Parameter Groups:

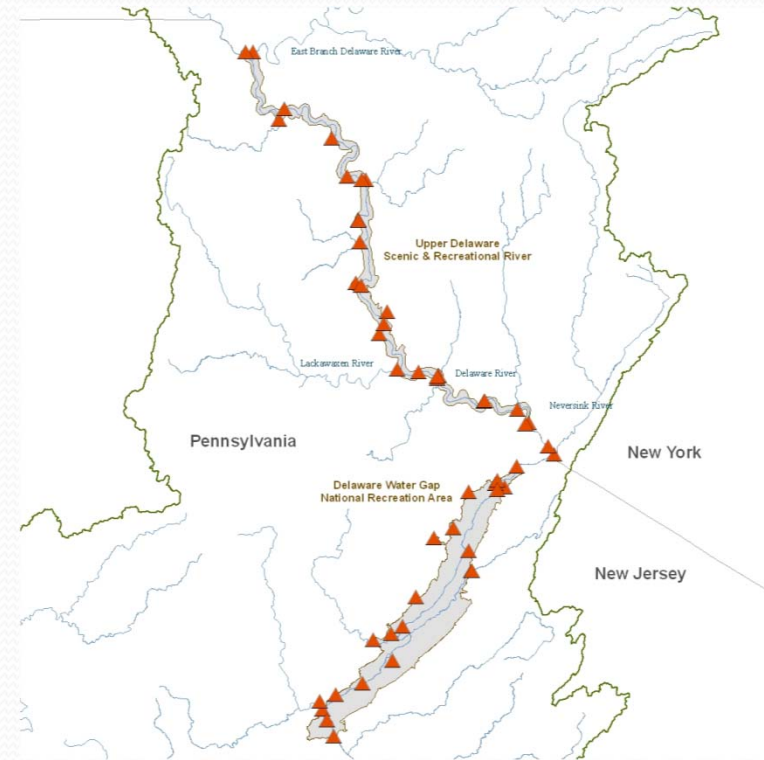
- Nutrients, DO and other conventionals, solids, bacteria, macroinvertebrates, periphyton, and flow.

How Often:

- 33 sites, 10 times per year, May through Sept for 5 years (2005 - 2010).

Purpose:

- To allow revised definitions of existing water quality (EWQ) based on control points, rather than reach wide averages; and
- Assessment of compliance with water quality criteria.



Lower Delaware SPW Monitoring

Where:

- The lower non-tidal Delaware River and major tributaries.

Parameter Groups:

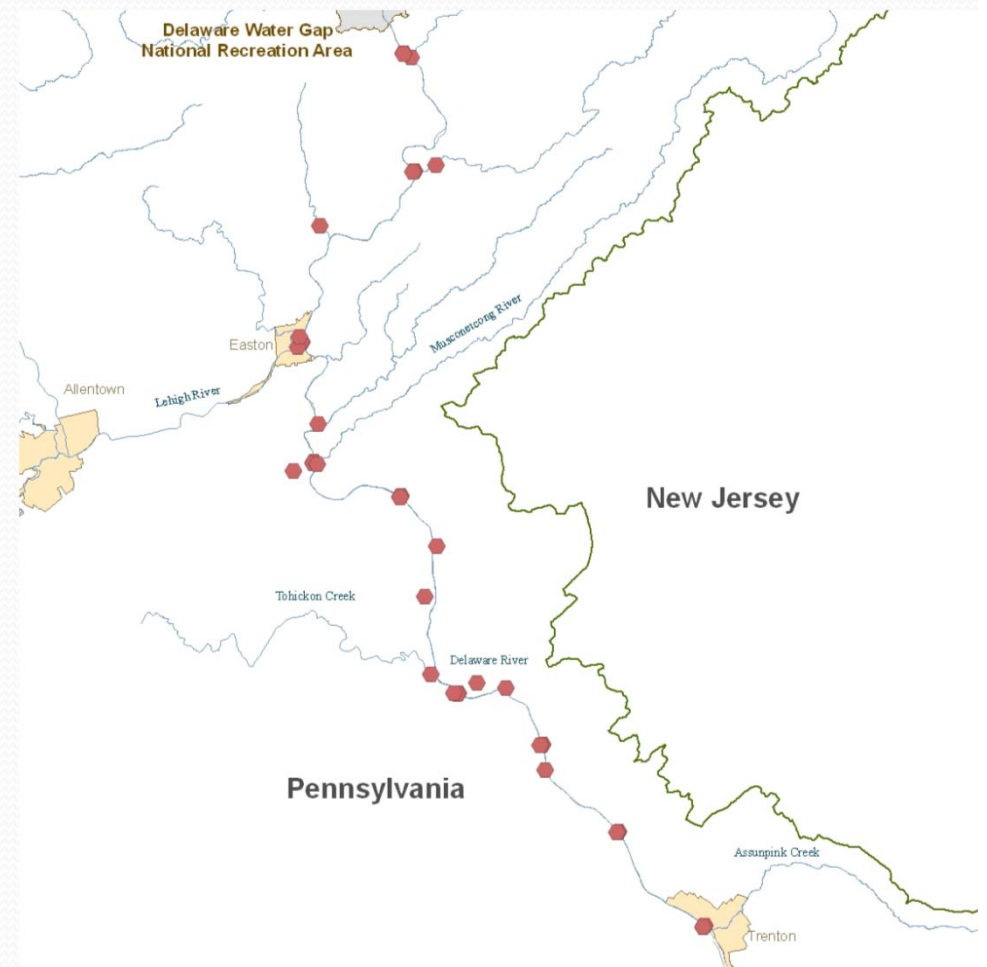
- Nutrients, DO and other conventionals, solids, bacteria, macroinvertebrates, periphyton, and flow.

