

Indicator Integration for National Water Quality Information: A State Perspective

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NJDEP - Water Monitoring & Standards

- Value of Indicators - Translating Data to Information
- Indicators Reporting – State and National
- National/State/Watershed Scale Data Integration
- Comparability of Data
- Align Indicators with Water Goals – measures of progress
- Benefits of Indicators in Results-Based Management Systems

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National Water Monitoring Conference – April 2010



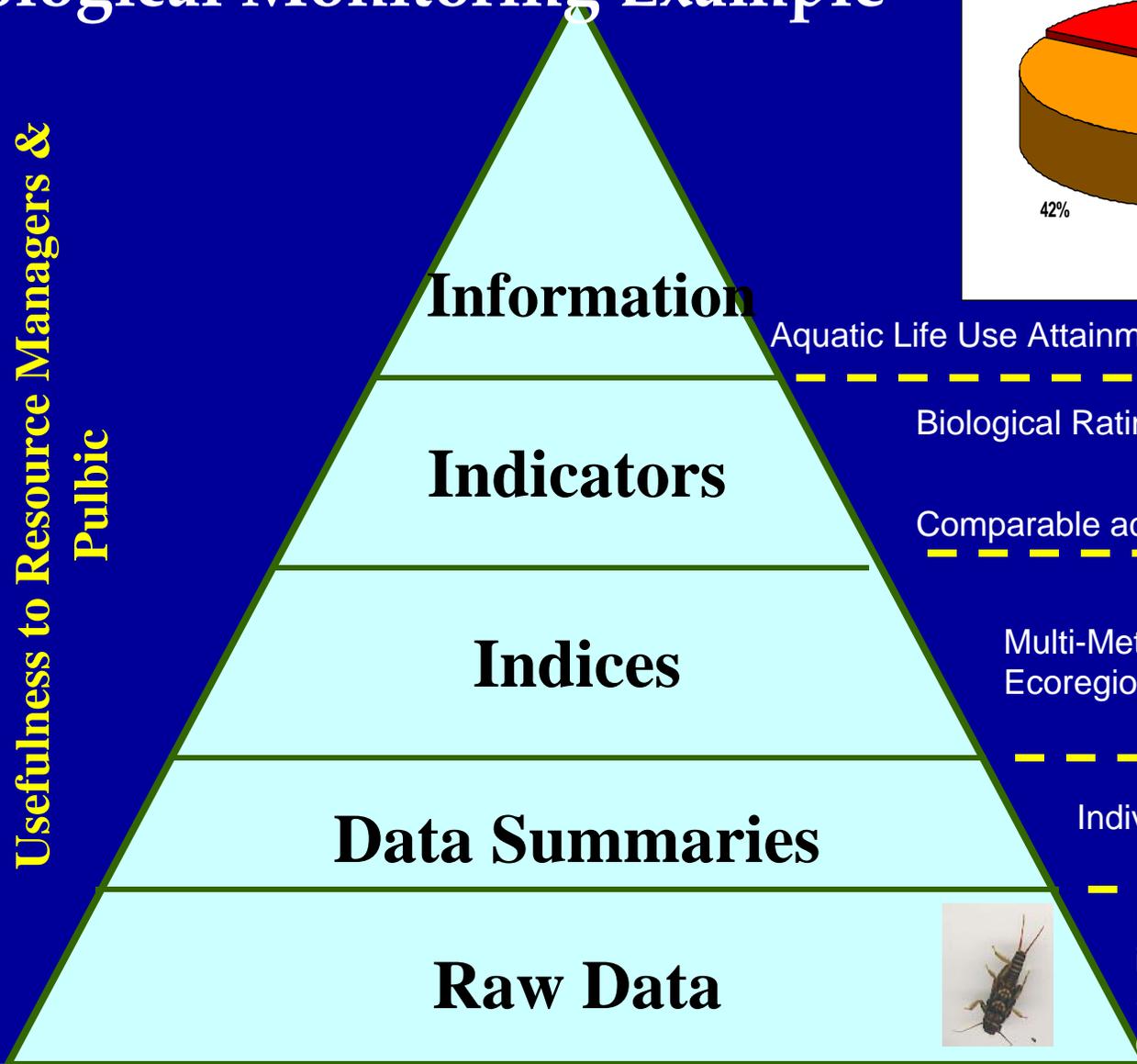
Value of Environmental Indicators

- Indicators - **currency of environmental quality information exchange**
- Measures of environmental quality used to assess **status and trends** of environmental **pressures, conditions or effects**
- Translate raw monitoring data, through assessment, into meaningful information
- Investments needed in data assessment, analysis & statistical methods



Indicators – Data to Information: Biological Monitoring Example

Usefulness to Resource Managers & Public



Information

Aquatic Life Use Attainment – Impaired, Non-Impaired

Indicators

Biological Ratings – Excellent, Good, Fair, Poor

Comparable across Ecoregions

Indices

Multi-Metric Index Scores – Ecoregion specific

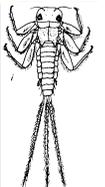
Data Summaries

Individual Scores (e.g., %EPT)

