
Photo courtesy of Port of Portland

Remedial Action Case Study: McBride Slough Cleanup

Presented by

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Anchor QEA, LLC

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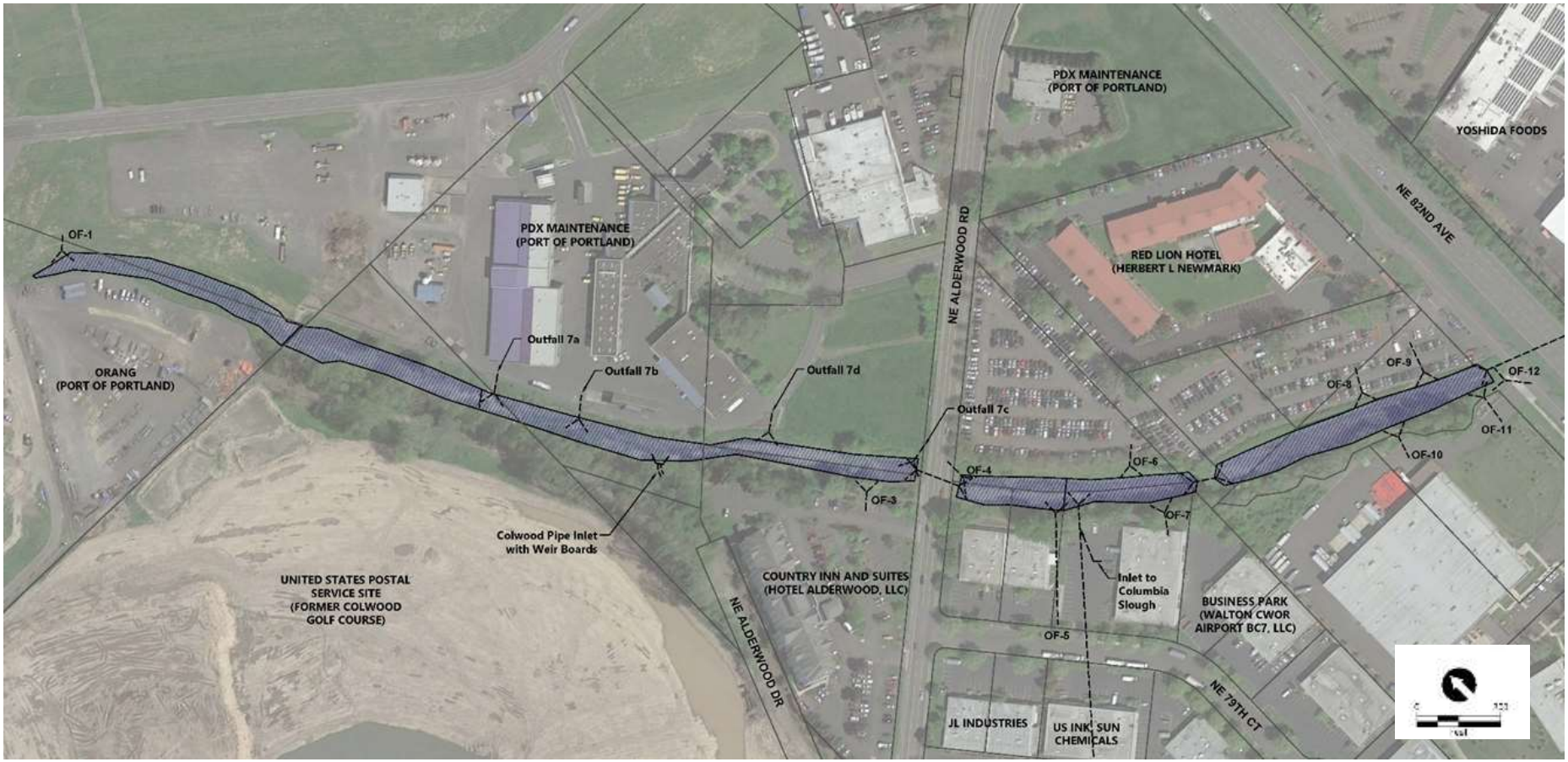
Presentation Overview

- Site Description and Background
- Design Criteria and Remedial Action Activities
- Design and Construction Challenges
- Schedule Overview

