# Regulatory Background: Systematic Elimination of Point Sources in the Inland Bays Watershed

Rehoboth Beach

Board of Commissioners Meeting

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# Federal Clean Water Act

- States must prepare and submit to the EPA every other year:
  - Watershed Assessment Report (305(b) Report)
  - List waters not meeting standards (303(d) List)

# Water Quality Standards

- Designated uses
  - Agricultural Water Supply
  - Industrial Water Supply
  - Public Water Supply
  - Secondary Contact
  - Primary Contact
  - Aquatic Life and Wildlife
  - Cold Water Fish
  - Harvestable Shellfish
  - Exceptional Recreational and Ecological Significance
- Water quality criteria
  - Concentrations, parameter levels, or narrative statements
    - Dissolved Oxygen, Nitrogen, and Phosphorus

It is assumed that if criteria are met, designated uses will be protected.

# *Why should I care about DO and nutrient levels?*

- Too many nutrients (eutrophication) offset the balance between photosynthesis and respiration so that there is too little dissolved oxygen in water

+ N + P ↔ Organ

»Loss of habitat

»Alteration of food we

Dead-end canal of Rehoboth Bay, August 28, 2000

# Total Maximum Daily Loads

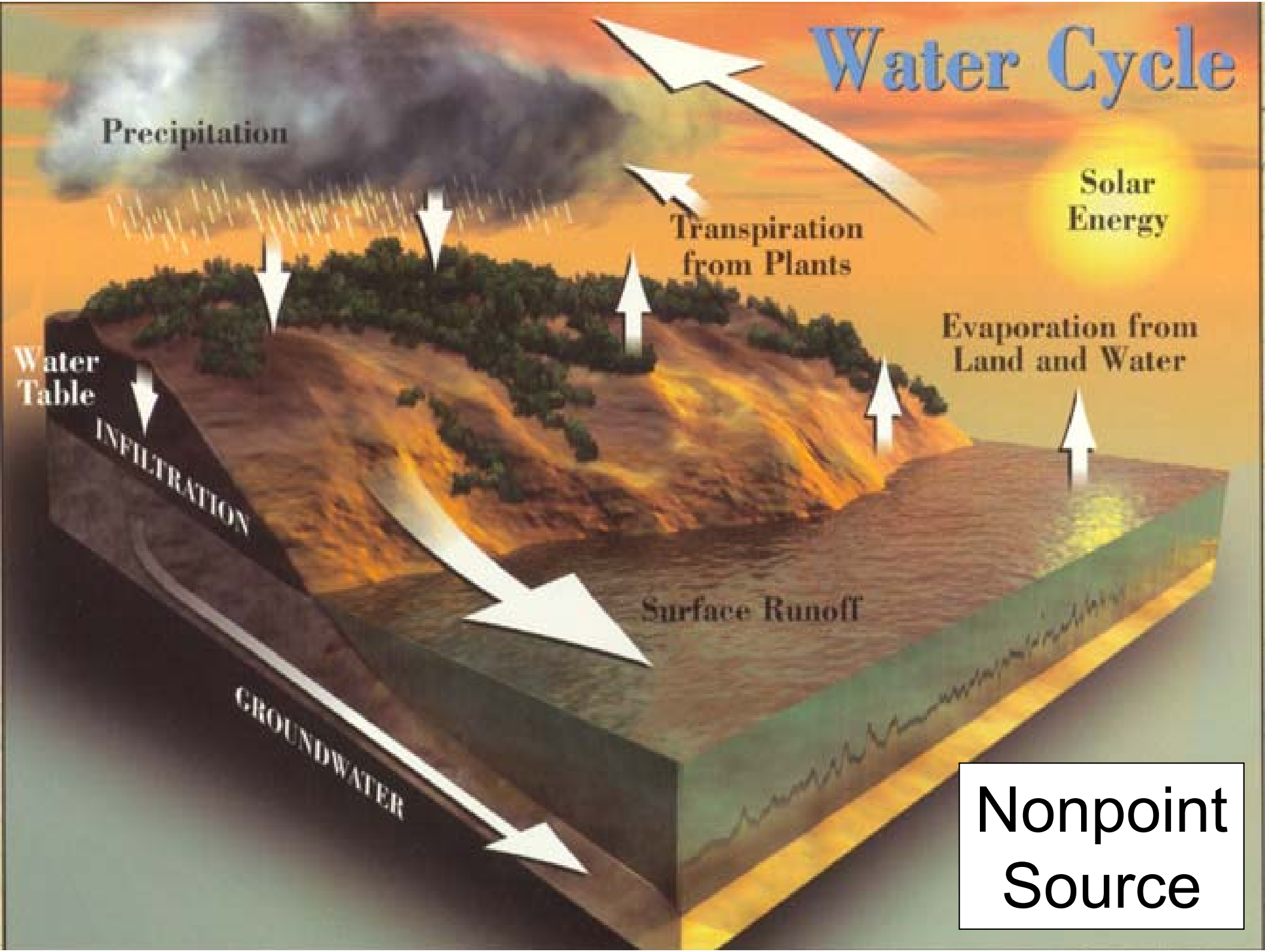
- The maximum amount of a pollutant that can enter surface waters and still meet water quality standards