Raw Data



Benthic macro-invertebrate taxa counts (e.g., mayfly & stonefly counts)



AMNET Statewide Results - Round 3
2002-2007
(758 total sites)

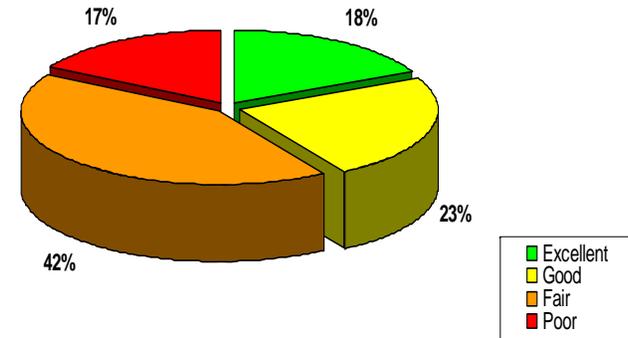


Figure 6



Environmental Indicator Reporting

NJ State

Strategic Water Goal – Rivers, lakes & coastal waters will be fishable, swimmable & support healthy ecosystems...Adequate quantities of surface & ground water will be available for all uses

- 1998 – NJ State of Environment Report (SOE)
- 2000 – NJ SOE Report
- 2005 to present – NJ Electronic Environmental Trends Chapters
 - Water Chapters (including):
 - Coastal Beach Closings
 - Shellfish Growing Waters
 - Rivers & Streams - Benthic Macroinvertebrates/ Fish
 - Rivers & Streams – Pollutant trends
 - All Waters - Designated Use Support



<http://www.state.nj.us/dep/dsr/trends2005/>



Environmental Indicator Reporting

National

- 2003 EPA Draft Report on Environment (RoE)
- 2008 EPA RoE Report – electronic chapters



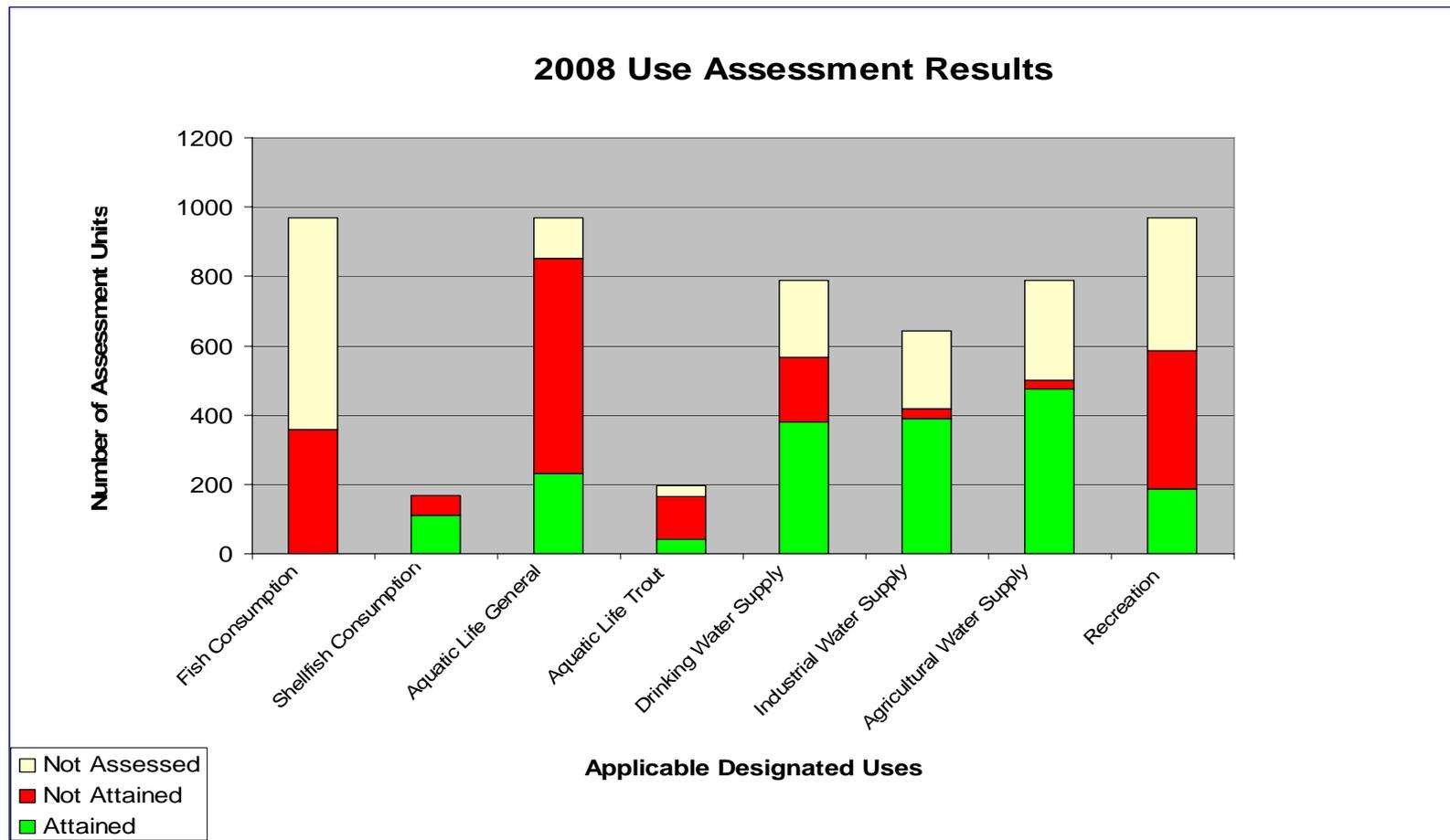
Other National Environmental Indicators efforts include:

- EPA Strategic Measures – Use of RoE indicators in GPRA-required Agency Strategic Plans. Outcome –based Performance measures in State Partnership Agreements.
- Heinz Center Report NEST (under development)- multi-Agency



NJ Water Indicator Examples

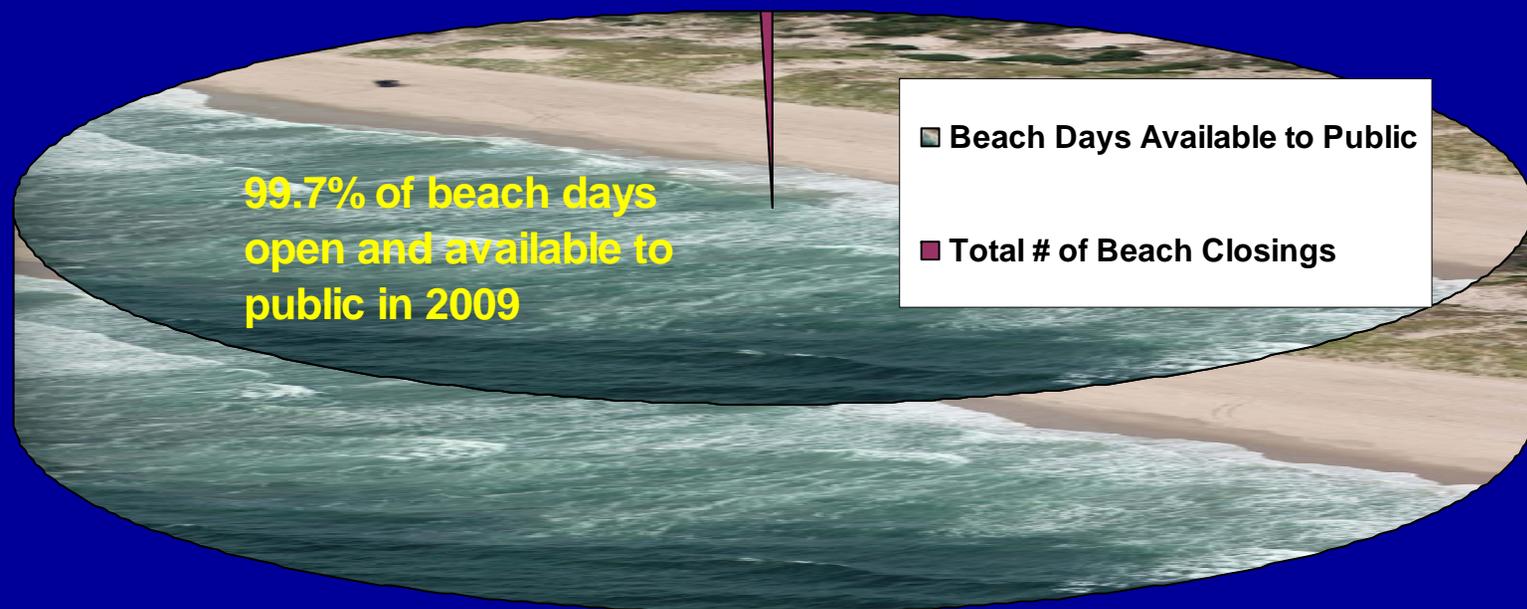
Federal Clean Water Act – [states](#) adopt water quality standards & biennially assess extent to which waters provide for protection of fish & shellfish, allow recreation, & meet other uses. State monitoring aligned with state standards for assessment. States in unique position for reporting this indicator.



NJ Total Beach Days Available to Public in 2009

New Jersey has **700** lifeguarded ocean and bay beaches - more than any other state in the country.

