Dredging Projects at BAE Systems San Diego Ship Repair

Maintenance, Capital Improvement, and Cleanup Dredging

Barry Snyder, Kimbrie Gobbi, and Tyler Huff – AMEC E&I
Shaun Halvax – BAE Systems San Diego Ship Repair

BAE Systems San Diego Ship Repair

- 40-acre facility (composed of 23-acres of land and 17-acres of water) located on Port of San Diego Tidelands
- One of 3 major San Diego shipyards: National Steel & Shipbuilding Company (NASSCO) and Continental Maritime of San Diego
- The site has been in operation as a shipyard since 1915 (prior operators San Diego Marine Construction and Campbell Industries)
- BAE Systems (and its predecessor company Southwest Marine) took over the site in 1979
- Operations include ship repair, modification, and maintenance
- Primary client is the US Navy (facility is of strategic importance)
- Operate a dry dock capable of servicing up to LHD Class Navy Ships

BAE Systems San Diego Ship Repair Location Map

Dredging Projects at BAE Systems San Diego Ship Repair

1. Pride of San Diego (POSD) Dry Dock Sump Dredging
   - Dredging with upland disposal
2. Pier 4 Replacement Project Dredging
   - Pier demolition and replacement
   - Wharf restoration
   - Dredging with ocean and upland disposal
3. San Diego Clean Bay Project Dredging
   - Cleanup and abatement order dredging with upland disposal

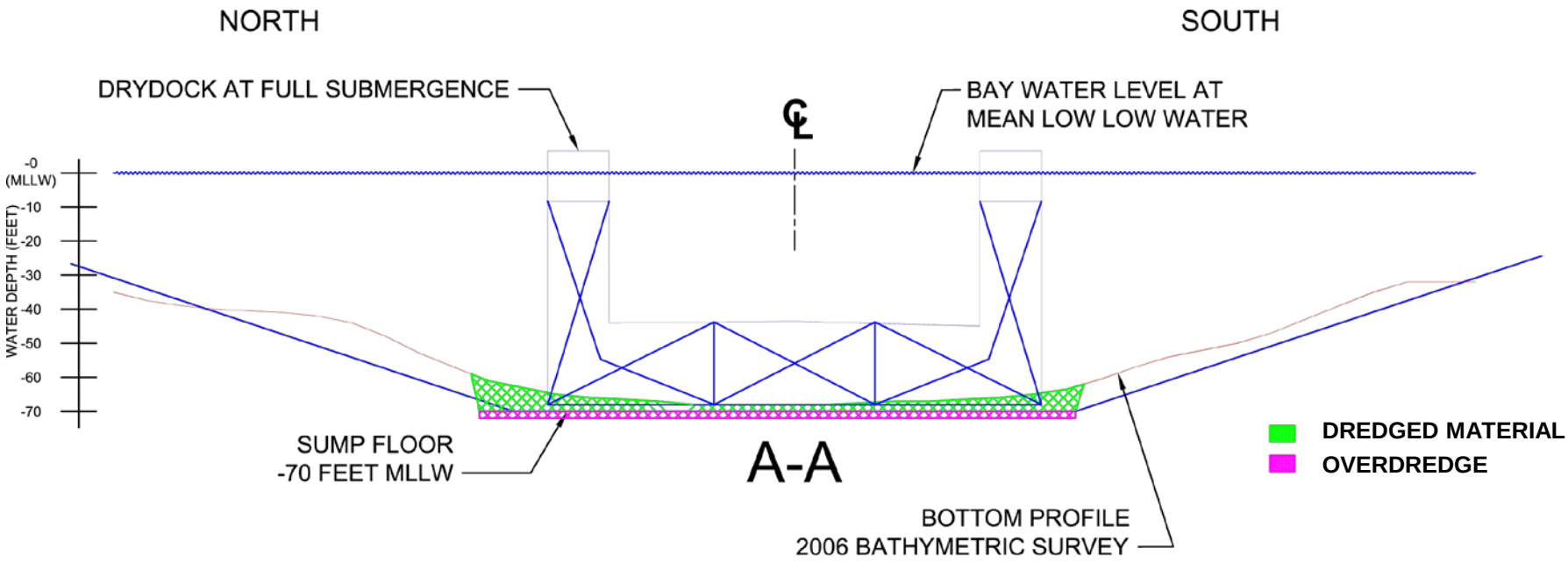
Pride of San Diego (POSD) Dry Dock Sump Dredging Project Features

