

**A Company Perspective on Linking
Science, Management and Policy for
Addressing Issues of the Delaware
Estuary.**

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The miracles of science™

DELAWARE RIVER/ESTUARY

Figure 1

Delaware River Zone Designations

History

1950s Delaware one of the most polluted rivers in the world

Zero dissolved oxygen at Philadelphia

Significant improvements in 60's and Clean Water Act of 1972

Today..

90% swimmable & fishable

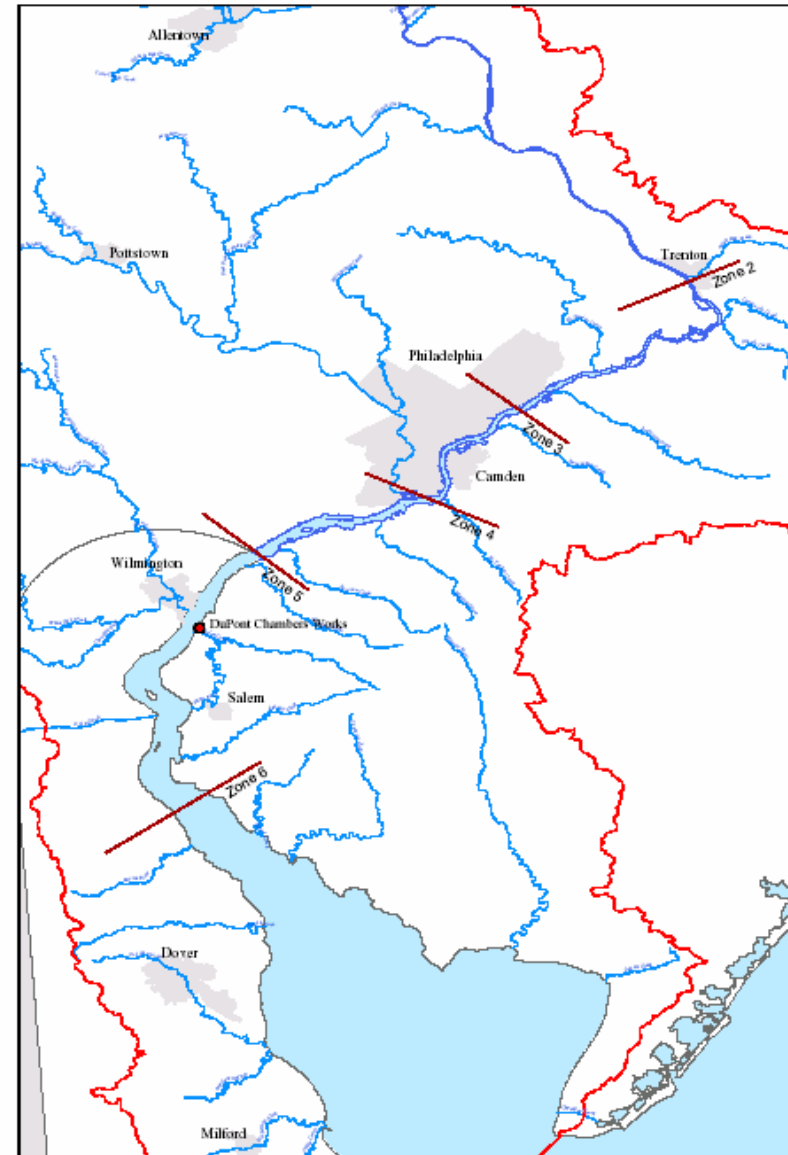
Recovering stocks of Shad, Striped Bass, Sturgeon, Bald Eagle

Struggling - Oysters, weakfish, flounder

Sitings - Beluga Whale & River Otter

Unique to the Delaware

- Largest contiguous salt marsh in Northeast
- Shorebird Phenomenon (Red Knot/Horseshoe Crab)
- Coastal Zone Act (1971)



