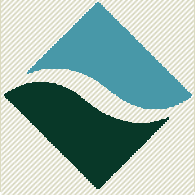




Mud-Wrestling Without the Glamour:

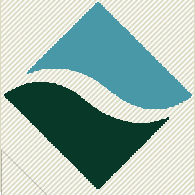
Strategies for Coping With Sediment Sites

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OVERVIEW

- ◆ Scope of Problem
- ◆ Trends in EPA Activity
- ◆ Unique Challenges – Technical and Non-Technical
- ◆ My Focus Today: Non-Technical Challenges and Coping Strategies
- ◆ Information Sources



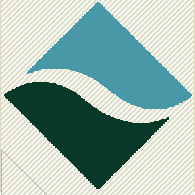
SCOPE OF PROBLEM

- ◆ Sediment sites increasing in number, size, cost. Trend likely will continue.
- ◆ 2004 EPA report to Congress on sediment quality lists 96 watersheds with “Areas of Widespread Sediment Contamination,” based on nonrandom survey of sampling locations (only 9% of water body segments in U.S.).
- ◆ Over 8,000 sampling stations “probably” associated with harmful effects on aquatic life or human health.



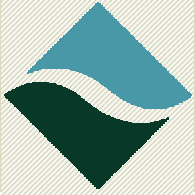
SCOPE OF PROBLEM

- ◆ 2005 EPA Contaminated Sediment Remediation Guidance reports that, partly due to sediment contamination, fish consumption advisories cover:
 - 100% of Great Lakes
 - 35% of other U.S. lake acreage
 - 24% of total U.S. river miles



SCOPE OF PROBLEM

- ◆ As of 2003, EPA reported about 7 sediment “megsites” (cost > \$50M)
- ◆ By 2007, more than 14 sediment megasites
- ◆ Others on horizon: e.g., Lower Passaic, Berry’s Creek, Tar Creek, Tittabawassee River, Kalamazoo River
- ◆ Many other sites with sediment cleanup costs between \$10M and \$50M (e.g., Saginaw River, Sheboygan River, Lavaca Bay)



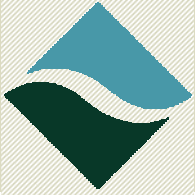
SCOPE OF PROBLEM

- ◆ Many current and future sediment sites not on NPL
- ◆ Even non-mega sites present complex problems and high costs
- ◆ E.g., Bayou d'Inde, Calcasieu Parish, La:
 - ~ 5 miles of bayou, marshes, and mud flats
 - ~ EPA did RI; sampling data poor
 - ~ 4.5 years for PRPs to complete FS (CAS)
 - ~ \$25 million remedy if agencies accept recommendations



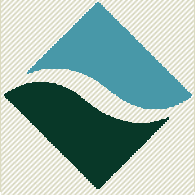
EPA ACTIVITY AT SEDIMENT SITES

- ♦ Apr. 1998: Contaminated Sediment Management Strategy
- ♦ Feb. 2002: 11 Sediment Management Principles
- ♦ Dec. 2005: 220-page Contaminated Sediment Remediation guidance



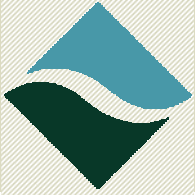
EPA ACTIVITY AT SEDIMENT SITES

- ◆ More than 60 Tier 1 Sites (>10K cy to be removed or >5 acres to be capped) (# Tier 1 sites fluctuates)
 - ~ EPA tracking over 98 areas within these sites
 - ~ Mostly PCBs, metals, PAHs
 - ~ 50% had removal as sole remedy
 - ~ 33% included capping or MNR
 - ~ <10% had capping or MNR as sole remedy



EPA ACTIVITY AT SEDIMENT SITES

- ◆ Projects just keep getting larger
 - ~ Hudson: 2.6M cy dredging, \$450M
 - ~ Lower Fox (OUs 2-5): Initially 7.3M cy dredging, now 3.5M cy dredging + 650 acres of cap or sand cover, \$600M
 - ~ Lower Passaic: FFS evaluated dredging alternatives ranging from 1M-11M cy, with costs ranging from \$0.9B-\$2.3B



EPA PERSPECTIVES

- ◆ Headquarters vs. Regions
 - ~ Contaminated Sediments Technical Advisory Group
 - ~ National Remedy Review Board
- ◆ Sediment PCBs and TSCA
- ◆ RPMs and Project Coordinators
- ◆ EPA vs. States; learning curves
- ◆ Implications for site strategies



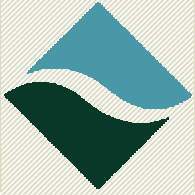
UNIQUE CHALLENGES

- ◆ Human health – fish consumption advisories, direct contact, links to natural resource damages
- ◆ Ecological health – bottom of food chain, bioaccumulation risks, links to natural resource damages
- ◆ Exceptional need for risk management, including risk of remedy



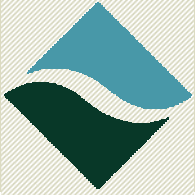
UNIQUE CHALLENGES (cont.)

