

Assessment of Water Quantity and Quality Indicators in the 2012 TREB

Delaware Estuary Science & Environmental Summit
January 28, 2013
Cape May, NJ



John Yagecic, P.E.

Delaware River Basin Commission

Technical Reports for State of the Estuary / State of the Basin (TREBs)

Quantity (Ch. 2)

- David Sayers (DRBC)
- J. Kent Barr (DRBC)
- Jeff Fischer (USGS)
- Jen Shourds (USGS)

Quality (Ch. 3)

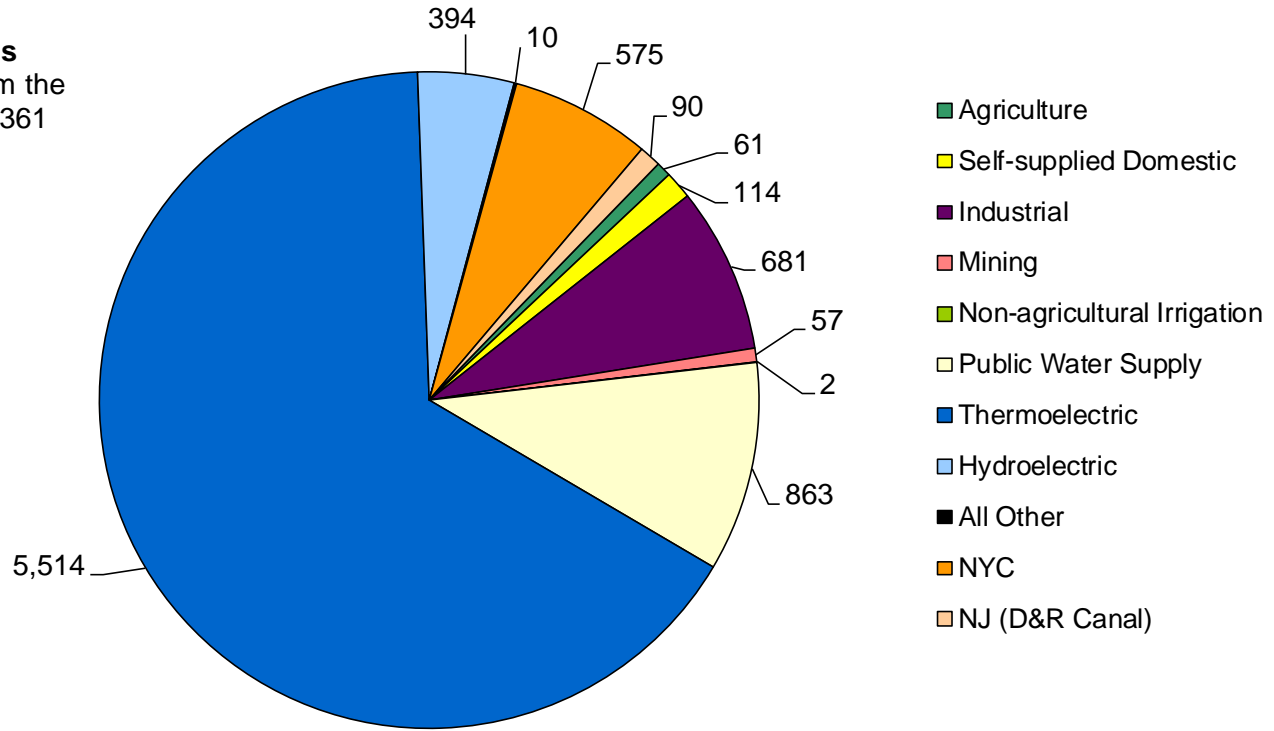
- John Yagecic, P.E. (DRBC)
- Ronald MacGillivray, Ph.D. (DRBC)
- Erik Silldorff, Ph.D. (DRBC)
- Eric Vowinkel, Ph.D. (USGS)
 - Special thanks to Jack Gibs (USGS)

Water Quantity Primary Indicators

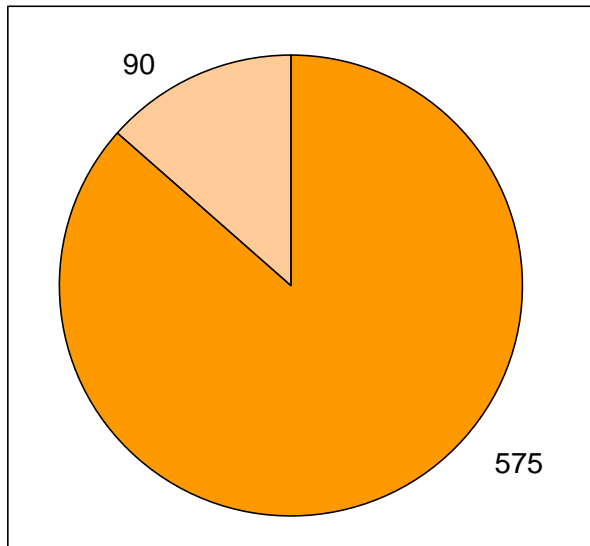
- 1 – Water Withdrawals – Tracking Supply and Demand**
- 2 – Consumptive Use**
- 3 – Per Capita Water Use
- 4 – Groundwater Availability
- 5 – Salt Line Location and Movement