How Often:

- 26 sites, 10 times per year, May through Sept (2009 - 2011).

Purpose:

- To assess whether existing water quality has been maintained in the lower Delaware since it was defined (2000-2004); and
- Assessment of compliance with water quality criteria.



Special Monitoring Programs

Where:

- Tidal and non-tidal portions of Delaware River: ambient water, airshed, surface sediment, sediment cores, fish tissue, macroinvertebrate and algal communities.

Parameter Groups:

- Chronic toxicity, Dioxin/Furans, PBDEs, PCBs, Emerging Contaminants, etc.

How Often:

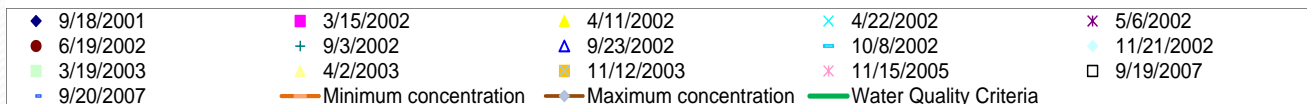
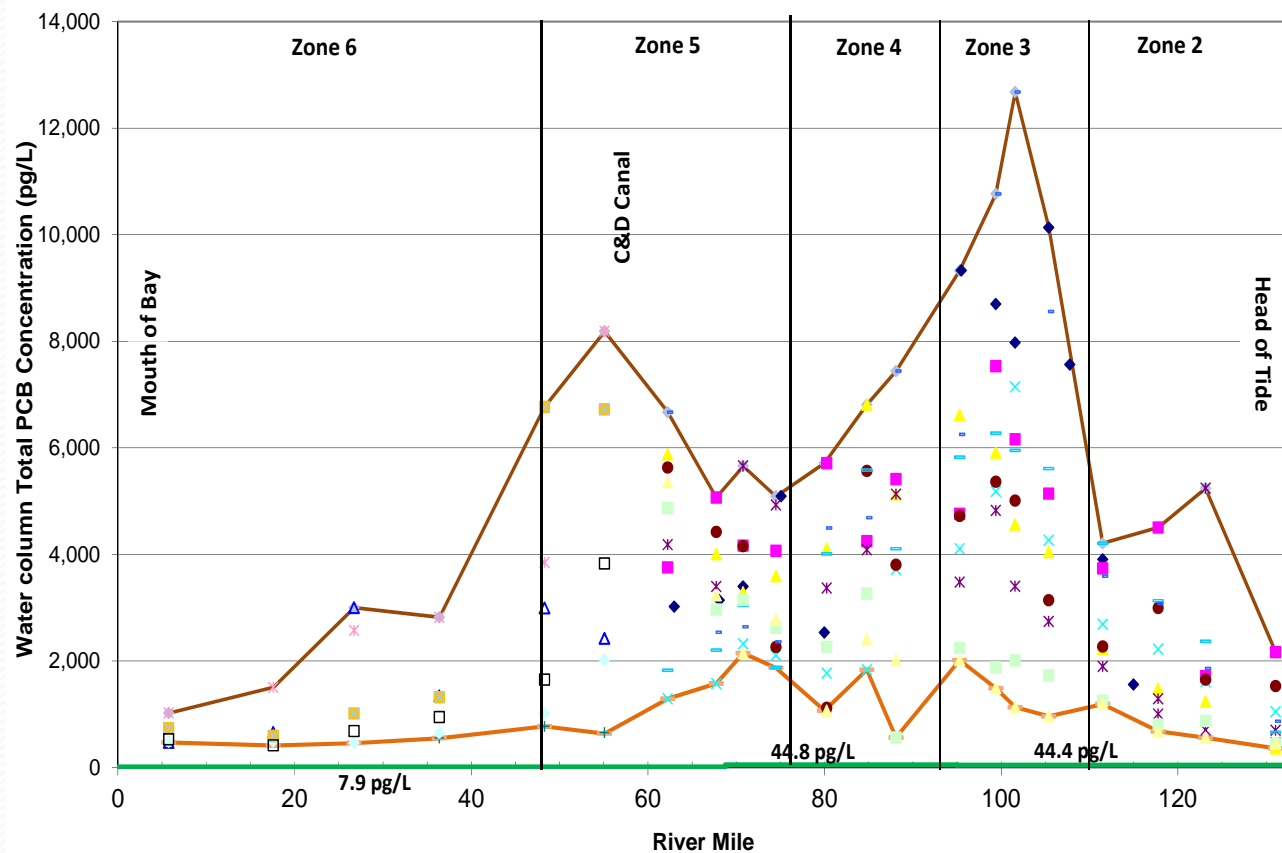
- Special Study

