



OTTER CREEK AND CONFLUENCE SEDIMENT REMEDY DESIGN

Stakeholder Meeting
Lake Erie Center
January 23, 2019



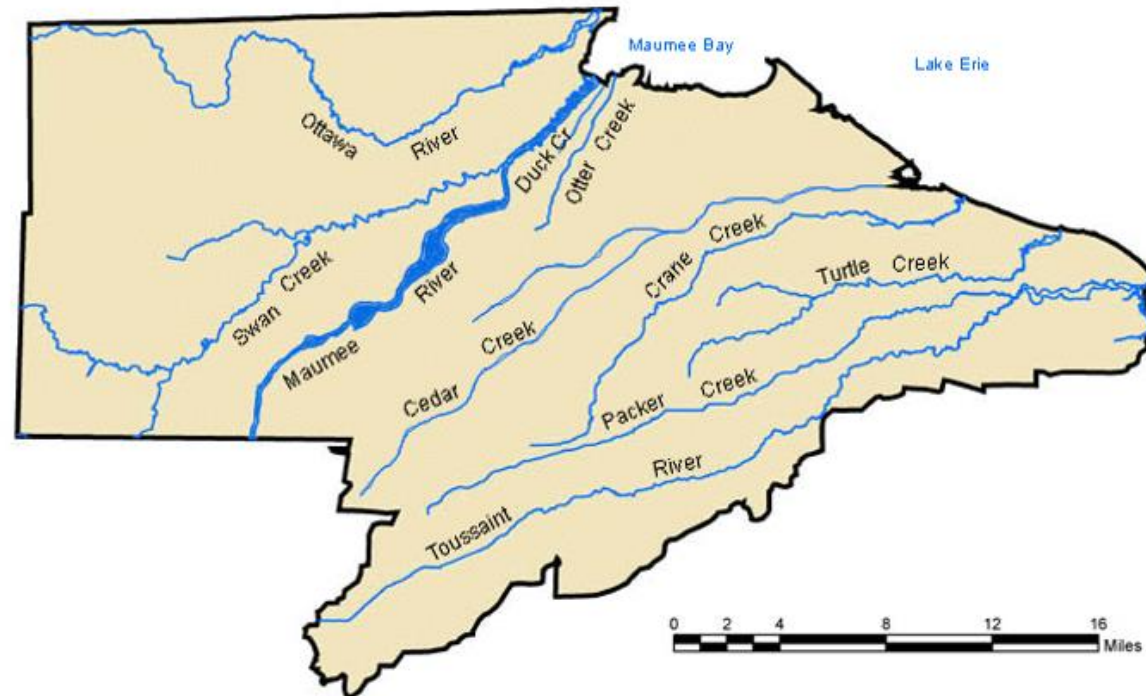
GREAT LAKES LEGACY ACT PROJECT

- Great Lakes Legacy Act sediment remediation project
 - A volunteer project in which funding from the federal government and non-federal sponsors is used to accelerate remediation in the Great Lakes Areas of Concerns
- Sponsors
 - Non-federal sponsors: BP-Husky, Chevron, Evergreen
 - Federal Sponsor: USEPA Great Lakes National Program Office
- Additional project team members
 - US Army Corps of Engineers
 - Ohio EPA
 - US Fish and Wildlife
 - Jacobs (on behalf of USEPA)
 - Toledo Port Authority
 - Ohio Department of Natural Resources



OTTER CREEK LOCATION

- Located in northwest Ohio, part of the Maumee Watershed
- Discharges into Maumee Bay, western basin of Lake Erie
- Located with Maumee Area of Concern (775-acre area)



LOWER OTTER CREEK AND CONFLUENCE



SITE DESCRIPTION

- Industrial area
 - East – railroad yards / West – phragmites wetland
 - Pipelines located adjacent to creek
 - Commercial and industrial properties
 - Municipal and industrial outfalls discharge into creek



OTTER CREEK AND CONFLUENCE



Confluence looking southeast



Closeup of Creek looking south

PAST INVESTIGATIONS

1990s:
OEPA sampling

2007-2010:
Sediment
investigation

2010-2011:
Data gap and
confluence
investigations

2012-2013:
Focused
feasibility
study

2016-2018:
Predesign
Remedial
Investigation

- Sediment sampling and analysis
- Porewater sampling and analysis
- Sediment toxicity tests
- Benthic community surveys
- Fish community surveys

