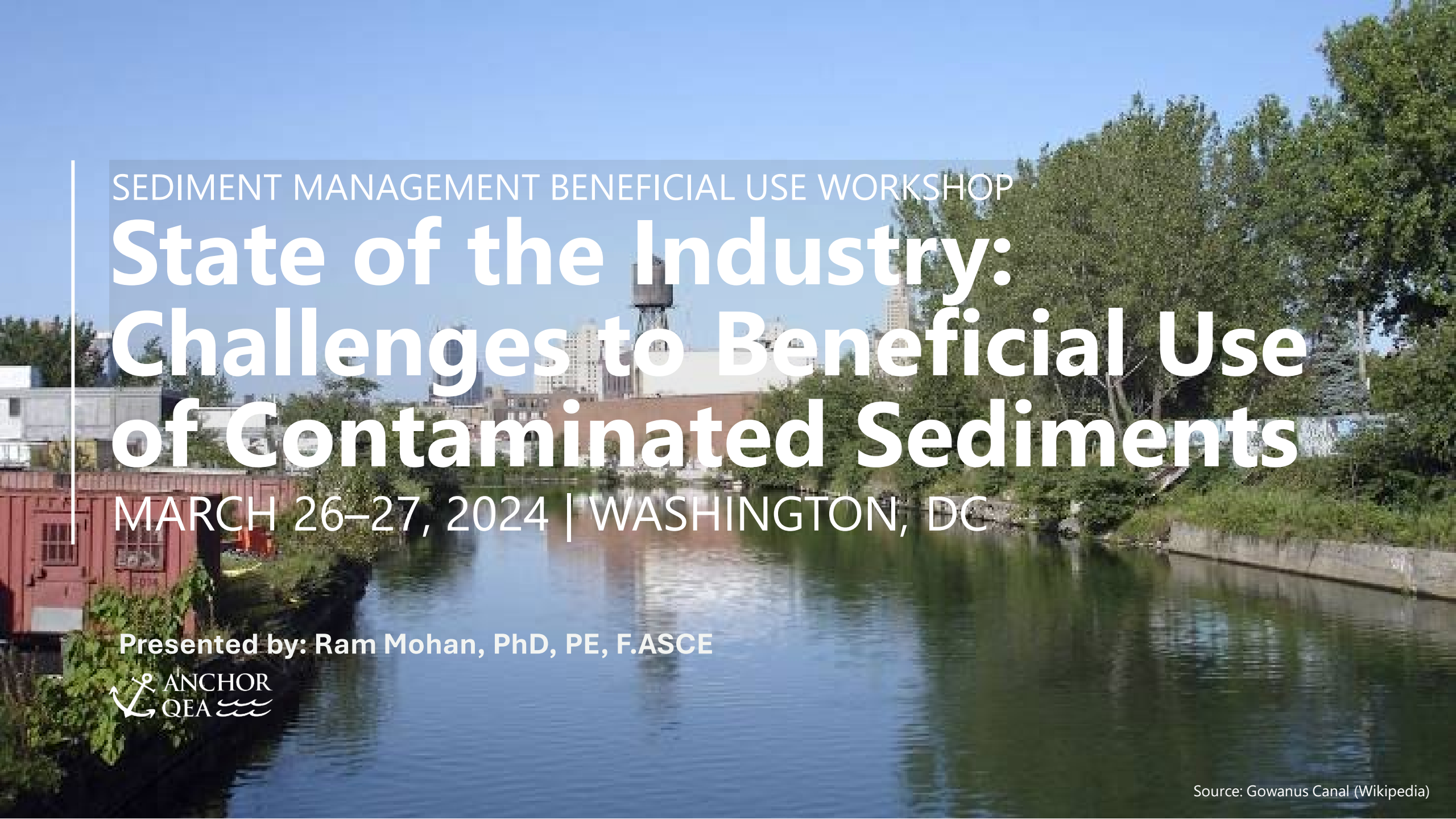


SEDIMENT MANAGEMENT BENEFICIAL USE WORKSHOP

State of the Industry: Challenges to Beneficial Use of Contaminated Sediments

MARCH 26–27, 2024 | WASHINGTON, DC

Presented by: Ram Mohan, PhD, PE, F.ASCE

ANCHOR QEA

Source: Gowanus Canal (Wikipedia)

