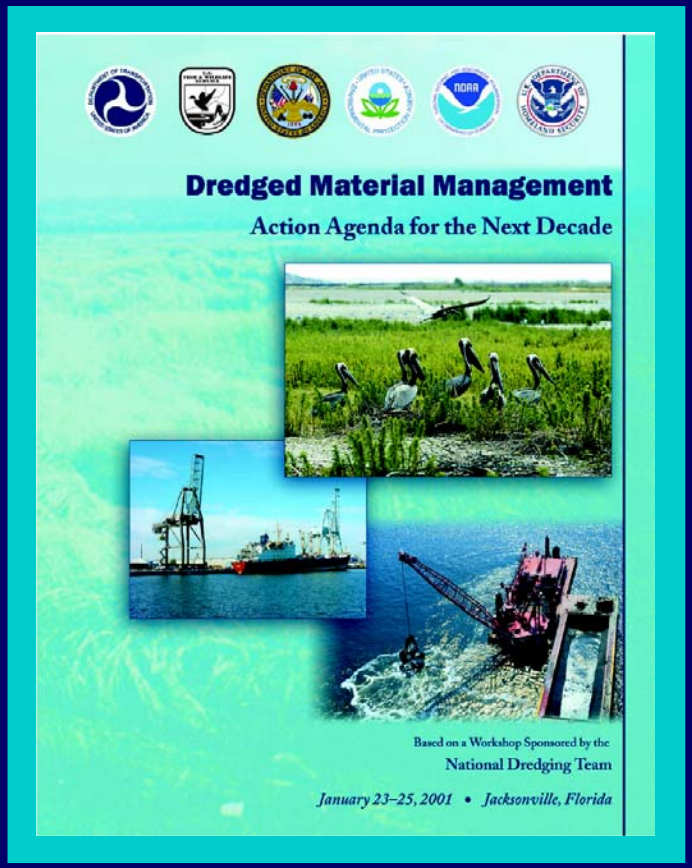
Watershed Approach to Dredged Material and Sediment Management

Craig Vogt
U.S. EPA
Washington, DC

National Dredging Team

- Federal interagency group established:
  - To promote national and regional consistency on dredging issues.
  - To provide a forum for conflict resolution and information exchange early in the dredging process.
  - To facilitate creation and operations of Regional Dredging Teams (RDTs) and Local Planning Groups (LPGs).

Dredged Material Management Action Agenda for the Next Decade



- 22 recommendations across 4 themes:
  - Beneficial use of dredged material
  - Sediment management
  - Emerging issues
  - Strengthening Regional Dredging Teams

2003 NDT Action Agenda

- Effective dredged material planning and sediment management require open and early communication among:
  - Federal and state dredged material regulators
  - Watershed planners
  - Ports
  - Other interested parties

2003 NDT Action Agenda

- Focus on the watershed:
  - Sources and fates of sediment (and sources of contamination carried by sediment) can be addressed.
  - Broadest range of beneficial uses and disposal alternatives for dredged material can be evaluated.
  - Adequate funding for dredged material use or disposal can be secured.

Conference on Managing Sediments in the Watershed Portland, Oregon August 29-31, 2006

- Objectives:
  - Facilitate dialogue among dredged material and watershed stakeholders.
  - Identify steps needed to include dredged material management in watershed plans.
    - Incorporate the needs of, and impacts on, downstream partners.
    - Reduce sediment and contaminant loads before they become material to be dredged.
  - Identify key actions to include a broader watershed perspective in dredged material management planning.

Sediment Management: The Problem

- Sediment overloading can cause:
  - Deposition in navigation waterways
  - Loss of flood-carrying capacity
  - Water quality problems
- Sediment shortage can cause:
  - Coastal and stream bank erosion
  - Wetland loss
  - Habitat destruction
- Current planning efforts
  - Dredging: by project (sometimes multiple projects) to dredge and place the dredged material
  - Watershed planning: focus on water quality