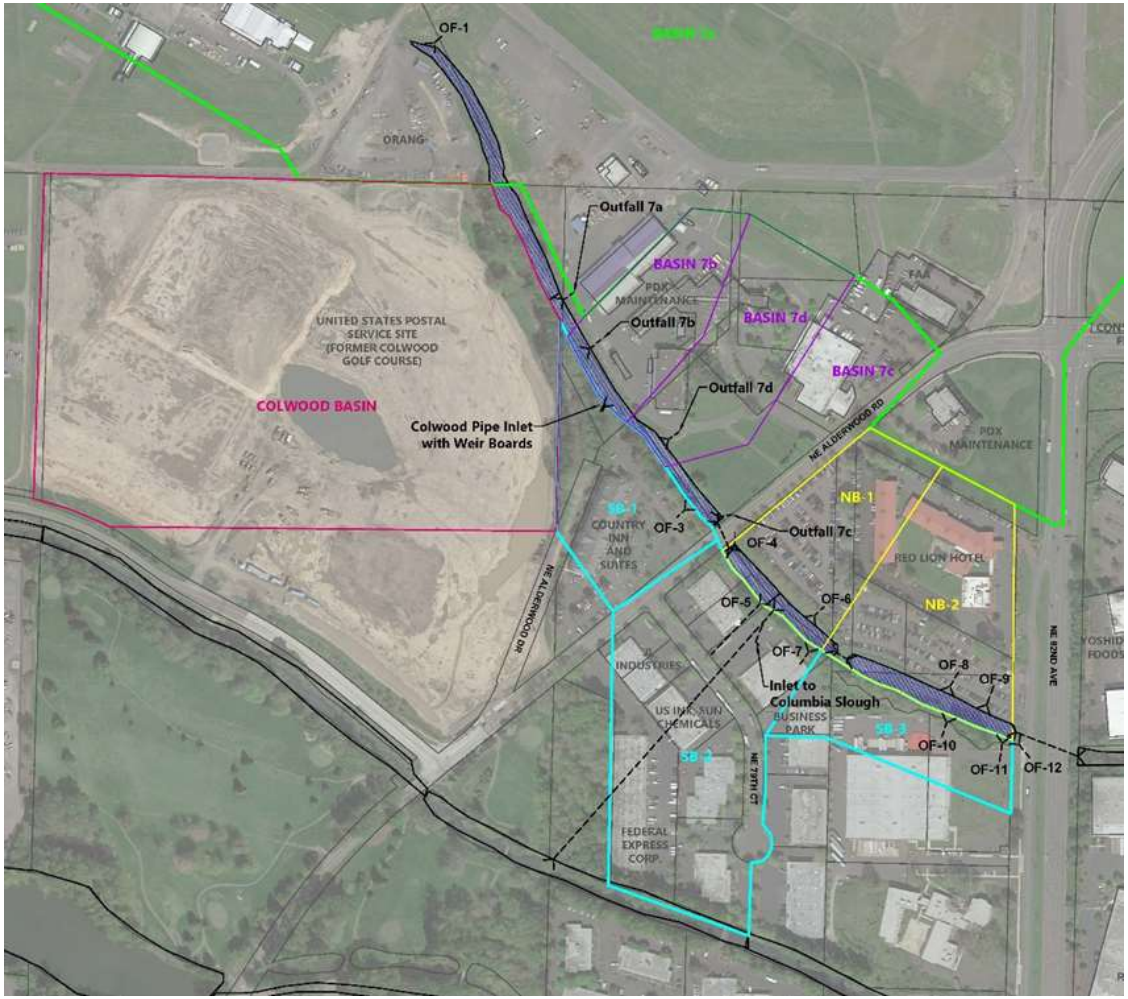
Site Description and Background

Site Location

Site Description and Background



Site Description and Background (cont.)



Site Description and Background (cont.)