$$TMDL = WLA + LA + MOS$$

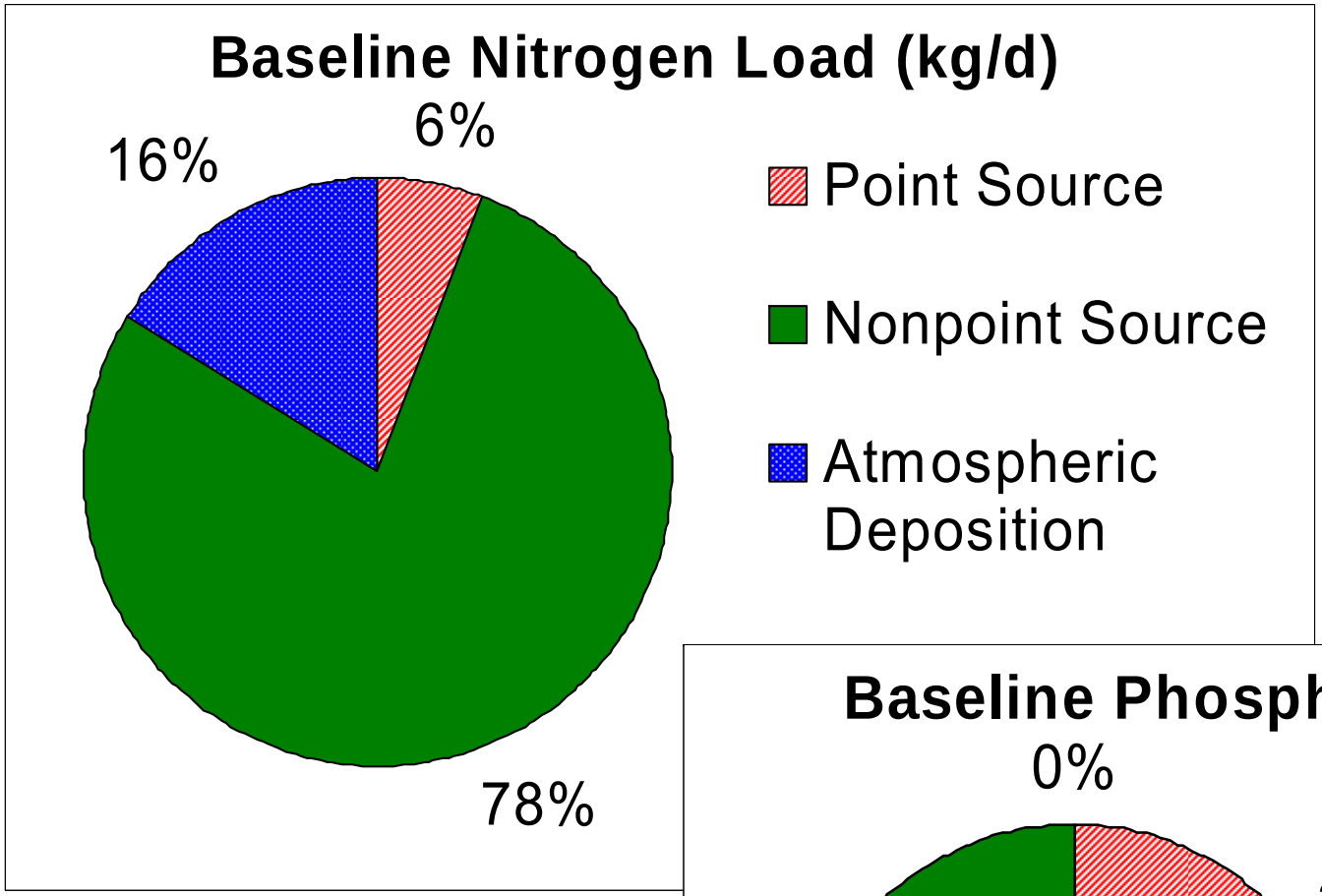
  - WLA = waste load allocation (point sources)
  - LA = load allocation (nonpoint sources)
  - MOS = margin of safety

