



# River Raisin AOC

## Remediation of Contaminated Sediments

### PROJECT OVERVIEW

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# Background

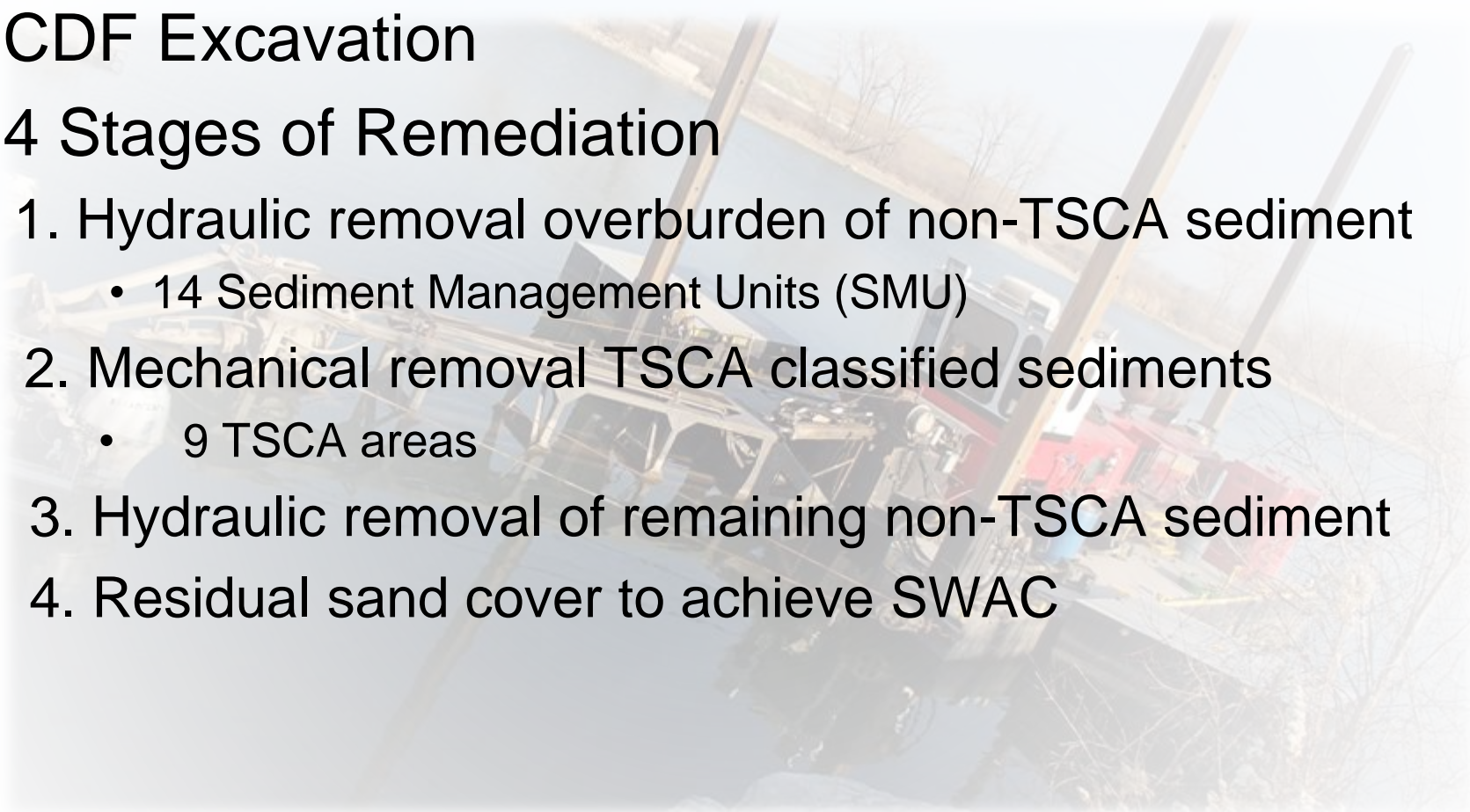
- River Raisin AOC Site located in Monroe, MI
  - Extends from ½ miles into Lake Erie to an upstream point 2.6 miles upriver
- Sponsored by:
  - Great Lakes National Program Office (GLNPO)
  - Michigan Department of Environmental Quality (MDEQ)
  - Other Non-Federal Sponsors
- Contaminants of Concern
  - Polychlorinated Biphenyls (PCBs)