- Contaminants detected in slough sediments during maintenance dredging in 2011
- In 2013, remedial investigation activities were conducted to delineate the extent of contamination
- Record of Decision issued in 2015
  - Cadmium, lead, mercury, DDT isomers, total polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs)
- Remedial design was finalized in 2017
- Construction begin in May 2018

Design Criteria and Remedial Action Activities

Design Criteria

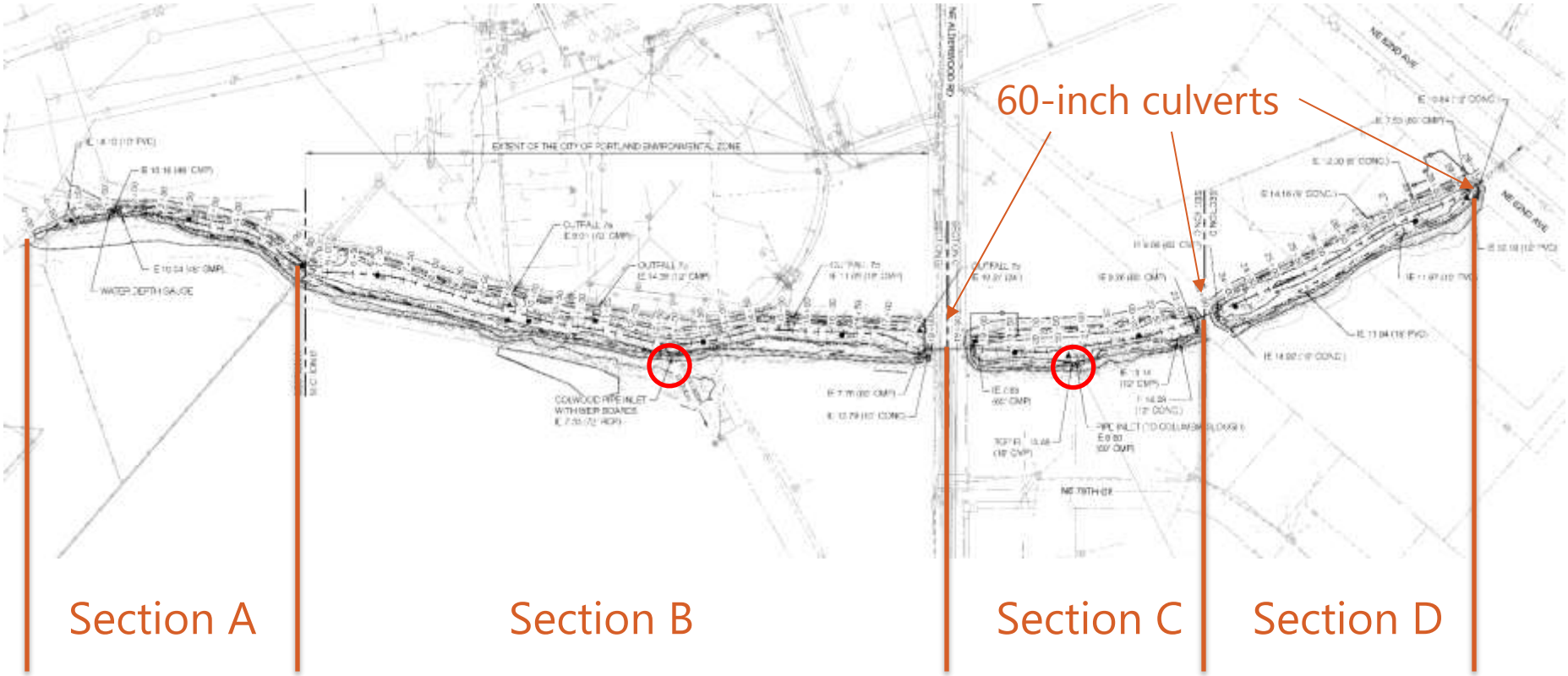
- **Remove slough sediments to improve sediment quality and drainage flow.**
  - Establish the elevations and extents of maintenance dredging to remove a majority of the contaminant mass from the slough and reestablish conveyance and storage capacity
  - Appropriately dispose of dredged material
- **Address potential dredge residuals.**
  - Establish the placement, extent, type, concentration, and method of application of activated carbon.
  - Establish methods to stabilize dredged cut slopes.
- **Minimize water quality impacts outside of the construction zone.**
  - Specify construction best management practices to protect human health and the environment during remedial construction and to comply with the 401 Water Quality Certification.

