Ashtabula Harbor, Ohio
Great Lakes Restoration Initiative (GLRI) Dredging

Partners:
U.S. EPA
Ohio EPA
Ashtabula City Port Authority
U.S. Army Corps of Engineers

Presented by:
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Introduction

- Ashtabula Harbor, Ohio
  - Federally (USACE) maintained deep-draft harbor
  - Situated within designated Great Lakes Ashtabula River Area of Concern (AOC)
    - Priority AOC targeted by U.S. EPA for completion of management actions in 2012
  - GLRI-funded USACE removal of sediments within Federal navigation channels that contribute to the restriction on dredging activities BUI
Introduction

- Restriction on Dredging Activities
  Beneficial Use Impairment (BUI)
  - Sediments in harbor Federal navigation channels that do not meet Federal guidelines for open-lake placement or unrestricted upland use
  - These sediments do not meet open-lake placement guidelines (Great Lakes Dredged Material Testing and Evaluation Manual) due to the risk of PCB bioaccumulation in the aquatic environment
Introduction

- Project Objectives
  - Delist AOC restriction on dredging activities
  - Create channel depths favorable to commercial and/or recreational navigation
  - Provide structural fill for the closure of a former industrial wastewater lagoon
Introduction

- Why GLRI Funding
  - Ashtabula River AOC identified as a 2012 Priority AOC
  - Sediment is within the authorized navigation channel
  - Upstream shoaling areas not in active commercial navigation areas
    - Not a priority for O&M Dredging funds
    - Potential for downstream migration to active commercial channel
  - No Confined Disposal Facility
Dredging

- More than 100,000 cubic yards of material is to be dredged from lower River Channel and Southern Reach
- Material is to be mechanically dredged
- Challenges include dredging in unmaintained sections of the channel – Debris expected, as well as substantial amounts of cobbles and leaves
Considerations for Upland Management of Dredged Material

- Hydraulic placement – Alternative eliminated from consideration
  ▶ Disposal area berm height and surface area insufficient for volume of material to be dredged (design parameters for retention of solids were not met)
  ▶ Geotubes determined to not be cost-effective
    • Issues with placement site volume limitations as well as ultimate achievement of strength properties required for placement within the lagoon
Considerations for Upland Management of Dredged Material

- Mechanical dredging and placement with solidification/stabilization technology – Selected plan
  - Dredged material will be offloaded, stabilized and placed within an existing wastewater lagoon
    - Provided favorable site logistics
    - Investigated several lagoons
    - Design was dependent on acquiring accurate surveying and geotechnical investigation of the lagoon embankments
    - Amendment treatment would provide needed strength properties for immediate compaction
Dredged Material Offloading

- Dredged material is to be transported to adjacent Pinney Dock for offloading
- Amendment mixing to occur on staging area
  - Cement/quicklime hybrid mixture removes moisture and improves strength for transport and placement
- Entrained water will be decanted and returned to the harbor
  - Effluent quality determined by elutriate testing
  - Total suspended solids (TSS) will be monitored prior to discharge (turbidity testing, with TSS/turbidity correlation)
Pinney Dock Offloading Site
Placement at Wastewater Lagoon

- Dredged material to be disposed in Elkem Pond 5C
  - Pond 5C is a former wastewater lagoon that received wastewater from the production of ferrosilicon and calcium carbide
- Dredged material will constitute structural fill per Elkem’s actions to close the lagoon per Ohio water quality regulations
- Pre-design testing determined that Calciment® was a feasible alternative for achieving moisture content and strength requirements needed for immediate compaction at the site
Elkem Pond 5C
I'm not sure where to put this slide.

g5cotswp, 5/10/2012
Projected Final Lagoon Profiles

MIN VOL OF 100,000 CU. YDS. TO ELEV. 647.3
MAX VOL OF 130,000 CU. YDS. TO ELEV 649.9
Dredging
- Three Locations: Lower River Reach, Outer Harbor, Southern Reach
- Mechanical dredging

Offloading and Dewatering
- Offloading of dredged material at dock adjacent to the Outer Harbor
- Water entrained during dredging is monitored and discharged back to the Outer Harbor
- Material is stabilized for transport and disposal

Transport
- Dredged material is transported via truck to Lagoon 5C at the site of the former Elkem Metals

Placement and Runoff
- Material is offloaded from trucks and placed in Lagoon 5C
- The embankments of lagoon 5C serve to isolate the dredged material from adjacent waters or land
- Runoff from the lagoon during placement activities is monitored and discharged from the site to Lake Erie
Regulatory Considerations

- Return water entrained during dredging and runoff will be Clean Water Act Section 404 discharges to the harbor and lake, requiring water quality certification from the Ohio EPA.

- Wastewater lagoon is a NPDES-permitted facility, requiring a Permit-to-Install from the Ohio EPA for placement of the dredged material and closure.
Regulatory Considerations

- Ohio EPA Determination regarding use of sediments for lagoon closure
  - Letter of authorization to USACE
  - Letter of approval to site owner
- Contaminated Nature of Lagoon and Low Level Contamination in Sediments
  - Future Liability?
  - General agreement regarding negligible risk.
Regulatory Considerations

- Environmental window extended from September 15 to December 15
- Lagoon is to be capped by Elkem per their PTI with Ohio EPA
- Maintenance and monitoring of the closed lagoon will be a responsibility of Elkem per their closure plan and PTI with Ohio EPA
Questions? . . .