PRE-DESIGN REMEDIAL INVESTIGATION (2016 – 2018)

1 Sediment and porewater sampling and analysis

2 Sediment geotechnical evaluations

3 Upland and sediment elevation surveys

4 Hydraulic monitoring at two locations (near confluence & 0.9 miles upstream)

5 Drone video and photography

REMEDIAL OBJECTIVE

Remedial Action Objective (Otter Creek and Confluence Area)

Reducing benthic invertebrate exposure to chemicals of concern and associated toxicity below levels of concern

Chemicals of Concern

- Polycyclic aromatic hydrocarbons (PAHs)
- Diesel range organics (DROs)

PREFERRED REMEDY ALTERNATIVE

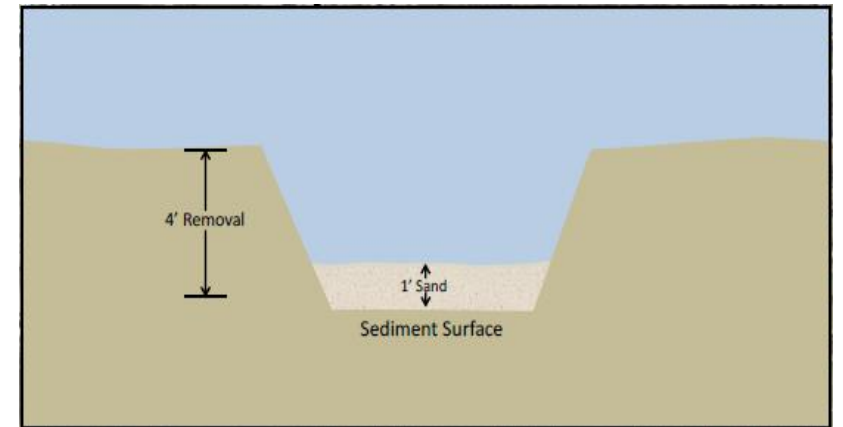
Sediment removal and cover placement

Otter Creek

- Remove sediments up to a depth of 4 feet below the sediment surface or to native clay (whichever is less)
- Place 1 foot of cover material over dredged areas

Otter Creek Confluence

- Remove sediments at depths ranging from 1 to 5.5 feet
- No cover except for deep dredge area (i.e., 5.5-ft area)