Remedial Action Activities

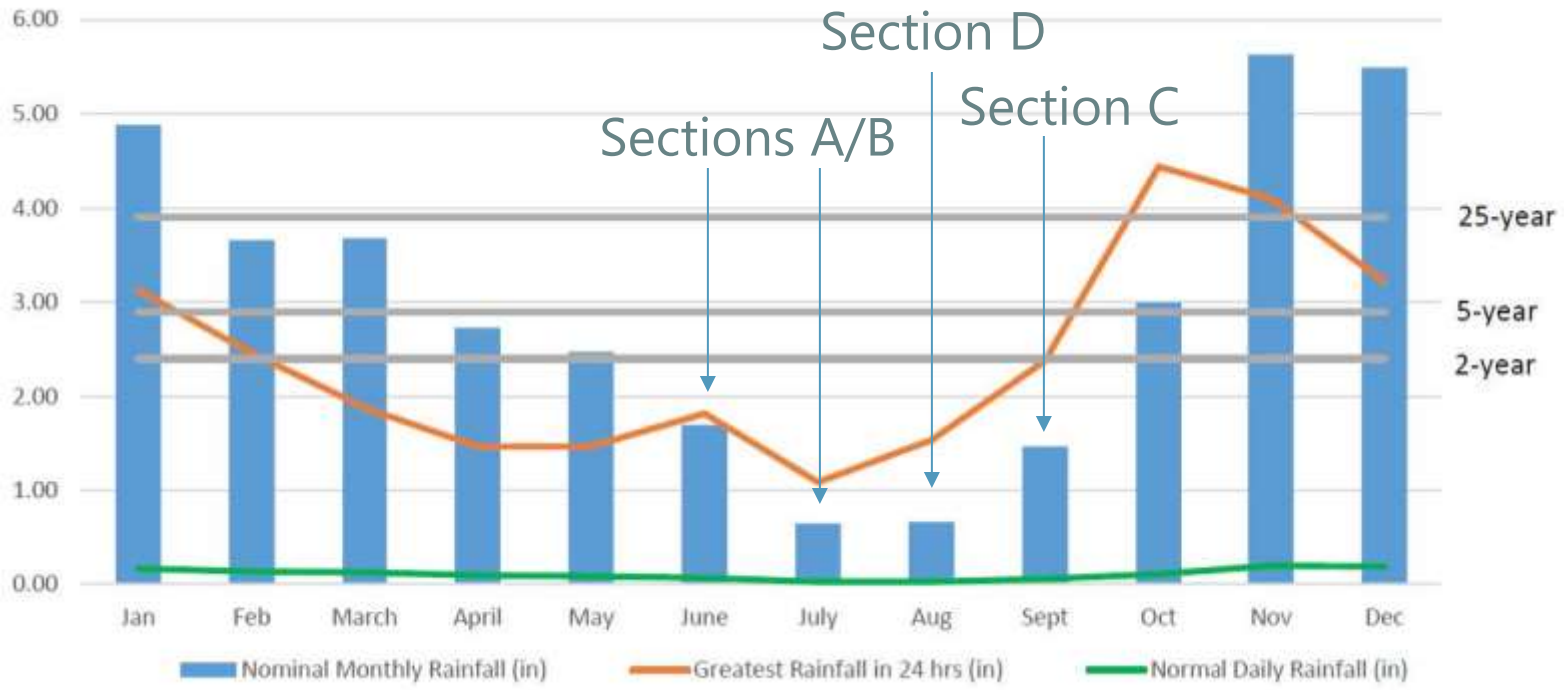
- Debris and vegetation removal
- Maintenance dredging
- Dewatering sediment with a mechanical dewatering plant
- Granular activated carbon (GAC)-amended sand/gravel cover placement
- Bank stabilization of exposed slopes above the waterline

Design and Construction Challenges

Stormwater Management and Section Isolation Sequencing



Stormwater Management and Section Isolation Sequencing (cont.)



