Sediment Management Solutions in Southern California

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Southern California Sediment Management

- Unique set of challenges from a unique environment
  - Highly urbanized
  - Heavily protected marine environment
  - Low contaminant standards
  - Global trade impacts

- Economic pressure to improve port infrastructure and remain competitive
- Capital programs to accommodate larger vessels
- Maintenance for navigational safety
- Pressure to clean up contaminated sediments

Contaminated Sediments Task Force: Long-term Sediment Management Plan

- Consensus that 100% beneficial reuse of contaminated sediments is a reasonable long-term goal
- Aquatic disposal of either clean or contaminated sediments is considered only as a last resort, after attempts have been made to beneficially reuse or treat the material

Regional Management Alternatives: Clean Sediment

Management Type	Clean Sediment
Beneficial Use	Port fill Shallow water habitat Beach nourishment Capping material
Temporary Storage	Upland CDF Aquatic CDF
Treatment	Amendment for fines
Disposal	Ocean

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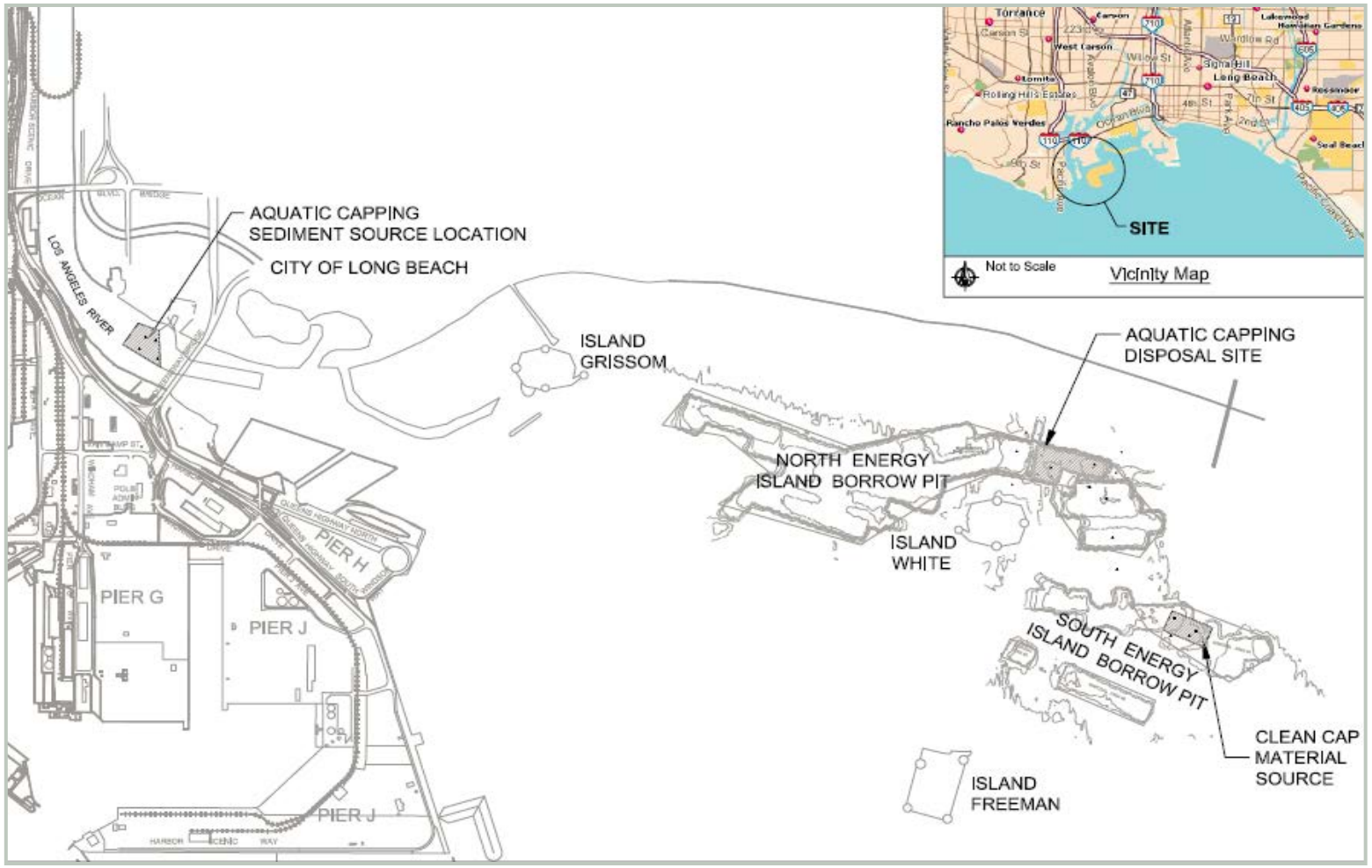
Confined Aquatic Disposal: Ecosystem Restoration



