

National Water Quality Network: Delaware River Basin Pilot

Bob Tudor, DRBC
NJWMCC Meeting
Trenton, NJ: Sept. 6, 2007

Presentation Overview

- National Issues/DRB Issues
- DRB Partners
- DRB Pilot Study Area
- Progress to date and plans
- Resource Components Snapshots
- Draft report on Delaware Pilot Inventory due in November
- Delaware River Basin water quality studies to be highlighted at the NWQMC Conference in May 2008

MNMM Objective—to link watershed, estuary, coastal, and ocean monitoring

Table 1-1: Water Quality Issues from NMN Report

- Oxygen depletion
- **Nutrient enrichment** (arguable)
- **Toxic contamination**
- Sedimentation
- Harmful algal blooms
- **Habitat degradation**
- Invasions by exotic species
- **Pathogens** (indicator bacteria)

NMN Objectives and Management Issues

NMN Objective	NMN Management Questions	Delaware Management
1. Define status and trends of key water quality parameters and conditions on a nationwide basis.	<p>What is the condition of the Nation's surface, ground, estuarine, coastal, and offshore waters?</p> <p>Where, how, and why are water quality conditions changing over time?</p>	Development of management strategies for protecting areas of high water quality.
2. Provide data relevant to determining whether goals, standards, and resource management objectives are being met, thus contributing to sustainable and beneficial use of coastal and inland water resources.	<p>Are strategies that protect or remediate water quality working effectively?</p> <p>Are we meeting water quality goals and standards?</p>	Environmental sources, transport and effects of contaminants in the region (e.g. PCBs, pesticides, and contaminants of emerging concern).
3. Provide data to identify and rank existing and emerging problems to help target more intensive monitoring, preventative actions, or remediation.	<p>What are the water quality problems?</p> <p>Where are the water quality problems?</p> <p>What is causing the problems?</p>	Maintain freshwater quantity and quality.
4. Provide data to support and define coastal oceanographic and hydrologic research, including influences of freshwater inflows.	What research activities will help us to understand water resources and ensure they are sustainable?	Assuring public health (pathogen contamination and fish advisories.)
5. Provide quality-assured data for use in the preparation of interpretive reports and educational materials.	All management questions require these data.	Potential impacts of nutrient overload and nutrient imbalance in the estuary.

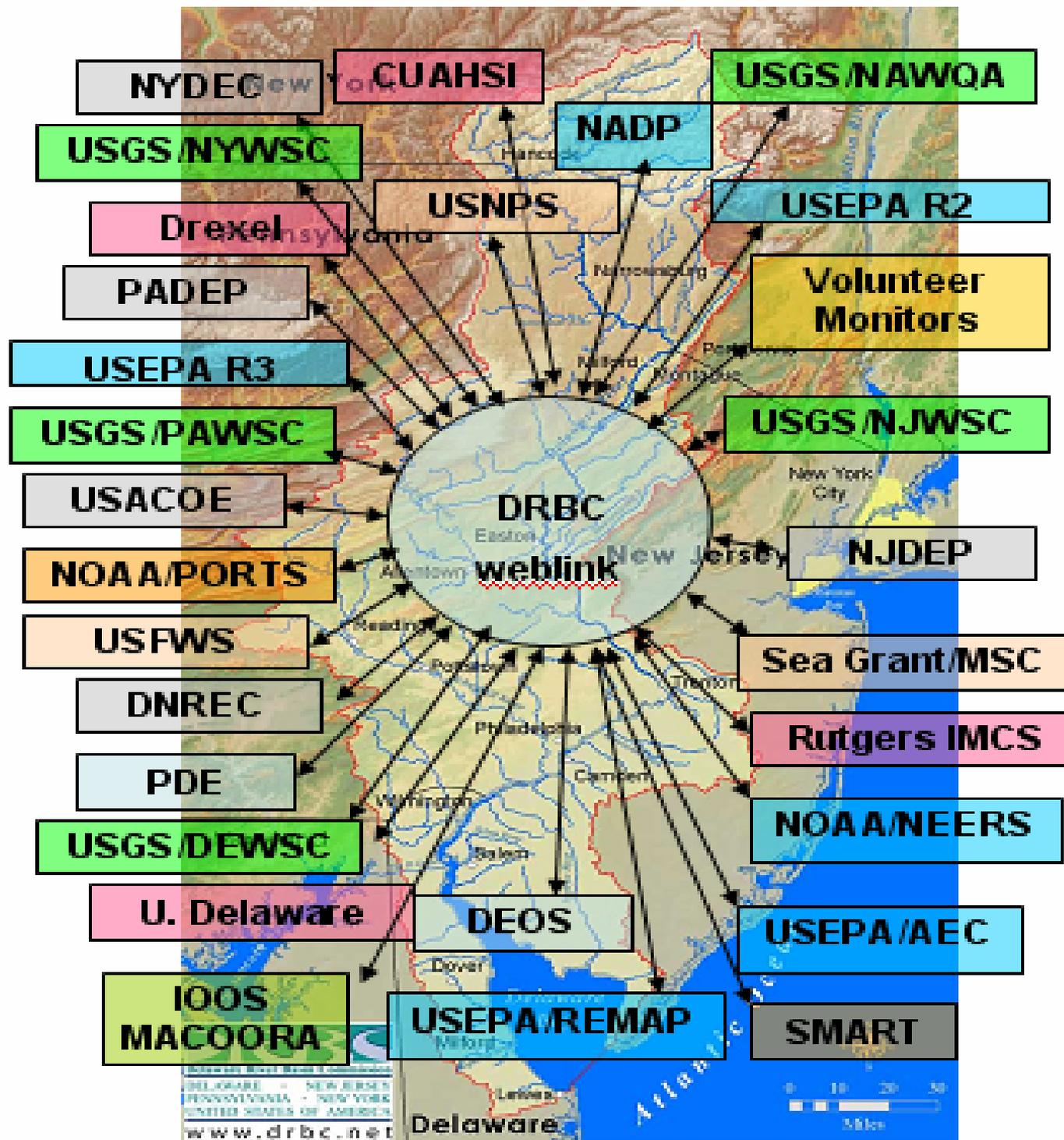
Delaware River Basin Pilot Steering Committee