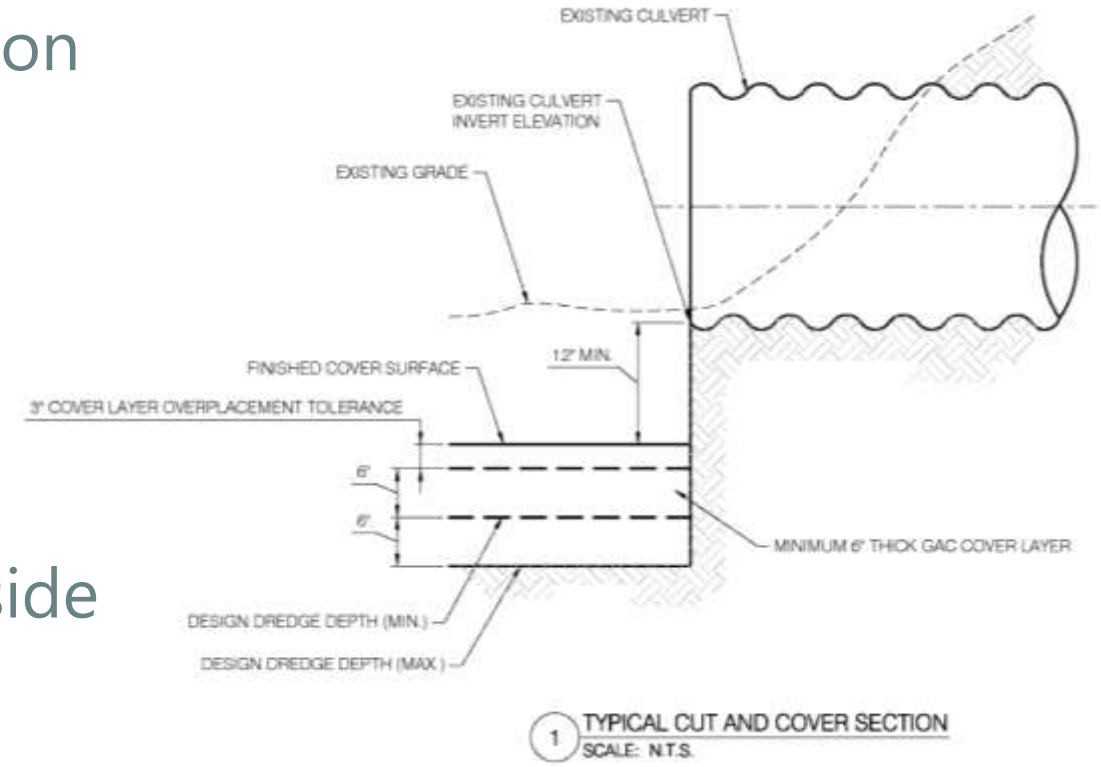
Debris/Vegetation Removal

- Grapple out large debris and weed masses
- Shred vegetation and pump through dredging equipment
- Do a second weed removal pass with Weedmaster Cutterhead dredge