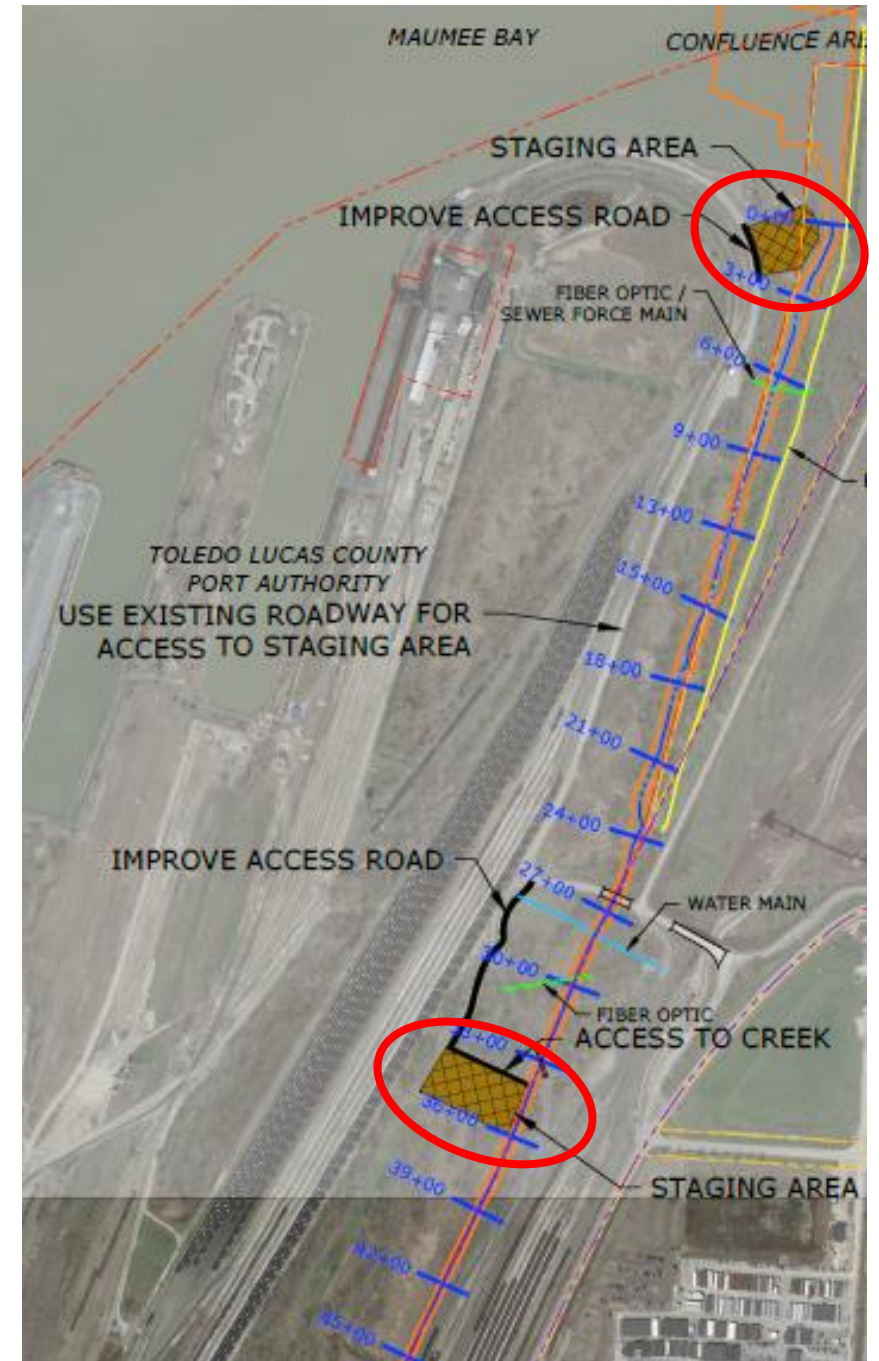
SEDIMENT MANAGEMENT AREA (SMA)

- Otter Creek
 - Lower 1.7 miles
 - Width of creek ranges from 25 to 85 ft
 - Sediment chemical concentrations and evaluations did not result in SMA upstream of Millard Avenue
- Confluence
 - 5.5 Acres