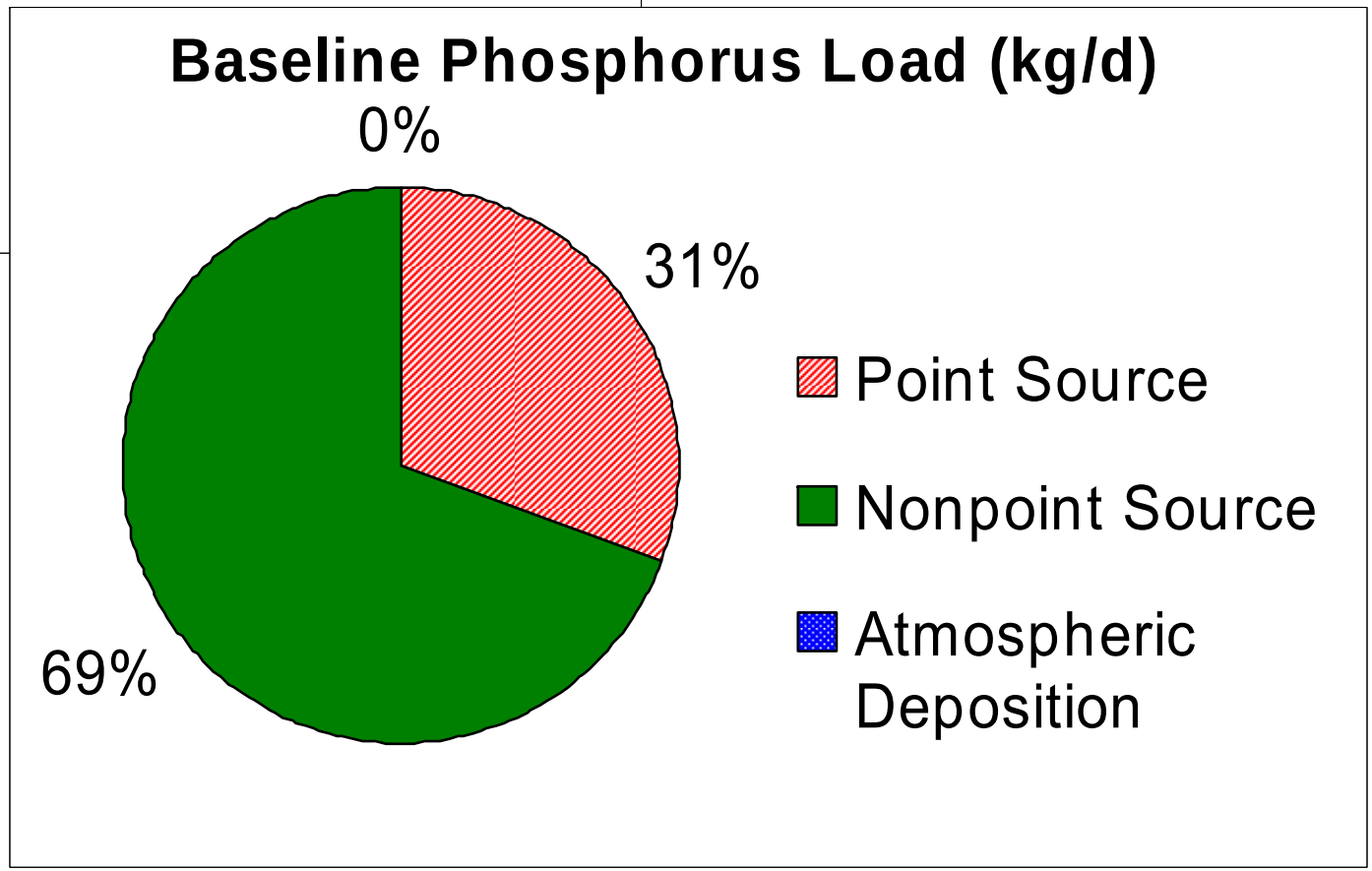
# Point Source

Facility with a
National Pollution Discharge
Elimination System (NPDES)
permit.


Water Cycle
Precipitation
Solar Energy
Transpiration from Plants
Evaporation from Land and Water
Water Table
INFILTRATION
Surface Runoff
GROUNDWATER
Nonpoint Source