173 total beach closings in 2009
(6 for bacteria in excess of standard, 135 precautionary)



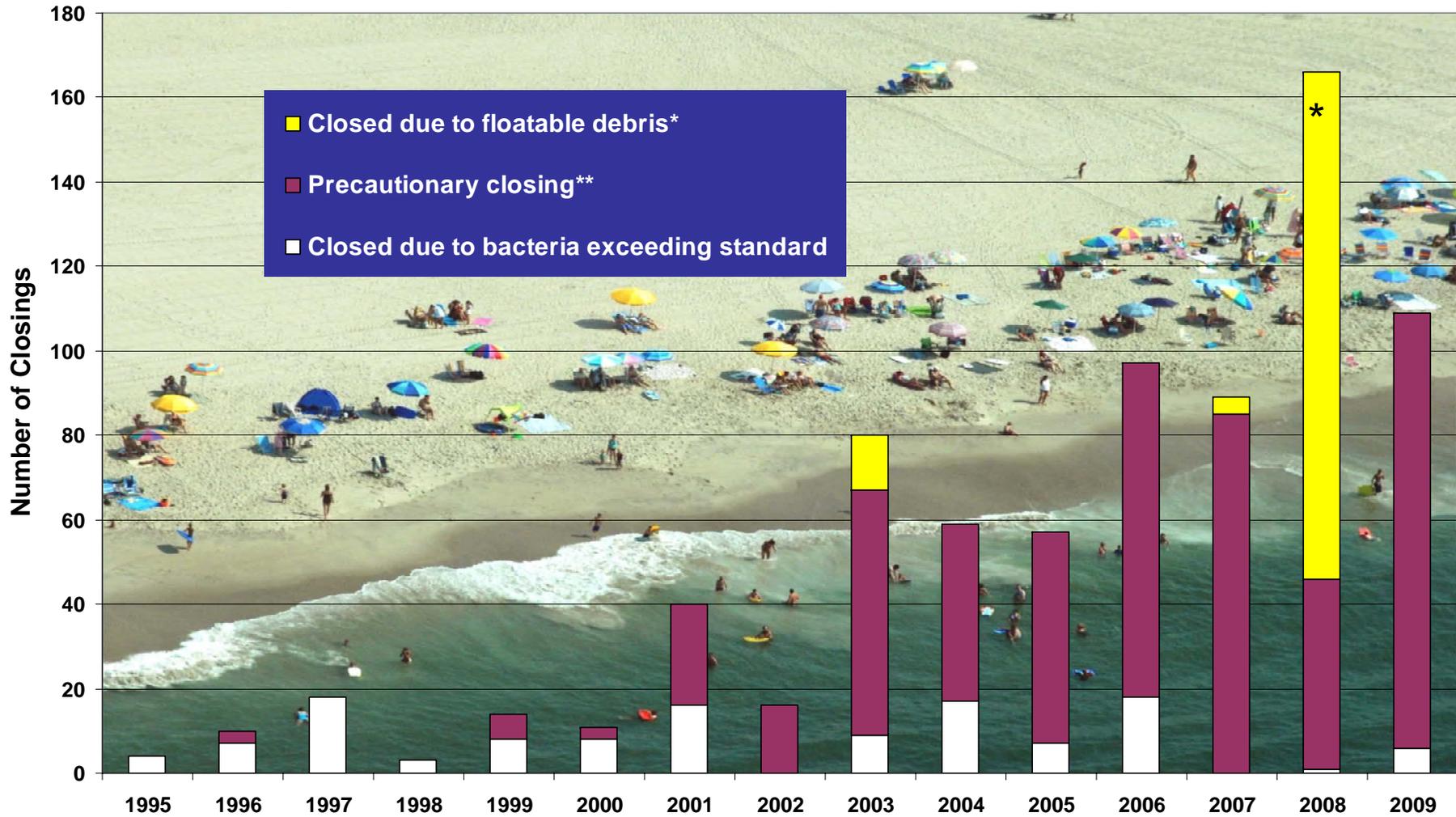
99.7% of beach days open and available to public in 2009

- Beach Days Available to Public
- Total # of Beach Closings

73,500 total beach days available in 2009



Ocean Beach Closings 1995 - 2009



*87.6% of floatables closings caused by 2008 criminal medical waste dumping event.

**60.5% of precautionary closings due to 2002 Monmouth Co. Health Dept. Wreck Pond rainfall policy. As of 2009, 4 beaches close for 24 hours following .1 inches of rainfall. This beach closure policy is more protective of public health; no waiting for sample results from lab.