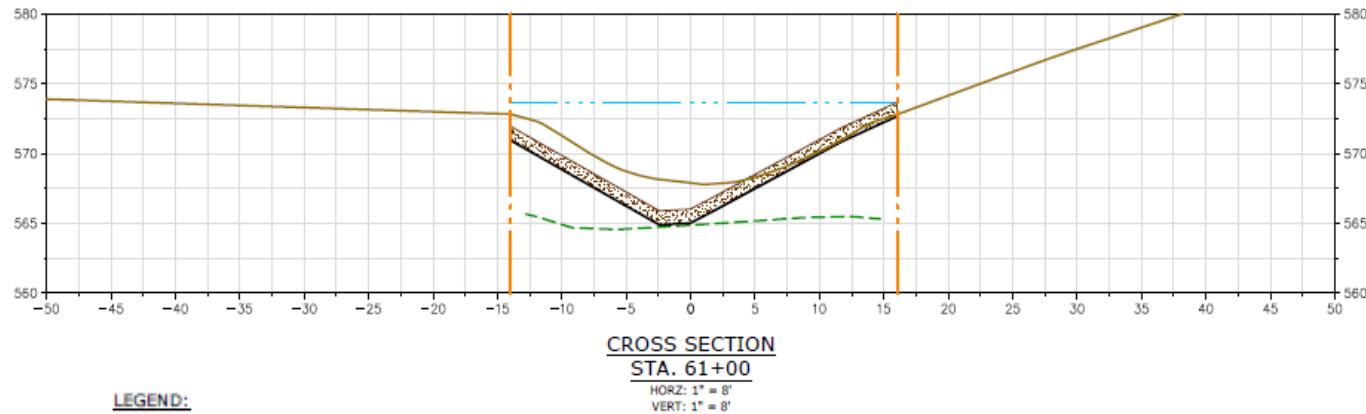
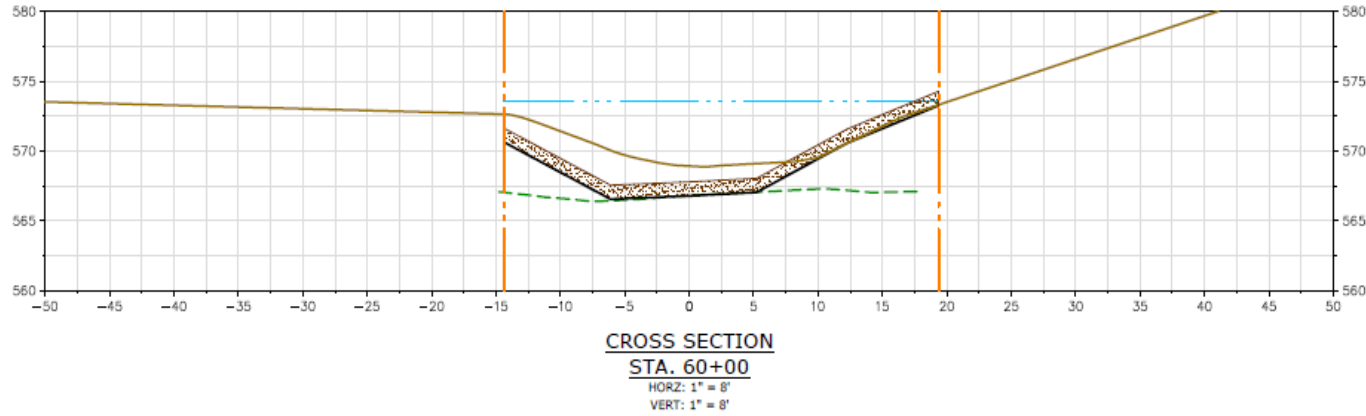
PROPOSED STAGING AREAS AND CREEK ACCESS LOCATIONS

- Two staging areas are proposed on Port of Toledo property, leased by CSX:
 - Near mouth of the creek
 - ~ 0.6 miles upstream of confluence
- Areas will be used for storing equipment and materials
- Access roads will need to be improved in some locations to access staging areas
- The team is working with CSX to finalize staging areas and access routes
- Following remediation, staging areas will be restored



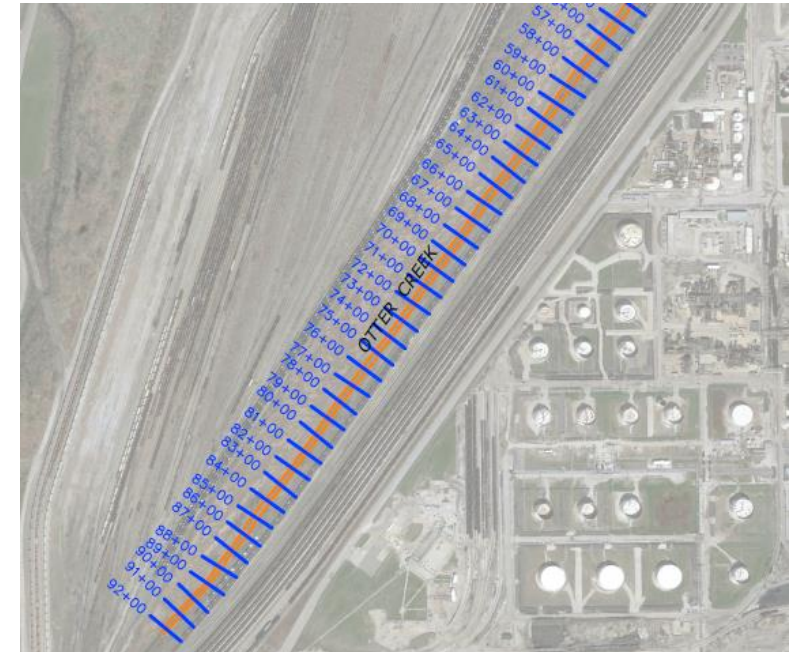
OTTER CREEK TYPICAL DESIGN CROSS-SECTION

