Addressing Uncertainty and Managing Risk at Contaminated Sediment Sites

Moderated by

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Status of Cleanups (Southerland)

- Characteristics
  - Sediments not large percentage of megasites
  - Most sites driven by human health risk
  - Metals and PCBs dominant contaminants
  - Bulk of sites relatively small
    - < 25,000 yd^3 in removal actions
    - < 10 acres for capping
  - MNR/ISC < 10 sites each
  - Increasing use of thin layer capping to control dredge residual
- Renewed emphasis on adequate pre- and post-remedial monitoring to allow before & after comparisons

Dredging (Hahnenburg/Verduin)

- What is failure?
  - Unable to end up better than before
  - Unable to contain cost/time requirements
- What causes failure?
  - Variety of site and implementation factors
  - Cited importance of planning, contractor experience, best management practices to manage implementation
- Planning
  - Preplan for residuals
  - Incorporate flexibility to meet goals
- An approach
  - Attain cleanup standard? Done
  - If not, define removal based upon pre-remedial footprint
    - Achieved site overall goal (e.g. SWAC)? Done
    - If not, backfill/thin layer cap to achieve overall site goal

Capping (Palermo/Mohan)

- Advantages
  - Containment in place (no transfer of risk)
  - Easy to implement (low implementation disruption and risk)
  - Quick and cost effective
  - Opportunities for habitat enhancement (even if we don't use it!)
- Disadvantages
  - Containment in-situ (higher residual risk?)
  - Emerging technology (not commonly selected)
  - Water depths reduced (see habitat enhancement)
  - Subject to erosive forces (return period design target?)
  - Long-term monitoring/maintenance (how to monitor, possible to achieve closure?)
- Conclusion
  - One tool to be considered equally with other remedy options

Monitored Natural Recovery (Patmont/Zeller)

- Five Assessment Elements
  - Develop site conceptual model (sources, sediment stability, fate and transport)
  - Characterize historical trends in chemistry and confirm with trends in biology
  - Predict future trends
- Keys for success
  - Sources controlled
  - Sediment bed stable
  - Depositional environment
- Issue
  - Monitoring and Assessment
    - QC of source characterization and historical trends
    - What to monitor and how for post MNR decision
    - Balancing prediction with measurement

Status of Treatment (Gardner/Stern)

- In-situ treatment
  - Limited by delivery system
  - Examples
    - Metallic reduction of PCBs
    - Activated carbon sequestration of PCBs
    - Apatite sequestration of metals
- Ex-situ treatment
  - Need stable source (navigation dredging) and stable market (challenging)
  - Variety of possibilities/varying degrees of success
  - Difficult to compete with alternative sources of products