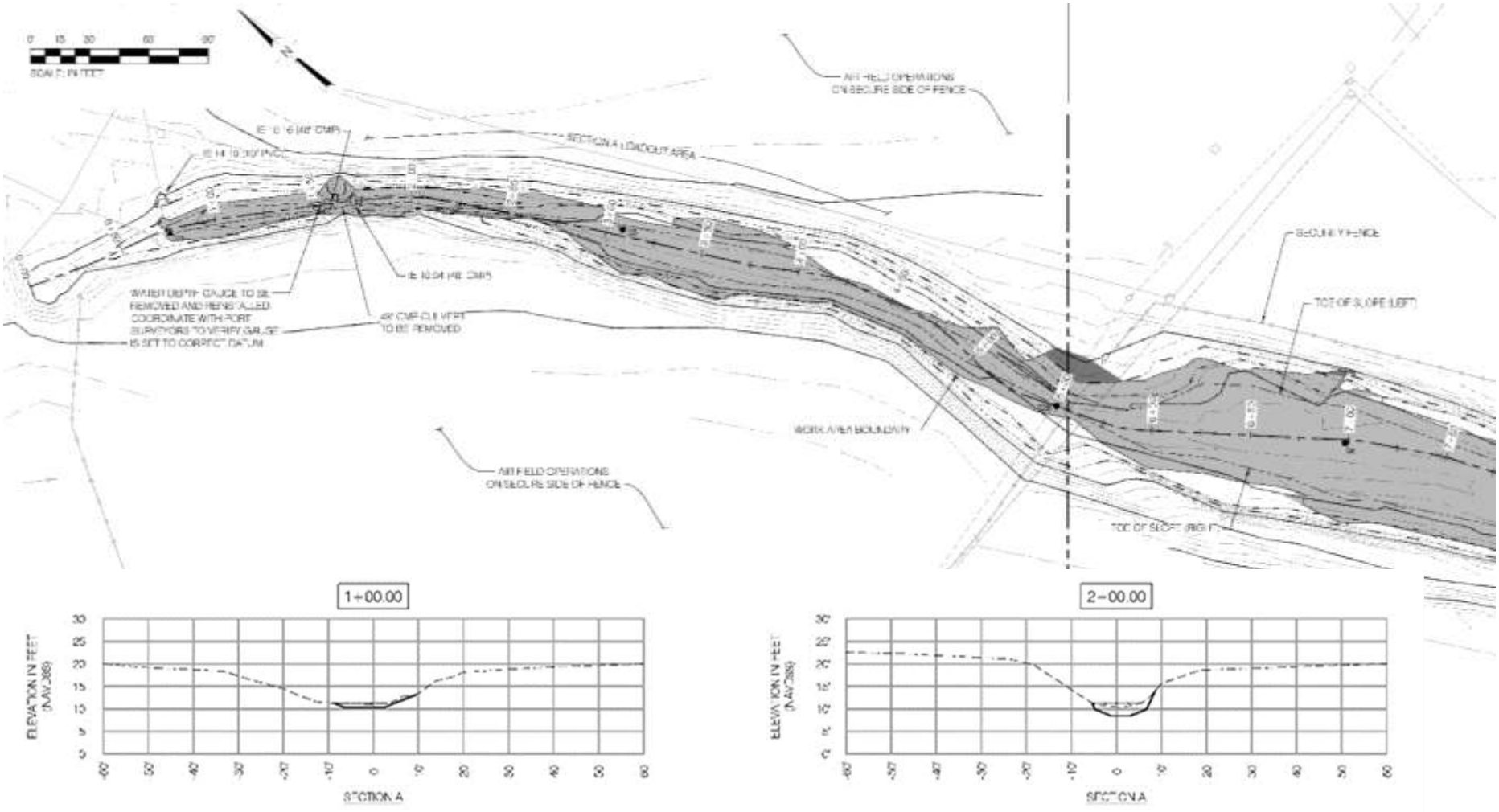
Debris and Vegetation Removal

Dredging Approach

- Dredge cut based on existing culvert elevations
- 6-inch allowable overdredge
- 2.5 horizontal to 1 vertical (2.5H:1V) side slope cut
- Mechanical and hydraulic dredging

