

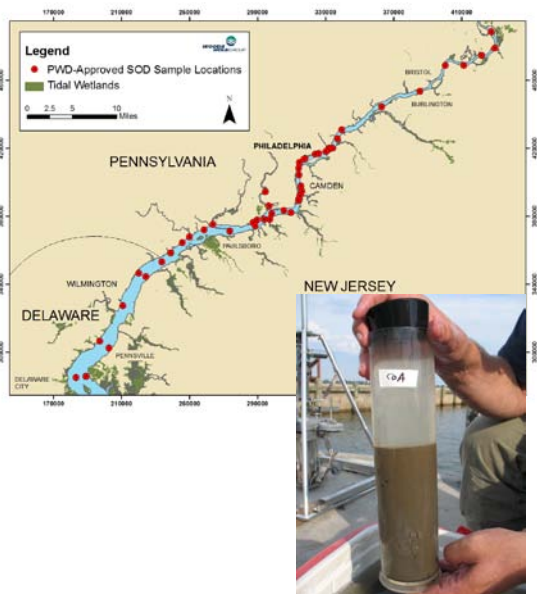
# Long-term Measurements of Hydrodynamics and Biogeochemistry in the Delaware Estuary

## Project Characteristics:

- *Collection of hydrologic and meteorological time-series*
- *Direct measurement of sediment and oxygen demand and nutrient flux*
- *Real-time data;*

The Philadelphia Water Department (PWD) is in the process of developing a hydrodynamic water quality model of the tidal Delaware Estuary between Trenton, NJ and Delaware City, DE. As part of this process, the PWD contracted Woods Hole Group and subcontractors to collect data to calibrate and validate the PWD model. The project is split into two parts: 1) collection of hydrodynamic and meteorological time-series; and 2) seasonal and spatial characterization of sediment oxygen demand (SOD), and other important biogeochemical processes in the model domain.

Hydrodynamic data (current speed and direction, temperature and salinity) have been collected at three long-term stations consisting of an acoustic Doppler current profiler (ADCP), conductivity sensor, data logger, and a surface buoy telemetry system (via IP modem). One station also contained a meteorological sensor suite. Data collected by each system were transmitted to the Woods Hole Group base station at 6-minute intervals.



In addition to the three long-term systems, multiple short-term (30-day) data collection stations were deployed to characterize detailed currents at specific locations of interest to the PWD modeling team.

The seasonal and spatial characterization of SOD is being performed via direct measurements, along with other relevant sediment parameters. Samples were collected at 88 stations in the model domain during four separate sediment collection surveys. Additionally, two water quality surveys were performed since the water column is a major contributor to the biogeochemical cycling of nutrients and oxygen in this urban estuary. Data were delivered in electronic format, along with interpretive reports including process descriptions and laboratory results.

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