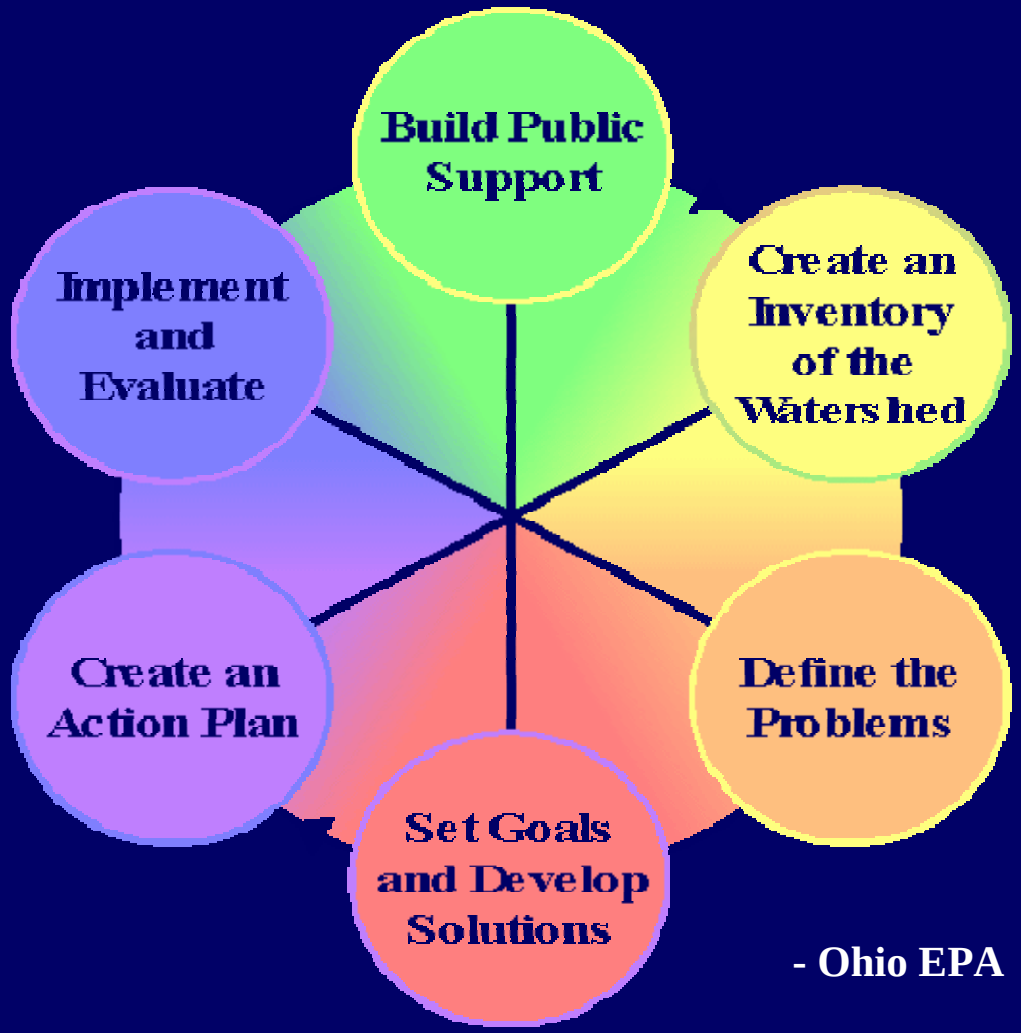
Sediment Management: What's Needed?

- Sediment management in the context of watershed management.
- Watershed management that incorporates sediment and dredged material management.