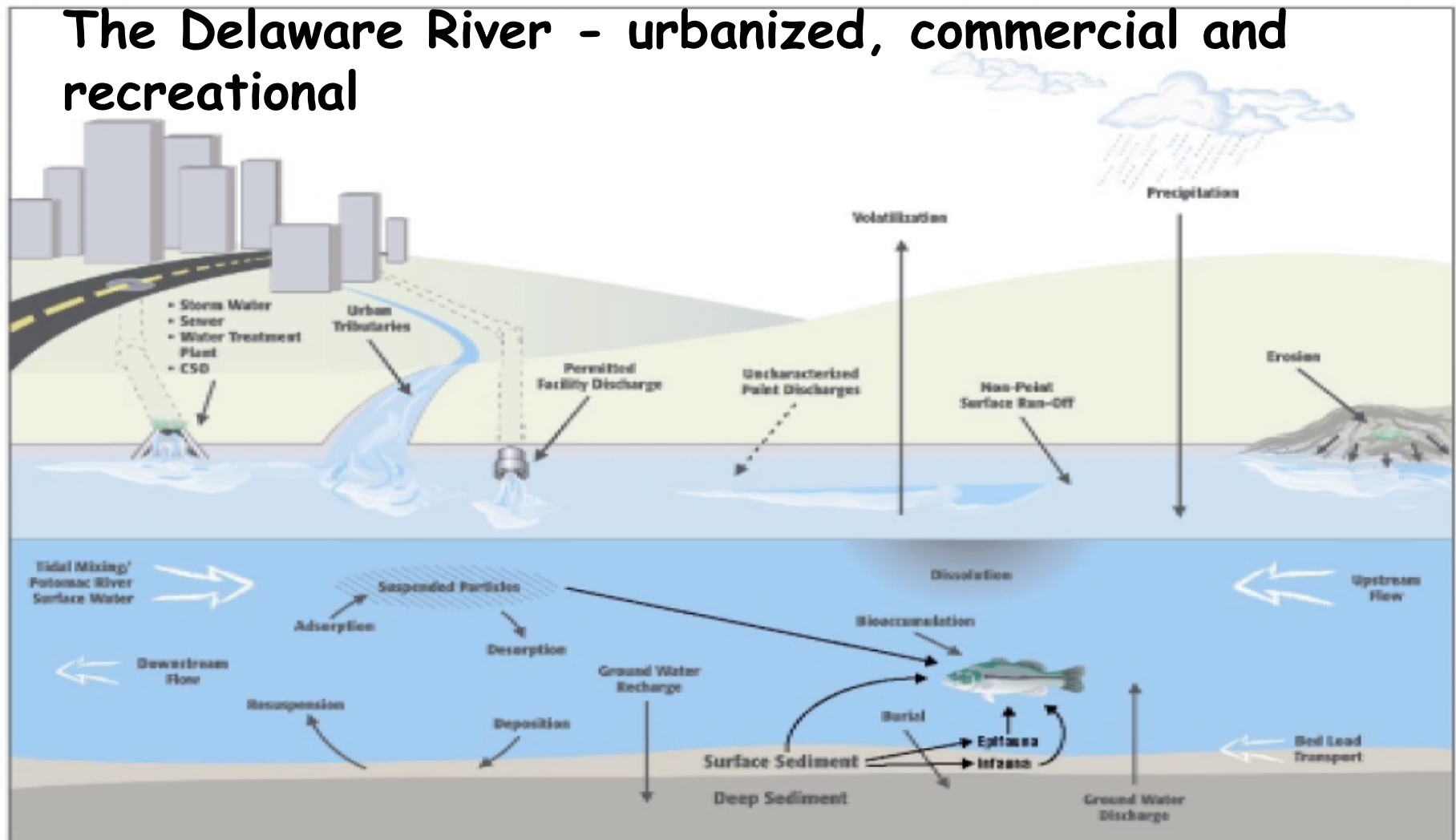
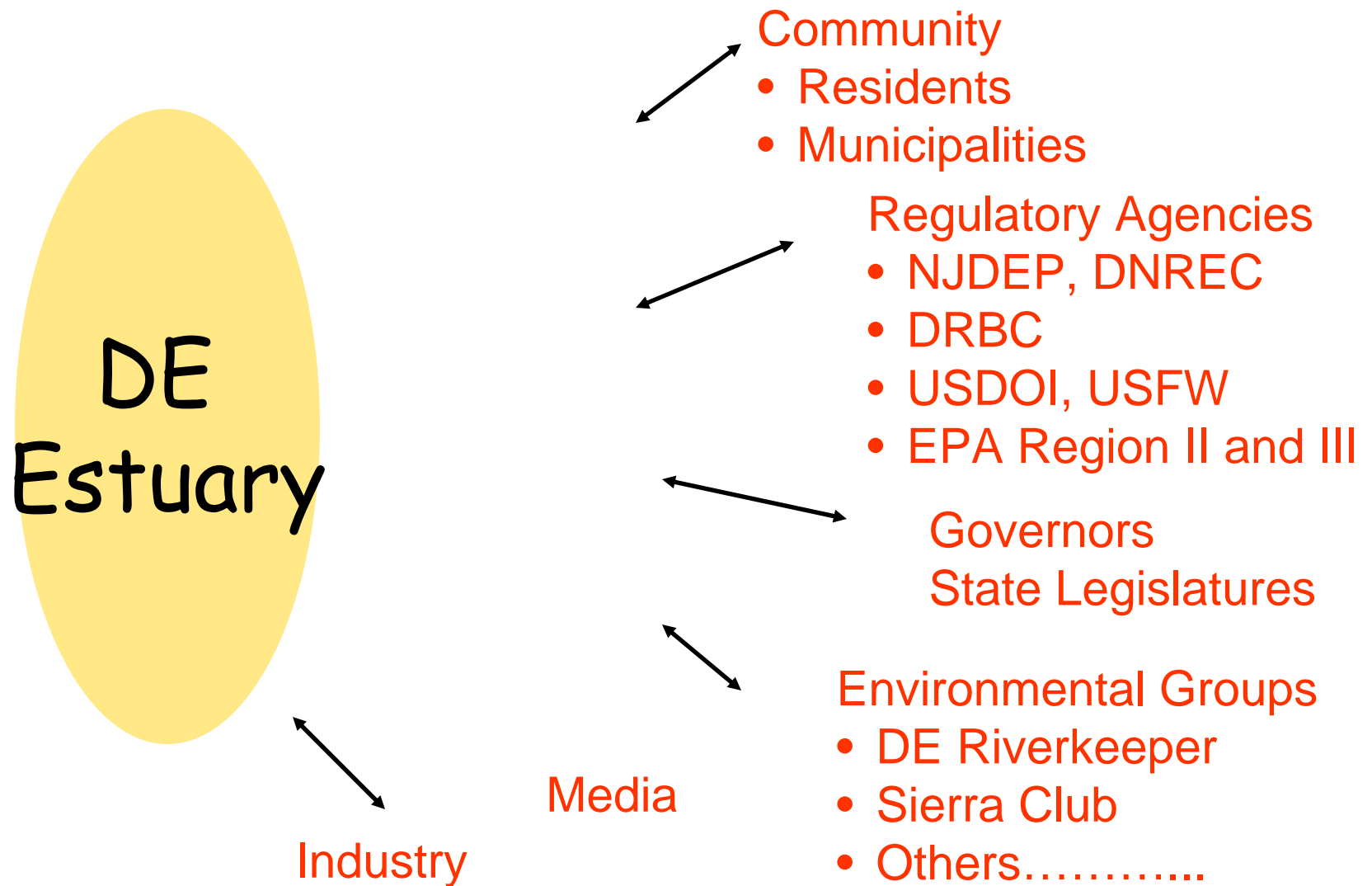