Confined Aquatic Disposal

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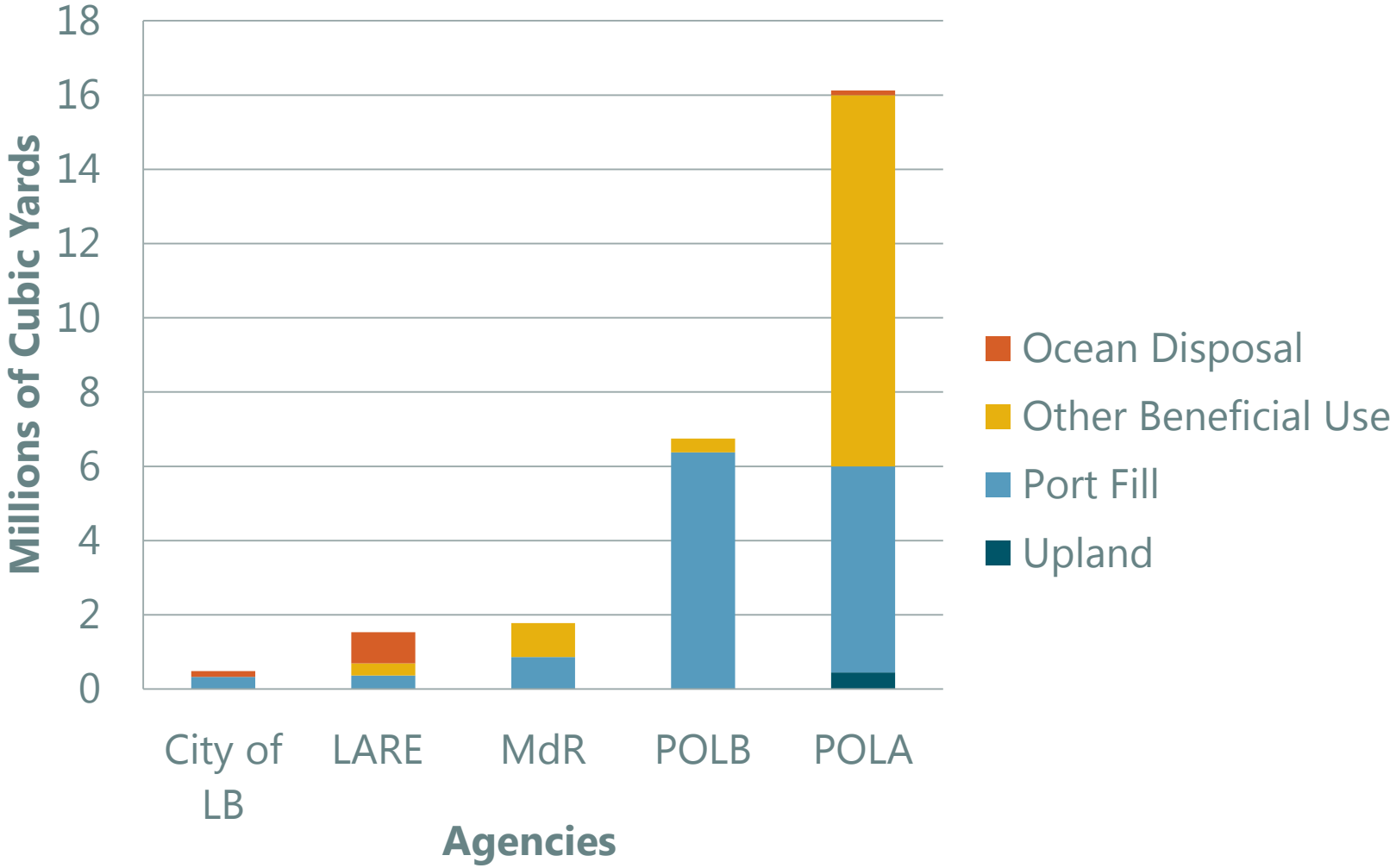
Last 15 Years of Sediment Management in LA