Purpose:

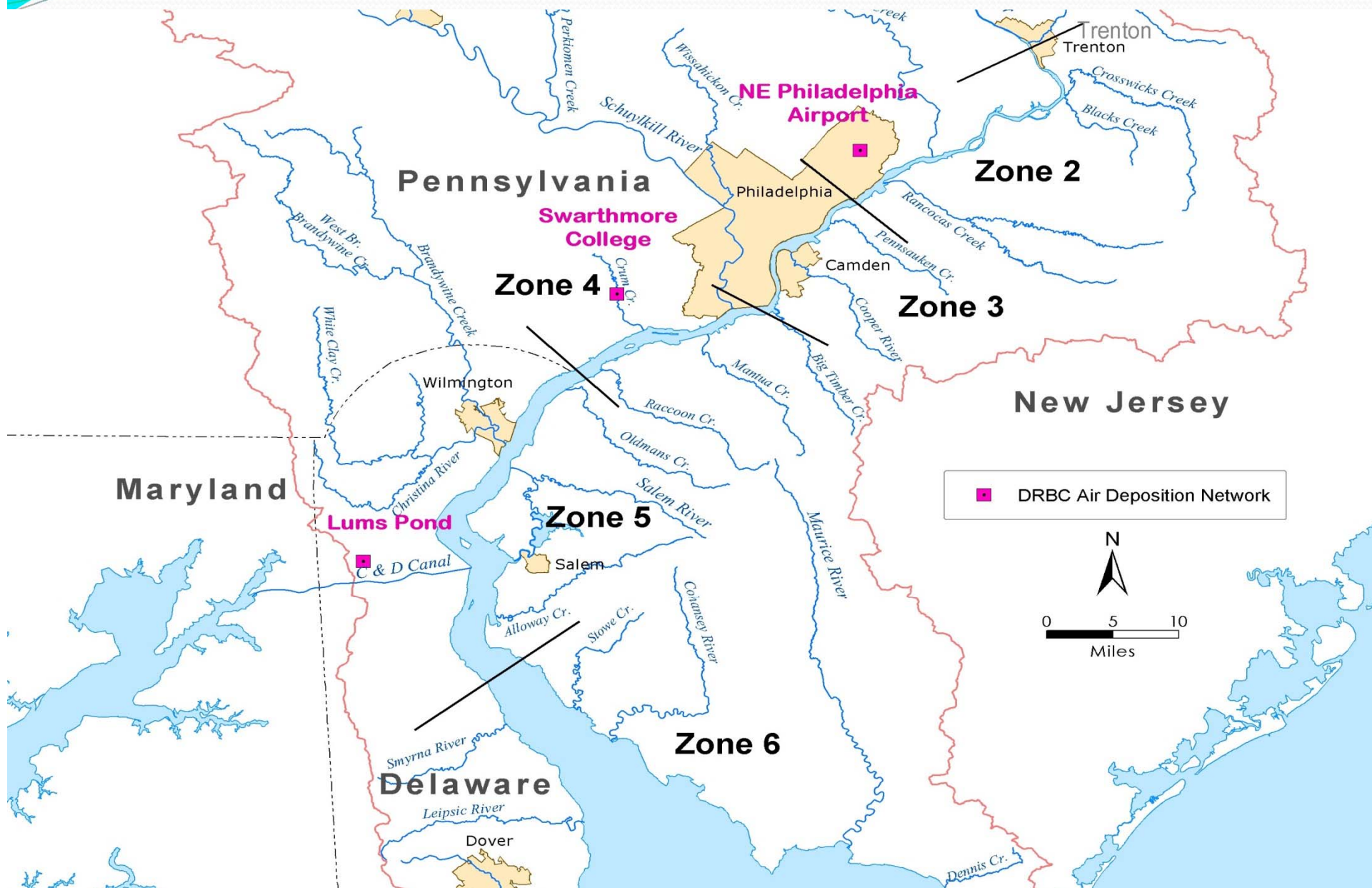
- TMDL development
- Model development and calibration
- Spatial and temporal variability of selected contaminants



Ambient Water Sampling for PCBs Delaware Estuary (2001 – 2007)

