Bacteria Mining to Enhance Phytoremediation of Contaminated Sediments for Beneficial Reuse

PROBLEM

- Managing contaminated dredged sediments is costly
- Approximately 1B cy of sediment dredged annually – not enough storage space
- Critical need for sediment management and reuse alternatives like Nature-based Solutions

SOLUTION

- Nature-based and sustainable alternatives to degrade contaminants in dredged sediment and support beneficial reuse

IMPACT

- Low-cost and sustainable techniques
- Increased aesthetic appeal of Confined Disposal Facility's (CDFs) along shorelines of the Great Lakes
- Increase of carbon storage (using nature or plants)
- Transformation and degradation of contaminants

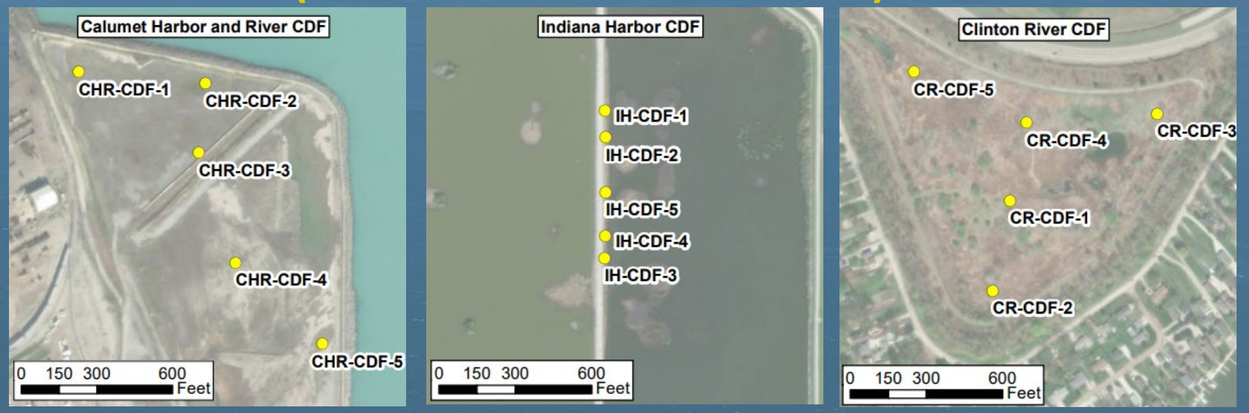
January 2024

Bacteria Mining to Enhance Phytoremediation of Contaminated Sediment for Beneficial Reuse

APPLICATIONS

- Bacteria enhance plant-assisted bioremediation
- Contaminant-specific degrading bacteria residing in dredged sediment may be adapted for use as plant inoculants (endophytes)
- Endophytes can be used to enhance phytoremediation of degraded contaminants for reuse of dredged sediments

STATUS (November 2023)



Sediment sampling locations from 3 CDFs within the Great Lakes

BENEFITS

- Low *operating* cost to degraded contaminants
- Reuse of dredged sediment
- High community acceptance
- Sustainable technique

WHAT'S NEXT

With additional resources, we will evaluate feasibility of culturing the identified bacteria and adapt as endophytes for plant-assisted remediation.