Upstream



LEGEND:

-  SEDIMENT SURFACE
-  INTERPOLATED TILL SURFACE
-  PROPOSED DREDGE LINE
-  MEAN LOW WATER LEVEL (573.61' AMSL)
-  CREEK SMA BOUNDARY
-  COVER MATERIAL

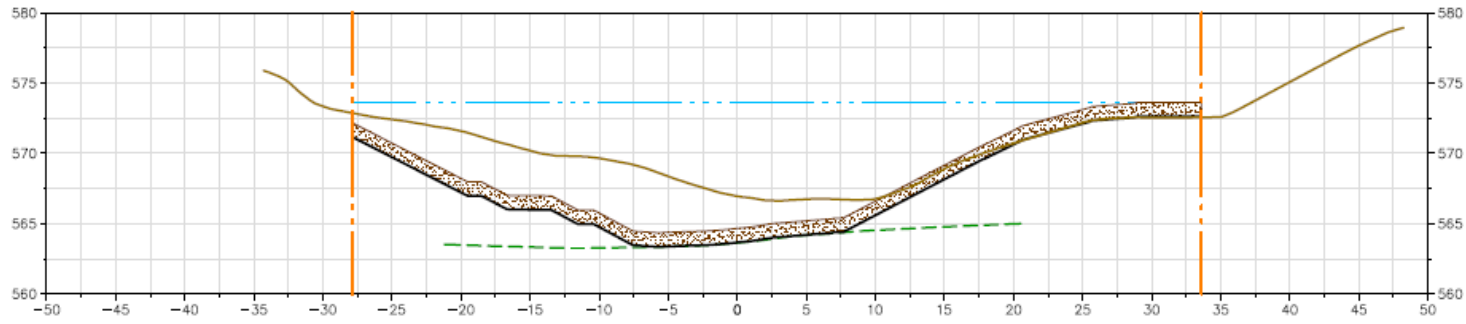


Delineation of creek boundary

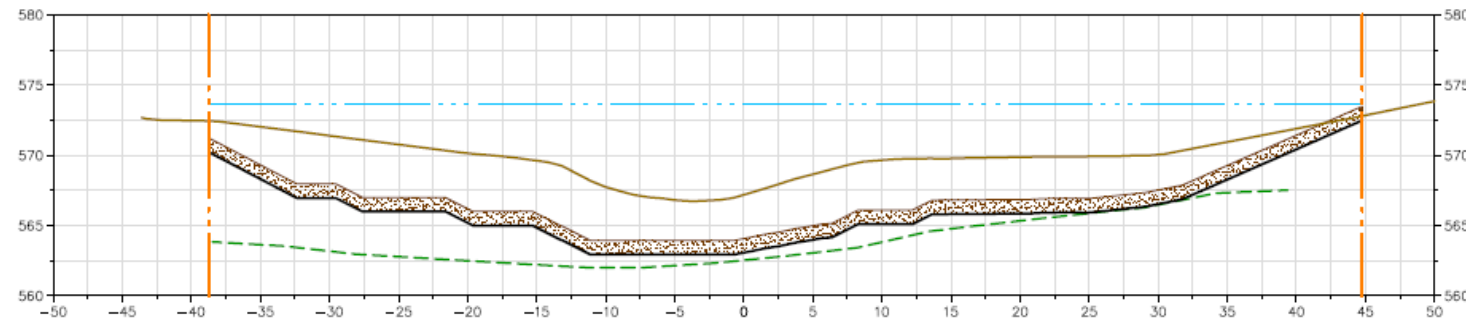
- Site walkthrough/ visual survey
- Upland and sediment surface elevation data
- Aerial imagery
- Water elevation
- Sediment surface morphology

OTTER CREEK TYPICAL DESIGN CROSS-SECTIONS (CONTD.)

