Integrating Monitoring Data into Water Resource Management Decisions

April 28, 2010 Denver, CO

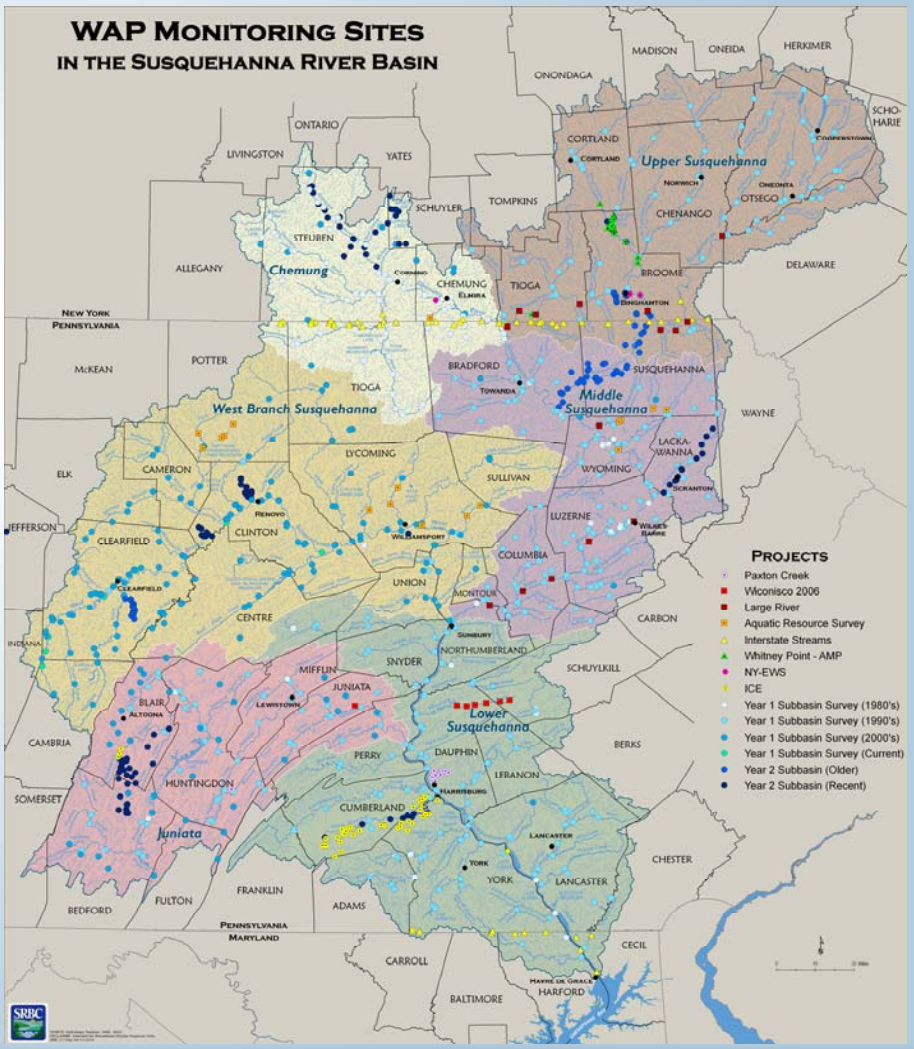
Susquehanna River Basin

The Basin

- 27,510-square-mile watershed
- Comprises 43 percent of the Chesapeake Bay watershed
- 4.2 million population
- 32,000+ miles of waterways