DAILY WATER WITHDRAWS, MAJOR EXPORTS AND CONSUMPTIVE USE IN THE DRB, 2007

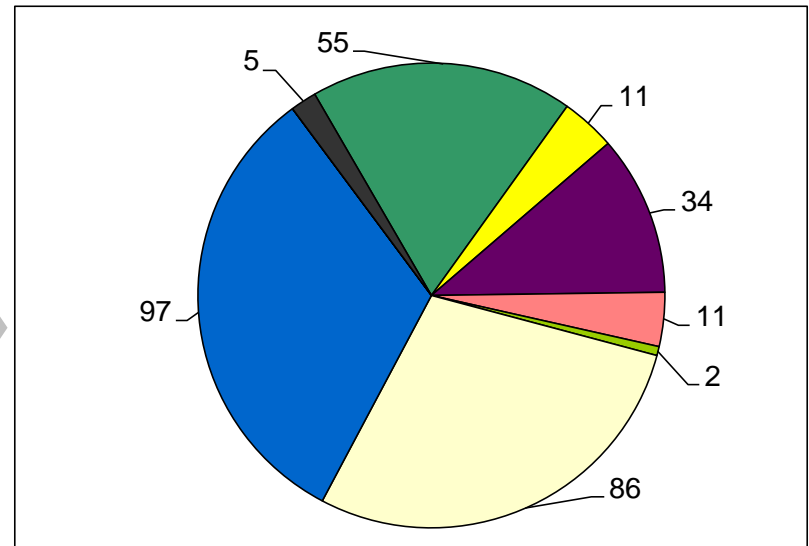
Total Water Withdrawals
(ground and surface) from the Delaware River Basin: 8,361 mgd



Major Exports from the Delaware River Basin: 665 mgd



Consumptive Use in the Delaware River Basin: 302 mgd



Pie chart values in mgd
(million gallons per day)

Sub-basins of the Delaware River

UPPER REGION

- East-West Branch
- Neversink-Mongaup
- Lackawaxen

CENTRAL REGION

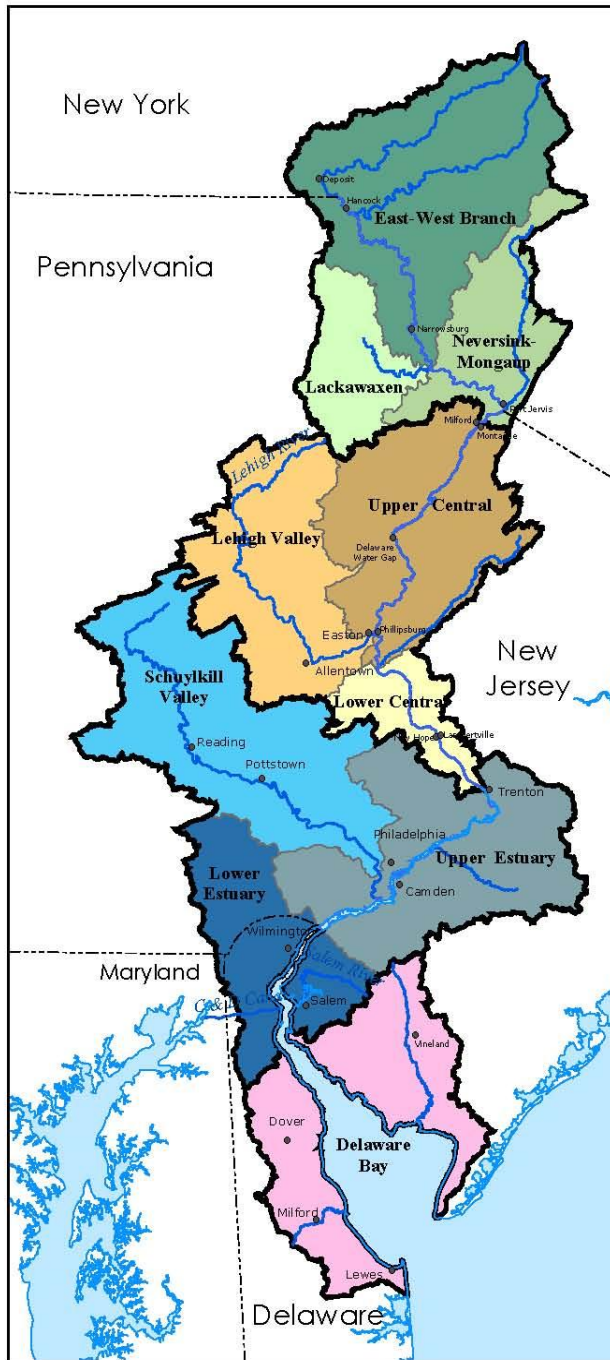
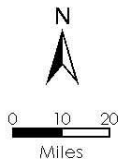
- Upper Central
- Lower Central
- Lehigh Valley