Downstream



CROSS SECTION
STA. 2+00
 HORZ: 1" = 8'
 VERT: 1" = 8'



CROSS SECTION
STA. 3+00
 HORZ: 1" = 8'
 VERT: 1" = 8'

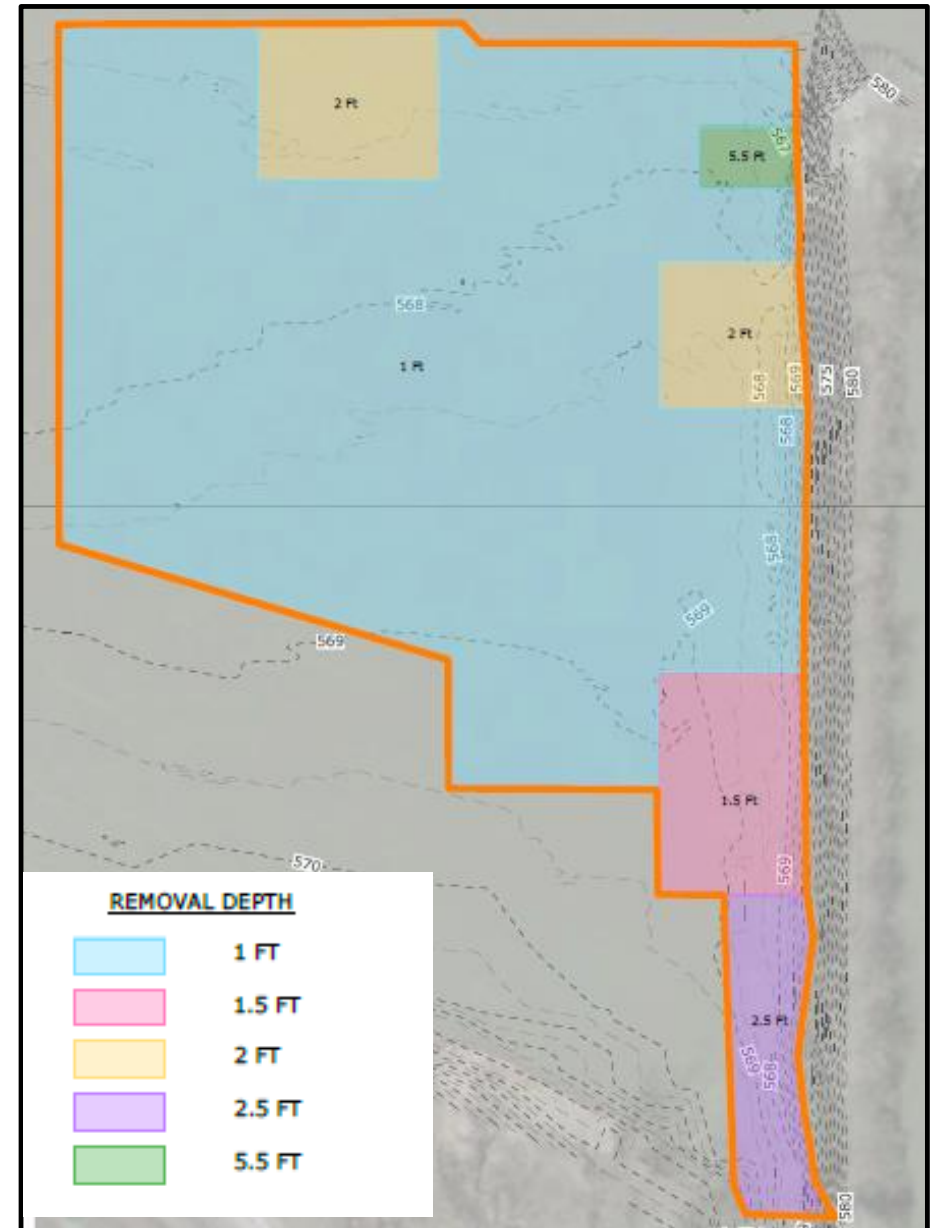
LEGEND:

- SEDIMENT SURFACE
- INTERPOLATED TILL SURFACE
- PROPOSED DREDGE LINE
- MEAN LOW WATER LEVEL (573.61' AMSL)
- CREEK SMA BOUNDARY
- COVER MATERIAL