Figure 2: Schematic representation of the conceptual site model for the Anacostia River showing potential routes for contaminant mobility and fate.

DE Estuary -- Many Players



Partnership for the Delaware Est. - CCMP

- **Comprehensive Conservation and Management Plan**
 - **Delaware Estuary Vision 2020**
 - *“A watershed approach to management that values interconnected habitats, preserved land, and planned efforts to protect and enhance the Estuary’s natural resources, while maintaining the economic viability of the region”.*
 - Environmental and economic improvements, increased public education....
 - **Six Action Plans**
 - Land Management, Water Use Management, Habitat and Living Resources, Toxics Action, Education and Involvement, Monitoring, and Regional Information Management Service
- **CCMP currently being revised - due 2007**

Understand Key Learnings from Other Rivers

- **Stressors stem from industrialization and urbanization and agricultural sources**
- **Remediation of incremental chemical impacts does not always provide an incremental improvement**
- **Cooperative process that includes multiple stakeholders will likely result in a more technically sound assessment and selection of potential restoration options**
- **Some portions of a program (ex. remediation, dredging) may move ahead of others (habitat and human use enhancement) - may result in additional resource damage**
- **Regulatory program/framework should be selected on a site-by-site basis (ex. WRDA does not satisfy all statutory requirements)**
- **Funding can accelerate the implementation**

Adaptive (Risk) Management - Another Tool that Might Help

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From Optimization to Adaptation: Shifting Paradigms in Environmental Management and Their Application to Remedial Decisions