The Susquehanna River

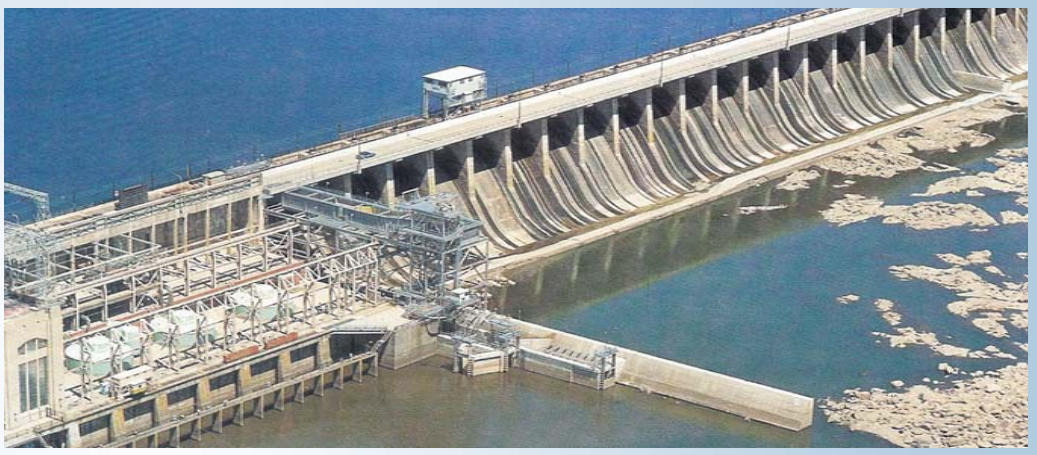
•444 miles, largest tributary to the Chesapeake Bay



Susquehanna River Basin Commission

- Federal-interstate compact commission established by the federal government (USACE) and the states of New York, Pennsylvania, and Maryland.
- Responsible for managing the basin's water resources.
- Regulatory authority for water withdrawals, diversions, and consumptive use
- Water quality monitoring and coordination

Types of Projects Regulated



Water Withdrawal Review

- Environmental Screening
  - Classification
  - Natural Diversity Inventory
  - Wetlands
  - Water Quality
- Aquatic Resource Survey
- Passby Evaluation
- Cumulative Impact Evaluation
- Aquatic Invasive Species
- Intake Design & Metering Plan
- Compliance Activities

Environmental Screenings

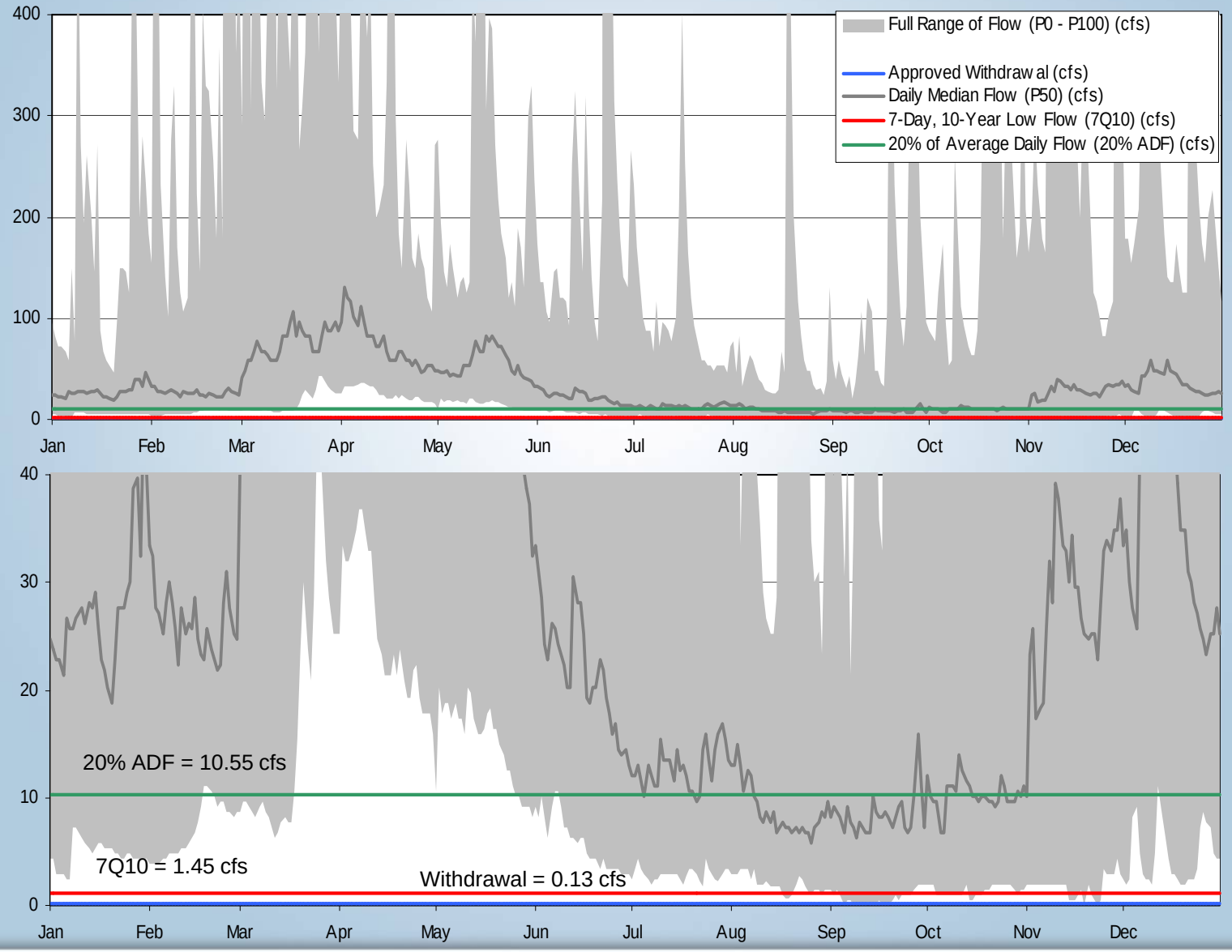
- Surface and Groundwater Withdrawals
- Stream Classifications
- 303(d) List or PWL Status
- Adjacent Wetlands
- Wild/Scenic Rivers
- Natural Diversity Inventory
- Aquatic Nuisance Species