LOWER REGION

- Upper Estuary
- Lower Estuary
- Schuylkill Valley

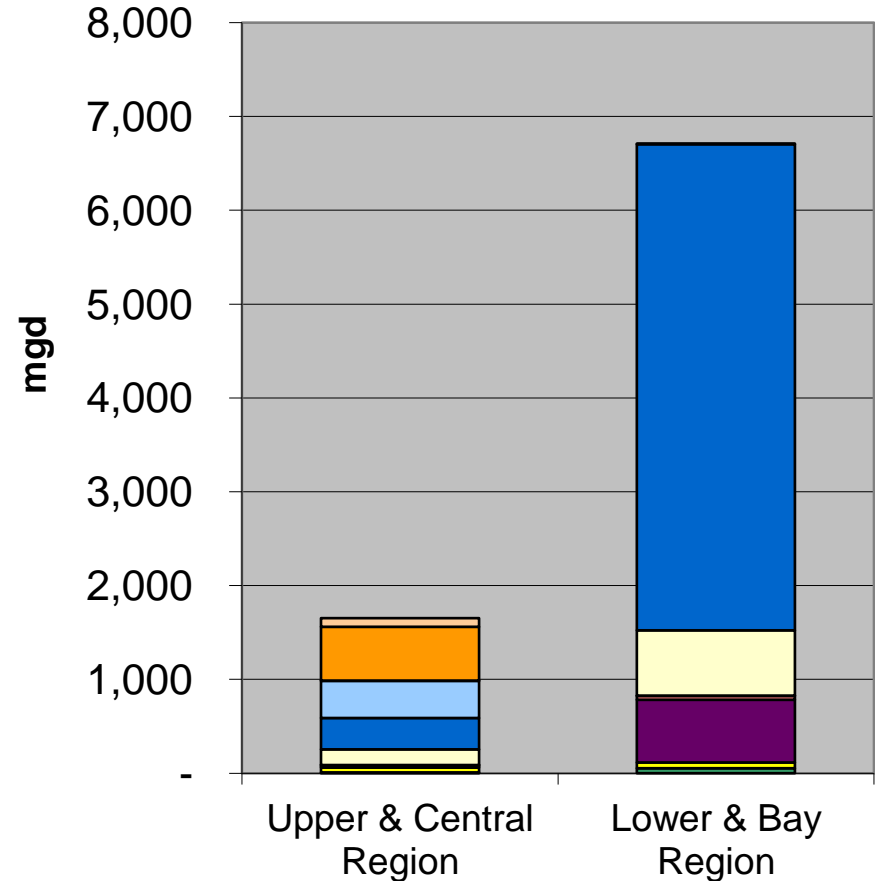
BAY REGION

- Delaware Bay



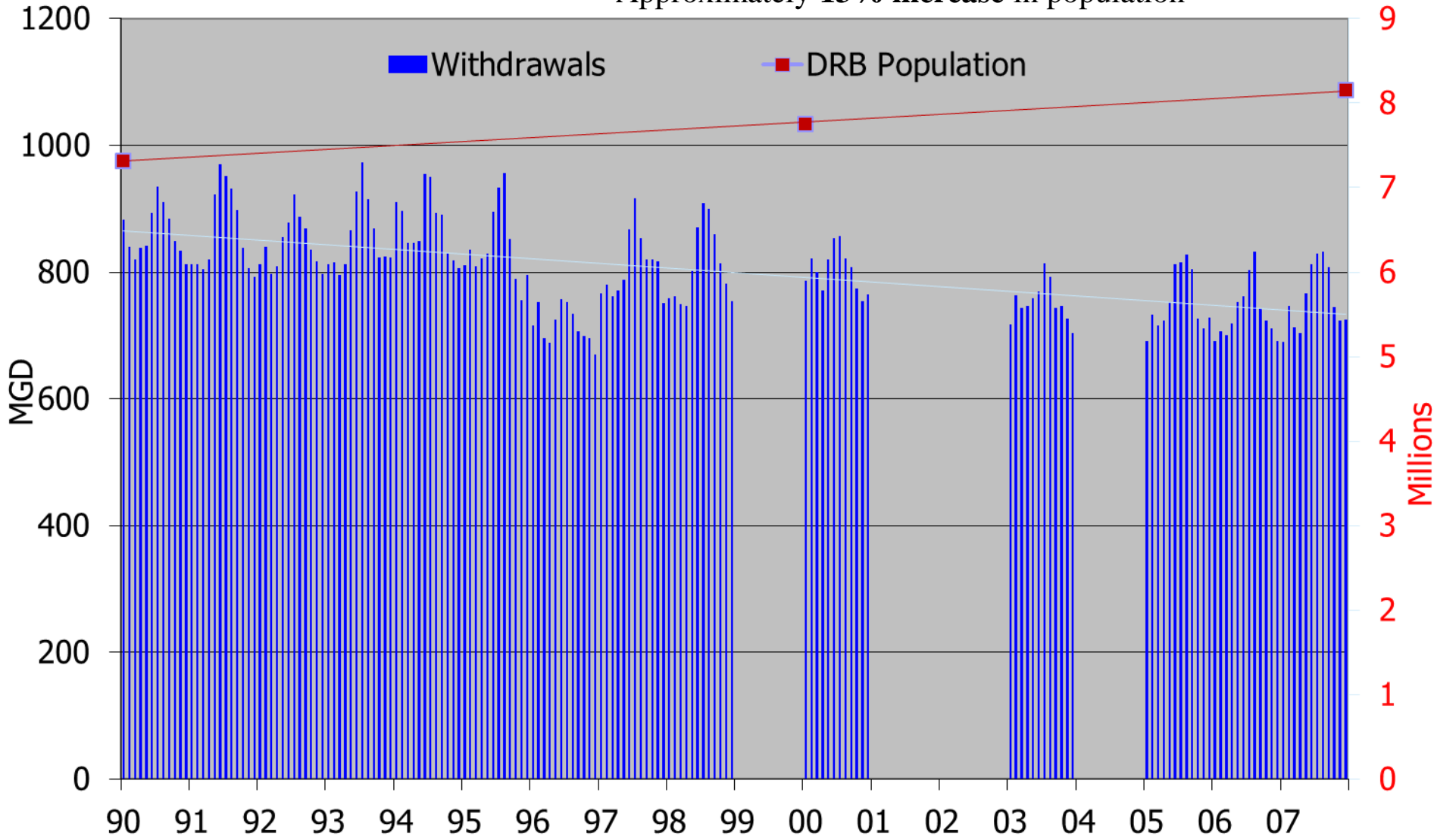
Water Use By Region

- NJ (D&R Canal)
- NYC
- All Other
- Hydroelectric
- Thermoelectric
- Non-agricultural Irrigation
- Mining
- Industrial