NEW JERSEY Regional Hydrologic Indicators & Declared Drought Status						June 24, 2009			
Region	Indicator Status	Hydrologic Indicator					Location	Drought Status	
		90-day precipitation	90-day stream flow	NJ reservoirs	Del. R. reservoirs	Unconf. ground water			
Northwest	Near or above normal	0	0	Not a significant water source to the region	2	2		Normal	2
	Moderately dry	0	0		0	0		Watch	0
	Severely dry	0	0		0	0		Warning	0
	Extremely dry	0	0		0	0		Emergency	0
Central	Near or above normal	2	0	2	2	0		Normal	2
	Moderately dry	0	0	0	0	6		Watch	0
	Severely dry	0	0	0	0	0		Warning	0
	Extremely dry	0	0	0	0	0		Emergency	0
Northeast	Near or above normal	0	0	2	Not a significant water source to the region	2		Normal	2
	Moderately dry	0	0	0	0	0		Watch	0
	Severely dry	0	0	0	0	0		Warning	0
	Extremely dry	0	0	0	0	0		Emergency	0
Southwest	Near or above normal	2	0	Not a significant water source to the region	2	0		Normal	2
	Moderately dry	0	0	0	0	6		Watch	0
	Severely dry	0	0	0	0	0		Warning	0
	Extremely dry	0	0	0	0	0		Emergency	0
Coastal North	Near or above normal	2	0	2	Not a significant water source to the region	0		Normal	2
	Moderately dry	0	0	0	0	6		Watch	0
	Severely dry	0	0	0	0	0		Warning	0
	Extremely dry	0	0	0	0	0		Emergency	0
Coastal South	Near or above normal	2	0	Not a significant water source to the region	Not a significant water source to the region	0		Normal	2
	Moderately dry	0	2	0	0	2		Watch	0
	Severely dry	0	0	0	0	0		Warning	0
	Extremely dry	0	0	0	0	0		Emergency	0

The number in each colored dot is the number of weeks the specific indicator in that region has been in that status. For indicators which changed status this evaluation cycle the arrow indicates the direction of change; it points from the previous status to the current. A water drop (●) indicates the indicator has been green for more than a year.

Subject to revision and update. This shows regional drought indicators for New Jersey. Local water-supply conditions may vary. Declared drought status is based on DEP professional judgment of water-supply characteristics and drought indicators in each region. Indicators are shown only for those water resources significant for each region.

New Jersey Department of Environmental Protection
Mark N. Mauriello, Commissioner

For more information:
www.njdrought.org

NJ Strategic Goal – adequate water quantities will be available for all needed uses

Hydrologic Indicators

- Precipitation
- Stream Flow
- Reservoir Levels
- Ground water Levels

Broken down into 6 regions



Data Integration

- Comparability of Data

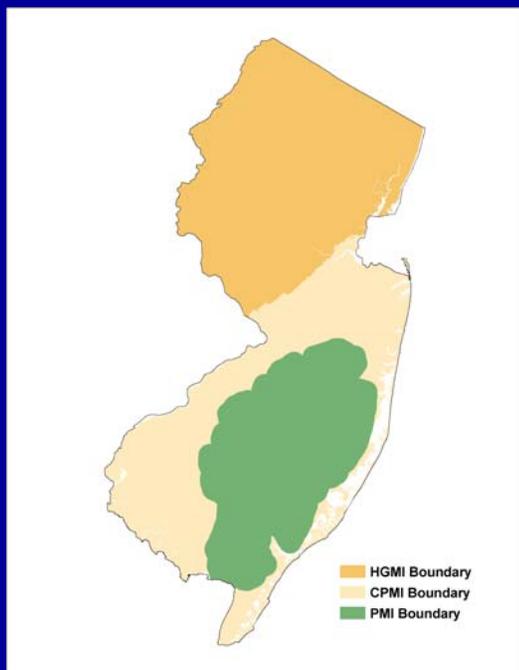
Some data currently comparable, some need to evaluate and enhance comparability

- Scale roll-up (Local-State-National)

- Benthic Data Example



NJ's Ambient Biomonitoring Network & EPA National Rivers & Streams Assessment (NRSA) Survey Sampling Sites