Aquatic Resource Surveys

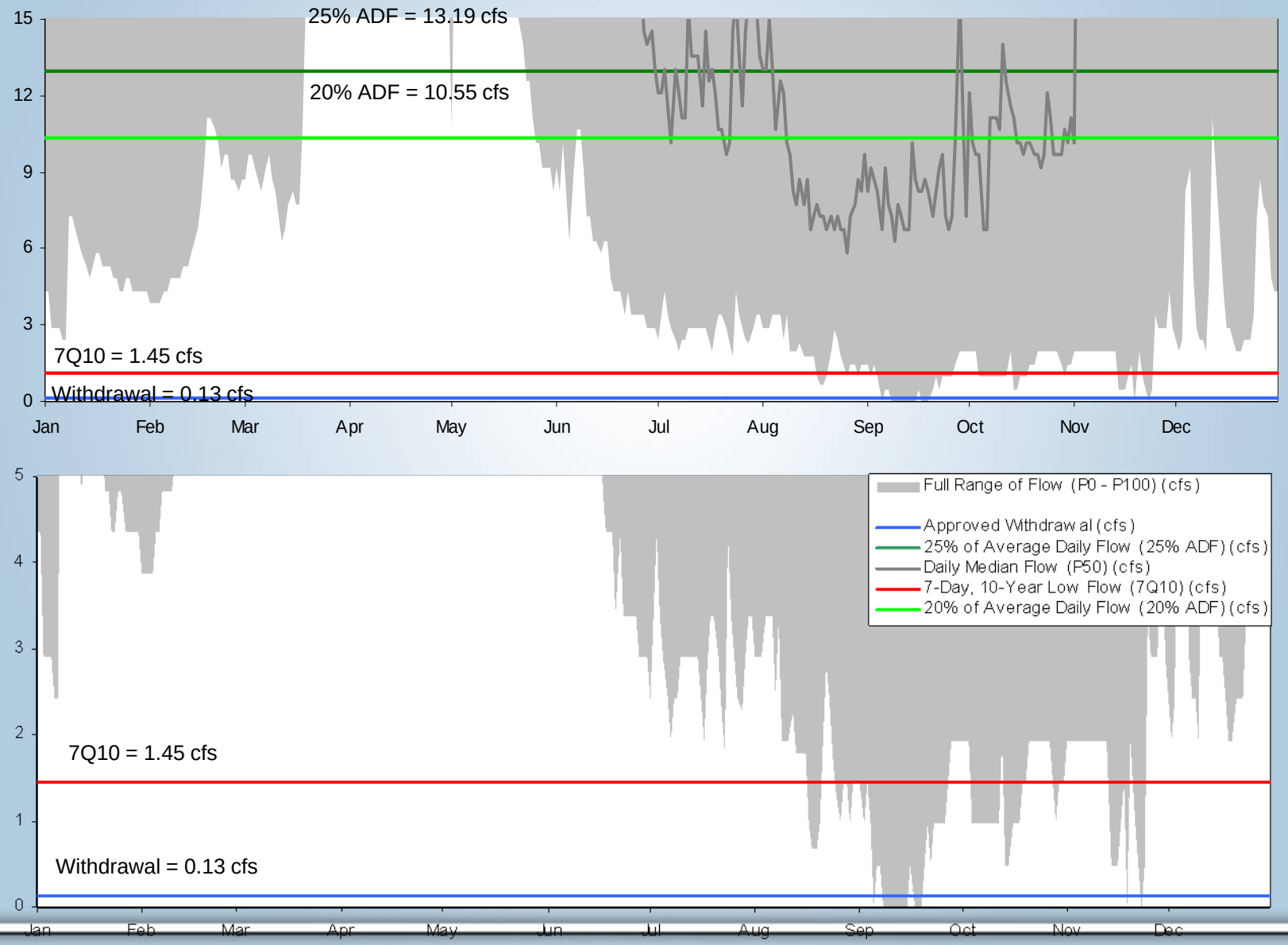
- No data available
- Obsolete information
- Special protection stream
- Protocols

