

# Other Uses of NOAA PORTS data in the Delaware Estuary

**15th Biennial Harbor Safety Committee and  
Area Maritime Security Committee Conference**

**Philadelphia, PA  
August 25-27, 2014**



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**Delaware River Basin Commission**  
**DELAWARE • NEW JERSEY**  
**PENNSYLVANIA • NEW YORK**  
**UNITED STATES OF AMERICA**

# Other Uses Include

- Water Quality Assessment

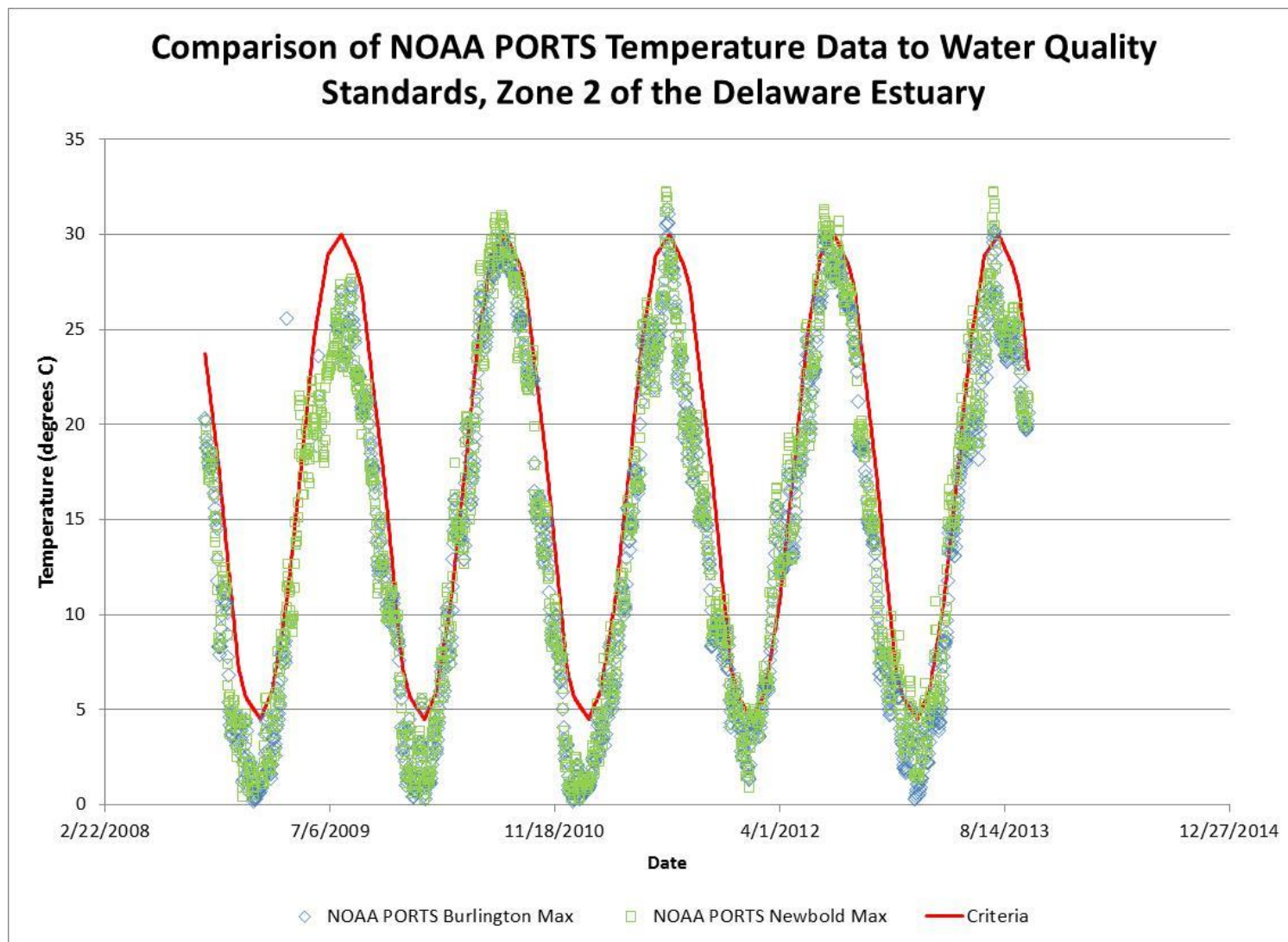
**Modeling**

- Evaluate Tidal Mixing Zones
- Track and Manage the Salt Line
- Proposed model recommended by Flood Mitigation Task Force (*future*)
- Automated spill model