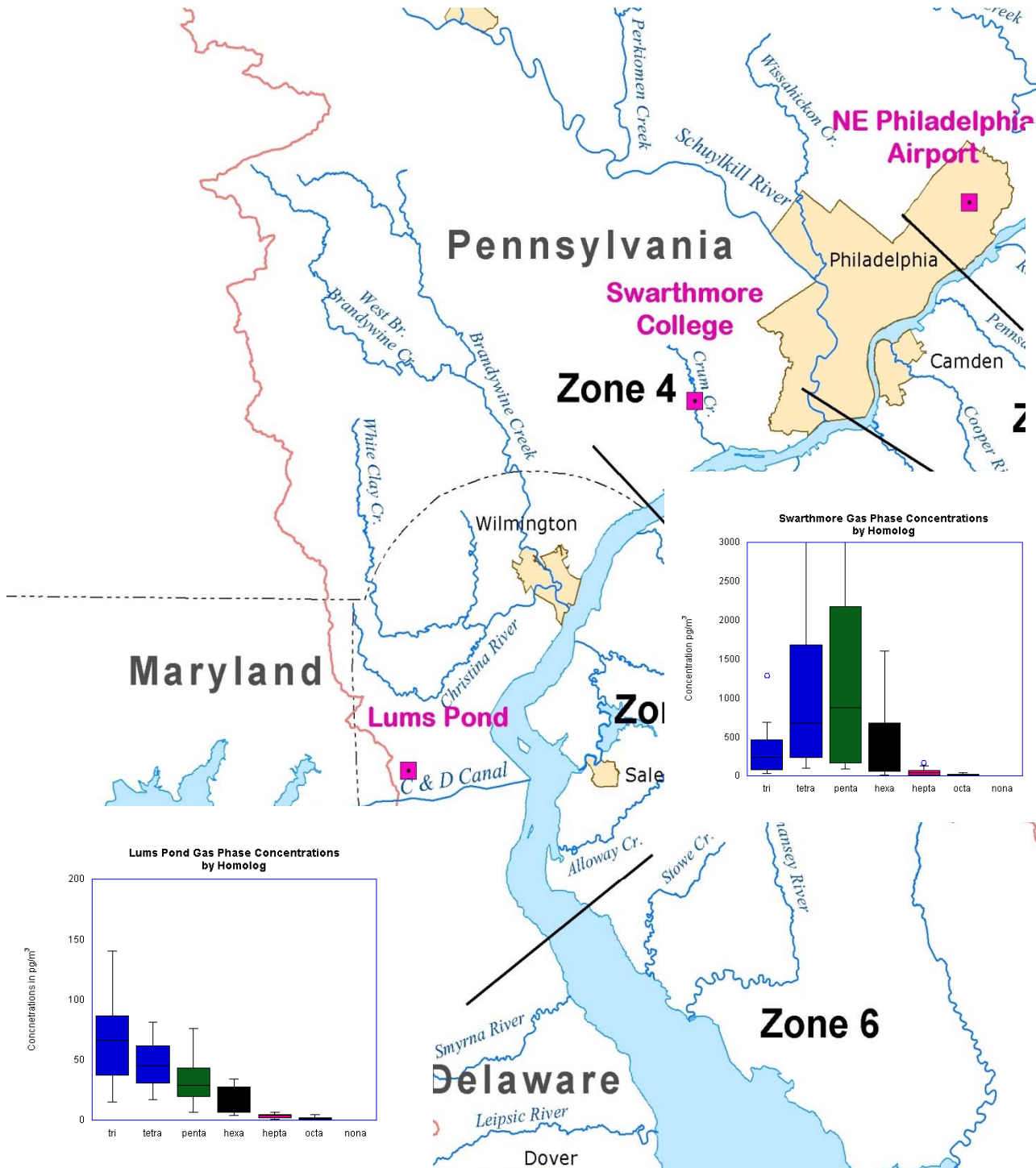


Air Monitoring Locations

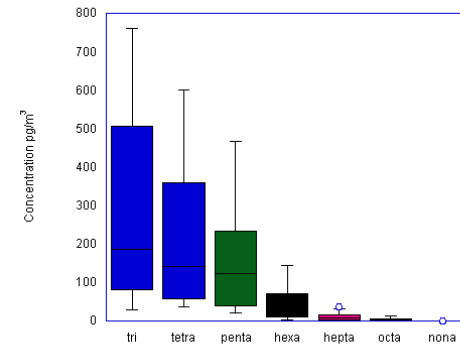


Hi-Volume Air Sampler

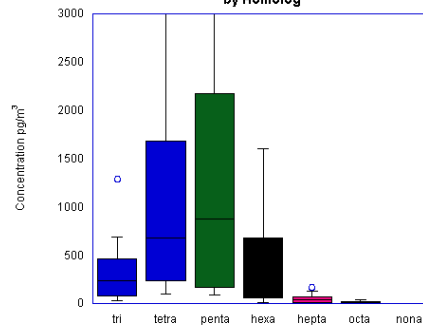




Northeast Airport PCB Gas Phase Concentrations by Homolog



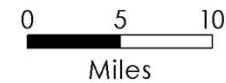
Swarthmore Gas Phase Concentrations by Homolog