- What has been working?
- Focused on projects greater than 50,000 cy
- Personal communications, permit reviews, and CSTF summaries

Survey Participants

- Agencies in Los Angeles
  - Port of Long Beach
  - Port of Los Angeles
  - Los Angeles County Beaches and Harbors
  - City of Long Beach
- Federal program—USACE
  - Los Angeles River Estuary
  - Marina del Rey Entrance Channel
  - Ports federal channels

Dredge Disposal in Los Angeles Region 2000 to 2015



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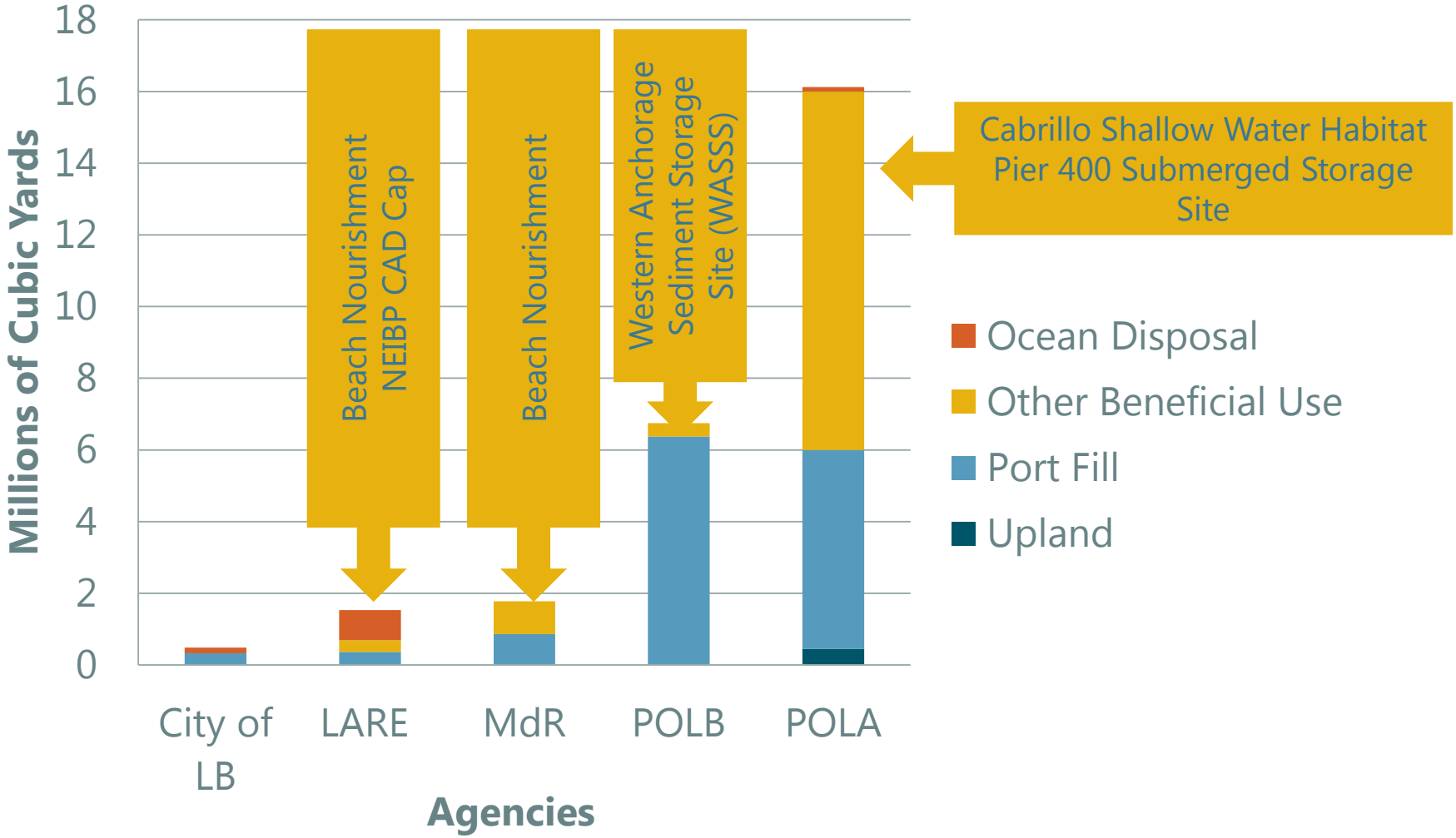
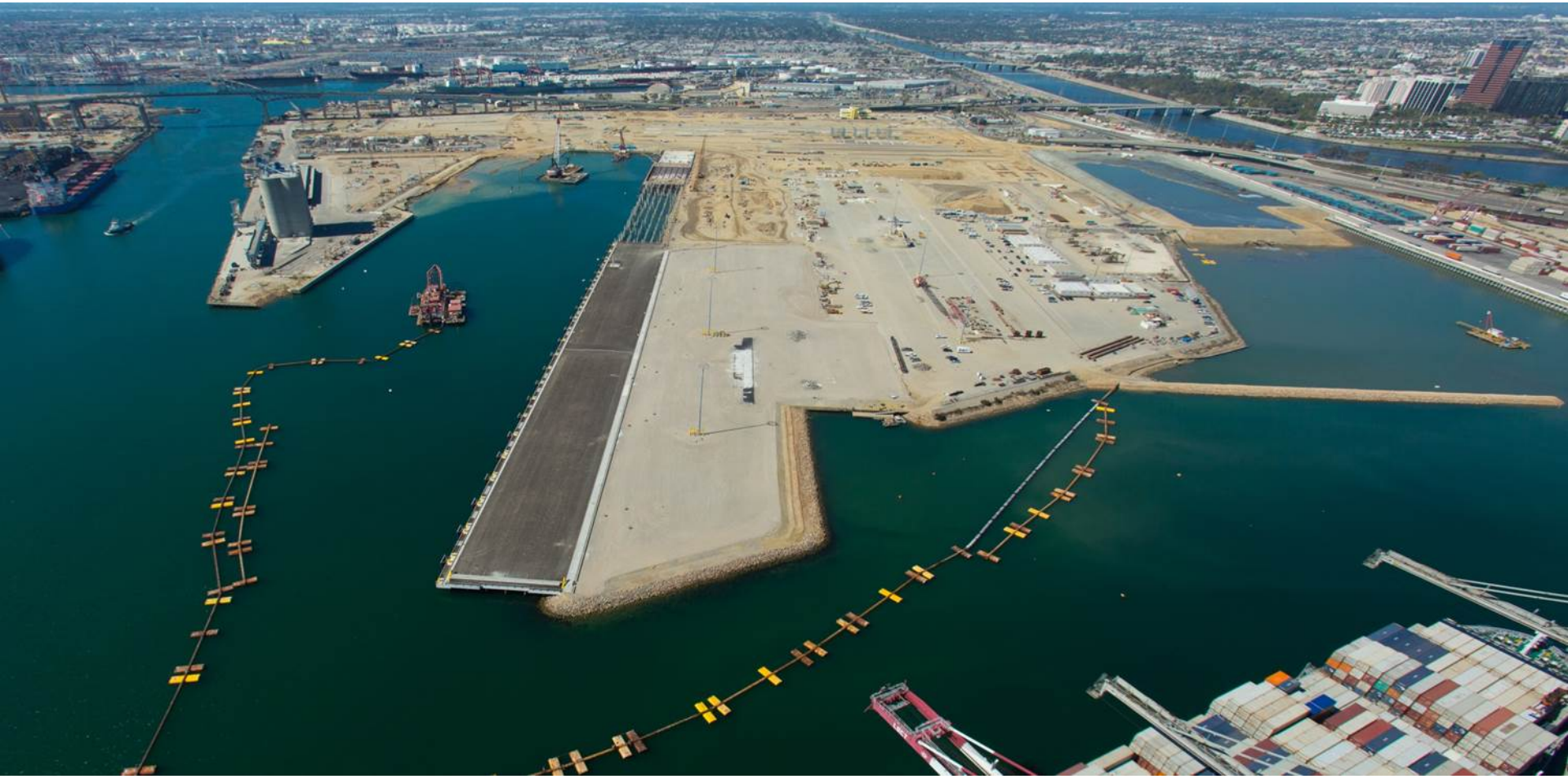