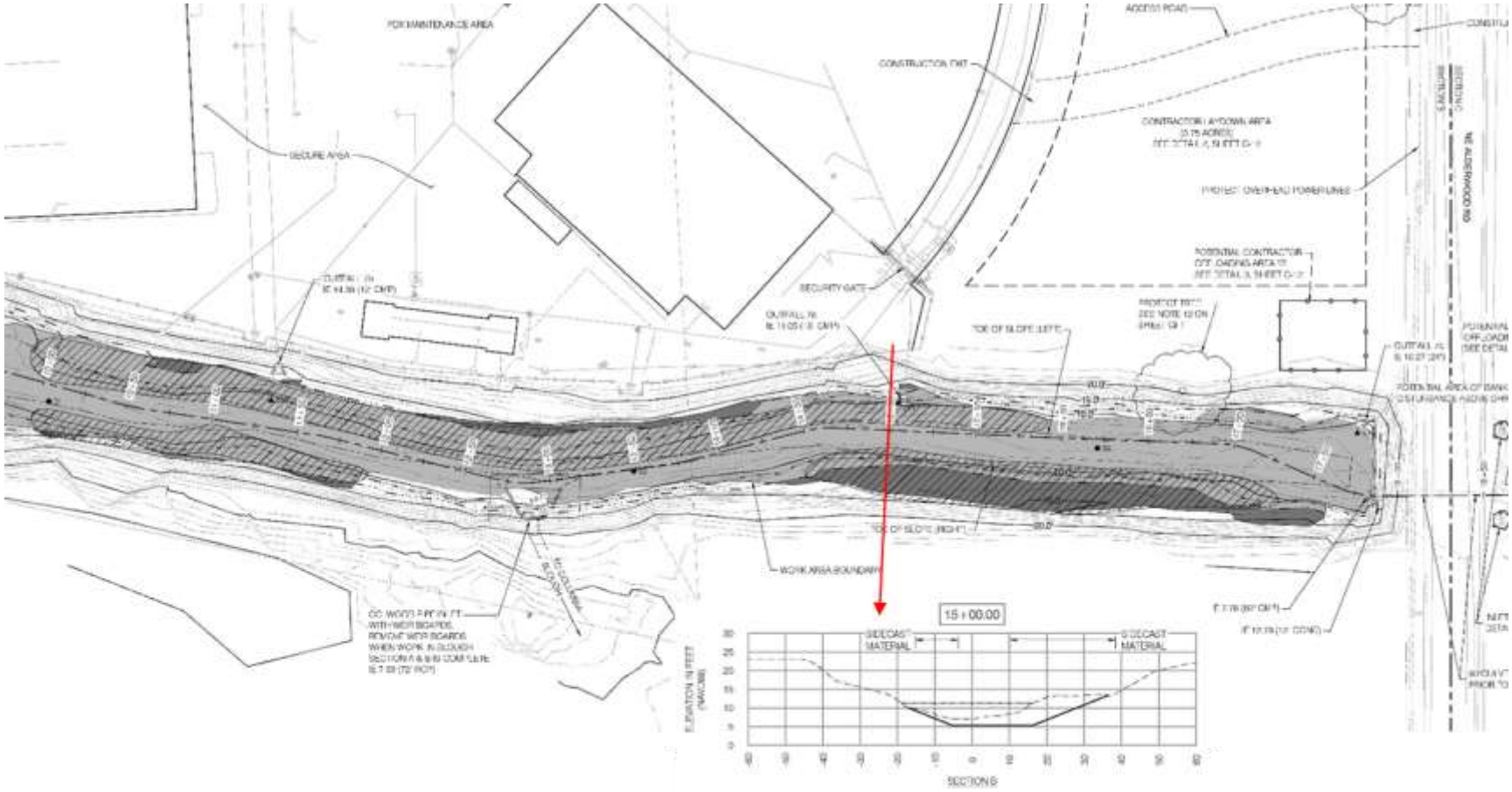


Dredging Approach - Mechanical



Dredging Approach – Mechanical (cont.)