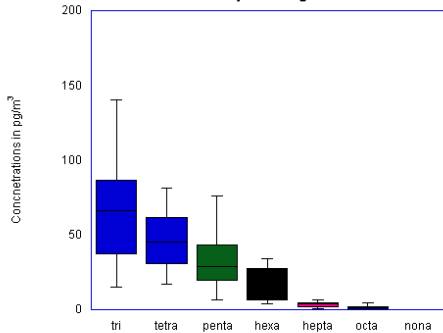
Maryland

New Jersey

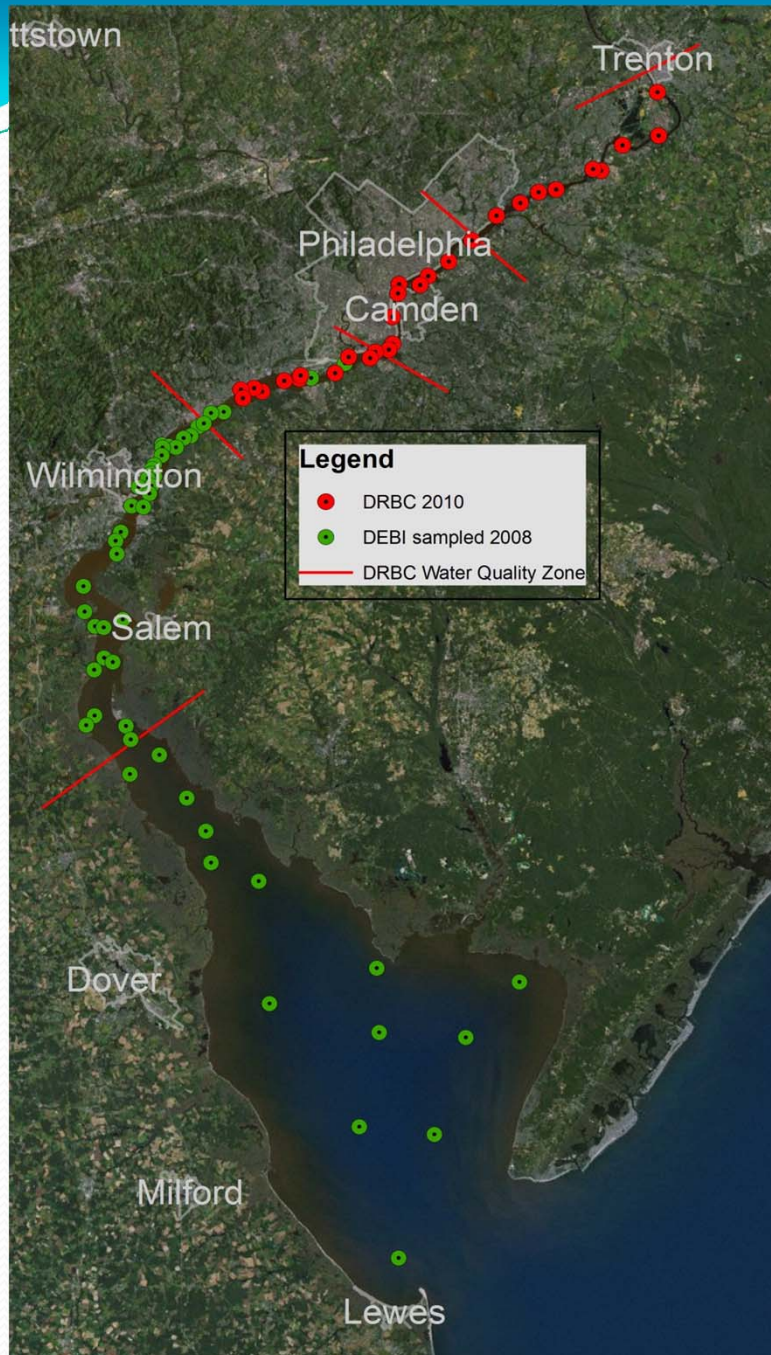
■ DRBC Air Deposition Network

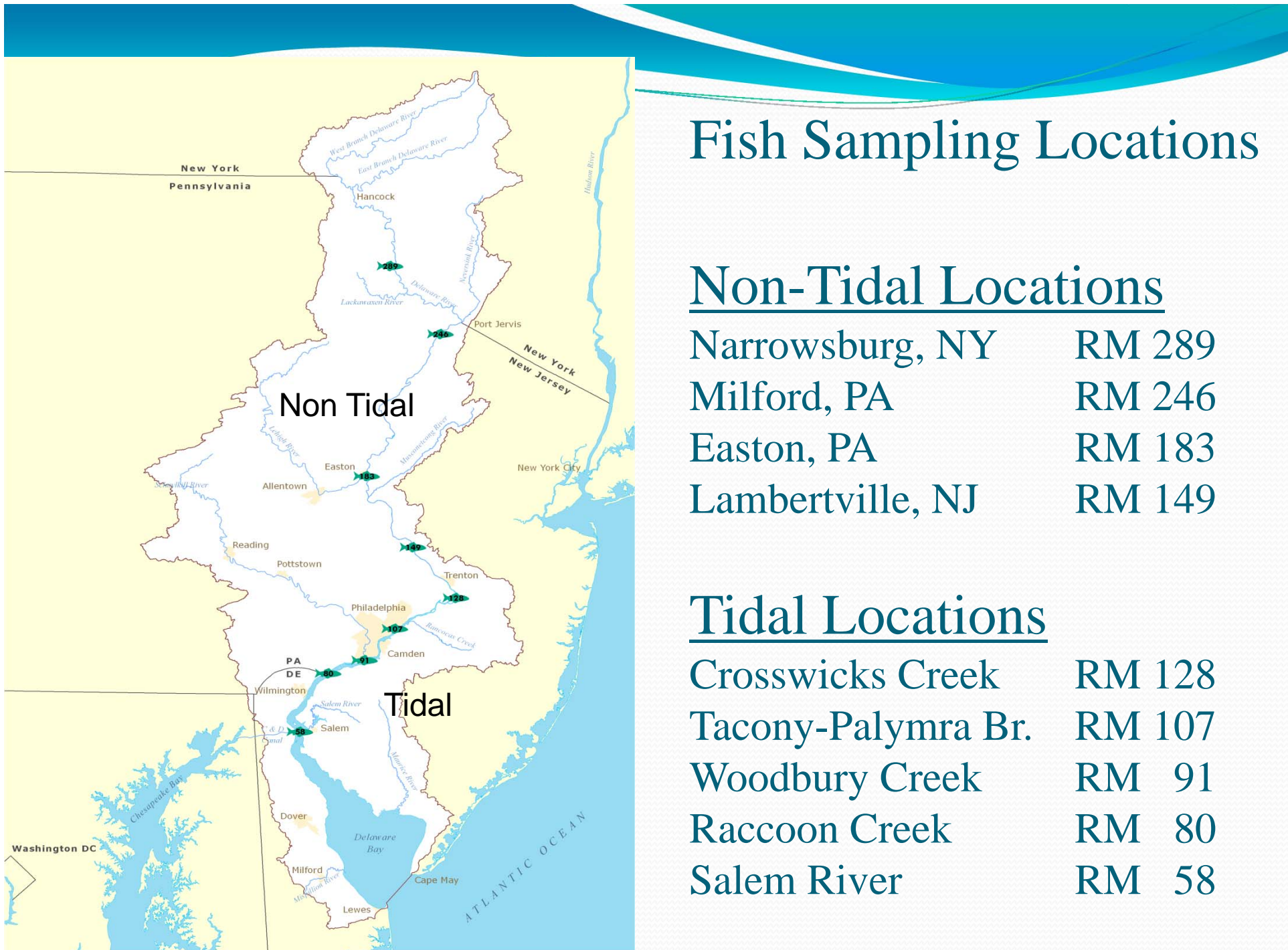


Lums Pond Gas Phase Concentrations by Homolog