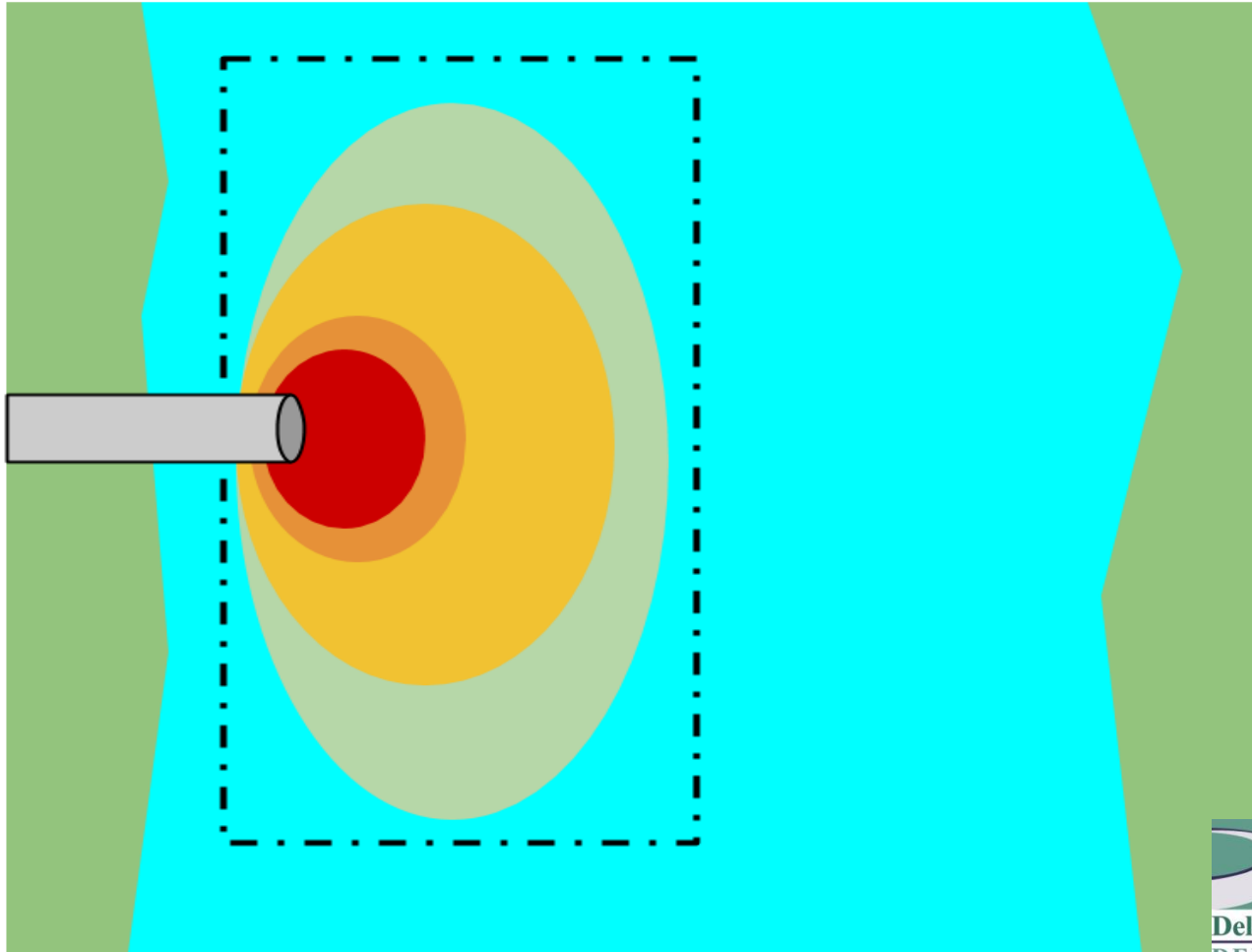
- Understanding Storm Surges

**Assessment**

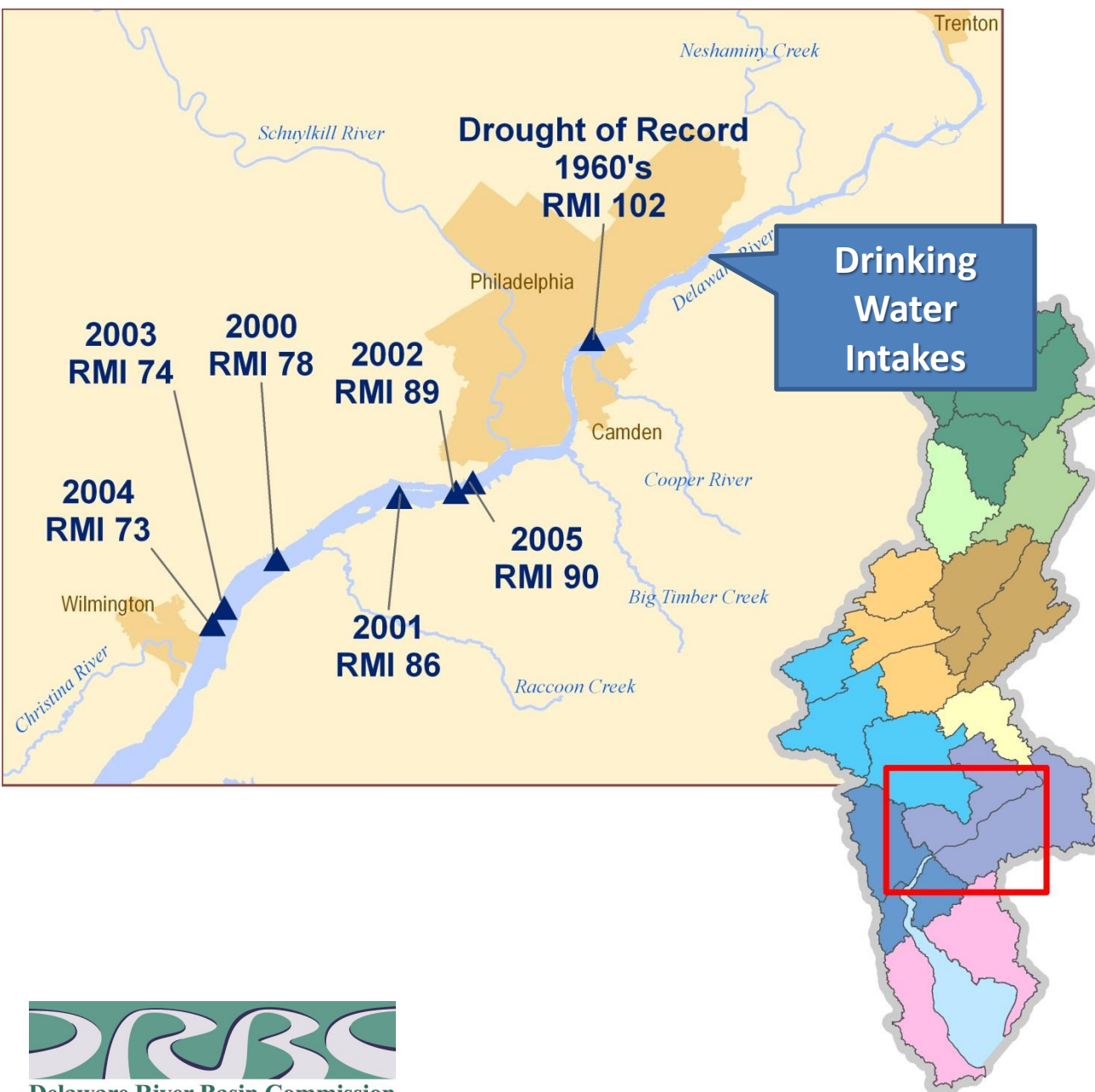
# Assessment of Water Quality Standards



# Evaluate Tidal Mixing Zones



# Tracking and Managing the Location of the Salt Line





# Flood Mitigation Task Force Recommendations



**DELAWARE RIVER BASIN  
INTERSTATE FLOOD MITIGATION  
TASK FORCE  
ACTION AGENDA**

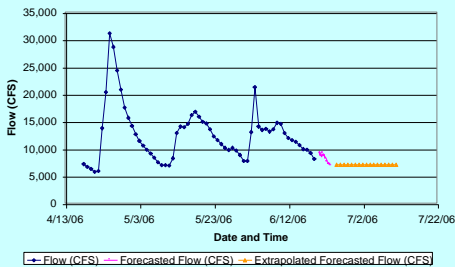
JULY 2007

- Recommendation FW-14: Coastal Flooding Impacts