- ◆ Political challenges
 - ~ Visibility; campaign fodder
 - ~ Multiple federal and state agencies; turf battles
 - ~ Local political bodies may be both PRPs and potential beneficiaries
 - ~ Potential for legislative interest (pro and con)



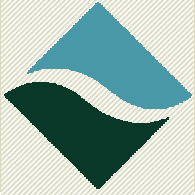
UNIQUE CHALLENGES (cont.)

- ◆ Community relations challenges
 - ~ National and local citizen groups
 - ~ A River Runs Through It
- ◆ Private lawsuit risks (floodplains)
 - ~ Rockwell/Town Branch Creek (KY)
 - ~ Dow/Tittabawassee River (MI)



UNIQUE CHALLENGES (cont.)

- ◆ Atypical allocation issues
 - ~ Rivers, harbors, estuaries = “linear” sites
 - ~ Often large geographic areas
 - ~ Like groundwater basins, but the dirt moves too
 - ~ Multiple sources over space and time
 - ~ Geographic divisibility among sources?
 - ~ Fate and transport issues (hydrodynamics)



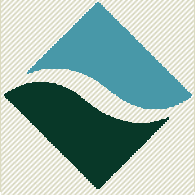
COPING WITH THE CHALLENGES

- ◆ Topics to cover:
 - ~ Coping with EPA
 - ~ Coping with States
 - ~ Coping with Groups
 - ~ Coping with natural resource trustees
 - ~ Allocation at multiparty sediment sites



COPING WITH EPA

- ◆ EPA knocks on the door (sends a notice of potential liability) and asks if you want to come out and play.
- ◆ Your response?
 - “This ain’t just rock salt in this shotgun”
 - “Talk to [Acme] Corporation”
 - “Give me a little time, then let’s talk”



COPING WITH EPA (cont.)

- ◆ Evaluate:
 - ~ Liability
 - ~ # PRPs – Opportunity to form Group?
 - ~ Potential costs
 - ~ Likely alternatives
- ◆ Individual vs. Group interests
- ◆ The power of numbers
- ◆ Examples: Fox River, Berry's Creek



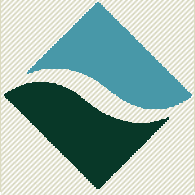
COPING WITH STATES

- ◆ The State environmental agency sends a notice of potential liability and asks if you want to come out and play.
- ◆ See factors regarding response to EPA, plus:
 - ~ Should EPA be involved?
 - ~ Should Jawetz get his head examined?
 - ~ Tittabawassee River example



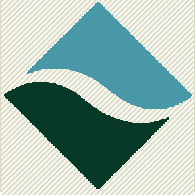
COPING WITH GROUPS

- ◆ In response to an earlier notice from EPA or the State, a Group has formed.
- ◆ The Group sends a notice and asks if you want to come out and play.
- ◆ See factors regarding response to EPA, plus:
 - ~ What does/will EPA/State think of me?
 - ~ What will the Group do?
 - ~ Transaction cost evaluation
 - ~ Buying peace of mind; power of numbers



COPING WITH NR TRUSTEES

- ◆ The natural resource trustee agencies have formed a Trustee Council. The Council sends a notice of potential liability and Pre-Assessment Screen and asks if you want to come out and play.
- ◆ Your response?

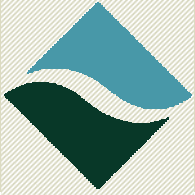


COPING WITH NR TRUSTEES (cont.)

- ◆ See separate talk on cooperative NRDAAs.

Easiest to remember: If pay when play, OK. If pay, but can't play, not OK.

- ◆ Closely related issue: RI/FS beginning or underway. Reach out to NR Trustees?
 - ~ What will they otherwise do?
 - ~ Pros and cons



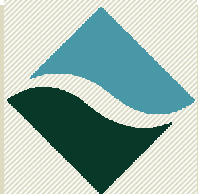
ALLOCATION ISSUES

- ◆ Somewhat akin to groundwater plumes from multiple sources to a regional aquifer (but the dirt moves too!)
- ◆ Impacts of flow direction and speed, time, commingling, deposition, resuspension, degradation, human activities (e.g., dredging)
- ◆ Multiple contaminants with differing impacts on risks, remedy, NRD?



ALLOCATION ISSUES (cont.)

- ◆ Little case law on allocation at sediment sites; potential advantages of ADR
- ◆ Volume of discharges (total loadings) usually far too simplistic (but see Fort James/Fox River NRD settlement...)
- ◆ Likely need to factor in location, time, fate and transport features (and toxicity?)
- ◆ Allocations of study, remedy, NRD costs may all differ – different factors
- ◆ May need to break site down into sub-areas to preserve manageability



USEFUL INFORMATION SOURCES

- ◆ Contaminated Sediment Remediation Guidance (EPA 2005)
- ◆ Superfund Sediment Resource Center
- ◆ “Risk Management Strategy for PCB Contaminated Sediments” (NAS 2001)
- ◆ “Sediment Dredging at Superfund Megsites: Assessing the Effectiveness” (NAS 2007)
- ◆ Sediment Management Work Group
- ◆ ABA/SEER/Sidley Austin reference list