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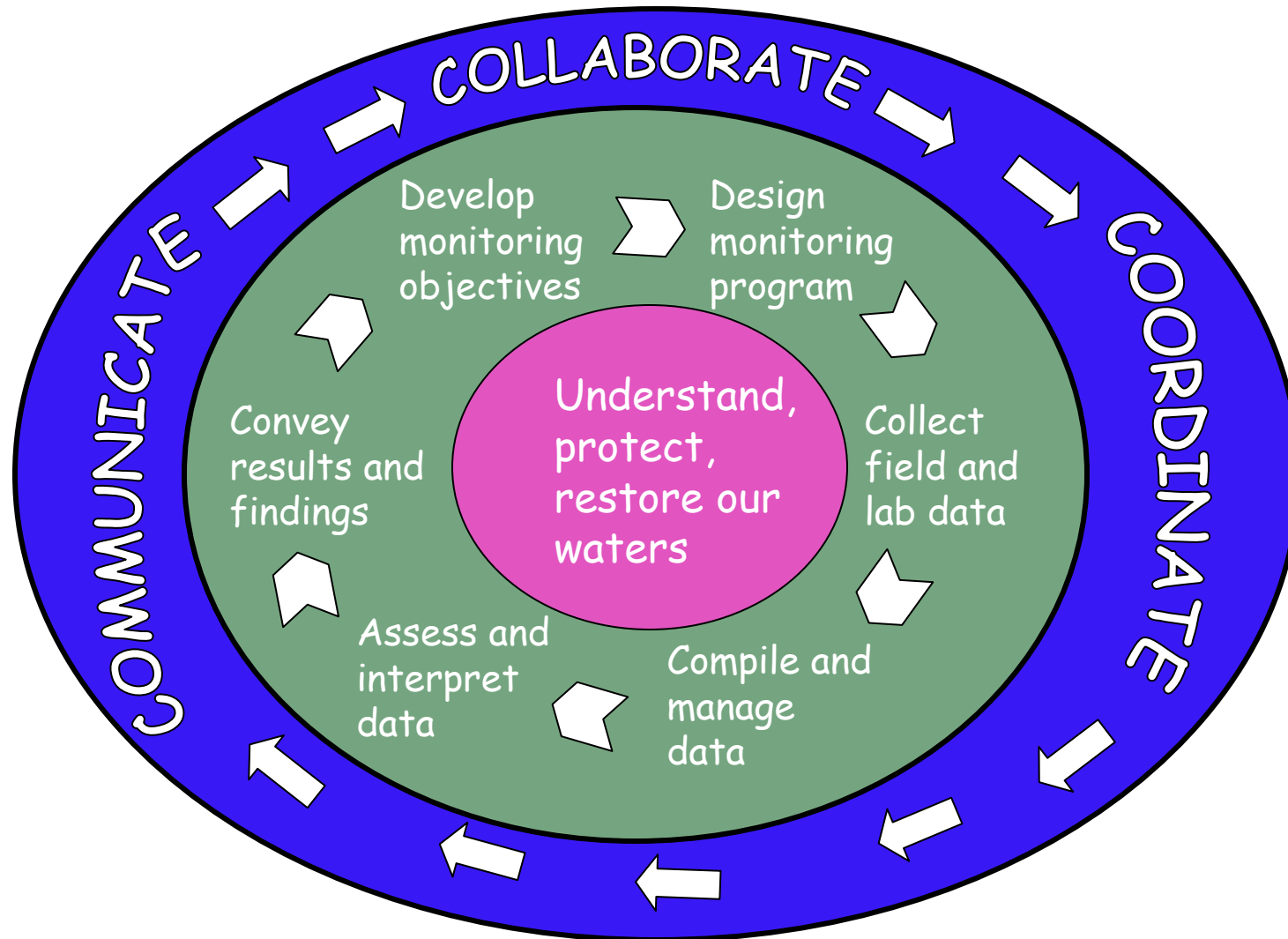
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Value of Watershed Approach



Risks & Uncertainties

- **Unable to build support for collaborative approach**
 - Industry, Government, NGOs
- **Unending struggle with “Leadership”**
- **Unable to sustain interest, funding, and or sweat-equity**
- **Conflict over regulatory framework, drivers**
 - CERCLA, RCRA, CWA, NRDA

Identify Common Metrics: Scientific and Societal

- **Biological**

- Acres of wetland (tidal, non tidal)
- Bushels of oysters / hectare
- Fish stocks / catch per unit effort
- Avian surveys

- **Consumption Advisories**

- **Angler Days / Recreational Rent**

- **Boat Launches / Boater Days**

- **Water Quality - contaminants, nutrients, DO, etc.**

- **Public Opinion Polls**

What About Chesapeake Bay ?

BNA News: January 8, 2007

The Chesapeake Bay will not be restored to environmental health for decades or generations if current regulatory and demographic trends continue, an associate director of the Environmental Protection Agency's Chesapeake Bay Program said Jan. 5.

Summary

The public and private sector will need to work collaboratively to address problems in the Delaware Estuary.

The public is a key member of any multistakeholder effort.

The role of the scientific community is to provide the scientific data to inform decisions.

Goals and objectives must be specific, measurable, achievable, realistic and timely.

Management actions and policy decisions should be monitored, and should be revised if they do not achieve the desired outcome(s).

All involved must be held accountable for meeting goals and expectations.