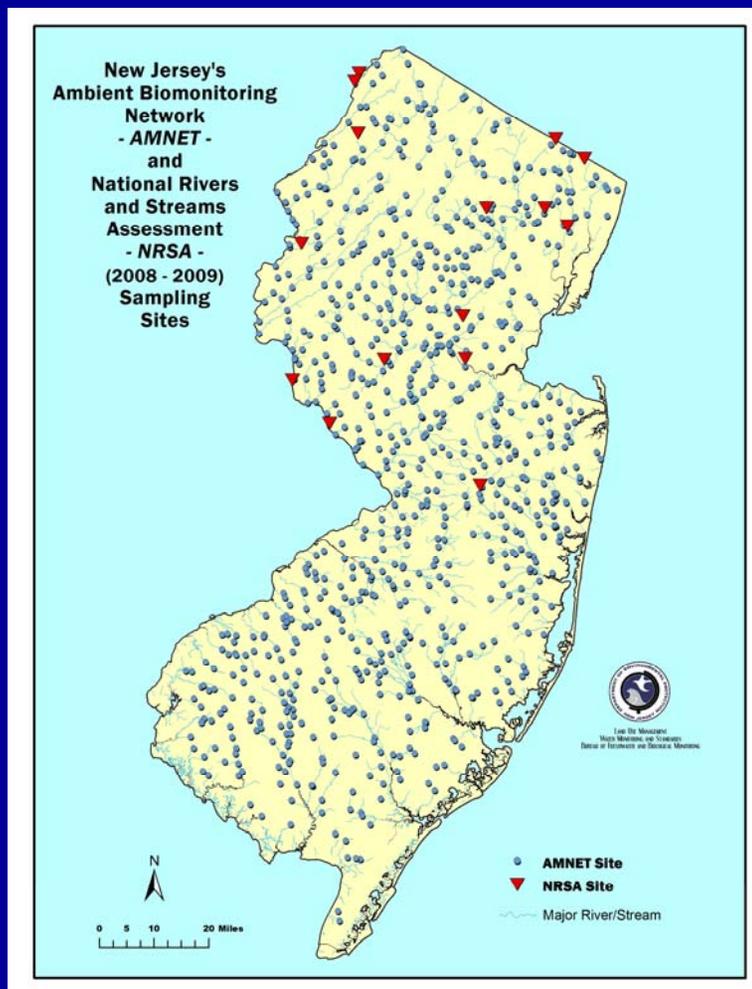


Multi-Metric Indices

HGMI - High Gradient

CPMI - Coastal Plain

PMI - Pinelands



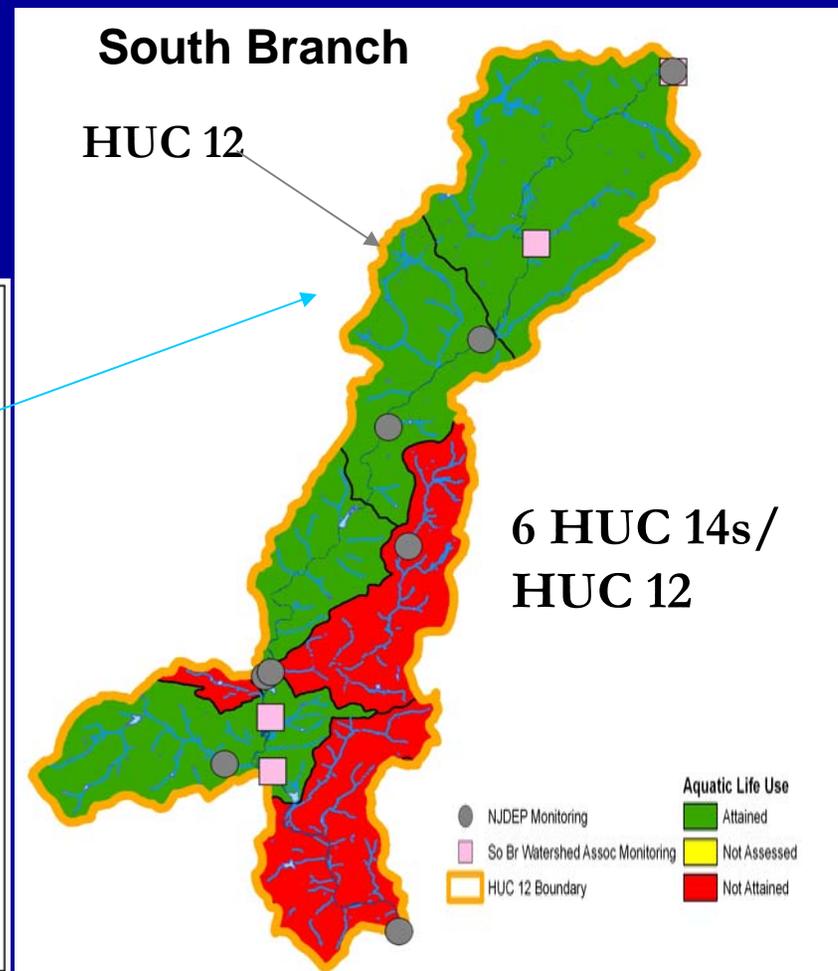
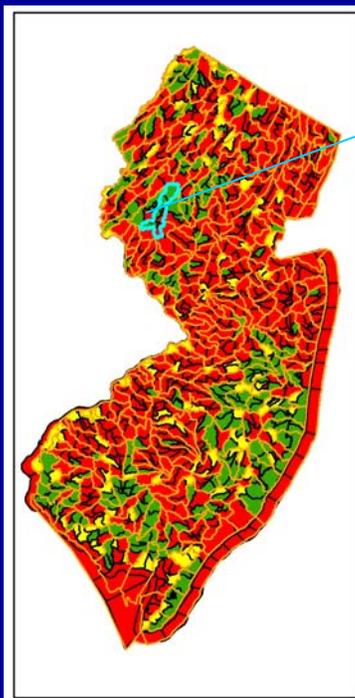
- NJ's ambient biomonitoring – EPA RBP methods w/ 800 benthic sites
- NRSA – 15 sites in NJ
- Need to integrate wealth of state data with national
- Continue to address comparability (WSA study)