Chair: Bob Tudor, DRBC

- Organizations participating:
 - DRBC, MACOORA
 - USEPA Regions 2 & 3
 - NOAA
 - USGS NJ, PA, DE, NY and NAWQA
 - NJDEP, DNREC, PADEP, NYDEC
 - Rutgers, UDel
 - PDE
- Set boundaries for study area
- Integrate with NMN Interagency Work Groups
- Coordinate DRB Work Group efforts
- Data Management efforts

■ Other DRB Pilot Work Groups

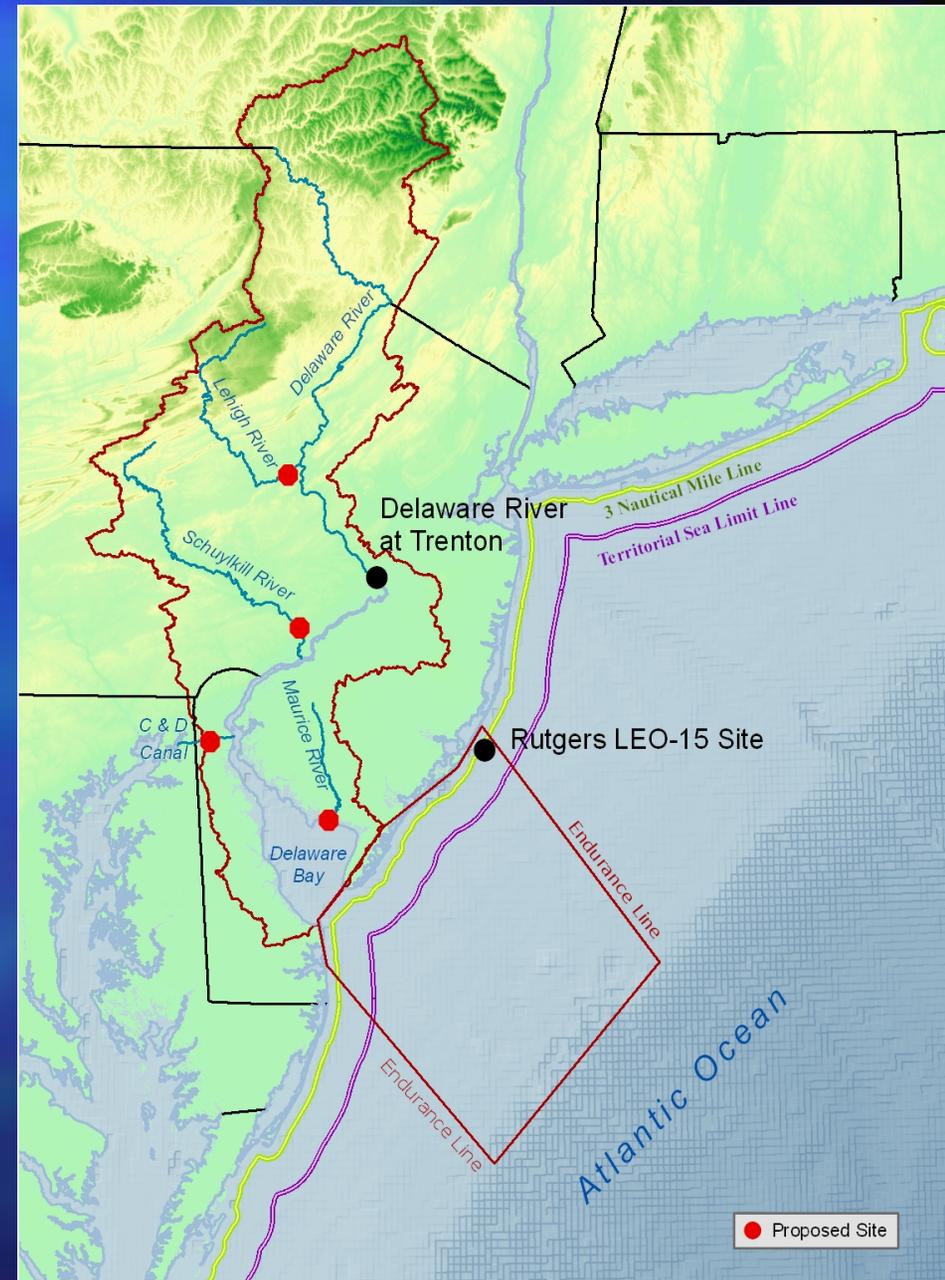
- Data Management
- Atmosphere
- Rivers above head of tide
- Estuary
- Near shore
- Off Shore
- Wetlands
- Ground water



Monitoring
Partners
in the
Delaware
River
Basin

DRB Pilot Study Area Boundary

- Entire Delaware Basin
- 4 states—NY, PA, NJ, DE
- Several Physiographic Provinces and Ecohabitats
- Major inflows—Lehigh, Schuylkill, Maurice, C&D Canal
