Beneficial Use of Dredge Material at a Southern California Marsh

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Overview

• Opportunistic dredge material use project
  • Huntington Harbor requires periodic maintenance dredging
  • For previous cycles, dredge material disposed at offshore open ocean site
  • For recent cycle (2016), dredge material used for marsh restoration - thin layer deposit pilot project (and beach nourishment)

• Partnership between multiple agencies
Dredge and Placement Sites
Seal Beach National Wildlife Refuge

Low Tide

High Tide

Note: many photos throughout this presentation provided by Rick Nye and Kirk Gilligan, USFWS
Wildlife Refuge Thin Layer Sediment Deposit

• Opportunity to re-use finer grain dredge material
• Place (spray) sediment on existing marsh vegetation to raise marsh elevation (slightly)
  • Marsh experiencing both land subsidence and sea level rise
  • Max sediment thickness to allow cordgrass growth
• Serve as pilot project for future West Coast applications for sea level rise adaptation
Key Considerations

- Sediment compatibility between native material and dredge material
  - Grain size
  - Contaminants
- Biological
  - Buried cordgrass survivability
  - Impacts to sensitive species
  - Environmental windows
Key Considerations (cont.)

- **Constructability**
  - Tight tolerances (inches/cm)
  - Measurement of fill thickness
  - Containment of fill material
  - Heavy equipment access to and on marsh

- **Other**
  - Several agencies/partners involved
  - Site on active Navy base and within small arms firing range
  - Impacts to research equipment installed within Refuge site
Construction Methods
Trial Methods / Trial Areas
Fill Containment
Fill Measurement
Fill Progress
Fill Completion
Sediment Retention – Preliminary Results

After sediment application completion, initial decrease in elevation averaged -46.60 mm (April-June 2016), however the rate of decrease in elevation then slowed averaging -16.56 mm (June-October 2016). Between October 2016 and November 2017 elevation change continued to gradually decrease, -18.21 mm. During the most recent interval (Nov.-Jan. 2017), elevation decreased again (-0.94 mm).

Total elevation loss -82.31 mm or -3.24 in as of Jan 2018

From Testing a Novel Adaptation Strategy in a California Salt Marsh, Webinar Presentation, Karen Thorne, USGS and Evyan Sloane, California State Coastal Conservancy
Summary

• Project completed in June 2016
  • Harbor navigation restored
  • Wetland vegetation and nesting bird habitat have been given resiliency
  • Many challenges and lessons learned
• Long-term monitoring will determine:
  • Survivability of marsh vegetation
  • Retention of sediment on site over time
• Opportunities exist for beneficial reuse of dredge material and (hopefully) sea level rise resiliency
THANK YOU!

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