# Inland Bays Sources of Pollution

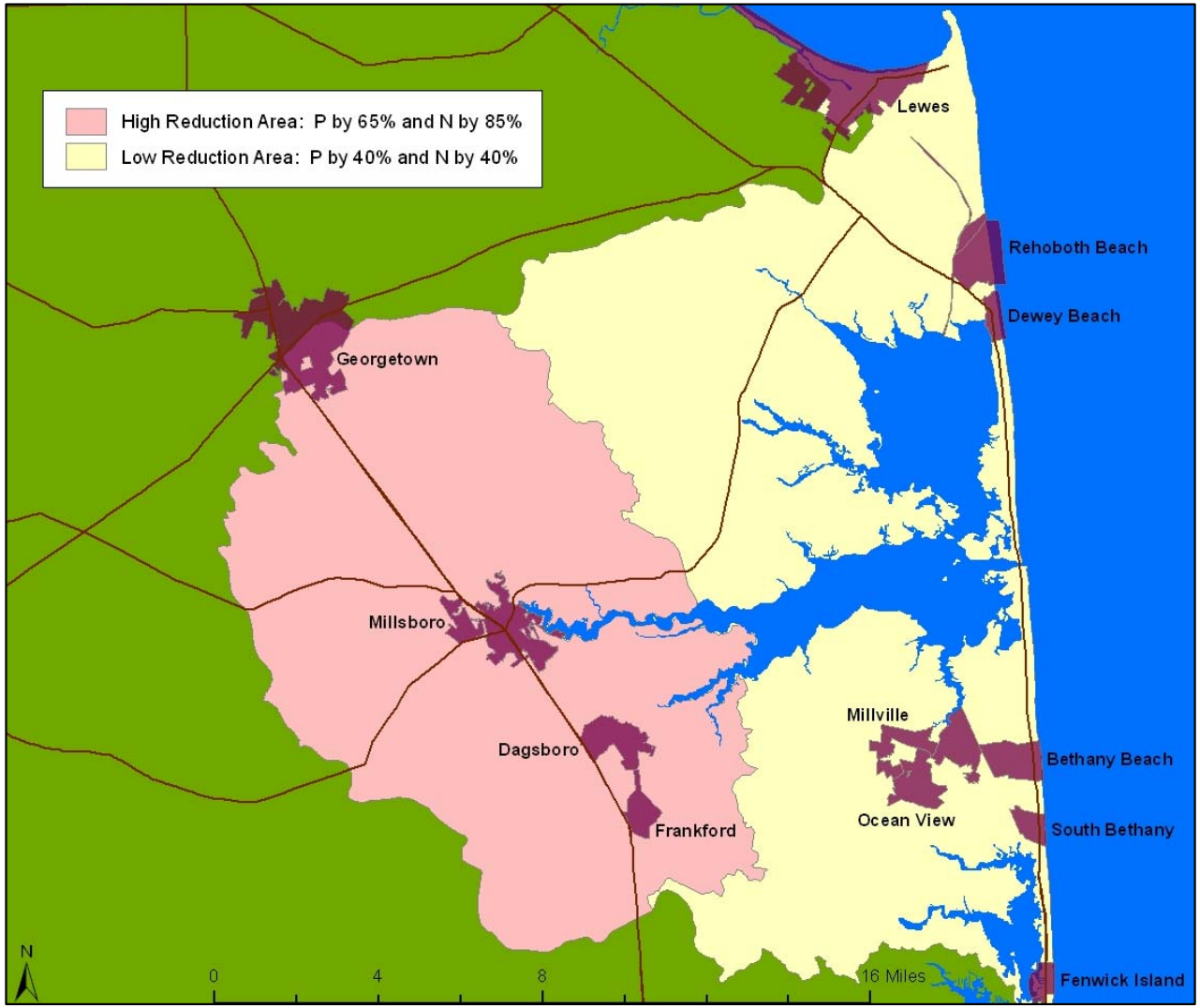



**Based on TMDL modeling data from 1988-1990**

# Inland Bays TMDLs

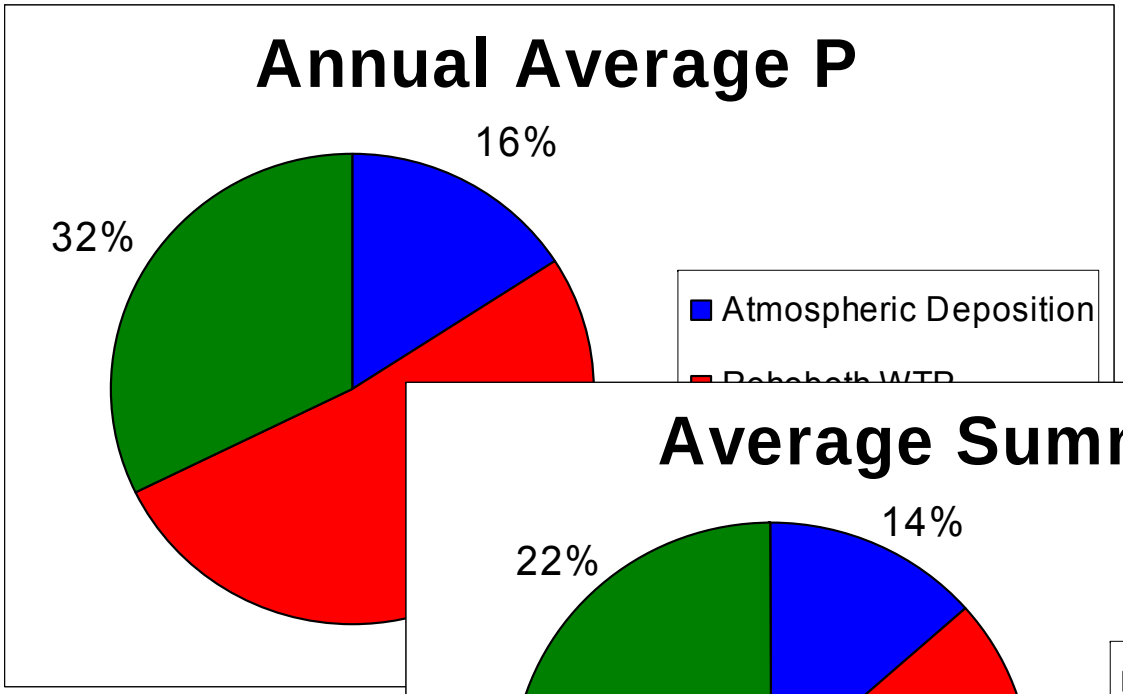
- **Systematic elimination of all point sources**
- Remove 40-85% nonpoint N
- Remove 40-65% nonpoint P
- 20% reduction in atmospheric deposition of N
- Implementation through Pollution Control Strategy