  - Finding: Communities in the tidal reaches of the Delaware River and Bay are equally vulnerable to catastrophic flood events. The convergence of a major storm event with an incoming tide, or a Category 3, 4, or 5 Hurricane can create dramatic water level rises along both the main stem and the tidal portions of tributary streams.
- Recommendation: Develop a comprehensive program for coastal communities and resources protection including:
  - A model that takes into consideration the convergence of storm events, high flows from non-tidal stream and river reaches, storm events in nearby ocean and coastal regions and the Chesapeake Bay that dramatically impact storm events and surges in the Delaware Estuary and Bay.

# Automated Spill Model

## Automated Daily Processes No User Input Required

Measured, Forecasted, and Extrapolated Forecasted Flows  
at the Delaware River at Trenton (USGS Station 01463500)



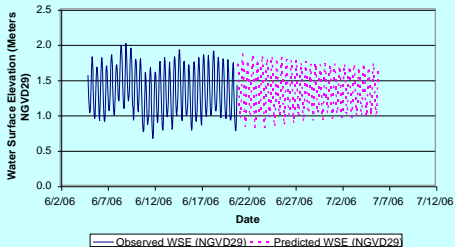
**Freshwater  
Boundary  
Discharge Data  
and Predictions**

**Pre-Processor  
develops model  
input file**

**DYNHYD5**

**Tidal Boundary  
Water Surface  
Data and  
Predictions**

Observed and Predicted Water Surface Elevation, C&D Canal at  
Chesapeake City, MD  
NOAA Station 8573927