Sediment Management Summary: Contaminated and Clean

- 26,500,000 cy dredged
- 95% beneficially reused
- 4% ocean disposal
- 1% upland disposal

- 99% of regional contaminated sediments wait for port fills
- No large fills are permitted or planned at this time

Regional Need for Confined Disposal



- Port of Long Beach received requests to place 4.5 million cy from region

Sediment Management

Re-engaging the Contaminated Sediment Task Force

Long-term Management Solutions

- Maintain ocean disposal site as a viable sediment management option
- Preserve capacity for contaminated sediments in fills
- Promote designation of shallow water habitat areas
- Align CAD development with restoration opportunities to give the financial means and regulatory acceptance for long-term management planning

Port Sediment Management Needs

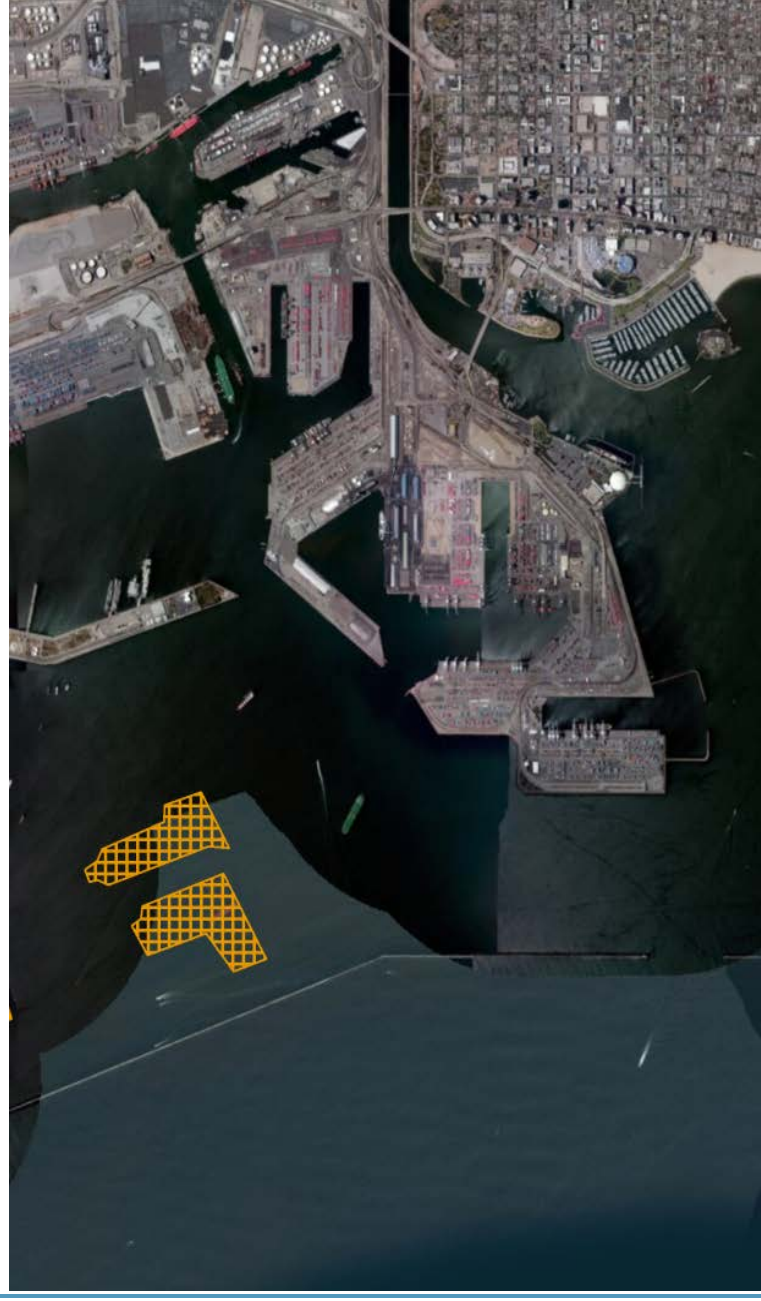
- Middle Harbor's remaining capacity is exhausted by the West Basin deepening project
- No major landfills beyond Middle Harbor are envisioned at this time
- The Port has a need for feasible disposal sites for both clean and impacted sediments

