



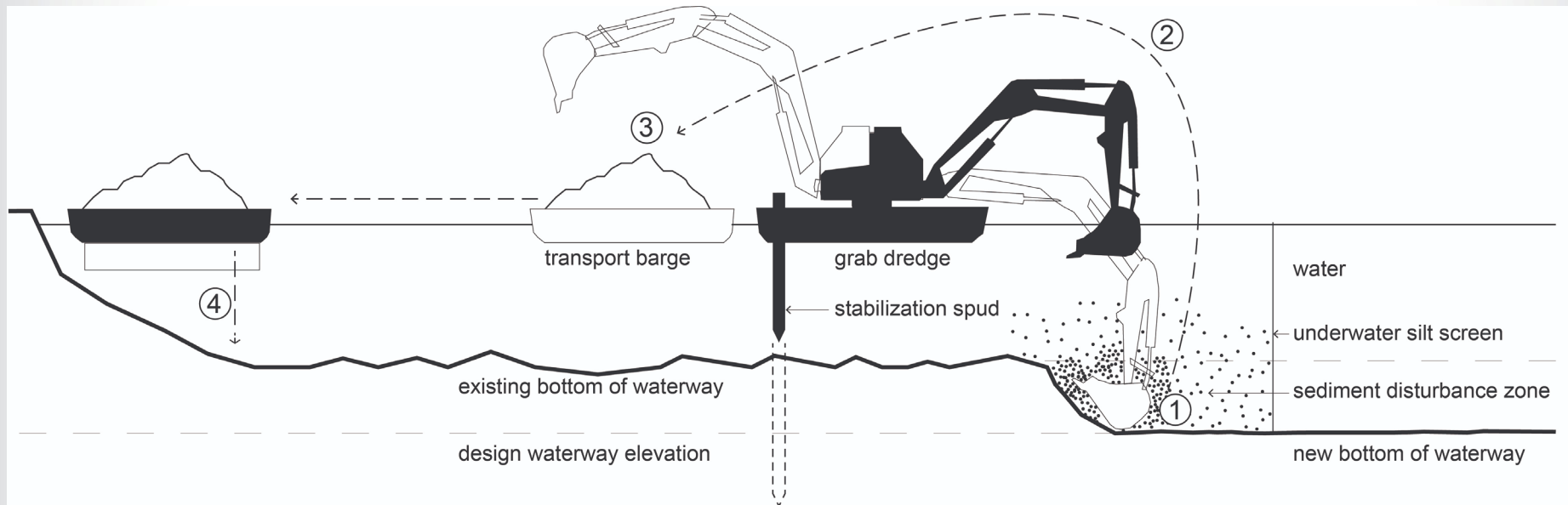
Supporting Decision-Making Through Analysis of the Beneficial Reuse of Dredged Materials in the St. Louis River

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- Introduction to port dredging and its challenges
- Description of research methodology
- Summary of progress
- Implications going forward





- ① - dislodging of in-situ sediment
- ② - raising of dredged material to the surface
- ③ - horizontal transport
- ④ - placement or further treatment



Obstacles for O&M Dredging

- Amounts
- Cost
- Stakeholder coordination
- Material characterization
- Public perception
- Placement
 - Confined Disposal Facilities (CDFs)
 - Open water placement
 - Beneficial reuse



The Potential of Beneficial Reuse

- Dredged materials as “resource” versus “waste”
- Aquatic and terrestrial habitat restoration
- Beach nourishment
- Construction and materials
- Brownfields remediation



Research Questions

- 1) What is the environmental quality, programmatic, and human benefit information needed to beneficially reuse dredged materials?
- 2) How are sediments dredged, moved, tested, planned for, and applied for?



Guiding Principles

- Collaborative problem-solving
- Environmental justice
- Translational science
- Transparency

- Collaborative Case Study
 - Context-dependent
 - 3 different reuse projects
 - 1) DWP Roundhouse 2) Atlas Industrial Park 3) 40th Ave West Aquatic Habitat
 - Stakeholder engagement
 - Data sources:
 - Document analysis
 - Stakeholder meetings
 - Stakeholder feedback & review
 - Stakeholder workshops



Discussion of progress & future implications



<http://www.dulutheda.org/parks>



<https://www.duluthnewtribune.com>



<https://www.fws.gov>



Refined & Expanded Criteria/Sub-Criteria

Environmental, Economic, Social, Other

Governance- Assess feasibility based on compliance with place and project relevant governance structures

Built Environment- Assess feasibility based on site's end uses and dredged material utilization

Biophysical- Assess harmful and beneficial impacts on habitat and organisms

Economic- Assess feasibility given potential economic incentives and constraints

Social- Assess potential harms and benefits on human health and well-being



Data Worksheet → Decision Tool

Governance

Maintain Navigation Channels: Yes ☐ No ☐ Unsure ☐

Likelihood: Choose an item. **Magnitude:** Choose an item.

Direction: Choose an item.

Enrolled in a voluntary program (often assessment/clean-up support): Yes ☐ No ☐ Unsure ☐

Likelihood: Choose an item.

Magnitude: Choose an item.

Direction: Choose an item.

Able to be completed inside of relevant Environmental Windows: Yes ☐ No ☐ Unsure ☐

Likelihood: Choose an item.

Magnitude: Choose an item.

Direction: Choose an item.

Referred to or included in existing guidance documents: Yes ☐ No ☐ Unsure ☐

Likelihood: Choose an item.

Magnitude: Choose an item.

Direction: Choose an item.

Which documents reference this project: Click or tap here to enter text.

Permitting timeline conducive to project timeline: Yes ☐ No ☐ Unsure ☐

Likelihood: Choose an item.

Magnitude: Choose an item.

Direction: Choose an item.



Identification of Six “Alternatives”

- **Potential placement sites to test the tool**
 - Upland Site (specific site not yet identified)
 - Spirit Lake (sediment nourishment)
 - Minnesota Point (beach nourishment)
 - Superior Bay Anchorage Basin
 - Allouez Bay
 - Interstate Island (known site, using as example)
- A Data Worksheet will be filled out by stakeholders for each site prior to upcoming Decision Tool Workshop
- At the workshop, stakeholders will walk through the process of ranking alternatives



What this means going forward...

- **Project level**
 - Host workshop to test tool
 - Refine and adjust tool as necessary
 - Possibly work to include or expand for inclusion of criteria relevant for contractors
 - Continue building database of beneficial use cases
- **Beyond this project**
 - Habitat work will continue in near future
 - Other potential longer term project sites- mine land reclamation, brownfields
 - Future collaboration- building into other mapping/databases
 - Ease of access to information
 - Classification and availability of dredged materials
 - Fitting material availability to potential site use
 - Continue identifying expansive uses of the tool
 - Increasing transparency for natural resource decision making
 - Assisting with weighing other decisions and prioritizing resources