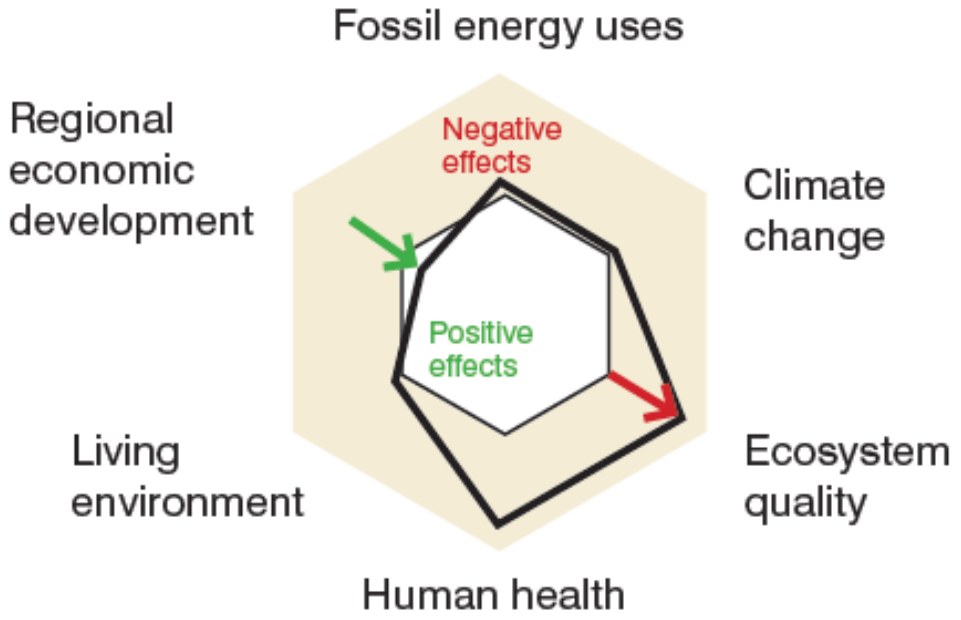
Beneficial Use of Sediments

- Sustainable approach
  - Reduced truck traffic, waste disposal, importing fill, reduced GHG and energy
- Could provide resiliency benefits
- Established practice for clean sediments
  - Beneficial use (BU) is part of USACE programs
  - Contaminated sediments can be amended for reuse
- Many states mandate BU
  - Facilitates site-specific BU

Source: Masonville CDF (Port of Baltimore)

Beneficial Use (BU) of Sediments

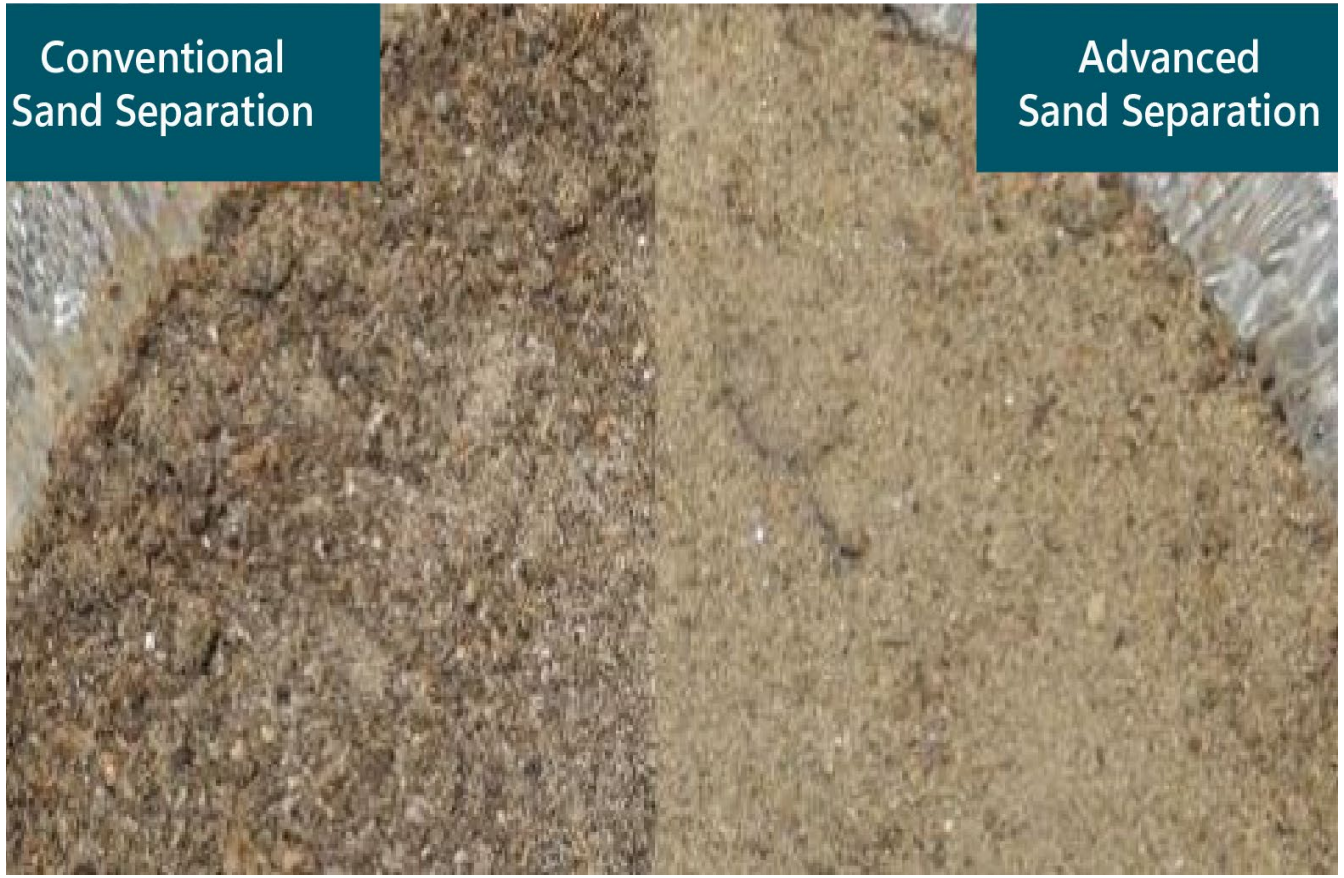
- Findings ways to “value” the potential of contaminated sediments
  - Enhancement projects (restoration, land creation)
  - Use in built environments (bricks, Construction aggregates)
- BU fosters the concept of circular economy