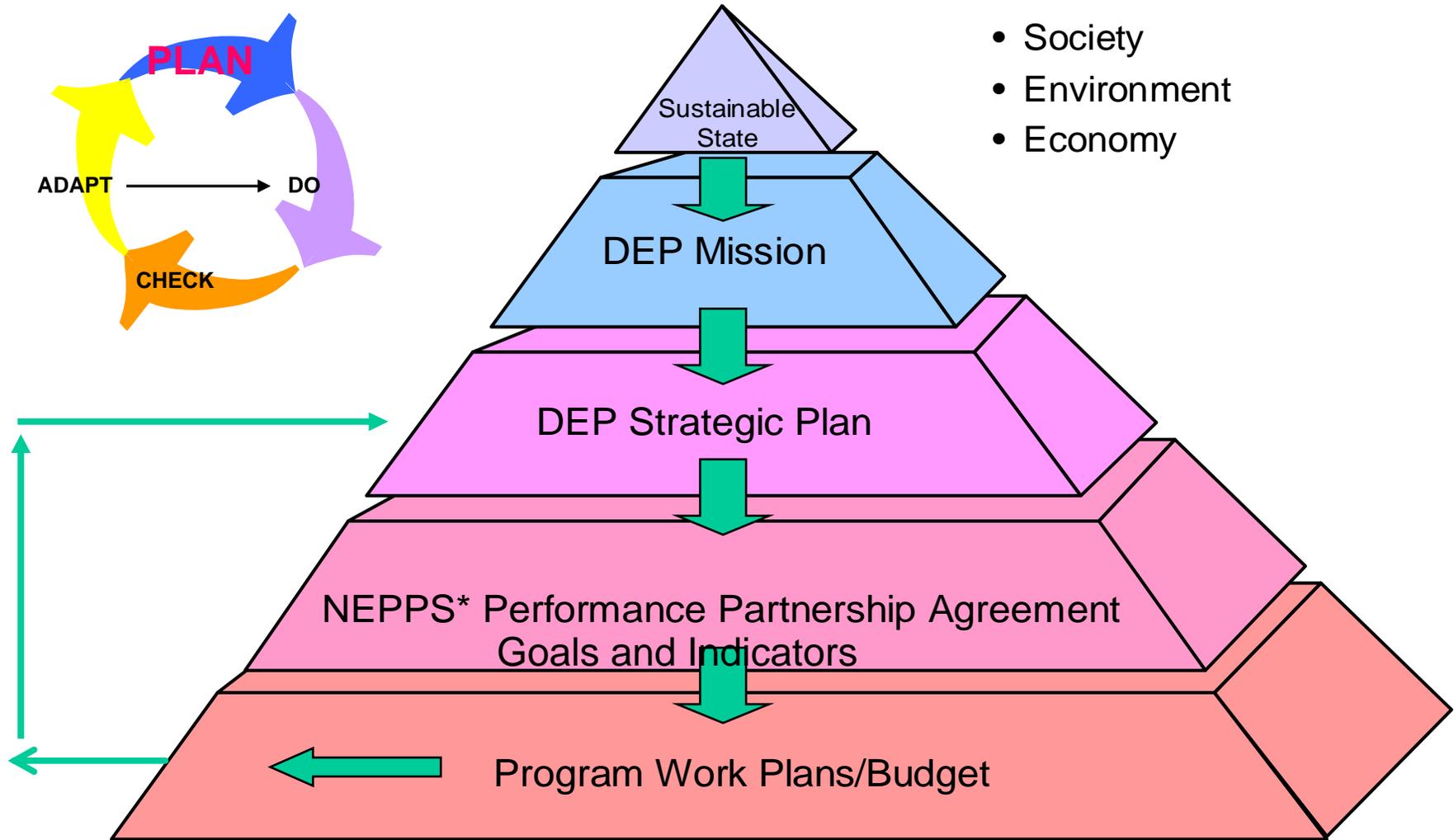
Benthic Data Roll-up – Site (Volunteer and DEP), HUC 14 , HUC 12, State

- Volunteer site data used to supplement state site data
- NJ assessments done by HUC14 (multiple HUC 14s within ea HUC12)
- Performance Measures reporting to EPA - HUC 12 scale
- State and Watershed information can roll up to meet federal needs