- Self-supplied Domestic
- Agriculture

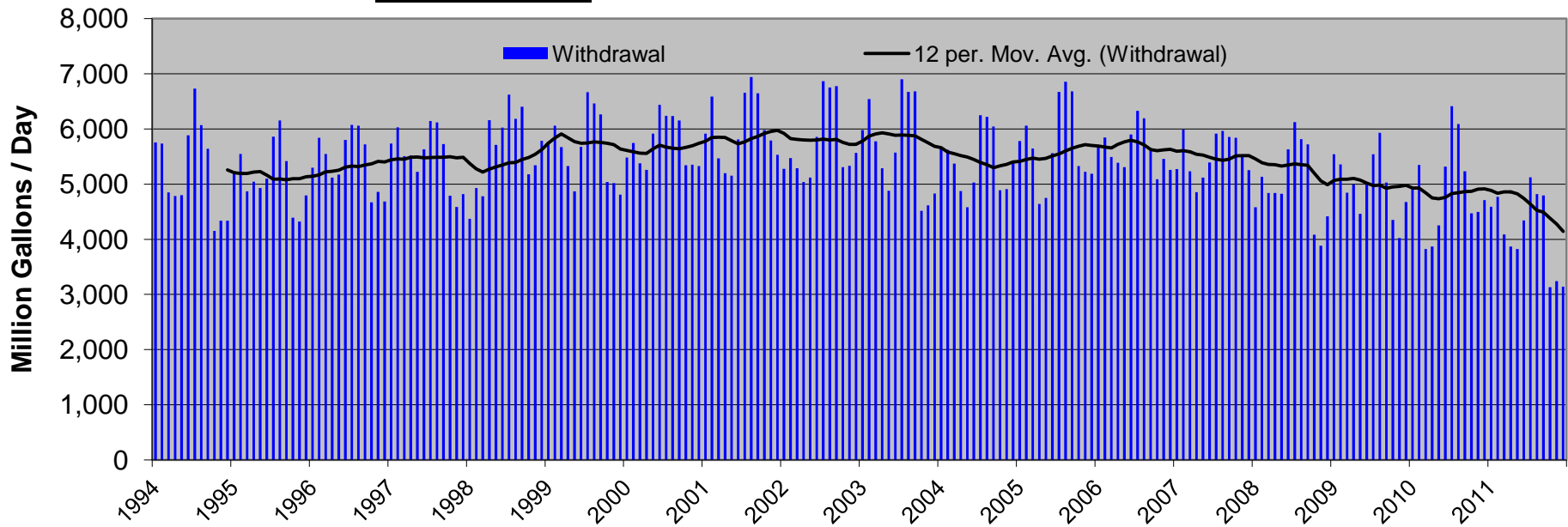


Aggregated Withdrawals of 40 Public Water Supply Systems in the DRB (MGD)

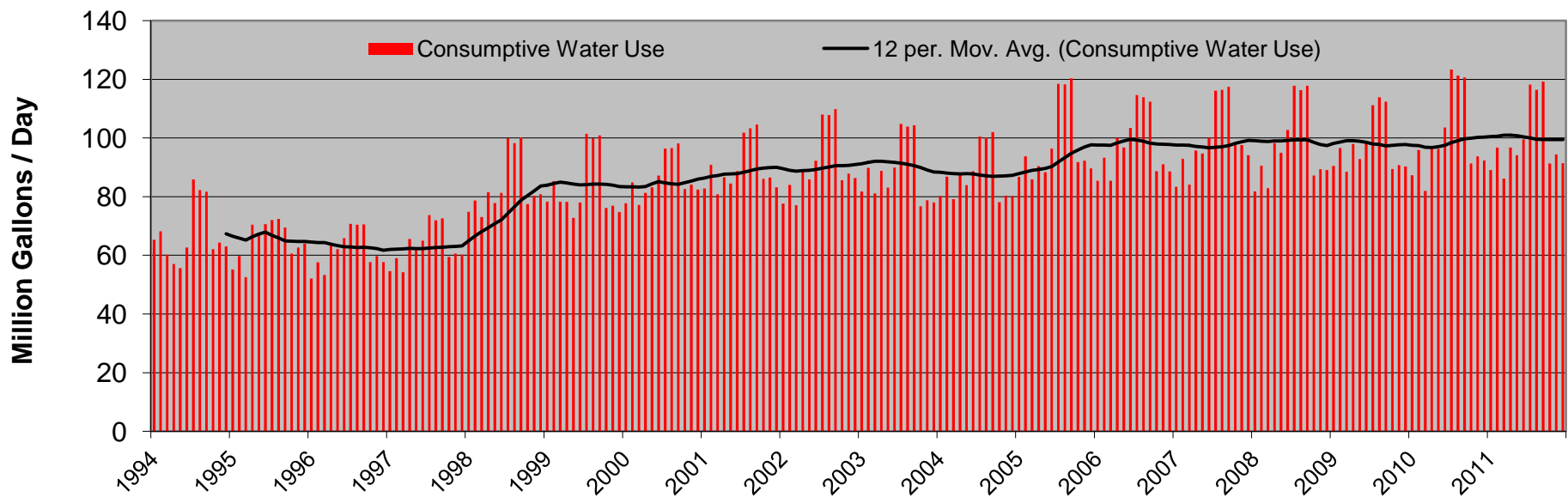
Trendlines 1990 - 2007: Approximately **15% decline** in withdrawals
Approximately **13% increase** in population