Relative Ranking Approach for Management and Reuse of Sediments (modified from CEDA 2019 – Contaminated Sediments Beneficial Use Report (original author: Lemiere, 2010)
Legend
Green = Improvement due to sediment reuse
Red = Damage from inefficient sediment management

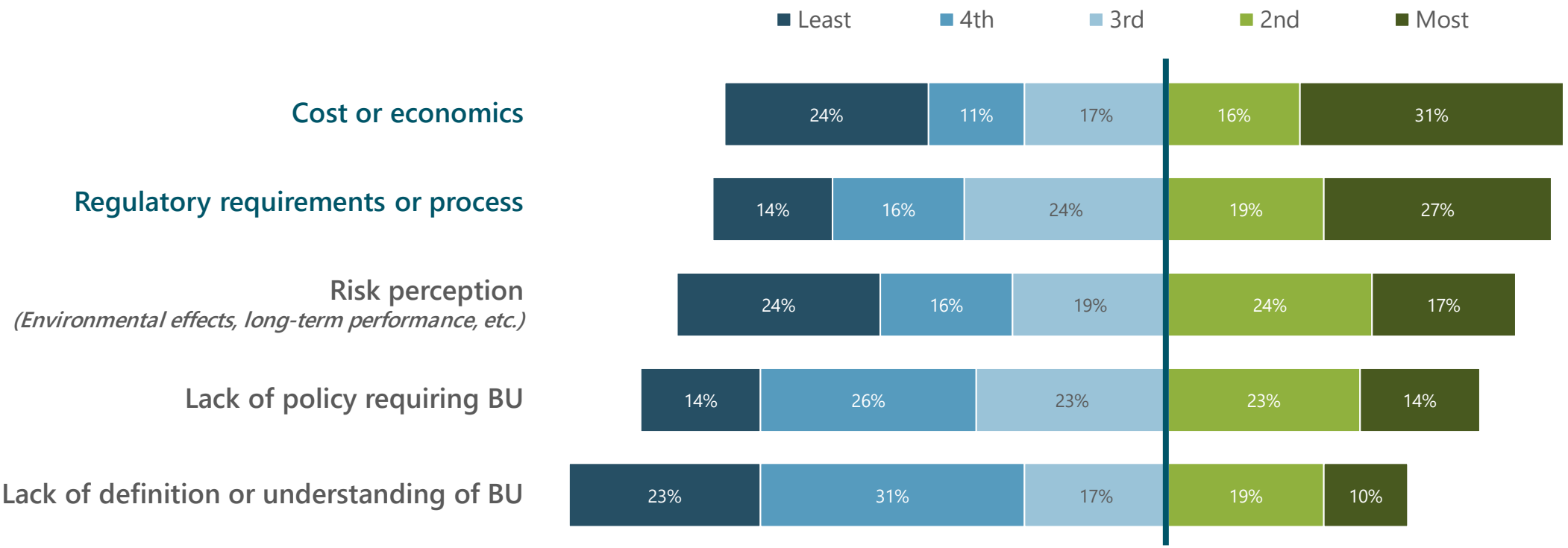
Barriers to BU

- Perception of cost savings
- Fear of failure
- Potential future liability
- Public and stakeholder acceptance
- Regulatory hurdles