- Background data for enforcement
- Correct protection level
- Pass-by decisions – possible stream reclassification

Annual Hydrograph - Larrys Creek

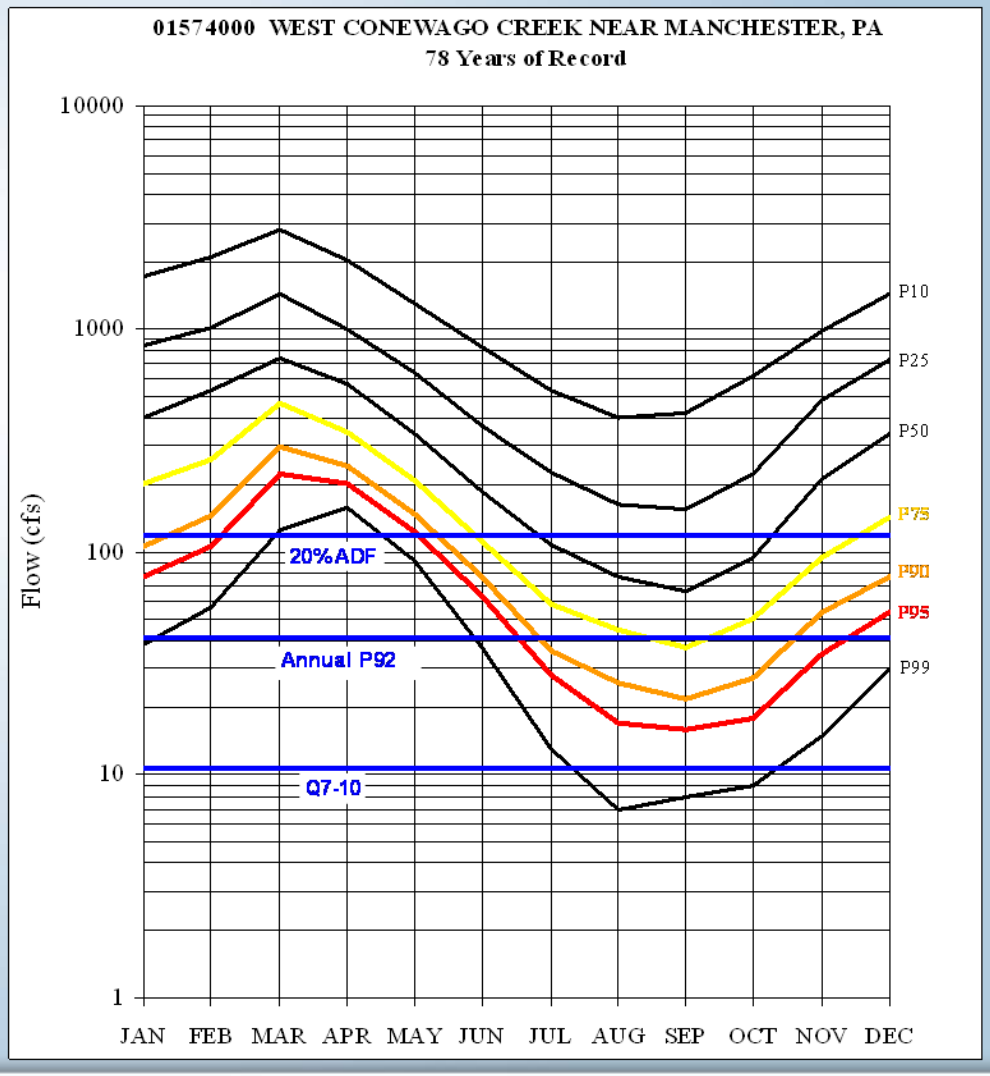


Annual Hydrograph - Larrys Creek



Low Flow Thresholds

The Commission is moving toward a more environmentally protective management system based on ecological flows.