- Bounded by northern and southern Coastal endurance lines



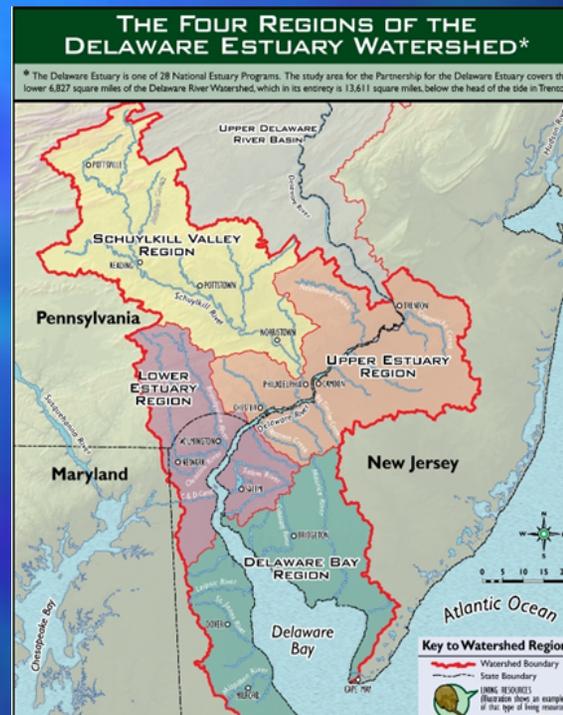
Progress to date and plans

- Steering Committee has been coordinating and consolidating efforts of various work groups
- Work Groups have been meeting regularly for the most part—may need to ramp up some groups
- Presentation at the NWQMC meeting in Philadelphia on July 24 went very well
- Responded to nutrient “dry run” request from the NMN Nutrient Interagency Work Group
- Continue to refine work group efforts as guidance comes in from other Interagency Work Groups
- Draft report for Pilot Study areas due in November
- Final report in January, 2008
- Highlight Delaware River Basin studies at National Conference in May 2008