Sediment Monitoring





Fish Sampling Locations

Non-Tidal Locations

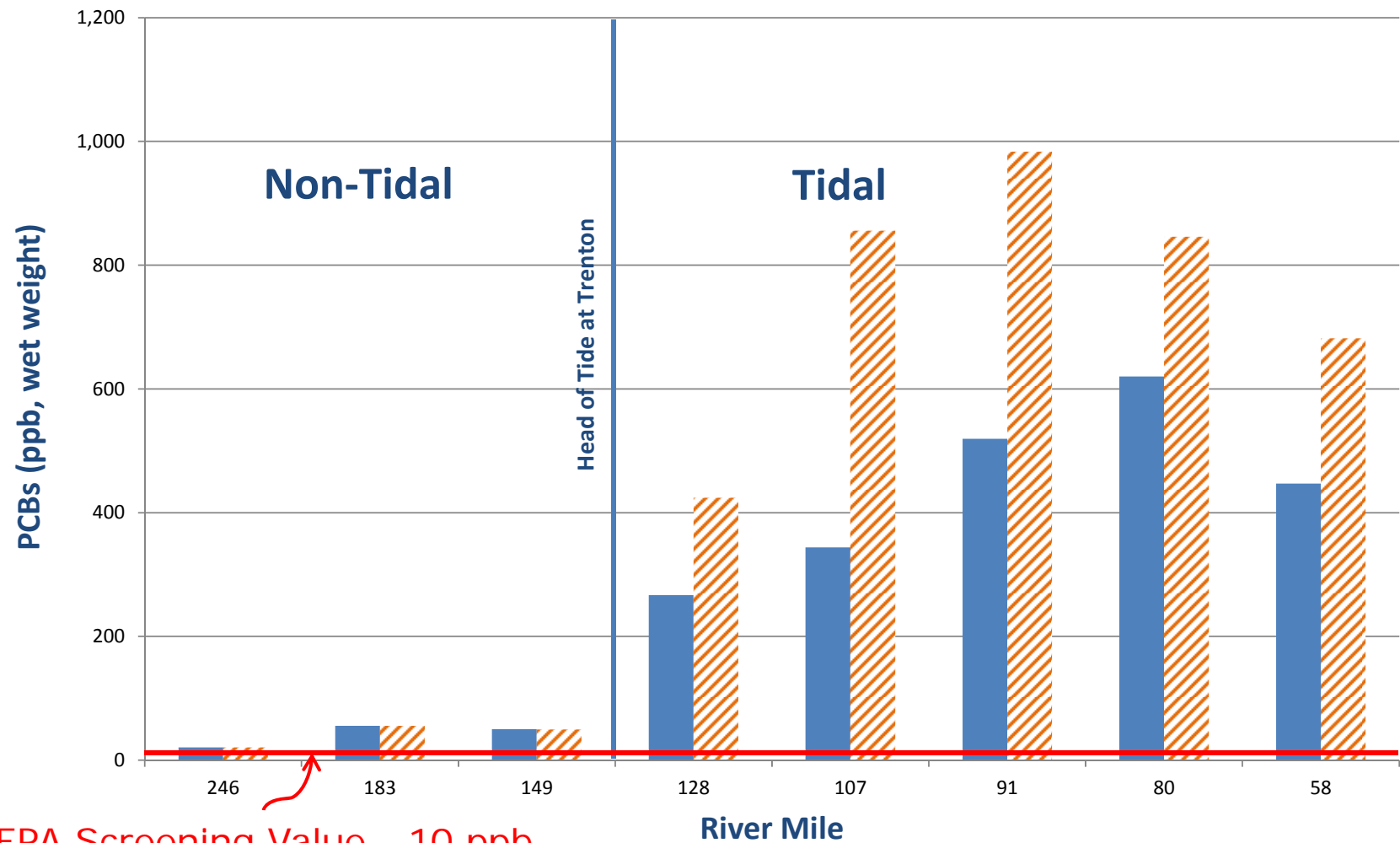
Narrowsburg, NY	RM 289
Milford, PA	RM 246
Easton, PA	RM 183
Lambertville, NJ	RM 149