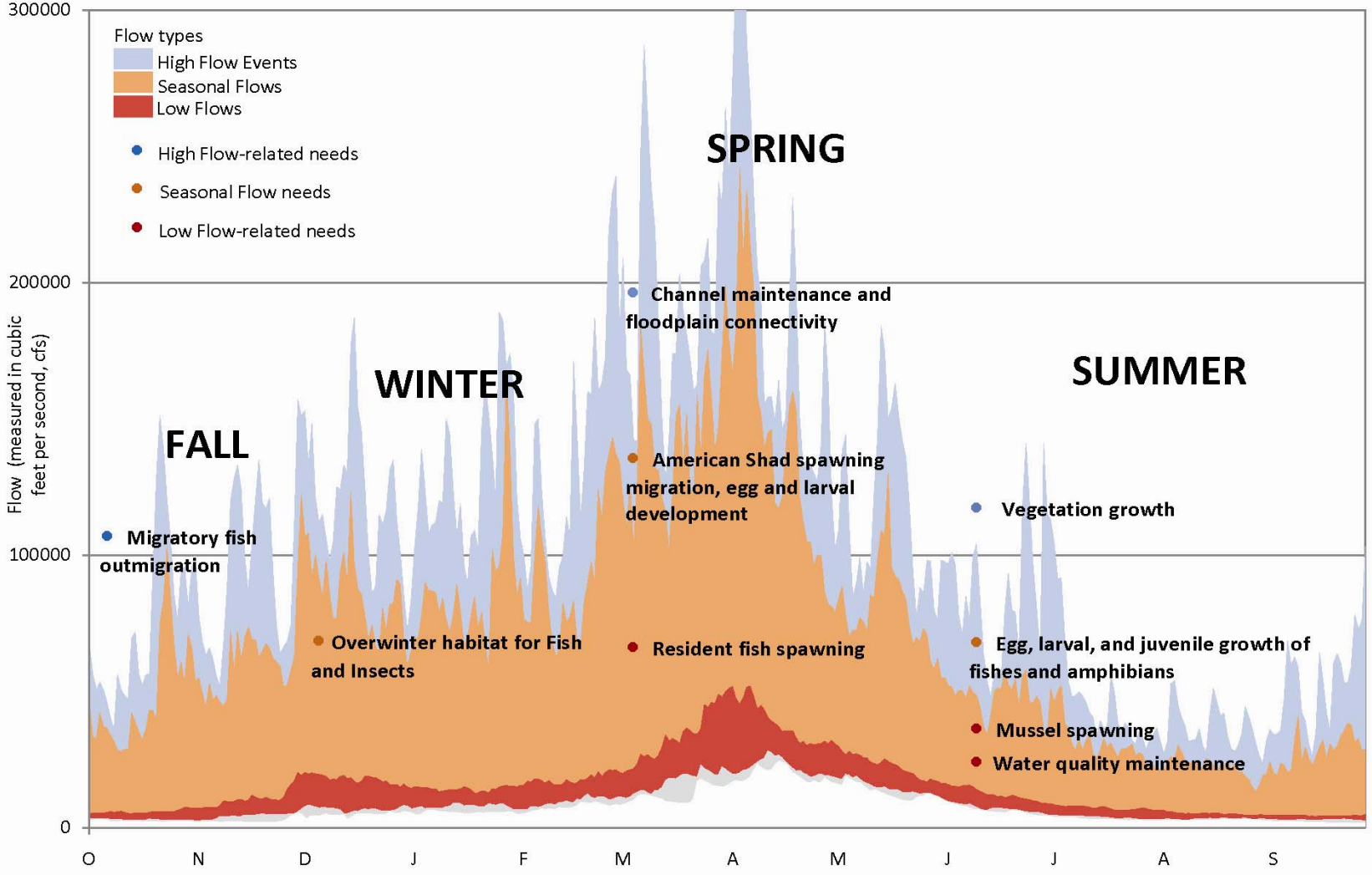
Ecological Flow Management

Cold Water Instream Flow Study PA, MD, USACE, USGS, PFBC

TNC Instream Flow Project in PA

Environmental Flow Study USACE & TNC