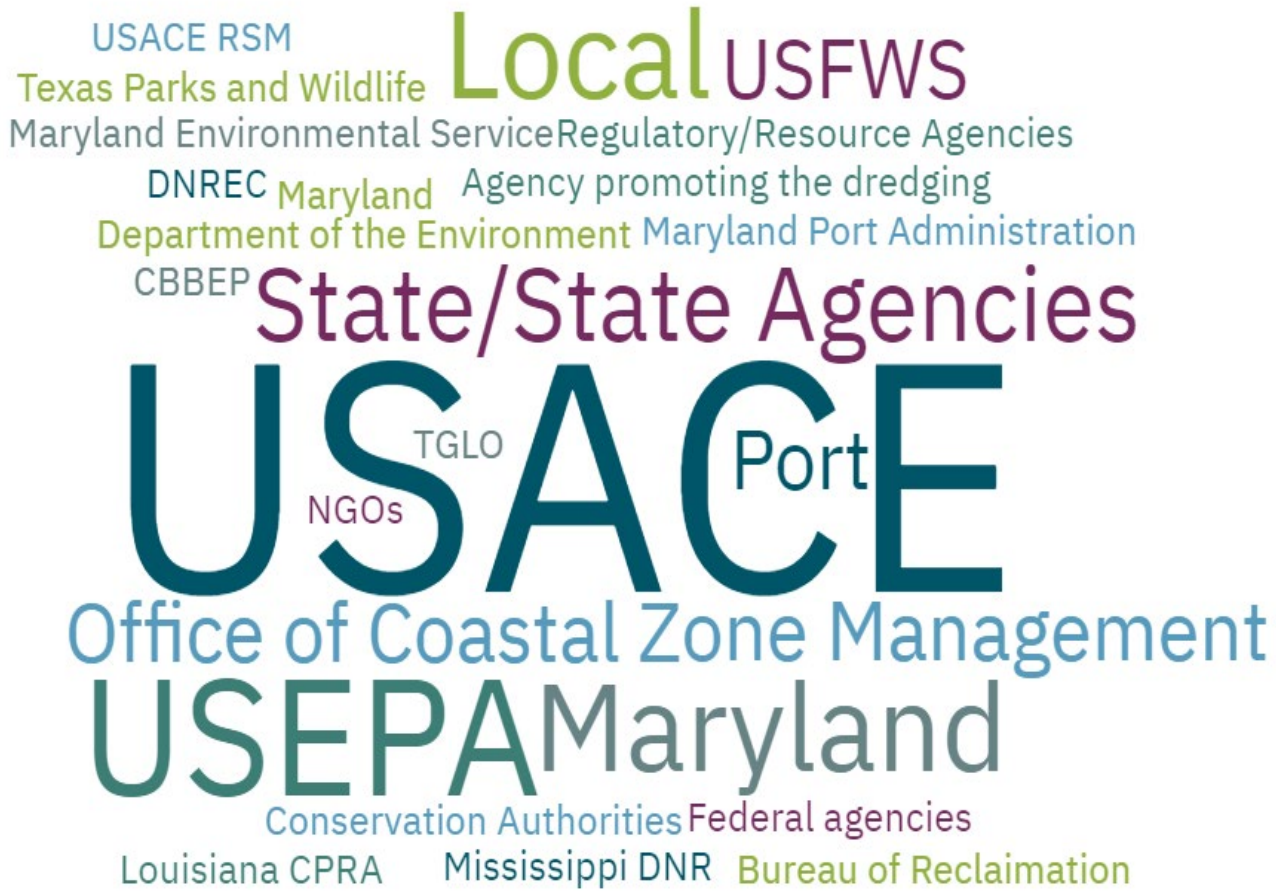


BU of Sand from Fox River for WI DOT Projects
(SMWG BU Webinar – Gardner & Magar, 2020; *Original source: Neil Geevers, Boskalis*)