## Water Quality Simulation in Response to Spill Event

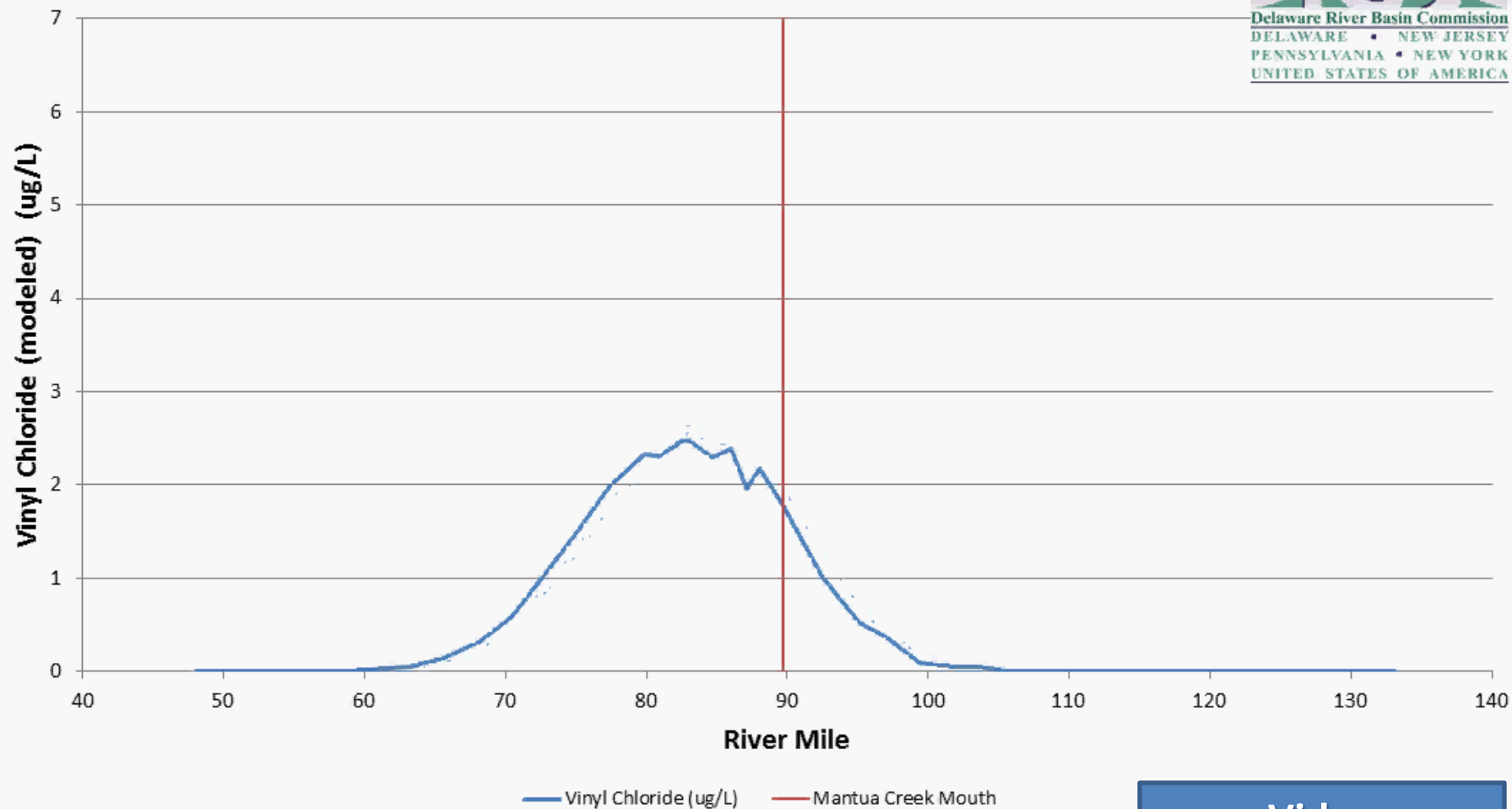
**Spill  
Data**

**WASP**

**Predicted Location,  
Duration, and  
Concentration of  
Impacted Water Intakes**

**Prescriptive Measures to  
Mitigate Impact**

12/4/12 11:00 AM



**Modeled concentration of vinyl chloride in the Delaware River  
from the release in Mantua Creek, near Paulsboro, NJ on  
November 30, 2012.**

