

# Balancing Monitoring Priorities - New Jersey's Strategy

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# Balancing Monitoring Priorities - New Jersey's Strategy

Meeting our Clean Water Act commitments Now and in the Future

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# Vision Statement

- ◆ To identify and implement monitoring programs that reflect the full range of water quality management objectives, including, but not limited to, the Clean Water Act goals.

# Goals and Objectives

- ◆ Establish water quality standards
  - ◆ Provide data of sufficient quality, frequency, and scale to permit definition of reasonable, clear and defensible standards
- ◆ Determine water quality status and Trends
  - ◆ Under 305(b) determine extent NJ waters meet the objectives of the Act, attain state standards, and protect aquatic life uses

# Goals and Objectives

- ◆ Identify impaired waters and waters needing protection
  - ◆ Under 303(d) identify both impaired waters and waters currently of high quality
- ◆ Identify causes and sources of impairment
  - ◆ Conduct monitoring and assessment programs for source ID and track-down

# Goals and Objectives

- ◆ Implement water quality management programs
  - ◆ Conduct monitoring aligned with the management programs:
    - ◆ Triennial Water Quality Standard Reviews
    - ◆ Conducting Use Attainability Analyses
    - ◆ Developing revised designated uses
    - ◆ Establishing Total Maximum Daily Loads (TMDL)
    - ◆ Assessment of Non-Point Source (NPS) best management practices (BMP)

# Goals and Objectives

- ◆ Evaluate program effectiveness
  - ◆ Conduct monitoring designed to evaluate effectiveness of CWA, Section 319 (NPS), 314 (Clean Lakes), 303(d) TMDLs, water quality standards, and NJPDES permitting programs.

# Where Have We Been?

- ◆ Historically:
  - ◆ NJ relied upon fixed station ambient monitoring for status and trend assessments
  - ◆ Intensive surveys for site specific assessments (304(L), 303(d), etc.)
  - ◆ By the 1980's, all routine ambient biological monitoring discontinued

# Where Have We Been?

- ◆ Problems:
  - ◆ Insufficient resources to adequately cover all waters
  - ◆ Monitoring designs not aligned (Bio vs.. Chem.)
  - ◆ Station selection biased towards higher order streams
  - ◆ Poor coverage in tidal and marine waters
  - ◆ No Ambient Lake Monitoring

# Where Are We Today?

- ◆ Created Ambient Biological Monitoring Network (AMNET) in 1992
- ◆ Redesigned NJDEP/USGS Cooperative Ambient Stream Monitoring Network in 1997
- ◆ Created Supplemental Ambient Monitoring SW Monitoring Network in 2000
- ◆ Established Ecoregion Biomonitoring Reference Stations

# Where Are We Today?

- ◆ Created Fish Index of Biotic Integrity Network
- ◆ Redesigned NJDEP/USGS Cooperative Ambient Ground Water Monitoring Network
- ◆ Created Ambient Lake Monitoring Network
- ◆ Implemented Source Identification and Track-Down studies in support of TMDL development
- ◆ Recalibration of biometrics for specialized environments (headwaters, pinelands, etc.)

# Where Are We Today?

- ◆ Initiated NPS monitoring in targeted watersheds
- ◆ Initiated 303(d) De-listing studies using clean methods for heavy metals

# Where Are We Today? - Examples

- ◆ 1992 Ambient Biological Monitoring Network (AMNET) created based upon USEPA Rapid Bioassessment Protocols
  - ◆ Over 800 Benthic Macroinvertebrate stations statewide
  - ◆ Monitored once every five years on rotational basin design
  - ◆ No probabilistic component in design

# Where Are We Today?

- ◆ Ambient Biological Monitoring Network (AMNET) - **HOW?**
  - ◆ Discontinued intensive surveys and compliance toxicity testing and put resources into ambient network

# Where Are We Today? - Examples

- ◆ 1997 major redesign of NJDEP/USGS Cooperative Ambient Stream Monitoring Network:
  - ◆ Increased from 79 stations to 115 stations
  - ◆ Monitoring in all 20 Watershed Management Areas
  - ◆ Created common sampling stations for chemical & biological monitoring
  - ◆ Initiated diurnal DO monitoring as selected stations

# Where Are We Today?

- ◆ 1997 major redesign of NJDEP/USGS Cooperative Ambient Stream Monitoring Network (cont.):
  - ◆ Created four classes of stations:
    - ◆ Statewide status
      - ◆ Randomly selected once every 2 years
    - ◆ Watershed Integrator
    - ◆ Land-Use Indicator
    - ◆ Reference/Background
  - ◆ Added intensive bacteriological monitoring

# Where Are We Today?

- ◆ NJDEP/USGS Cooperative Ambient Stream Monitoring Network - **HOW?**
  - ◆ Decreased frequency (based on statistical evaluation) from 5X to 4X per year
  - ◆ Discontinued lower priority chemical monitoring activities
  - ◆ Additional funding to cover increased analytical & operational costs
  - ◆ Partnered with County Health Agencies
  - ◆ Hired summer hourly staff