Major flow types and flow needs of species and habitats in the Susquehanna River



Warm Water IFIM Study

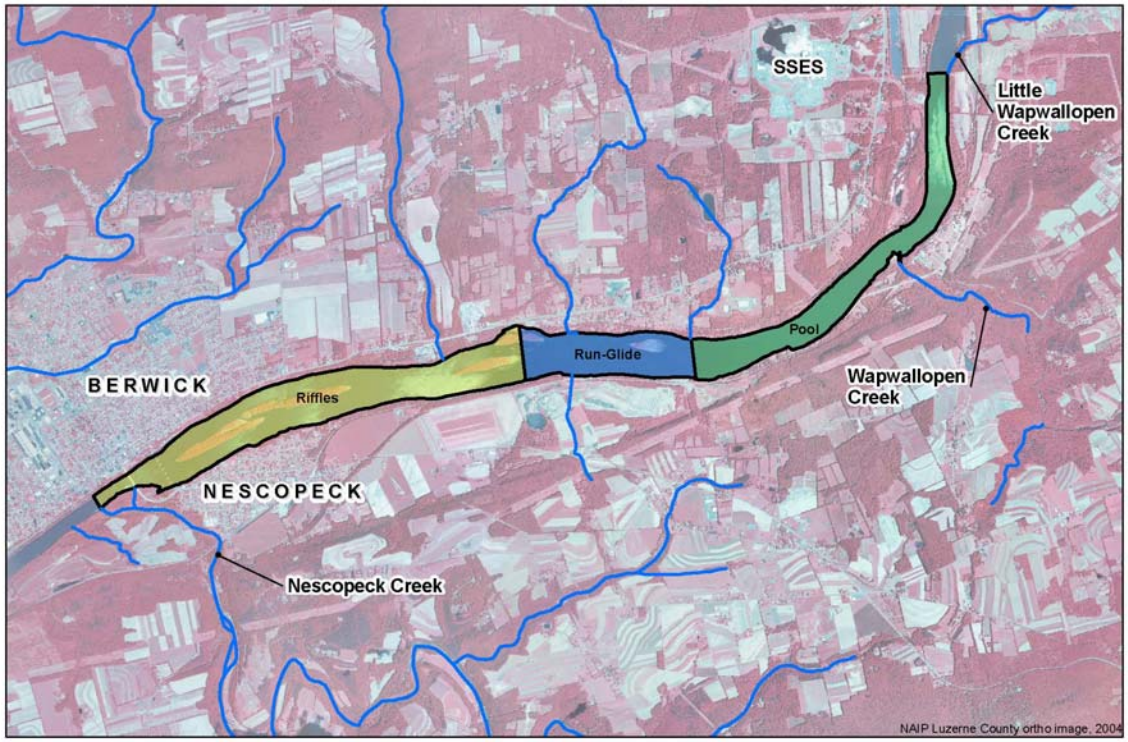


Figure 1-2.