Factors Preventing Widespread Use of BUDM



Agencies with Most Positive Influence in Promoting BU



Agencies with Least Positive Influence in Promoting BU

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Case Study 1: St. Louis River (SLRIDT) Site, Minnesota

- Industrial site
- High contamination
- Old industrial slip restoration
- Keys to success
  - Agency-industry partnership
  - Collaborative process
  - Hybrid remedy

SLRIDT Site (Source: MN Pollution Control Authority)

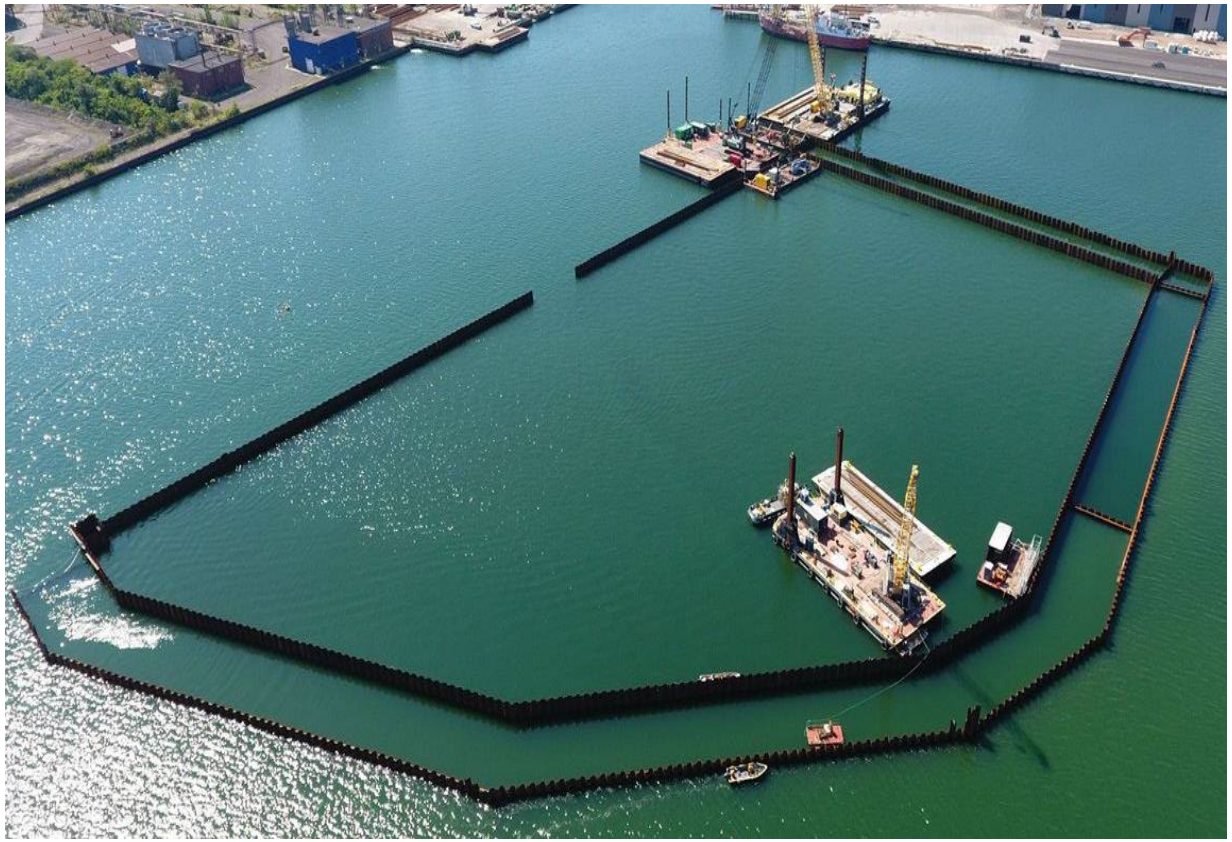
Case Study 2: Northeast Site

- Industrial canal
- Varied contamination
- In situ and ex situ BU options
- Roadblocks:
  - "Process" issues
  - Viewed as "cost savings"
  - Negotiation strategy

East Side Coastal Resiliency Concept (Source: NYC DEP 2018)