SEDIMENT REMOVAL IN THE CONFLUENCE

Confluence sediment removal depths range from 1 to 5.5 feet



BEST MANAGEMENT PRACTICES (BMPS)

BMPs will be used to minimize sediment resuspension:

- Dredging operations will be conducted to prevent, to the extent possible, turbidity outside the work area
- Turbidity curtains or barriers will be installed downstream of in-water work areas
- Turbidity monitors will be installed; work will stop if turbidity is measured above the established criterion



Turbidity curtain example

ESTIMATED SEDIMENT REMOVAL VOLUMES

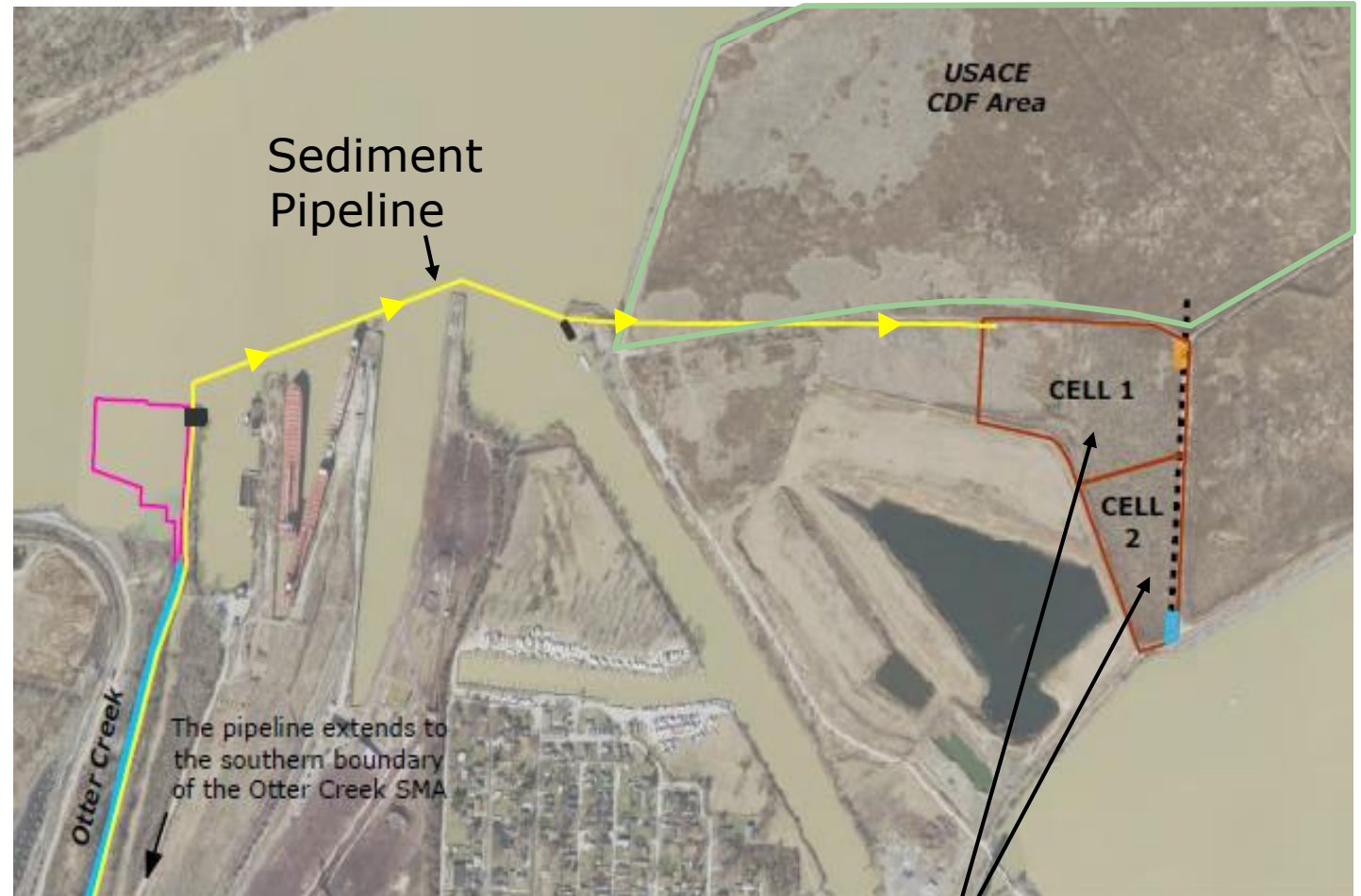
Dredge Area	Total Volume¹ (Cubic Yards)	Total Including Over Dredge Volume² (Cubic Yards)
Otter Creek	33,450	39,950
Otter Creek Confluence	13,000	17,500
Total	46,450	57,450