2008 Statewide Aquatic Life Assessment



RESULTS-BASED MANAGEMENT SYSTEM

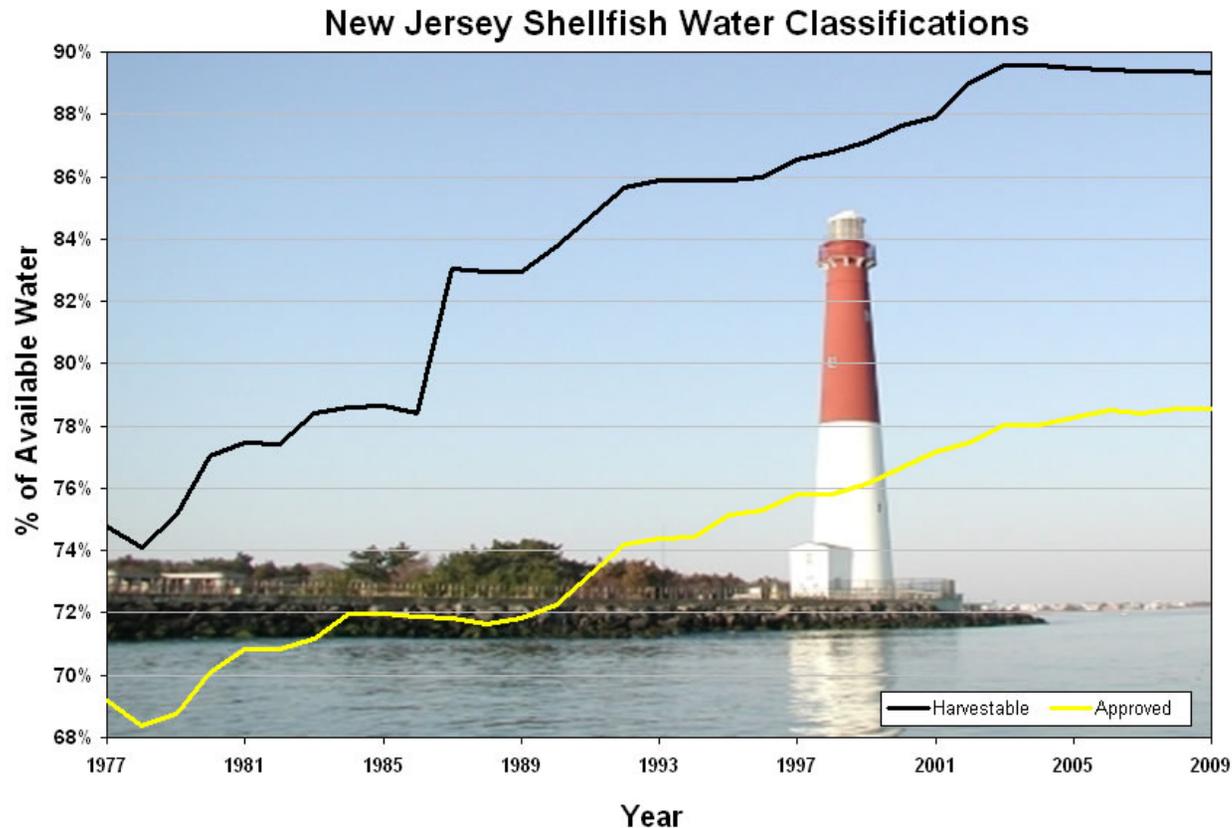


* NEPPS = National Environmental Performance Partnership System



Example Use of Goal and Indicators in Results-based Management System

Shellfish waters goal in 2000: By 2005, 90% of waters should be harvestable



Source: NJDEP, Water Monitoring & Standards, Bureau of Marine Water Monitoring



Classification Upgrades Needed to Achieve 90% Goal - Harvestable Shellfish Waters by 2005

Location	% Harvest	Success Probability	Action	Est. Time (Yrs)
Sandy Hook	88.2%	High	More intensive sampling for classifications	2
OCUA - North	88.5%	High	ID new landmarks for closure	1
Long Branch – Atlantic Ocean	88.8%	High	Installation/ upgrade of WWTP alarms	4
Flynns Knoll	88.9%	High	Toxic testing of shellfish	1
Toms River	89.9%	High	Shoreline Survey	1
Sea Isle City	89.9%	High	NPS Source ID & Correction	3
Sandy Hook	90.5%	Moderate	More intensive sampling for classifications	2

90% goal achieved



Recommendations for National Water Indicators

- Indicators –key to water quality information
- NWQMC & states/ state organizations like ASIWPCA – play active role in national indicators development
- Rely on multiple data sources – national surveys/networks (e.g. EPA NARS, USGS stream gaging network) AND state data, including state intensification of NARS
- Use wealth of available state data, e.g. use assessments, % beach days open, shellfish harvestable waters, biological assessments
- Emphasize comparability studies – e.g. complete WSA - State benthic methods comparison
- Additional investments needed in assessment methods, e.g. trends analyses
- Link indicators to strategic goals in CWA and GPRA –required agency Strategic Plans. Consider coordination Water Goals and Indicators across federal agencies.