Data Management Work Group

Chairs: Eric Vowinkel and Ed Santoro

- Existing DRBC Monitoring Matrix
- Will create an ftp site on DRBC computer to store exchange of information
- Water-Quality Data Exchange (WQDE) Networks in progress at NJDEP, DNREC, PA?, NY?
- Exploring options for web-based portal for Delaware Basin

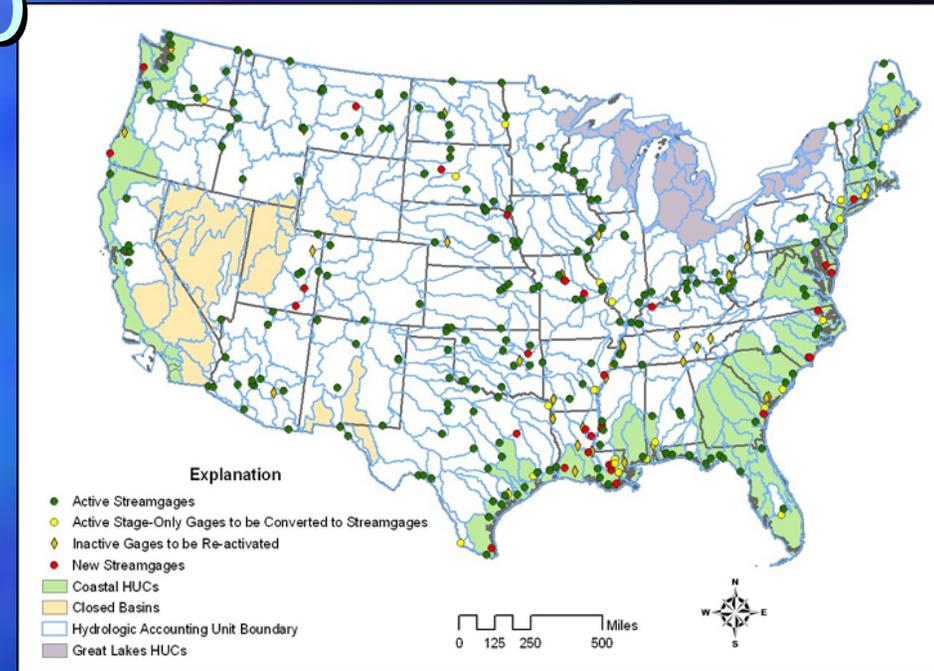


http://www.delawareestuary.org/Info_gateway/Main_map.asp

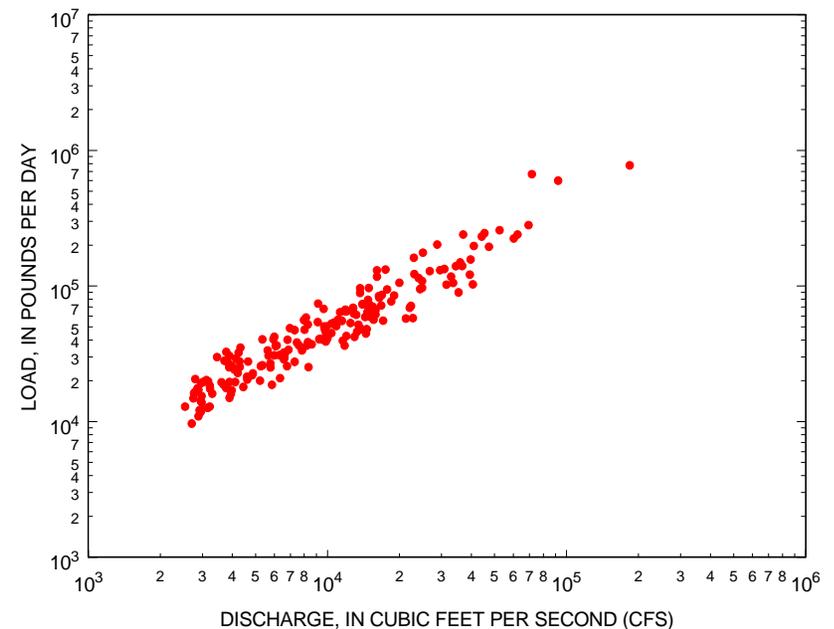
Riverine Work Group

Chair: Ed Santoro, DRBC

- Del R. at Trenton is the only site from NMN design
- Water-quality concerns related to salinity gradient and concentrations and loads of nutrients, toxic contaminants
- Nutrient "dry run" test based on suggestions of the Interagency Work Group (IWG).