¹Estimated dredge volume based on the design vertical and horizontal dredging limits

²Estimated over dredge volume including a 6-inch over dredge allowance

SEDIMENT DISPOSAL

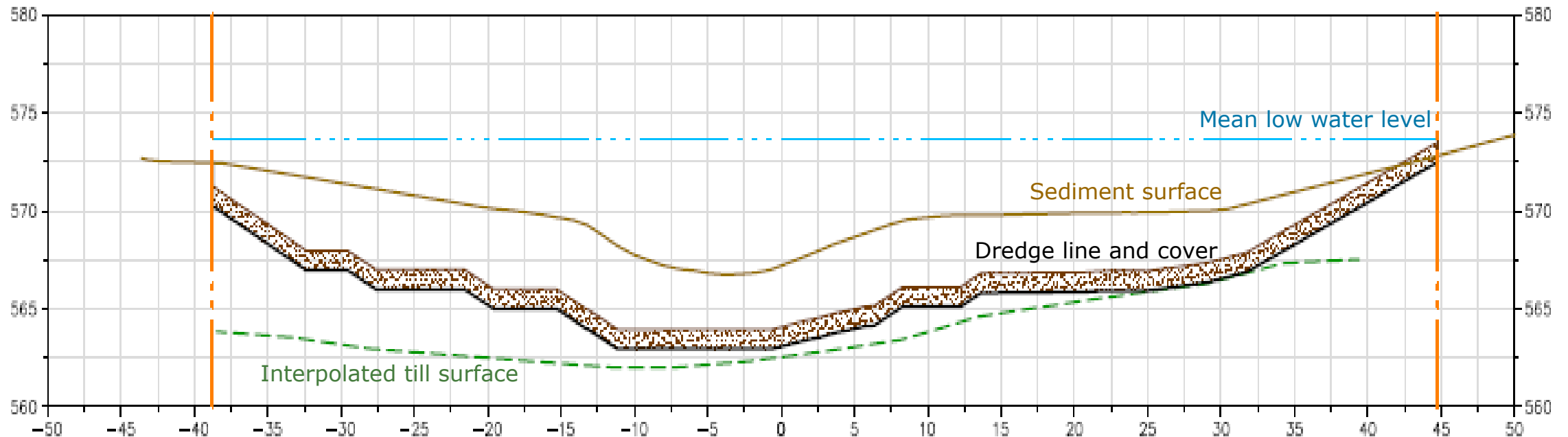
- Hydraulically dredged sediments will be pumped to the Port of Toledo Confined Disposal Facility (CDF)
- Pipeline will be submerged and anchored to the bottom floor to prevent interference with boat traffic
- CDF disposal area is designated for contaminated sediment – these sediments are not authorized for reuse
- Excess water may be pumped to USACE CDF



Port of Toledo
Sediment
Disposal Area

COVER MATERIAL PLACEMENT

- Following removal a 1-ft clean sand layer will be placed on the new sediment surface
- Backfill will be placed in shallow lifts to reduce mixing with underlying sediment
- Dredging and cover placement will start upstream and move downstream to the confluence



PROPOSED SCHEDULE

Task	Timeframe for Completion
90% Design Review	December 2018 – January 2019
Finalize Design Document	February – March 2019
Permitting	July 2018 - June 2019
Contractor Procurement	March 2019 – January 2020
Remedial Action (Removal, Disposal, and Cover)	March – October 2020
Restoration	October 2020 – April 2021

QUESTIONS?