Tidal Locations

Crosswicks Creek	RM 128
Tacony-Palymra Br.	RM 107
Woodbury Creek	RM 91
Raccoon Creek	RM 80
Salem River	RM 58

Fish Tissue Data

PCBs in Fish Tissue - 2004 - 2007
Mainstem Delaware River

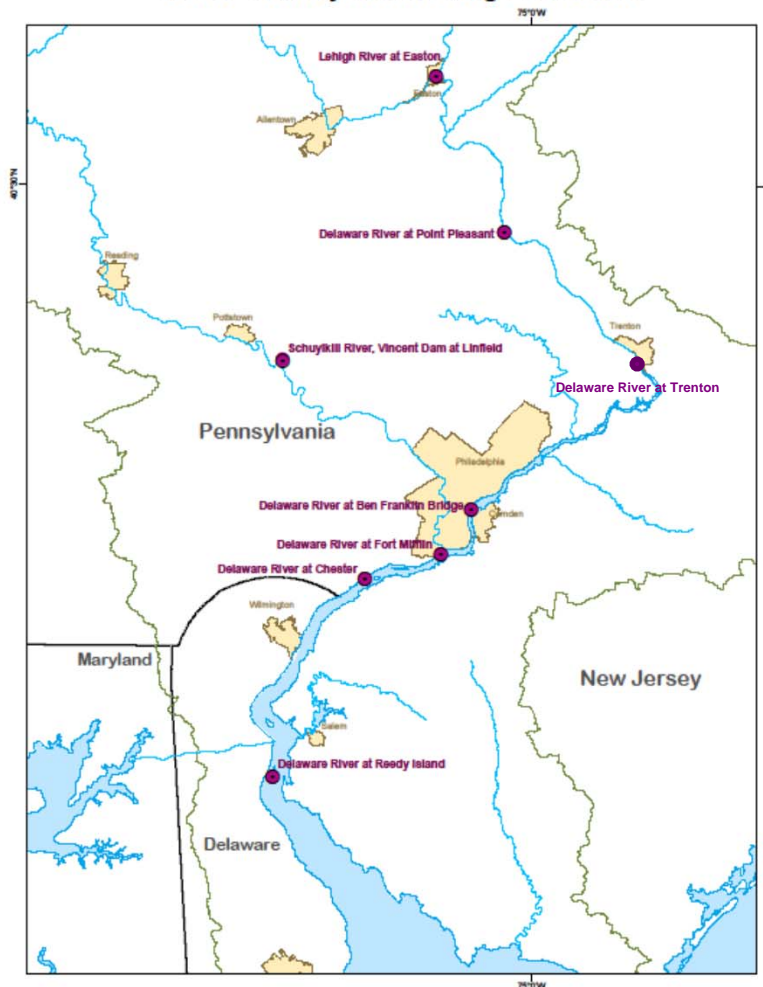


EPA Screening Value - 10 ppb

■ Pelagic Species ▨ Benthic Species

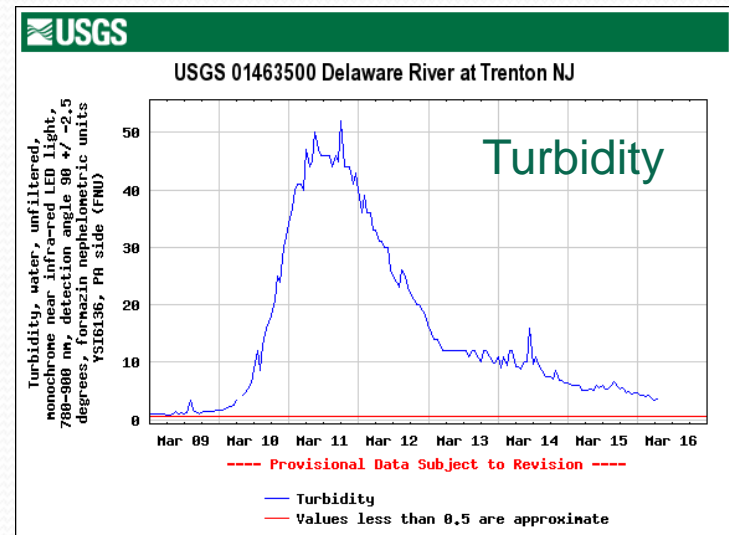
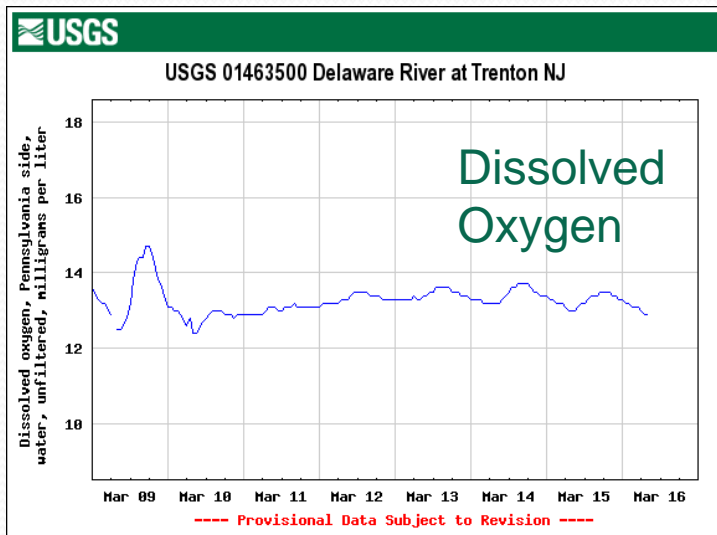
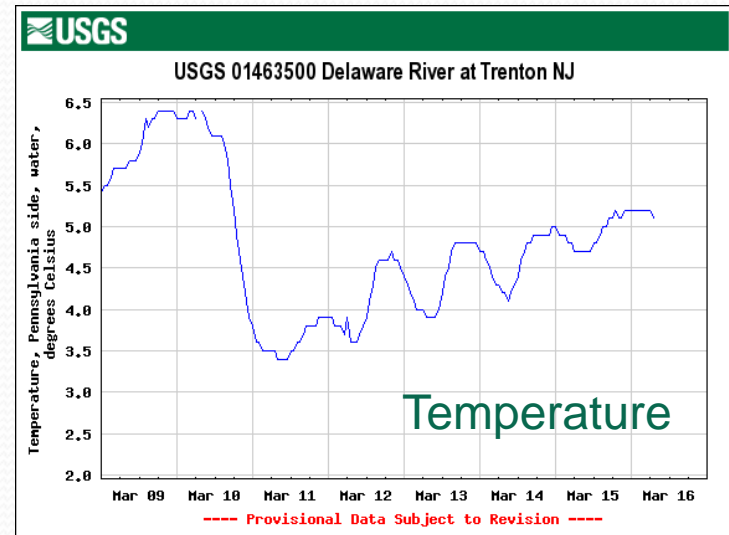
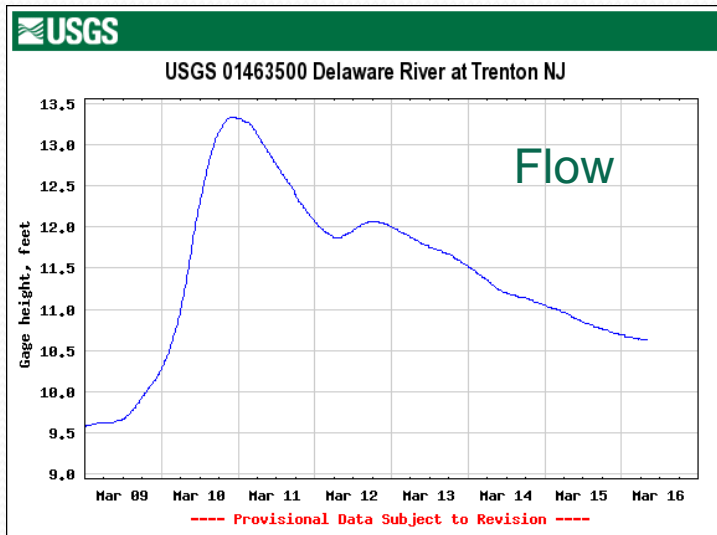
Real-Time Water Quality Monitors

DRBC/USGS Cooperative
Water Quality Monitoring Locations



- DRBC and USGS cooperatively fund a number of water quality monitors.
- Parameters: temperature, pH, specific conductivity, dissolved oxygen and turbidity.
- Other agencies including USCOE, PWD and NOAA support additional monitors.
- **Purpose:**
 - Assessment of compliance with water quality criteria
 - Track salt front location

Examples of Monitor Outputs Trenton, NJ



Other Monitoring Activities

- ❑ Special Monitoring Requests: PCBs (2001 - present) and nutrients (2011 - 2012).
- ❑ NPDES permit and Docket support - parameters, frequency and methodology.
- ❑ Monitoring for model development and calibration - estuary and SPW models.
- ❑ Data management in support of special monitoring requests.
- ❑ PCB Pollutant Minimization Plans (PMP) - review of plans and annual reports.
- ❑ Baseline monitoring for natural gas development.



Value Added to Commission States

- ❑ Monitoring complements state-wide monitoring programs providing greater spatial and temporal coverage for basin issues.
- ❑ Monitoring data for use in Integrated Assessment Report including Section 303(d) listings.
- ❑ Tissue data for developing fish consumption advisories.
- ❑ Provide data for developing and establishing TMDLs for conventional and toxic pollutants.
- ❑ Special monitoring studies for model development and calibration provide data on intrastate tributaries - Neversink River, Lehigh River and Brodhead Creek.

Modeling, Monitoring & Assessment Staff

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Questions?

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