Macrohabitat types classified in the study area during an initial field trip in early September 2009.

N

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- 41 mgd withdrawal
- Up to 31 mgd CU
- Investigating potential effects of consumptive use on aquatic biota and fish habitat related to a water withdrawal for Bell Bend Nuclear Power Plant
- Investigating life stages and seasonal effects

Whitney Point Project Objectives

- Maintaining Whitney Point Reservoir at a year-round pool level – 8,500 acre-feet of total storage will be available to augment downstream flows

- Monitor annually and during trigger low flow conditions to document the benefits of additional flow to the system.

Low-flow Monitoring Plan

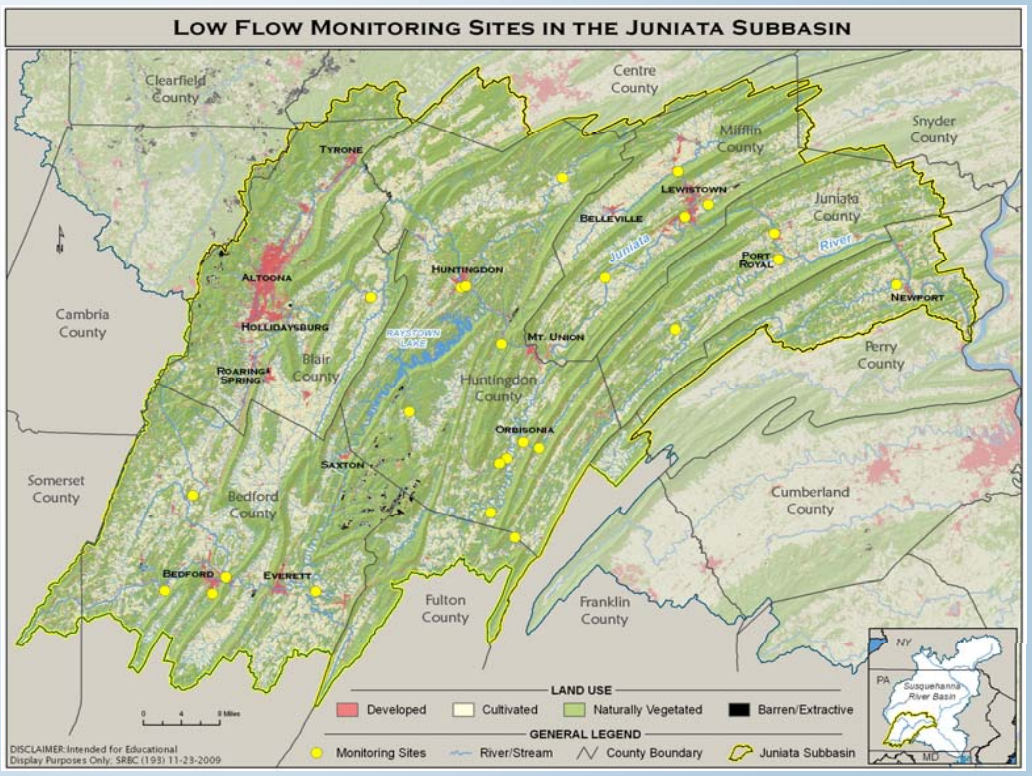
- Sentinel station system
- Pilot project in the Juniata Subbasin
- Yearly baseflow data collection
- Drought conditions, when occur
- Possible addition of subset of smaller streams, based on outcomes of pilot study

Sentinel Stations

- Increased time and expense associated with monitoring larger streams
- Located near USGS stream gaging stations
- Targeted riffle sections
- Macroinvertebrate sampling
- Periphyton data
- Water quality data
- Freshwater native mussels
- Photographs