Total Withdrawals for Thermoelectric Facilities in the DRB



Total Consumptive Use for Thermoelectric Facilities in the DRB



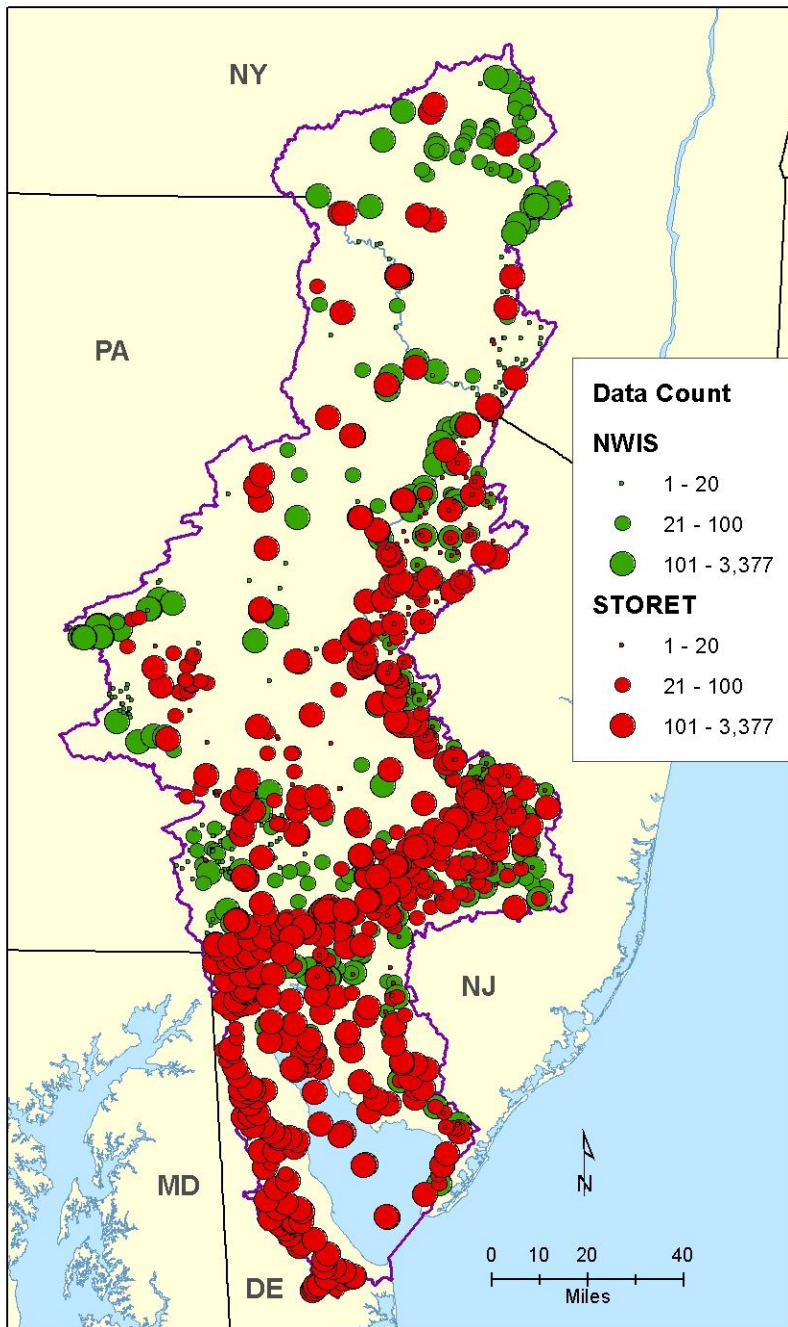
Water Quality Primary Indicators

Tidal (3A) and Non-Tidal (3B) Indicators

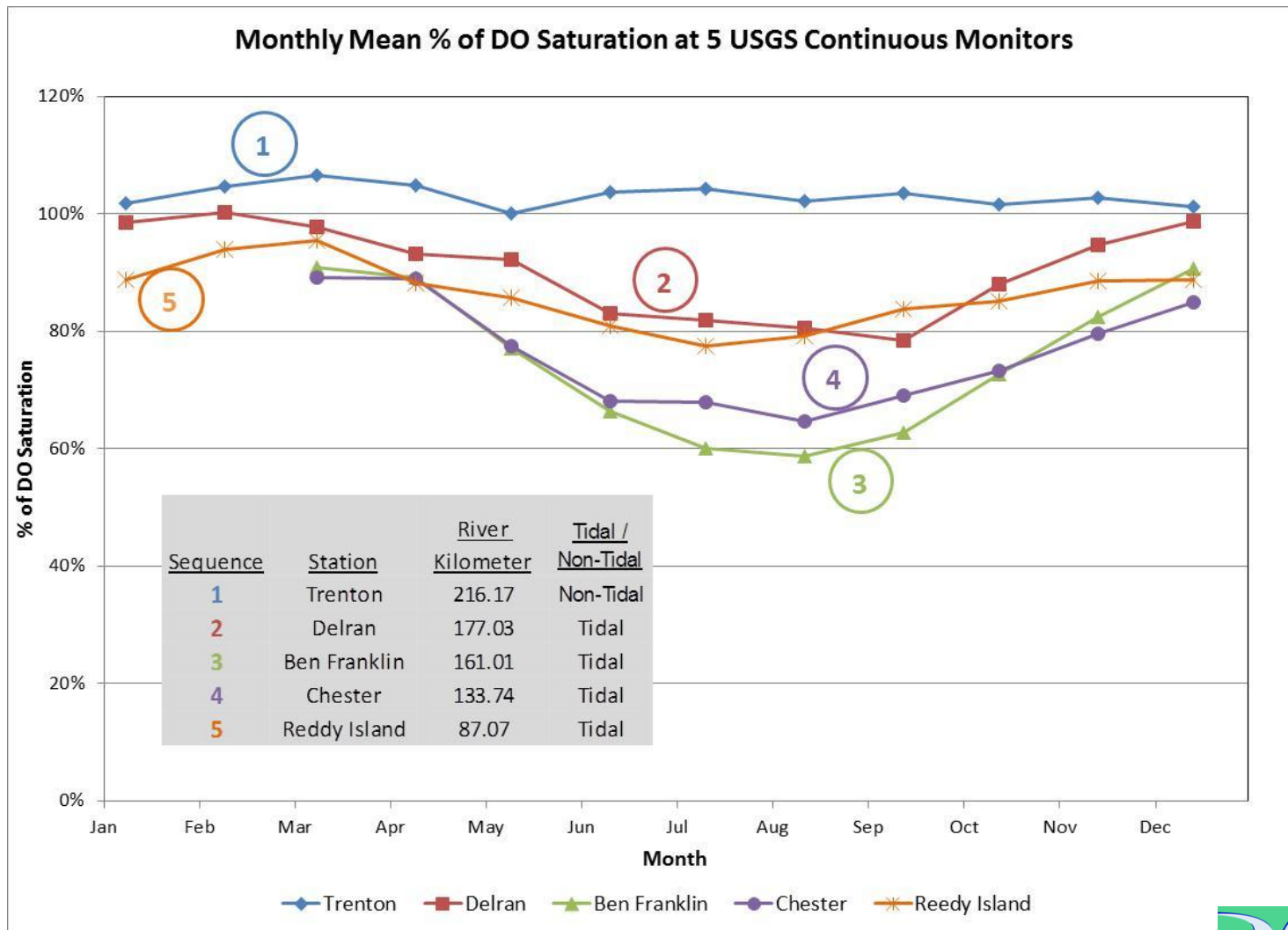
- 1 – Dissolved Oxygen**
- 2 – Nutrients
- 3 – Contaminants
- 4 – Fish Contaminant Levels**
- 5 – Salinity
- 6 – pH**
- 7 – Temperature**
- 8 – Emerging Contaminants

Data Sources

- 2000—2010 Data window for current conditions
- Primarily STORET and NWIS (discrete observations)
- Over 400,000 discrete observations
- *Also pulled full period of record for continuous monitors*