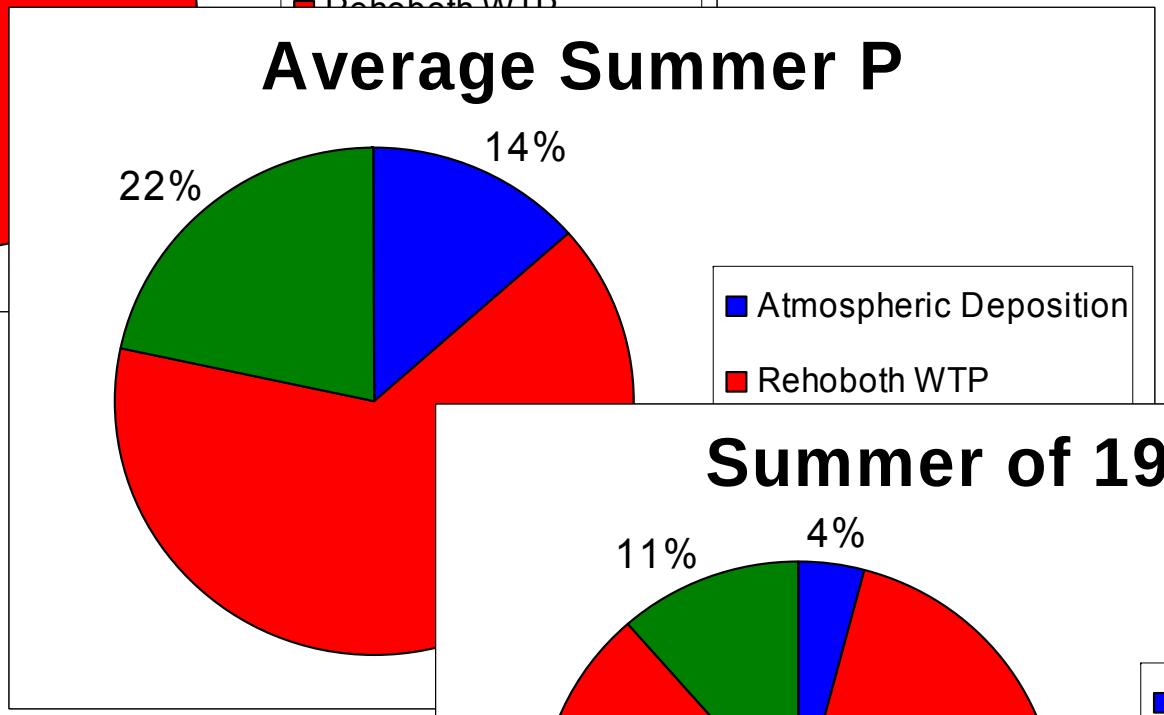


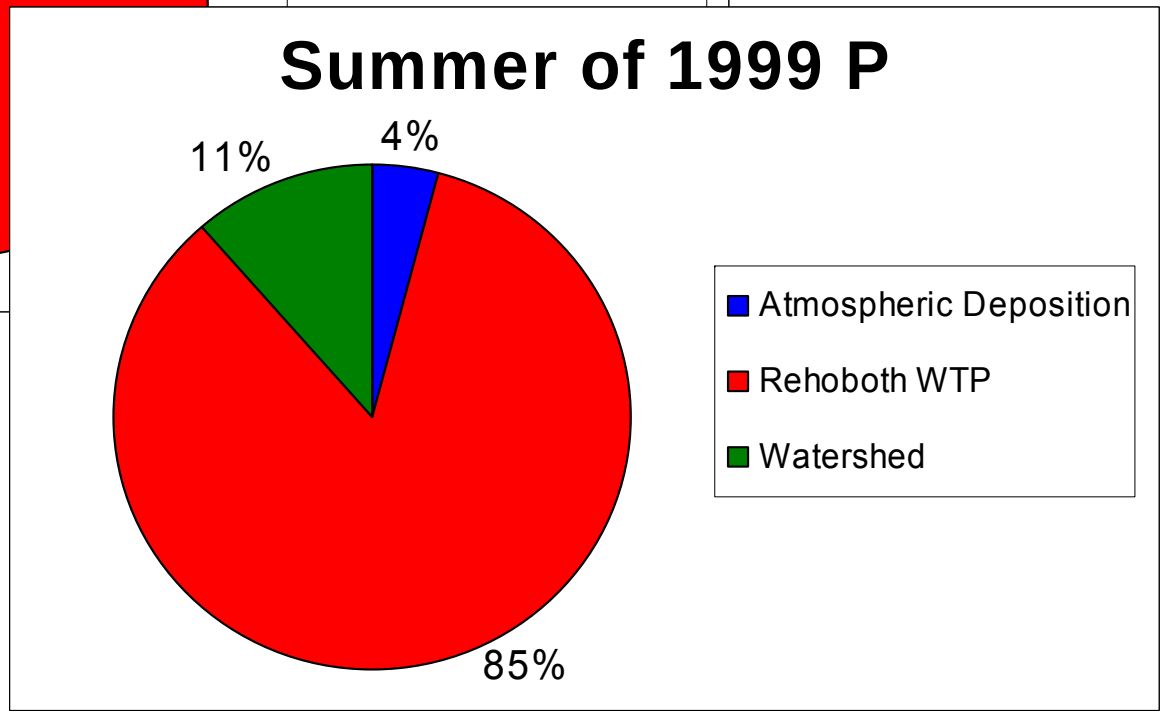
# Point Sources

- Systematic elimination
  - To require the elimination of waste loading into the affected waterbody by point sources on a firm, fixed schedule as approved by the Department. This elimination must occur within five years of the expiration of the facility's current NPDES permit unless a longer period of time is provided for in a State or Federally enforceable Consent Order, Decree, or Administrative Order.
- Water quality trading available as an option
  - 2:1 ratio
  - Must achieve the NPS reduction before can generate credit