Pilot Study

- 25 stations
- Discharge measurement
- Biotic & abiotic features
- Yearly report on baseflow conditions
- More extensive reporting during low flow years
- Management decisions to mitigate low flow effects
- Management decisions regarding pass-by flows and surface water withdrawals



Remote Water Quality Monitoring Network

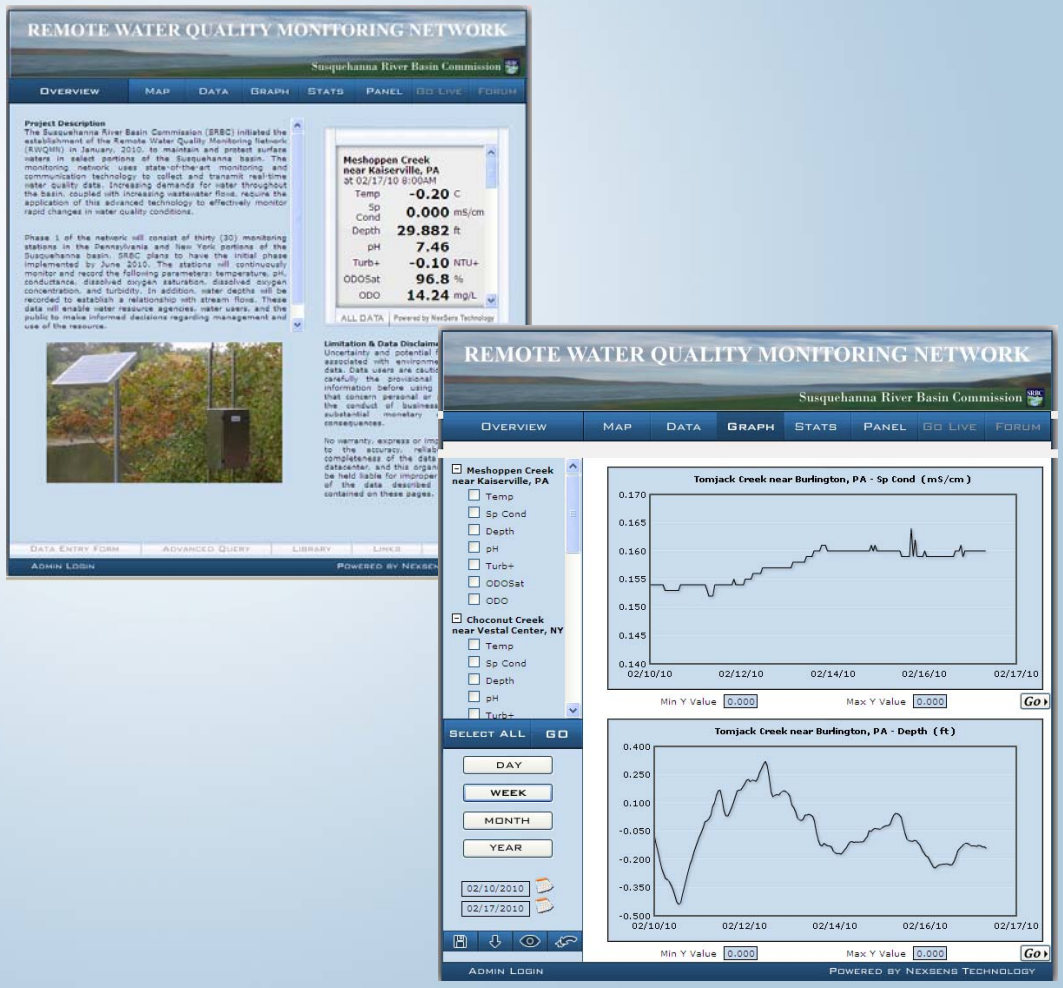
Station Locations

- Increased activities associated with natural gas development
- Sensitivity of headwater areas
- Public concerns
- Site considerations

Parameters of interest

- Conductance
- Temperature, pH, dissolved oxygen, turbidity, and depth
- Supplemental data

Website Interface



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