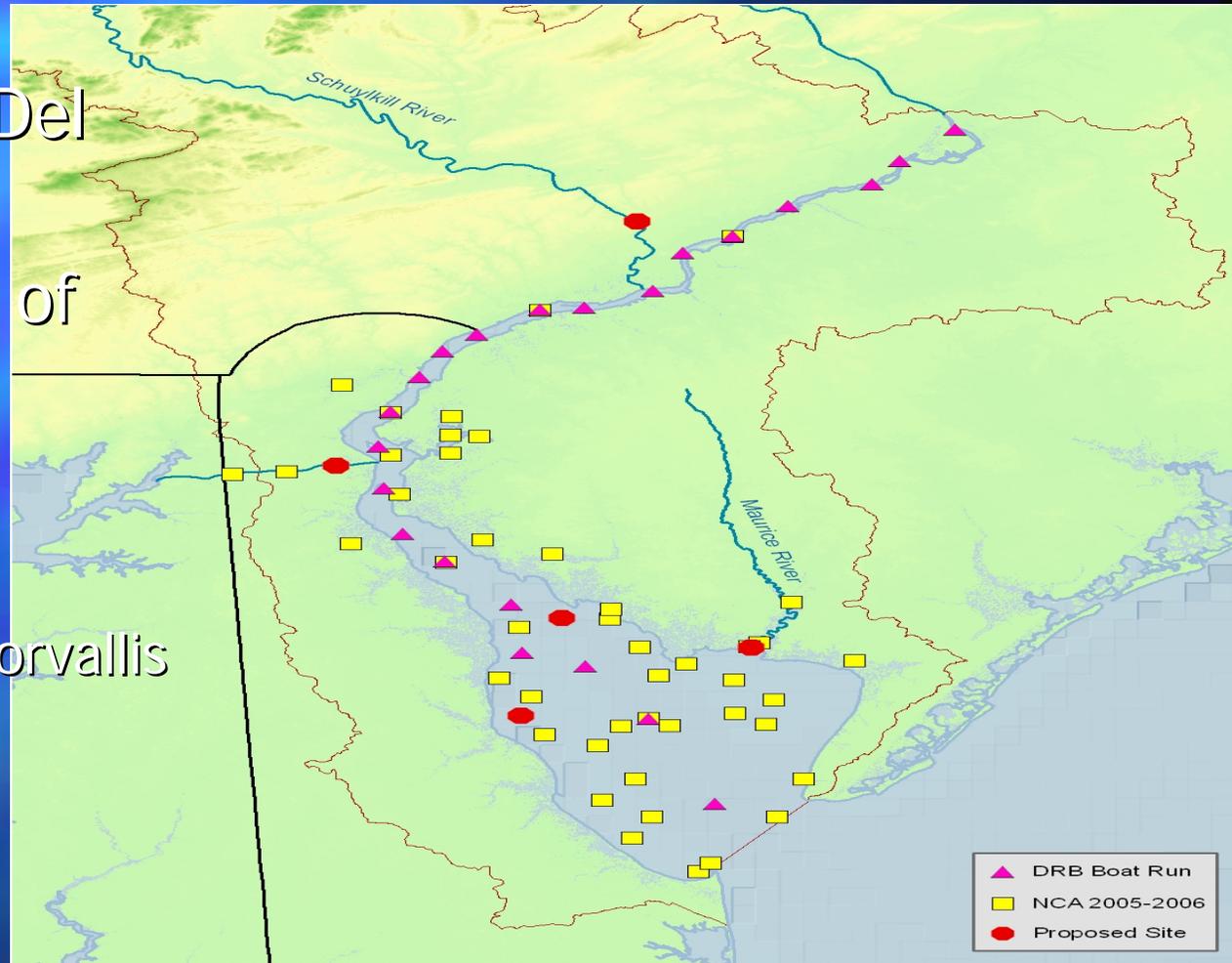
RELATION OF LOAD OF NITRATE PLUS NITRITE TO DISCHARGE AT THE DELAWARE RIVER AT TRENTON