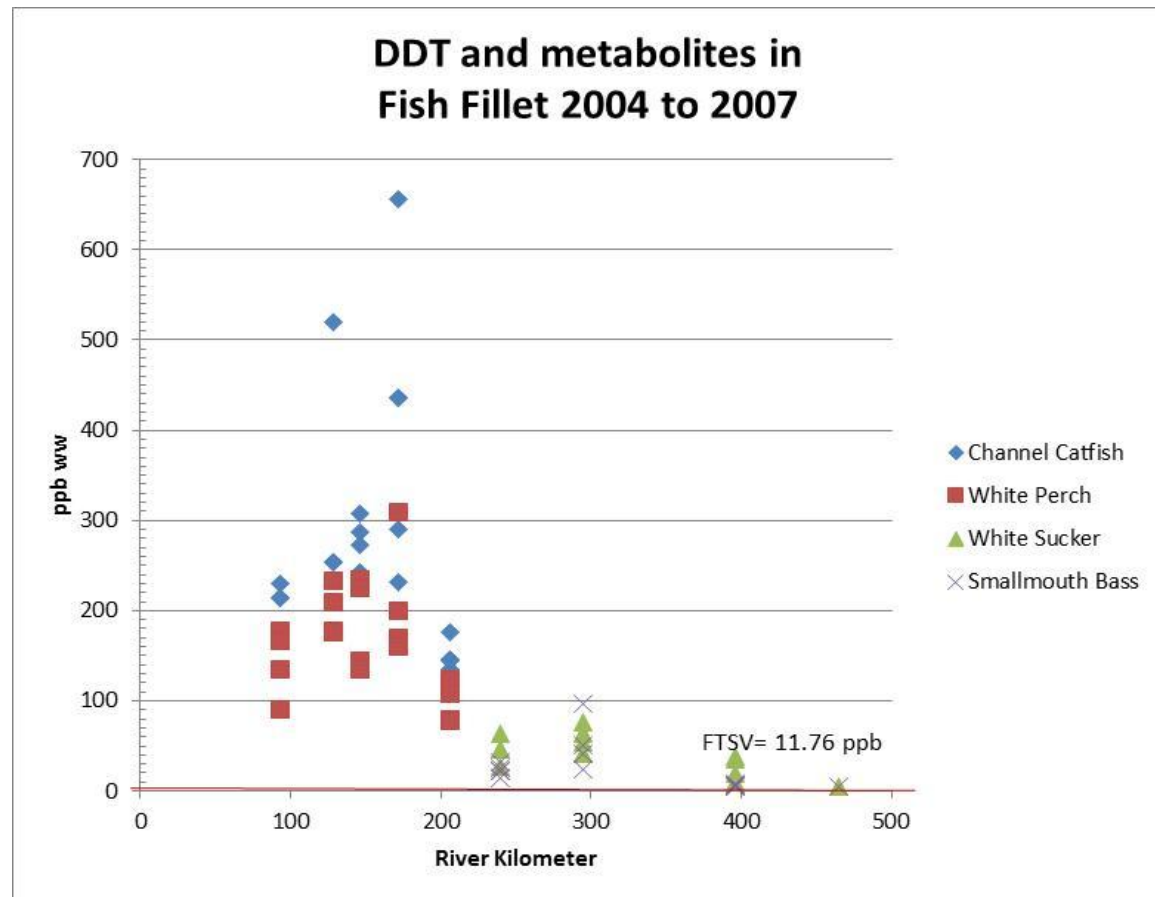


DO Saturation (2000-2010)