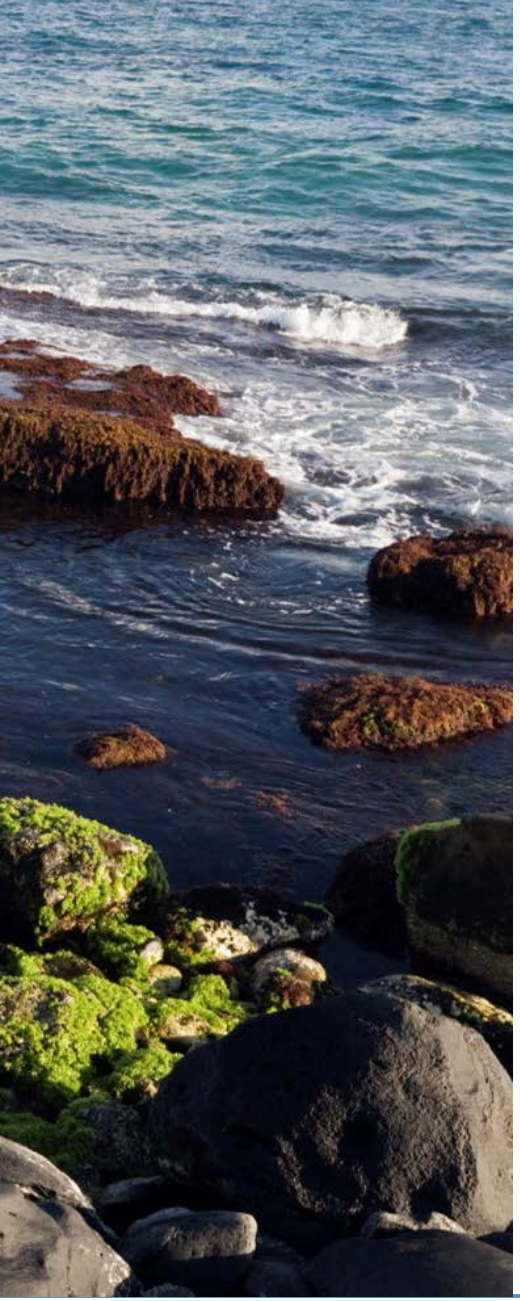
Potential Project Sediment Management Needs

Project	Estimated Dredge Volume (cy)	Limitations for Placement in Fill
Pier S Dike Realignment	1,600,000	Known to be poor quality, requiring confined disposal
Anchorage Deepening	2,600,000	Expected to be suitable for open water placement
Pier J Berths and Approach Channel	1,300,000	Expected to be suitable for open water placement
Annual Maintenance Dredging	~50,000 per year	Expected to be poor quality, requiring confined disposal
Army Corps Deep Draft Navigation Study	Potentially significant	Varies based on location

New Management Alternatives to Be Explored

- Conversion of temporary aquatic sediment storage sites to confined aquatic storage sites
- Evaluation of feasibility of new shallow water habitat areas
- Evaluation of new temporary sediment storage site areas





Questions

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Acknowledgements

- Port of Los Angeles
- Port of Long Beach
- USACE—Los Angeles District