Dredging Approach - Hydraulic

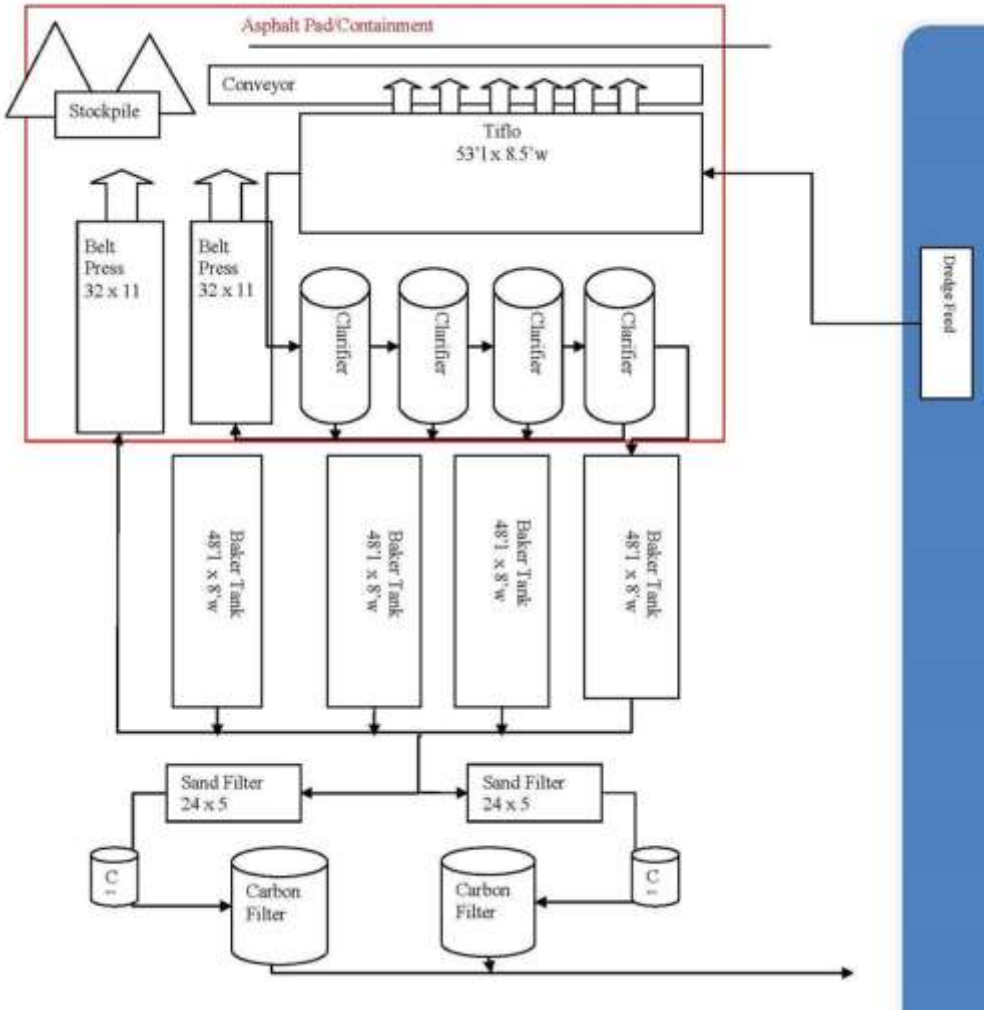


Dredging Approach – Hydraulic (cont.)

Photo courtesy of Port of Portland

Sediment Dewatering

- Separation system
- Clarifying and settling tanks
- Sand, bag, and carbon filters
- Belt press

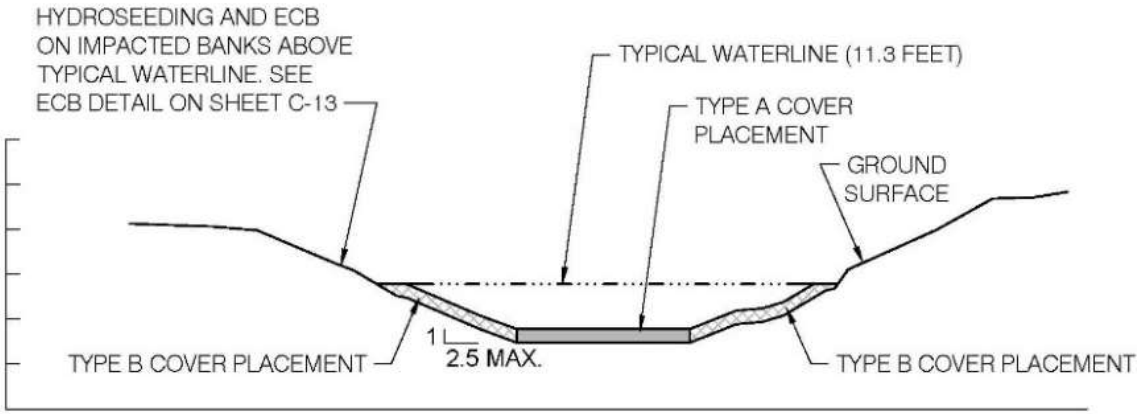


Sediment Dewatering (cont.)

Sediment Dewatering (cont.)

Material Blending and Cover Placement

- Residual cover of sand/GAC or sandy gravel/GAC
- Target 4% +/- 1% GAC dry weight
- 6-inch cover with 3-inch allowable overplacement
- Hydraulic and mechanical placement



Material Blending and Cover Placement (cont.)

- Blended with hopper, conveyor, and 7-yard mixer truck
- Confirmed percent GAC at Anchor QEA Geochemistry Laboratory

Material Blending and Cover Placement (cont.)

Schedule Overview

Schedule

- Section A is complete
- Complete Section B in November 2018
  - Additional stormwater management
- Demobilize for winter
- Remobilize to complete Sections C and D: May 2019
  - Section D: May 2019 to June 2019
  - Section C: July 2019 to September 2019

Questions?

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