# Where Are We Today? - Examples

- ◆ Creation of Ambient Lake Monitoring Network
  - ◆ Probabilistically based design
  - ◆ 200 lake network, 40 lakes sampled per year on a five year rotational basis
  - ◆ Each lake monitored 3X per year (Spring, Summer, Fall)
  - ◆ Design does not adequately address trends

# Where Are We Today? - Example

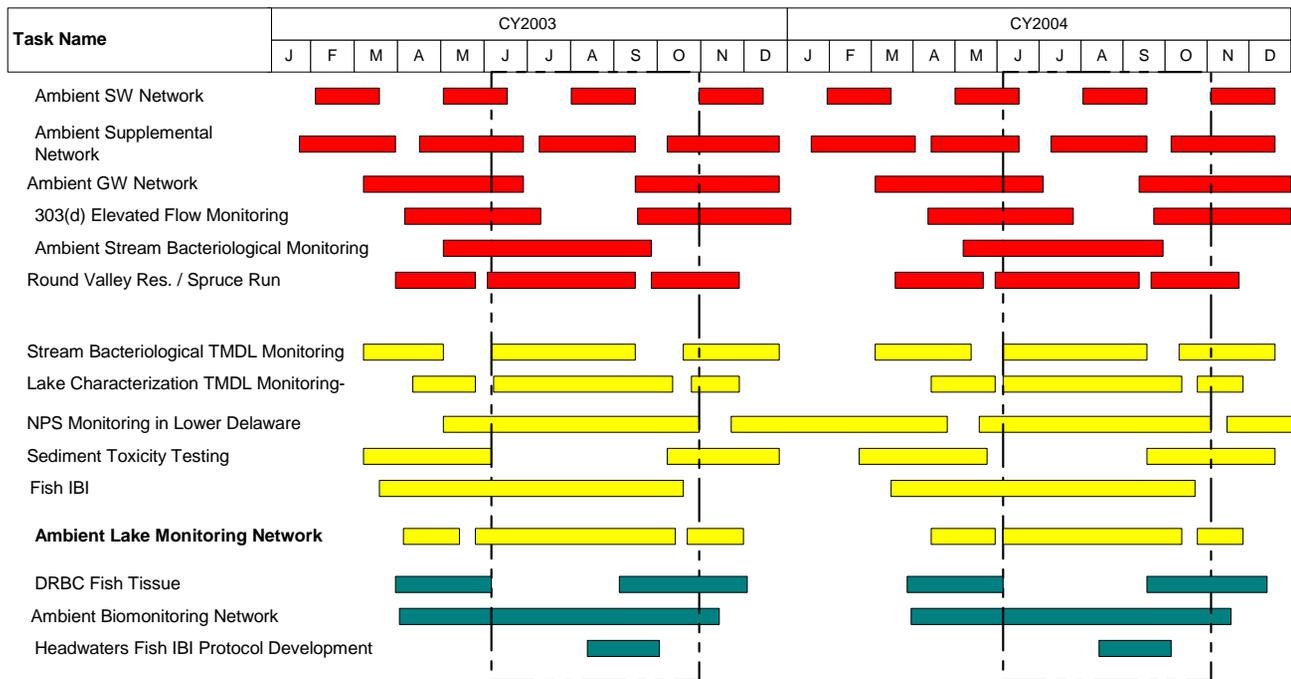
- ◆ Ambient Lake Monitoring Network - **HOW?**
  - ◆ Re-tasked one employee and hired three hourly staff
  - ◆ Infusion of additional operating funds
  - ◆ Assistance from USEPA in network design
  - ◆ Working with Volunteer Monitoring coordinator to establish a Volunteer Ambient Lake Trend Monitoring Network

# Summation

- ◆ Brutally honest triage on existing monitoring activities
- ◆ Maximize partnerships and use of volunteers where appropriate.
- ◆ Appropriate use of outside contractors
- ◆ Creative and flexible scheduling of monitoring

# Summation

## Ambient / Watershed Monitoring Networks



### LEGEND:

- Chemical Monitoring Staff
- ALL Monitoring Staff
- Biological Monitoring Staff

# Summation

- ◆ Brutally honest triage on existing monitoring activities
- ◆ Maximize partnerships and use of volunteers where appropriate.
- ◆ Appropriate use of outside contractors
- ◆ Creative and flexible scheduling of monitoring
- ◆ **NEW RESOURCES!**

# Future?

- ◆ Re-evaluation of AMNET design
  - ◆ Incorporate probabilistic component?
- ◆ Investigating use of SI/CADDIS
- ◆ Evaluation of Tiered Aquatic Life Use (TALU)
- ◆ Enhancement of Ambient Cooperative SW Monitoring Network
  - ◆ Adding more targeted stations
  - ◆ Adding more probabilistic stations

**THANK-YOU**