Case Study 3: Randle Reef, Canada

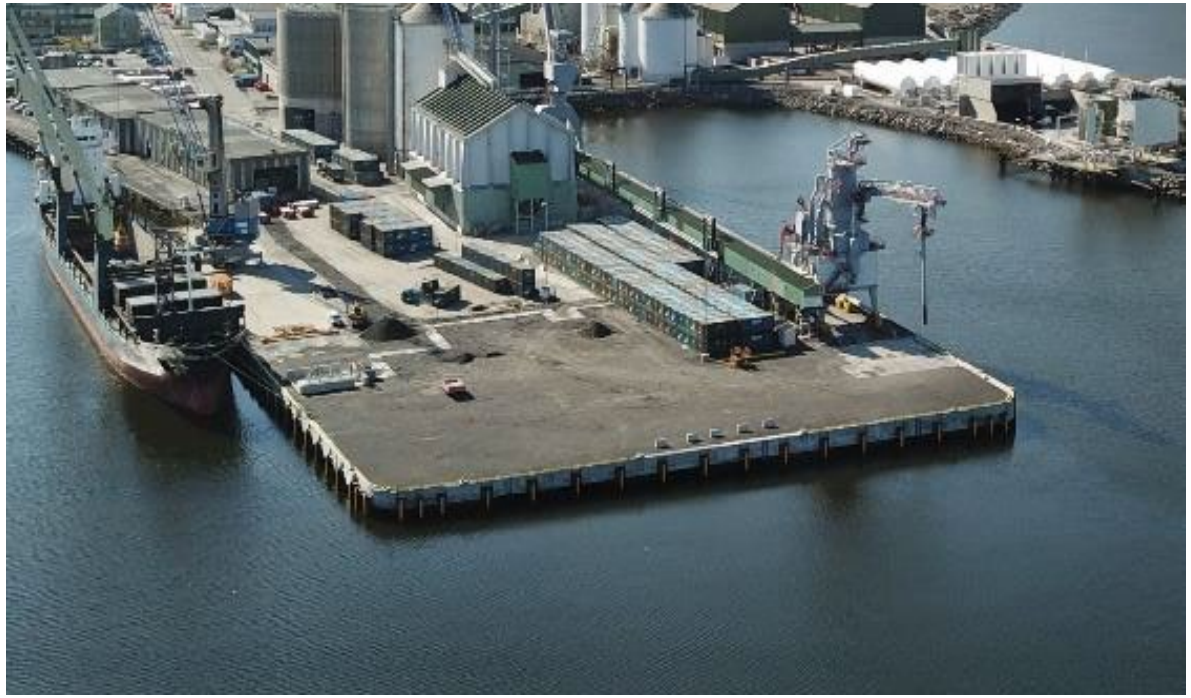
- Contaminated harbor
- PAH contamination
- Dredging and engineered containment facility
- Keys to success:
  - Agency-industry partnership
  - Cost-sharing
  - Hybrid remedy



Randle Reef Remediation (Source: Environment & Climate Change Canada)

Recap: Key BU Challenges

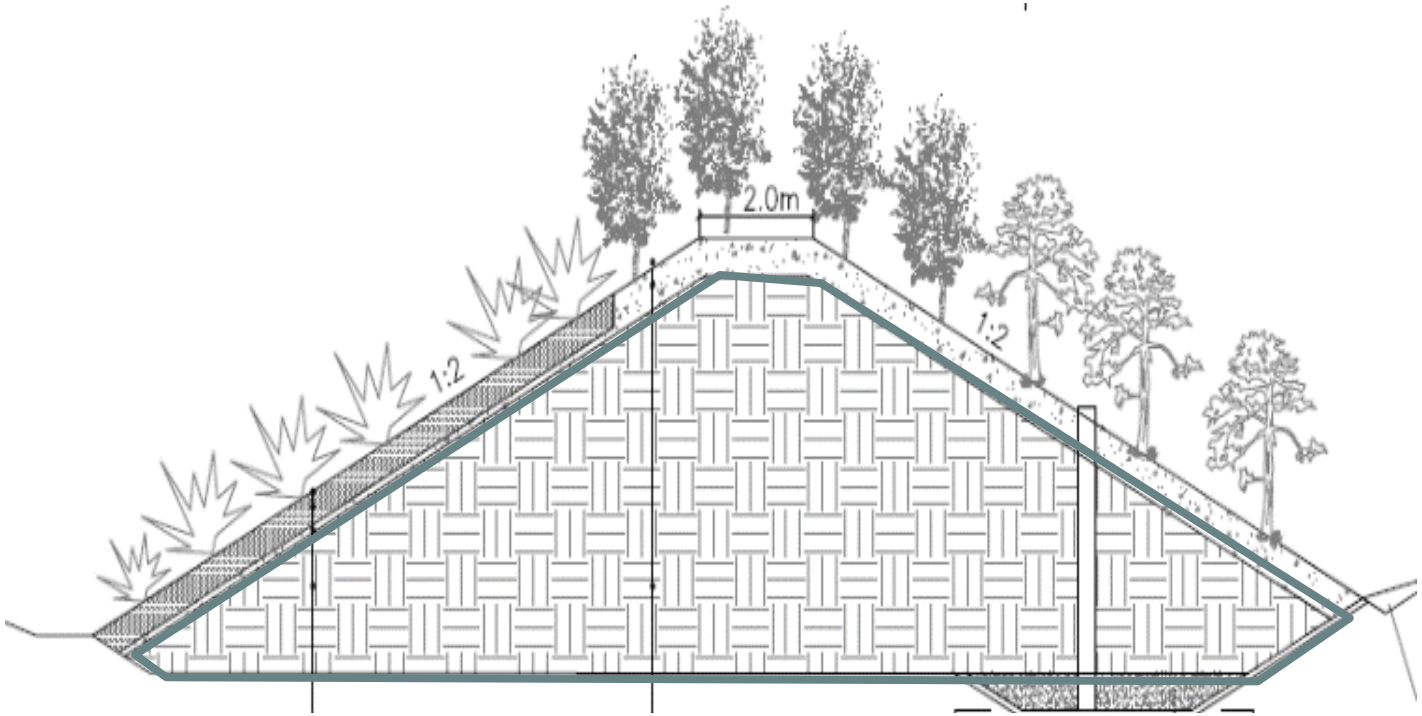
- Perception management
  - "Contaminated"
  - "Not in my backyard"
- Site management
  - Operations and maintenance
  - Cost sharing (savings)?
- Process issues
  - How to evaluate?
  - Who holds long-term liability?