# Overview

- CDF Excavation
  - 4 Stages of Remediation
    1. Hydraulic removal overburden of non-TSCA sediment
      - 14 Sediment Management Units (SMU)
    2. Mechanical removal TSCA classified sediments
      - 9 TSCA areas
    3. Hydraulic removal of remaining non-TSCA sediment
    4. Residual sand cover to achieve SWAC
- 

# Background





# CDF Excavation

- CDF located at Sterling State Park
- 2 Cell configuration
  - Excavation took place in the non active cell
  - Dredge spoils were pumped to the active cell
- Excavation process
  - Removed 102,000 cubic yards
- Excavated material was used for beneficial backfill reuse by private PRP



# Phase 1 Overburden Removal

- 2 Hydraulic Cutterhead Dredges
  - 8" Articulated, swinging ladder
  - 10" Swinging ladder
- Total Removal of 3,800 CY of Non-TSCA material
- Preceded, then paralleled Phase 2





# Phase 1 Hydraulic Transport



- Transport System
  - (2) 10" Booster Pumps
  - 8" sealed HDPE pipeline
  - 4 Mile total pumping distance
- Combined pipeline for both dredges
  - Kept velocities up
  - Easier to manage
  - Lake Erie portion was anchored to the lakebed

# Phase 2 TSCA Removal

- Mechanically Excavated
  - 2,500 CY of TSCA classified sediments
  - Internally developed, hydraulically actuated trenching bucket
  - Turbidity control moon pool
  - RTK-GPS tracking
- Sediment handling
  - Material placed in sealed, 20 CY roll-off containers
  - Transport using shallow draft jet drive vessel
  - Container transfer with 150-ton lattice boom crane





# Phase 2 TSCA Removal

- Material thickening
  - Mixed with Portland Cement to thicken the soft sediments
  - Internally developed, hydraulically driven mixing tool
  - Performed to allow adherence to landfill paint filter requirements
- Disposal
  - All TSCA material was trucked offsite to Wayne Disposal Facility in Bellville, MI



# Phase 2 TSCA Removal

- Wastewater Treatment

- Onsite mobile plant
- Water was treated and released to the City of Monroe water treatment plant for further processing



- Load out

- Thickened sediments were dumped onto asphalt containment area
- Material was loaded into lined trucks and transported to landfill





# Phase 3

## Non-TSCA Dredging

- Hydraulic removal and transport of remaining non-TSCA sediment
  - 70,200 CY removed
  - 24 hour dredge operations
- Efficiency dredging
  - Larger dredge focused on production
  - Smaller dredge focused on residual cleanup



# Sand Cover

- 6-inches of sand placed in areas where post dredge samples did not meet 1 PPM SWAC
- Broadcast Capping System (BCS™) used
  - No disturbance to underlying sediments
  - Sand cover placed in water and along shoreline
  - Armament placed on shoreline cover





# Challenges Encountered



- High-Subgrade
  - Hard pan clay found above design elevation
  - Reduced total quantity from 122,000 CY to 70,200 CY
  - Only about 30% of areas could be dredged to the design elevation
- Solution:
  - Surgical dredge techniques
  - Increased sampling to define areas of soft sediment
  - 2<sup>nd</sup> pass operations when required

# Challenges Encountered



- Additional TSCA material found through sampling
  - 2 additional hot spots
  - 1 area had concentrations far exceeding initial concentrations
  - Additional dredging for shoreline area
- Solution
  - Additional Sampling
    - Manual split spoon cores
    - Drill rig borings
  - Proposals for remedial options
  - Navigational channel restrictions
  - Interim adsorptive cover
    - 5% by wt. Organoclay additive





# Thank You

## QUESTIONS?



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