**Video  
Link**

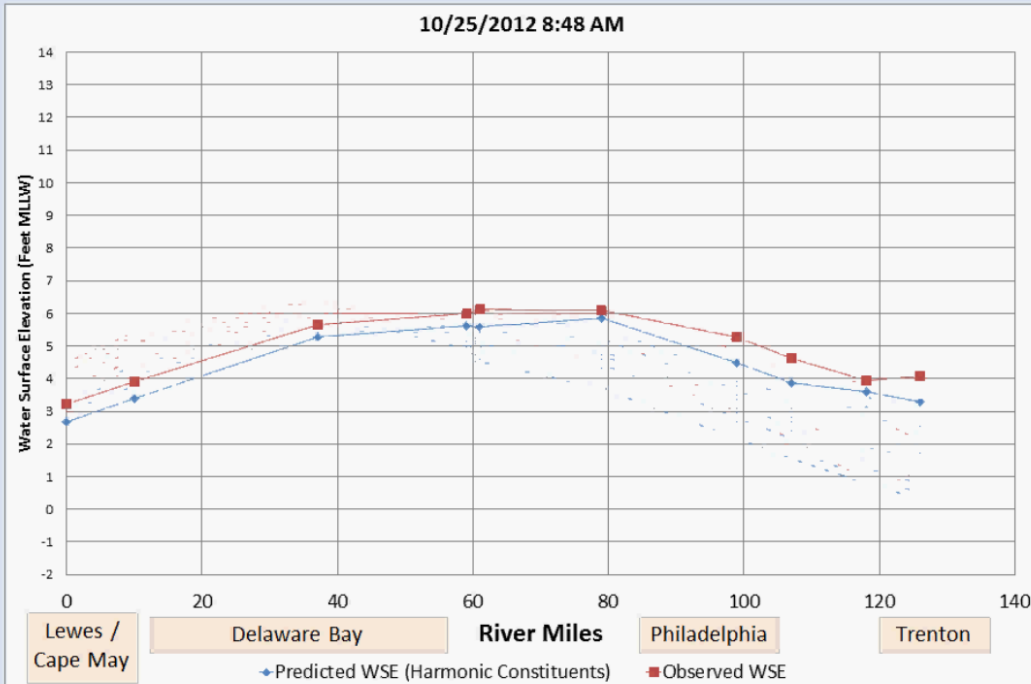


# Improved Understanding of Storm Surges in the Delaware Estuary

## Water Surface Elevations During Hurricane Sandy

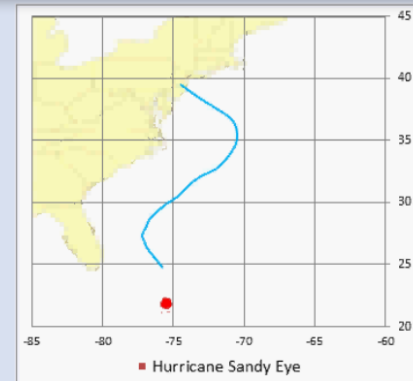
Sandy Delaware WSEs Animated Graph

### Impact of Hurricane Sandy on Delaware Estuary Water Surface Elevations

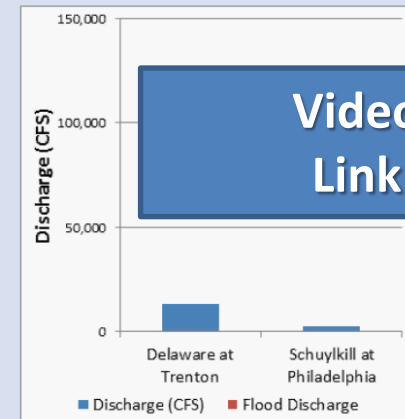


<http://tidesandcurrents.noaa.gov/ports/index.shtml?port=db>

Programmed by John Yagecic, P.E. in VBA Excel  
Delaware River Basin Commission



<http://www.nhc.noaa.gov/2011atlan.shtml>



Video  
Link

<http://waterdata.usgs.gov/usa/nwis/uv?01463500>

<http://waterdata.usgs.gov/usa/nwis/uv?01474500>

# Categories of Uses and Needs

## Assessment

- Water Quality
- Storm surge

## Model Needs

- Tidal elevations
- Currents
- Specific Conductance  
(to track salt) at all  
stations
- Water temperature

# Other Uses of NOAA PORTS data in the Delaware Estuary

## Questions?

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