Mosjøen Remediation, Norway (Source: Anchor QEA & Arconic)

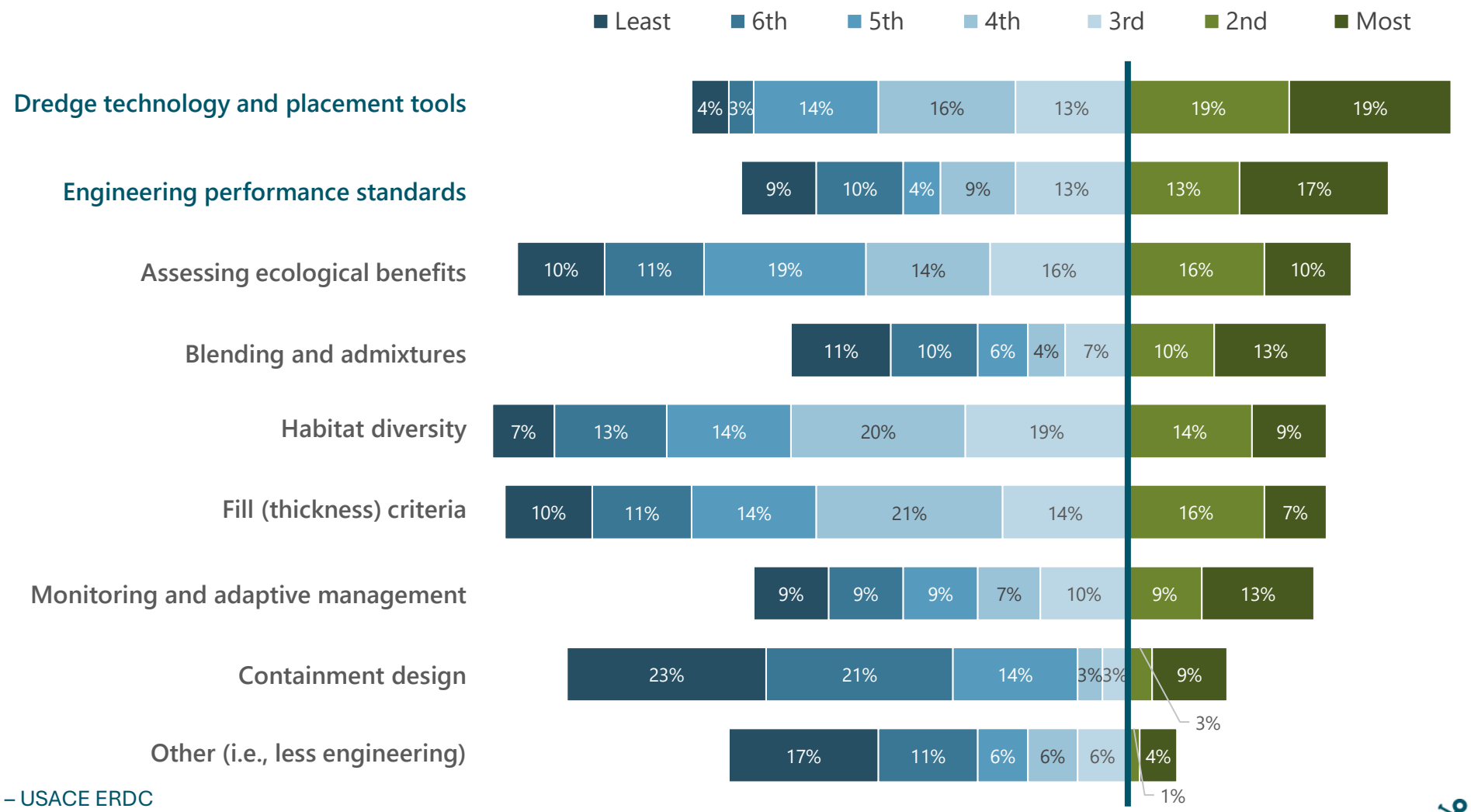
Ways to Promote BU

- Creative thinking
- Focus on "*nature-positive*"
- Risk sharing
- Collaboration, from Day 1
- Listening to concerns and proactively developing solutions
- "Adaptive" learning



Embankments or Noise Barrier Concept
(Source: SMWG BU Webinar – Gardner & Magar, 2020)
(Original Source: Sepanmaki Noise Barrier, Finland, Magar/Ramboll)

Research and Development Needs Related to BU



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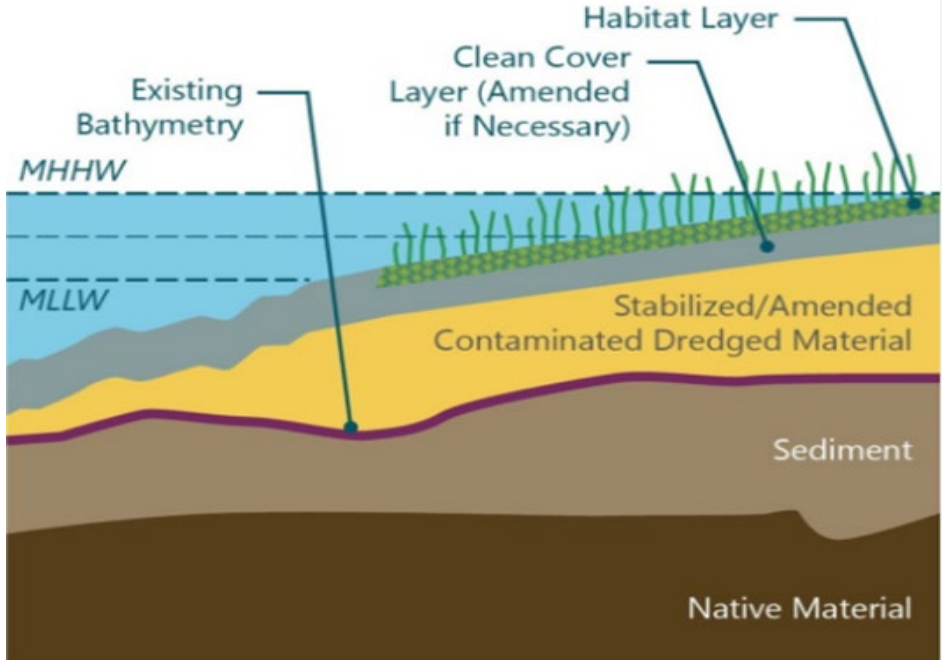
Near-Term Research Ideas

- Bench-scale testing of specific concepts
- Larger-scale field demonstrations
- Idea "incubators"
- Monitoring and reporting

Reclaimed Terminal, Quebec (Source: Alcoa - Aluminerie de Baie-Comeau)



USACE ERDC BAA#4 – PPP Project for Kingman Lake, Washington, DC

Concluding Remarks

- *"Win-Win"* strategy
- Challenge is to overcome perceptions and bias
- Develop a team approach
- Focus on sustainability over costs
- Tap into existing agency mandates or preferences
  - *Green remediation*
  - *Nature-based solutions*

SLRIDT site interagency team (source: MN Pollution Control Authority)

USACE Chief of Engineers' BU Strategy (Source: USACE HQ, Ousley et al., 2024)

Thank you!

Questions?

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