# Rehoboth Bay Sources of Pollution



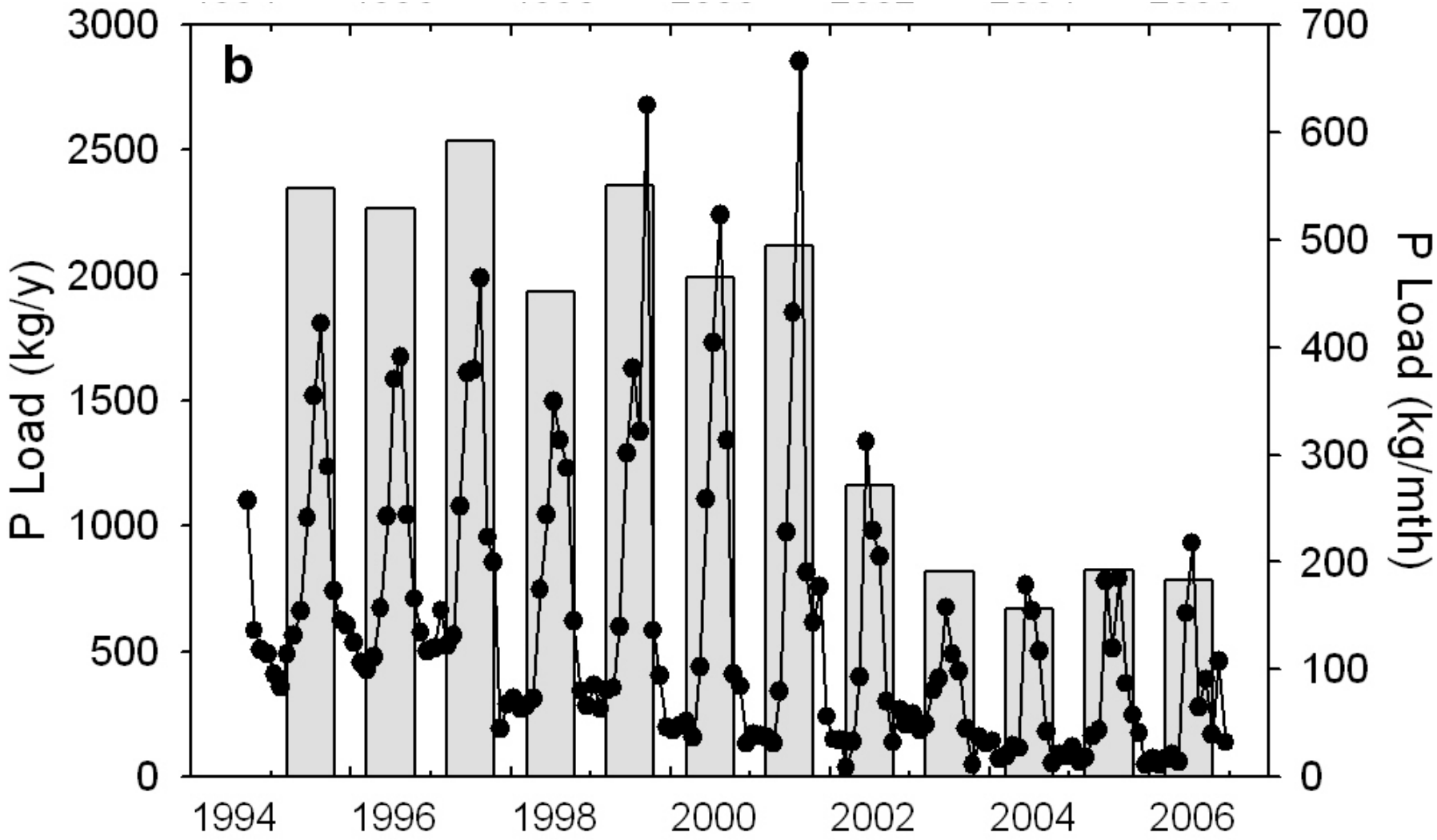




**Based on J. Jennings thesis data from 1999-2001**

# Point Source Progress to Date

- 8 eliminated
  - Bayshore Mobile Home Park
  - Colonial East Mobile Home Park
  - Colonial Estates
  - Delaware Seashore State Park
  - Delaware State Housing Authority
  - Frankford Elementary School
  - George
  - town Wastewater Treatment Plant
  - Mountaire (previously Townsend's; 2 sources)
- 1 trade
  - Pinnacle Foods (previously Vlassic)