Estuary Work Group

Chair: Jonathan Sharp, UDel

- Boat Run—historical monitoring along spine of Delaware Estuary
- Probabilistic network
 - NCA
 - New sites from USEPA Corvallis from Tony Olsen
- Discussions of mixing probabilistic and fixed stations



Near-Shore Work Group

Chair: Bob Connell, NJDEP

Issues

- How far south?
- 12-miles out into Atlantic Ocean
- Physical habitat needs
- Sediments included
- Biological assessment and productivity
- Lidar methods—remote sensing
- Should not be looking at nutrients but rather eutrophic conditions
- Chlorophyll a, DO, macro algae, HABS, nutrient loads, wastewater discharges, atmospheric deposition

Assessts

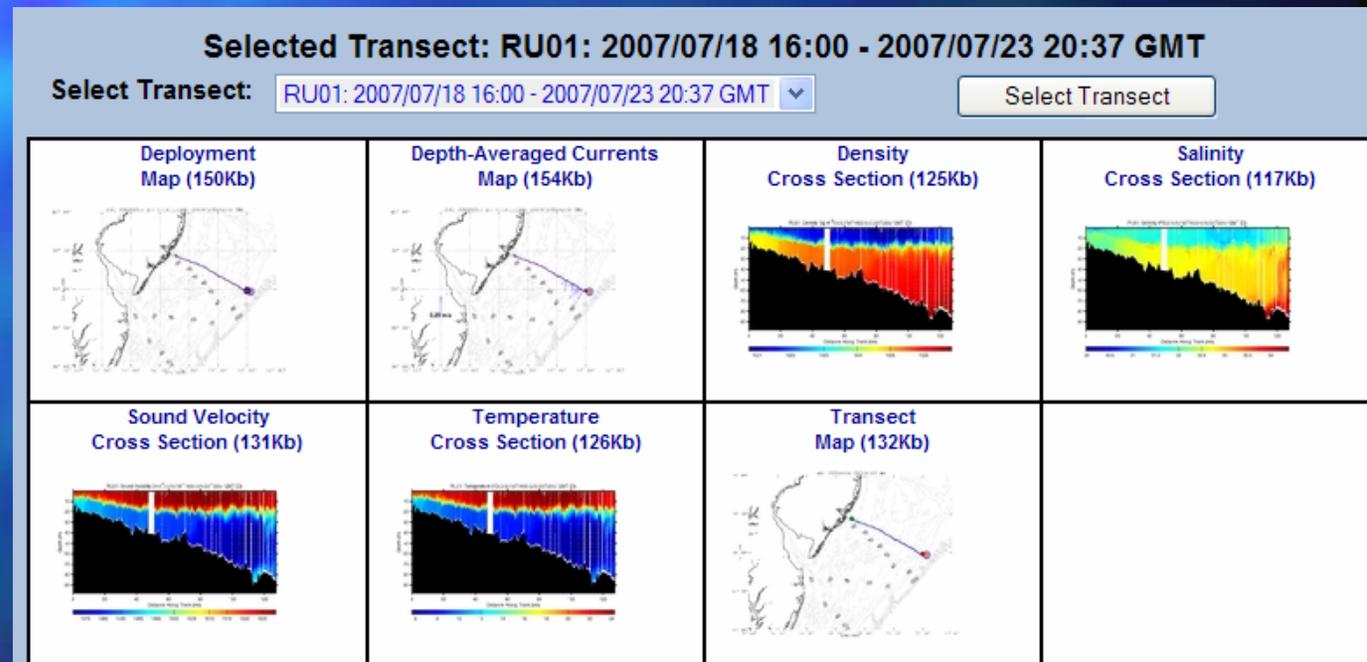
- Gliders
- Air craft and satellite remote sensing
- Boat along coast with NJDEP & USEPA
- Fixed station LEO site from RU
- DEOs fixed station
- Optical sensor for DO in future in glider
- Nuisance algal blooms-by boat
- Loads from WWTP
- Maybe some nutrient data from atmospheric
- Map will be coming

Off-Shore Work Group



Chair: Scott Glenn,
RU IMCS

- Endurance line off of Tuckerton, NJ
- Future site off of Delaware



<http://marine.rutgers.edu/cool/auvs/>

Wetlands Work Group

■ Chair: Danielle Kreeger, PDE

Tidal Wetlands:

Signature Trait of System

Extensive, Near Contiguous Band
Diverse Types: *Salt, Brackish and
Freshwater Tidal Marshes*

Ecological Values:

Structural

biodiversity

*habitat for fish & wildlife
nurseries, imperiled taxa*

Functional

food web

water quality

flood protection

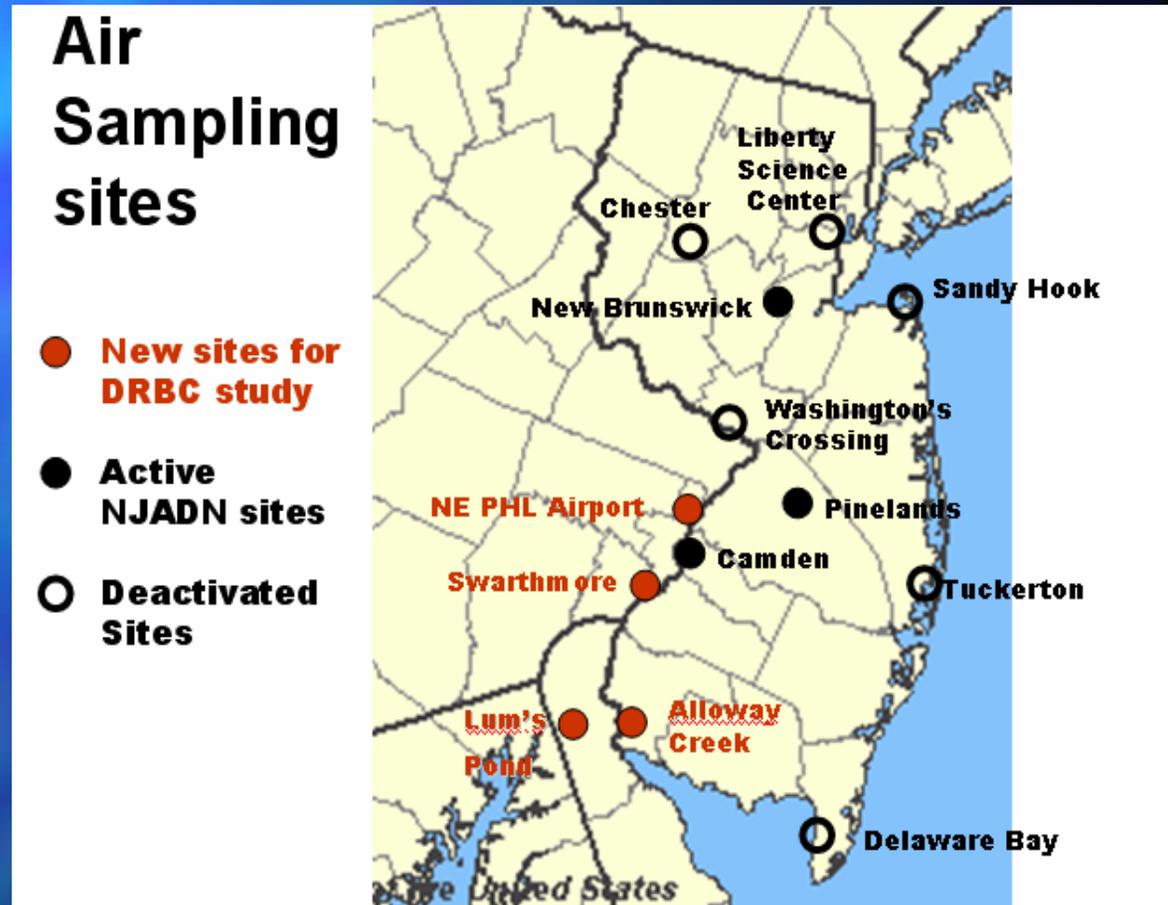


Rutgers University

Atmosphere Work Group

Chair: Lisa Totten,
Rutgers

- Only one NADP site in the Basin
- Supplemental sites added by NJDEP, DRBC
- Some sites deactivated



Ground-Water Work Group

Chair: Eric Vowinkel, USGS

- Significant vulnerability of ground water in the Delaware Basin to contamination by nitrate in PA, NJ, and DE
- Concentrations of nitrate in ground water are largest in agricultural areas and moderate in urban area
- Is ground water directly contaminating estuaries or near coastal waters