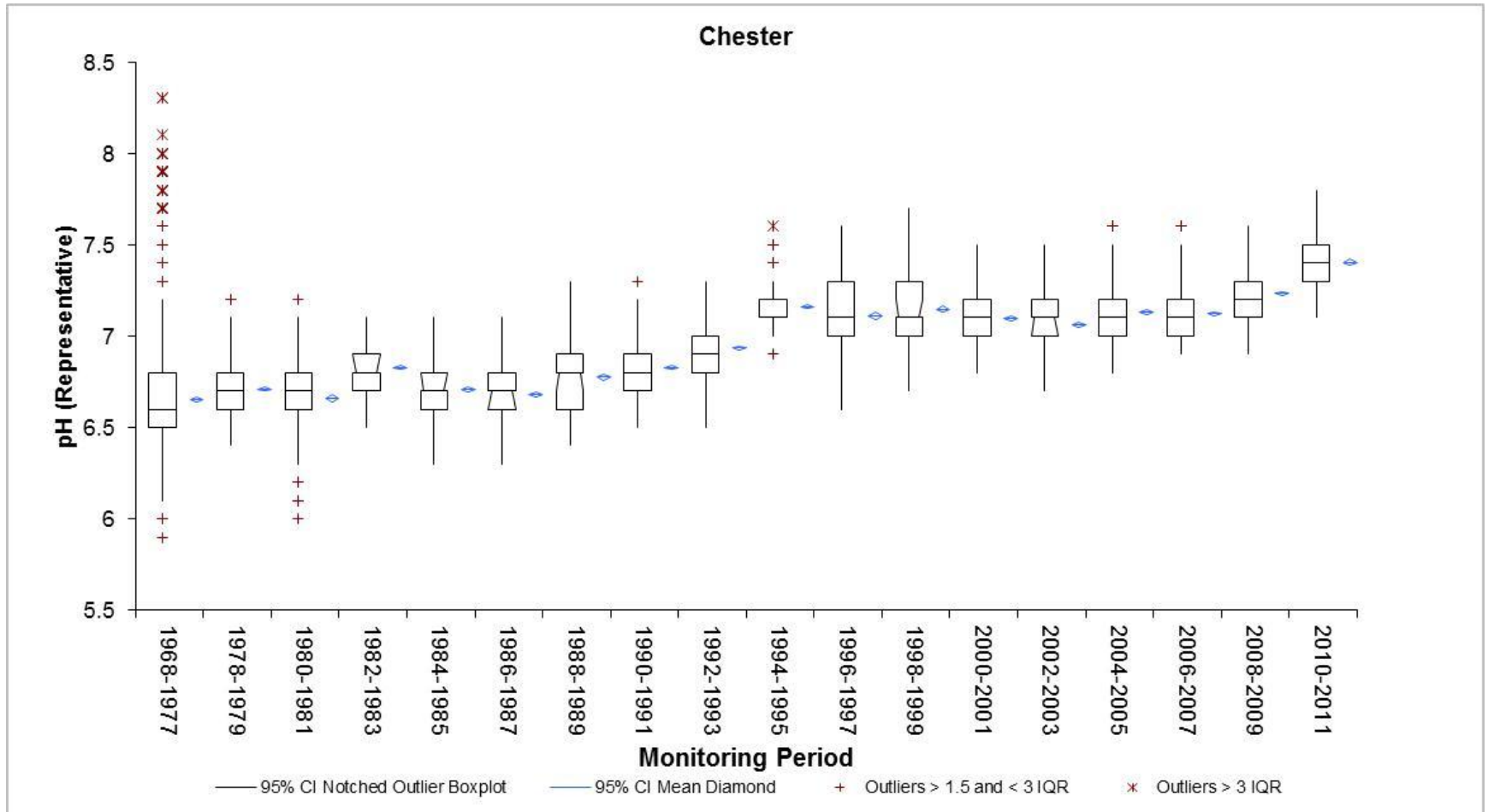


Developed Fish Tissue Screening Values based on WQ Criteria

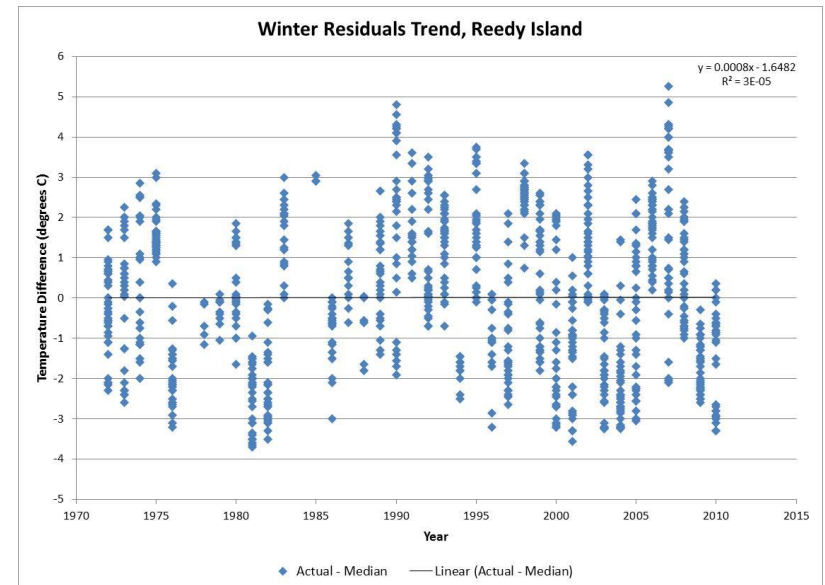
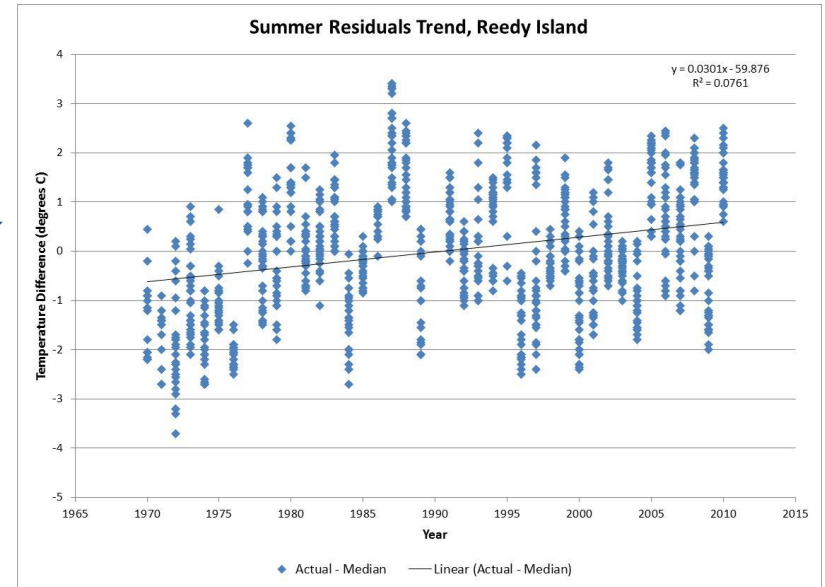
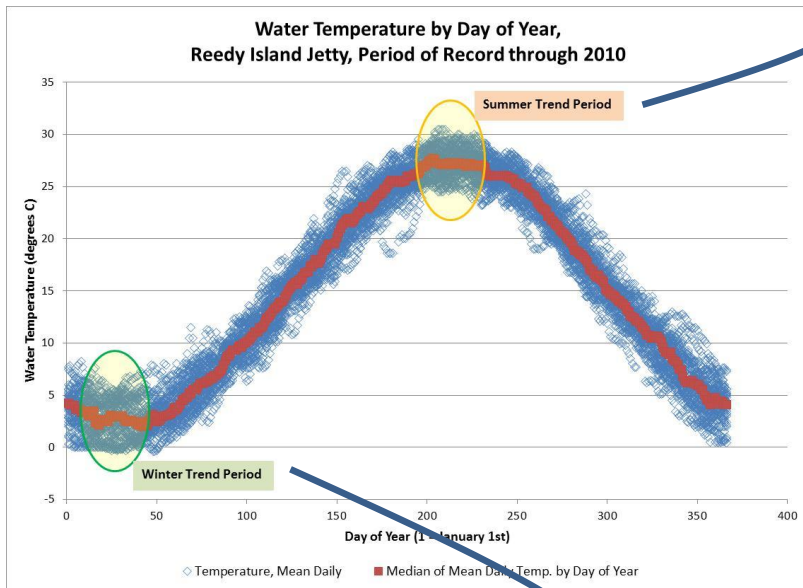
- Compared fish tissue concentrations to the FTSVs
- Exceeded FTSV for DDT and metabolites
- Linkage between fish tissue and water column suggests that WQ criteria could be exceeded



Apparent Increase in pH over Period of Record



Trends in Summer versus Winter Water Temperature?



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Questions?

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UNITED STATES OF AMERICA

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