- NRG - not affected by TMDL
- 3 remaining
  - Lewes Wastewater Treatment Plant
    - Upgrades
    - Trading proposed
  - Millsboro Wastewater Treatment Plant
    - Upgrades
    - Exploring alternatives
  - Rehoboth Beach Wastewater Treatment Plant
    - Upgrades
    - Consent decree

# Rehoboth Progress To Date




Data provided by R. Stenger (City of Rehoboth Beach)
Figures created by Dr. W. Ullman (UofD CMES)

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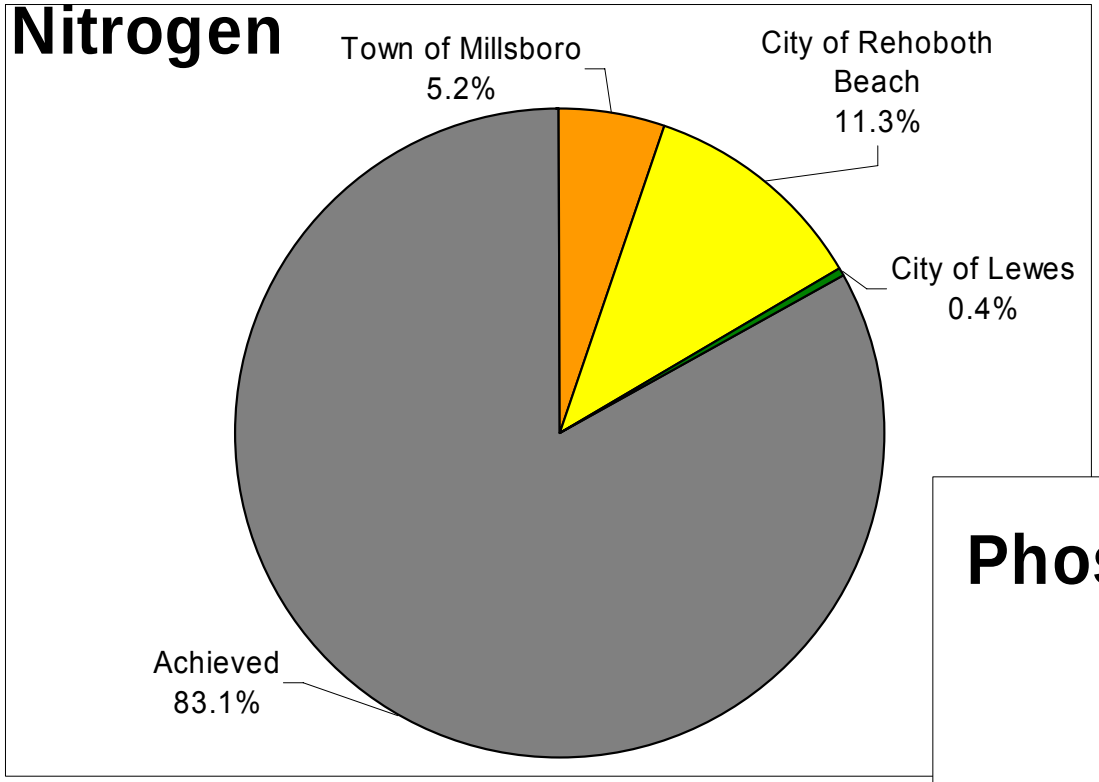