EPA's Watershed Approach

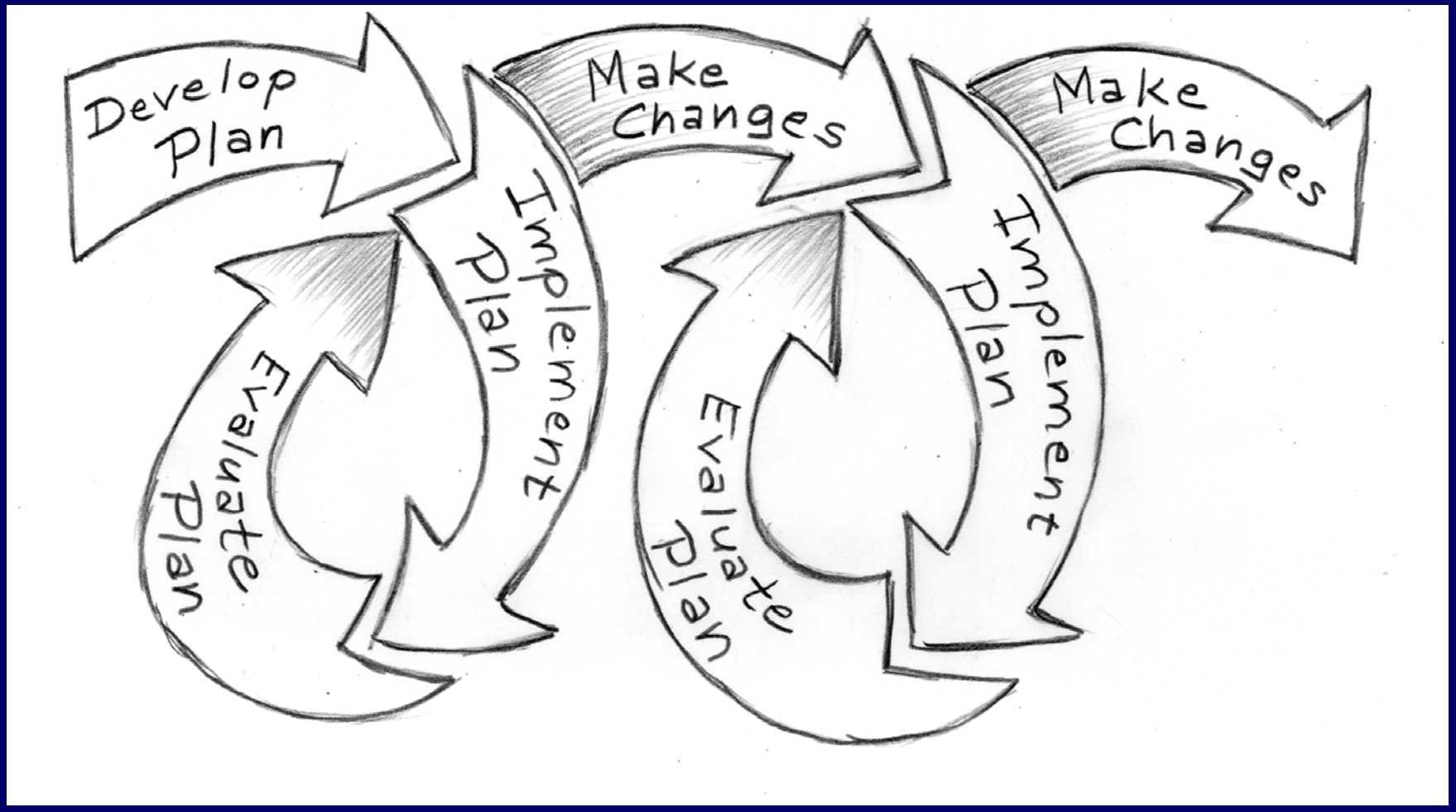
- Focus on hydrologically defined areas
- Involvement of all stakeholders
- Use of iterative planning to address priority water resource goals
- Use of an integrated set of tools and programs

Implementation Through Watershed Planning



- Ohio EPA

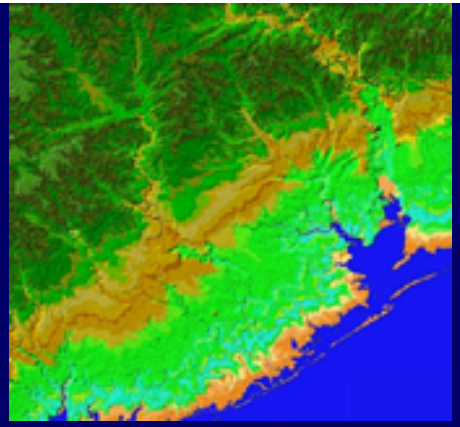
Watershed Planning is Iterative



Integrated Set of Tools and Programs

- Integration through partnerships (e.g., TMDLs, non-point source funds—CWA 319, NPDES, Source Water Protection, Wetlands Protection, Farm Bill Programs, local planning, private investment)
- Coordination with other water resource and land use programs (regulatory, voluntary, public and private)
- Leveraging available resources to meet common water resource goals

Watershed Approach to Sediment Management



- Considers the regional sediment system
- Recognizes sediment as part of hydrologic system
- Engages partners to identify sediment concerns and common objectives
- Uses regional sediment watershed management strategies to address goals
- Integrates across programs

Snapshot of Conference Discussions

- Conference participants identified next steps in 4 preliminary categories:
  - Collaboration
  - Goals and mission (strategic planning)
  - Economic analysis
  - Legislation and funding

Snapshots of Discussion

- Some of the concepts discussed:
  - Sediments should be managed in context of watersheds and sediment systems
  - Need better education about sediment as a system and a resource
  - Many beneficial uses exist, but potential is not widely recognized

Snapshots of Discussion

- Some of the concepts discussed:
  - Challenges exist in identifying a manageable scale for watershed/regional coordination
  - Looking at how large watershed approaches have been successful/failure
  - Get beyond regulatory framework
  - Using National Estuary Program approach to managing sediments

