Dredged Material Management: CADs, Treatment, & Upland Considerations

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Management Alternatives
### Some Alternative Environmental Issues (1)

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Open-Water</th>
<th>Island</th>
<th>Upland Treatment</th>
<th>No Dredging</th>
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<td>Transfer Losses</td>
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<td>Staging Area</td>
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### Some Alternative Environmental Issues (2)

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<td>Aquifer</td>
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<td>Neighborhood</td>
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<td>Leachate Treatment</td>
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<td>Extractant Disposal</td>
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<td>Water Quality</td>
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Comparative Risk*

* After Kane-Driscoll et al., 2002

Comparative Cost

* After Kane-Driscoll et al., 2002
Ted Williams Tunnel – Upland

> $150/CY (1990)

1 MCY = 64 ac @ 10 ft
Geotextile Tube Dewatering/Storage

Images Compliments of Mineral Processing Services, LLC, South Portland, ME

Sediment Treatment

- Small Volumes
- Low Process Rates
- Needs Accessible Site
- High Cost
- Residual Disposal
Confined Aquatic Disposal (CAD) Cell
Confined Aquatic Disposal Cells

- 1981 – Norwalk Harbor, ~ 2,500 cu m
- 1989 – New Bedford Harbor Pilot
- 1997-2000 – Boston Harbor, 1,200,000 cu m
- 1998 – Hyannis Harbor, 57,000 cu m
- 2003-? - Providence Harbor, 900,000 cu m
- 2006 - Norwalk Harbor, 27,000 cu m
- 2005-? – New Bedford Harbor - TBD
- 2006 - New London Harbor, 117,000 cu m
- 2008-2010 – Boston Harbor
- 2010 – New London Harbor
• 11 cells total, with approximately 2 million cy excavated up to 60 feet below the surrounding harbor bottom
• 8 cells were capped between 1997 and 2000, C12 remains uncapped with additional capacity, capping recently completed for 2008 cells

Providence CADs - data collection
• Extensive characterization data as part of EIS
• Extensive water column monitoring program as part of permit for disposal
• Additional monitoring of dredging performed by ERDC
• Ongoing RICRMC monitoring of bathymetry
• Full project summary report
• 2009 bathymetry, SPI, and video transects survey
Other CAD Alternative Experience

1981 – Rotterdam, Netherlands, 1.1 MCY
1984 – Seattle, WA Duwamish, 1100 cy
1987 – One Tree Island Marina, WA
1992 - Hong Kong, 13 MCY
1992 – Ross Island, Portland OR, 160 KCY
1997 - Newark Bay, 2 MCY
2000 – Puget Sound Naval Shipyard, 377 KCY
2001 - Los Angeles, Energy Island, 100 KCY
2006 – Oslofjord, Norway, 880 KCY
2008 - Port Hueneme, CA, 327 KCY
2008 – Melbourne, Australia, 23 MCY
2010 – Manila, Philippines

CAD Considerations

• Geology
• Cost
• Capacity
• Channel Deepening
• Capping?
Bulking Considerations

Fluid Loss Conditions

Clay

Sand/Till
Conclusions

• Need to Balance Environmental Effects of all Alternatives
• Logistics and Cost are Major Drivers
• CADS have a Growing History of Use

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Further Reading


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