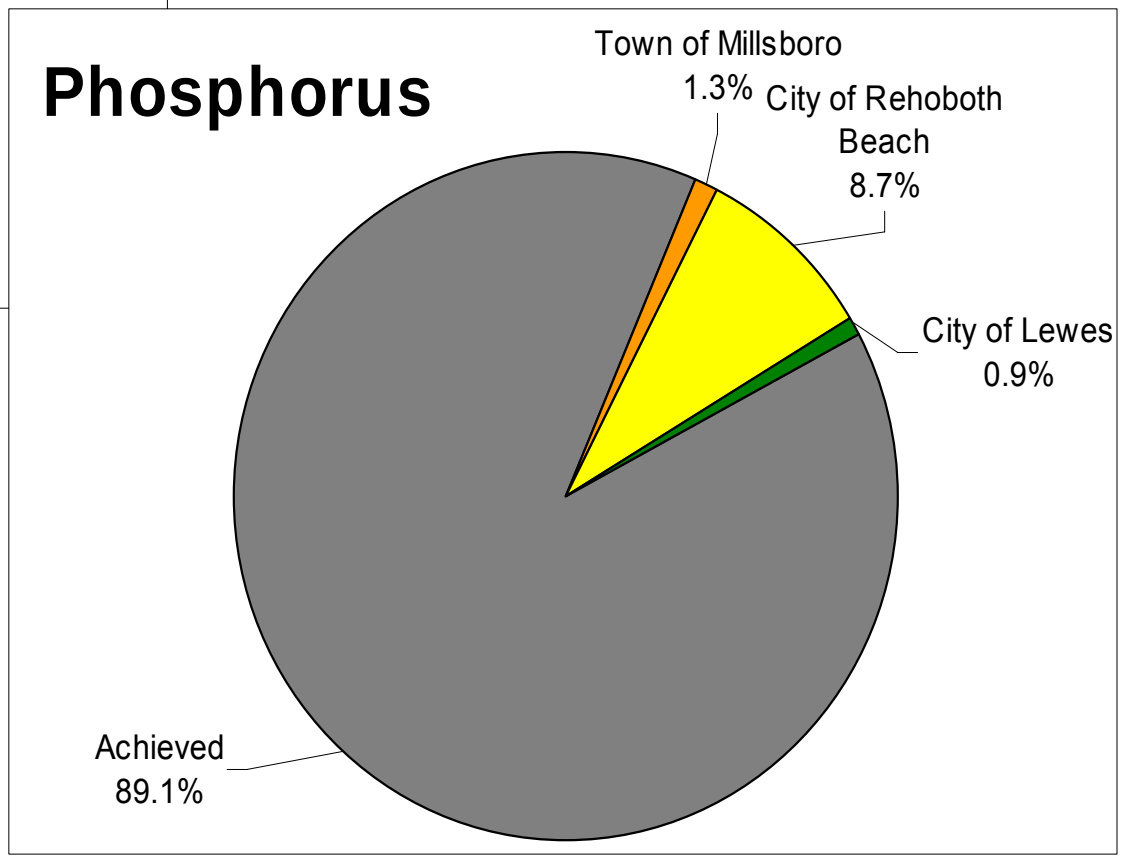

# Options for Systematic Elimination

- Alternative disposal methods have various environmental and economic impacts
  - No option is cheap
  - Don't want to turn a point source into a nonpoint source
- Best management practices to achieve NPS reductions in the Inland Bays Watershed are estimated to cost $25,000,000/year.