Examples of next steps identified by regional groups

- Gulf region: Define scope and mission statement for sediment master plan
- Great Lakes: Look into facilitation options
- Mid-Atlantic: EPA/Corps to convene organizational meeting
- Northeast: Identify goals and develop vision statement
- Pacific Northwest:
  - Lower Columbia – Initiate Coastal processes workshop
  - Puget Sound – Prepare and deliver talking points to communicate conference info to colleagues, managers
- California: Apply California Sediment Master Plan tools to one watershed as pilot to field test tools (Arana Gulch watershed ~ 3/07)

Existing Challenges

- Momentum for business as usual.
- Long term comprehensive basin-wide planning is limited.
- How to get adequate funding where major issues don't already exist.
- Regulatory authorities provide the basis for current approaches. Changes in legislation could help, but this is either unlikely or not in the immediate future.

What are the next steps, especially for the Corps of Engineers and Port Authorities?

- Regional Dredging Teams and Regional Sediment Management Actions
- Messaging to watershed groups and other watershed planning efforts to address dredged material in their plans
- Suggestions please!
- The floor is open…..

Table 3 Goals and Objectives

Goals	Watershed Health Objectives
Hydrology	***Stream Flow and Hydrologic Complexity:*** Protect and increase rainfall interception areas, create infiltration and detention areas to normalize stream hydrographs, reduce stormwater flow to sewer systems, and reduce basement flooding.
	Channel and Floodplain Function: Protect and restore the extent, connectivity, and function of streams, other open drainageways, wetlands, riparian areas and floodplains to improve bank stability and natural hydrologic functions and reduce risk to development and human safety.
	Stormwater Conveyance: Maintain stormwater collection and conveyance infrastructure capacity.
Physical Habitat	***Aquatic Habitat:*** Protect and improve aquatic, riparian, and floodplain habitat extent, quality, and connectivity that supports the persistence of native fish and wildlife communities.
	Terrestrial Habitat: Protect and improve upland habitat extent, quality, and connectivity that support the persistence of native terrestrial communities and connectivity to aquatic and riparian habitat.
Water and Sediment Quality	***Stream Temperature:*** Protect and improve stream temperatures, dissolved oxygen, and pH levels that protect ecological health and achieve applicable water quality standards.
	Human Pathogens: Maintain and manage sewer infrastructure and stormwater inputs and runoff to limit sewage overflow and the delivery of pathogens to waterways and achieve applicable water quality and sewer design manual standards.
	Urban Pollutants: Manage the sources and transport of urban stormwater and industrial pollutants and nutrients to limit surface water, groundwater, soil, and sediment contamination to levels that protect ecological and human health and achieve applicable water quality standards.
Biological Communities	***Fish and Other Aquatic Organisms:*** Implement watershed actions to maximize the persistence of native Willamette and Columbia River fish and other aquatic organisms and assist with species recovery and potential population productivity by protecting and improving hydrology, habitat, and water quality.
	Terrestrial Wildlife and Vegetation: Implement watershed actions to restore populations of terrestrial organisms to healthy, self-sustaining levels, protect and restore the composition and structure of native vegetation communities, and reduce populations of non-native plants and organisms to levels that do not compete with native species.

Table 4.1 Watershed Strategies and Actions

STRATEGIES	ACTIONS
Stormwater	Modify the storm drainage system to increase infiltration and maximize evapotranspiration
	Modify the storm drainage system to increase reuse or detain stormwater
	Modify the storm drainage system to treat stormwater pollutants
	Modify the storm drainage system to separate flow from combined storm/sanitary sewer
Revege-tation	Increase the extent of canopy and other vegetative cover
	Improve the quality and composition of vegetative cover
Aquatic and Terrestrial Enhancement	Restore channel and floodplain function and stability
	Restore or create river, stream, wetland, and terrestrial habitat structure and function
	Restore habitat connectivity and access
	Manage for appropriate native species
Protection and Policy	Implement management of erosion, sediment, and pollutant discharge from construction sites
	Implement management of stormwater for all new and redevelopment projects
	Implement management of pollutant discharges for industrial and commercial sites
	Protect sites and features with high watershed values and functions
Operations and Maintenance	Operate and maintain the storm sewer system, public rights-of-way, greenspaces and other city facilities and infrastructure to remove and prevent pollutant discharges
	Reduce illicit and non-stormwater discharges
	Maintain and repair sewer systems to ensure conveyance for current demand and future growth
Education Involvement and Stewardship	Promote watershed awareness with city staff, schools, the business community, organizations, and general public
	Provide pollution prevention education to city staff, the business community, organizations, and general public
	Provide technical assistance and incentives to city staff, schools, the business community, organizations, and general public