- Project Description
  - Maintenance dredge accumulated sediment from POSD Dry Dock Sump
  - Dry dock sump constructed in 1984; operational depth is -70 ft. MLLW; No dredging since 1984
  - On-scow thickening with cement; stockpiling; and landfill classification
  - Environmental bucket/double silt curtain
  - Post-dredge sediment confirmation testing in the CAO Area
- Disposal Volume and Disposal Location
  - Upland disposal at Otay Landfill: ~7,900 cy total; ~2000 cy within the remedial footprint (completed in January 2011)
- Project Team
  - AMEC – Sediment characterization, permitting, and construction/post-construction monitoring
  - Anchor QEA – Water quality control plan
  - R.E. Staite – Dredging and disposal operations
  - Merkel & Associates – Biological monitoring
  - BAE Systems – Project design

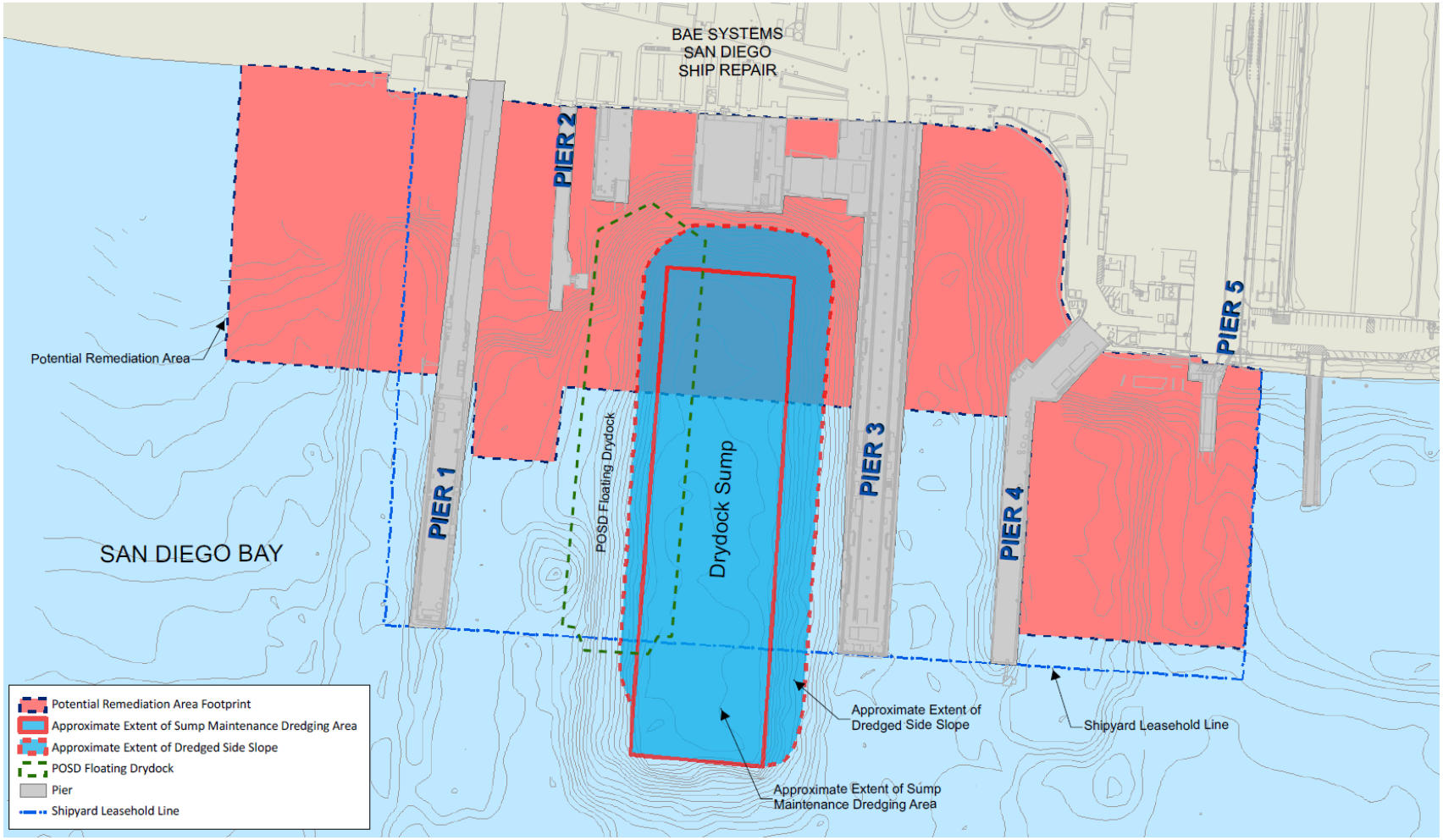
POSD Dry Dock Sump Dredging
Project Location

POSD Dry Dock Sump Dredging
Dry Dock in Operation

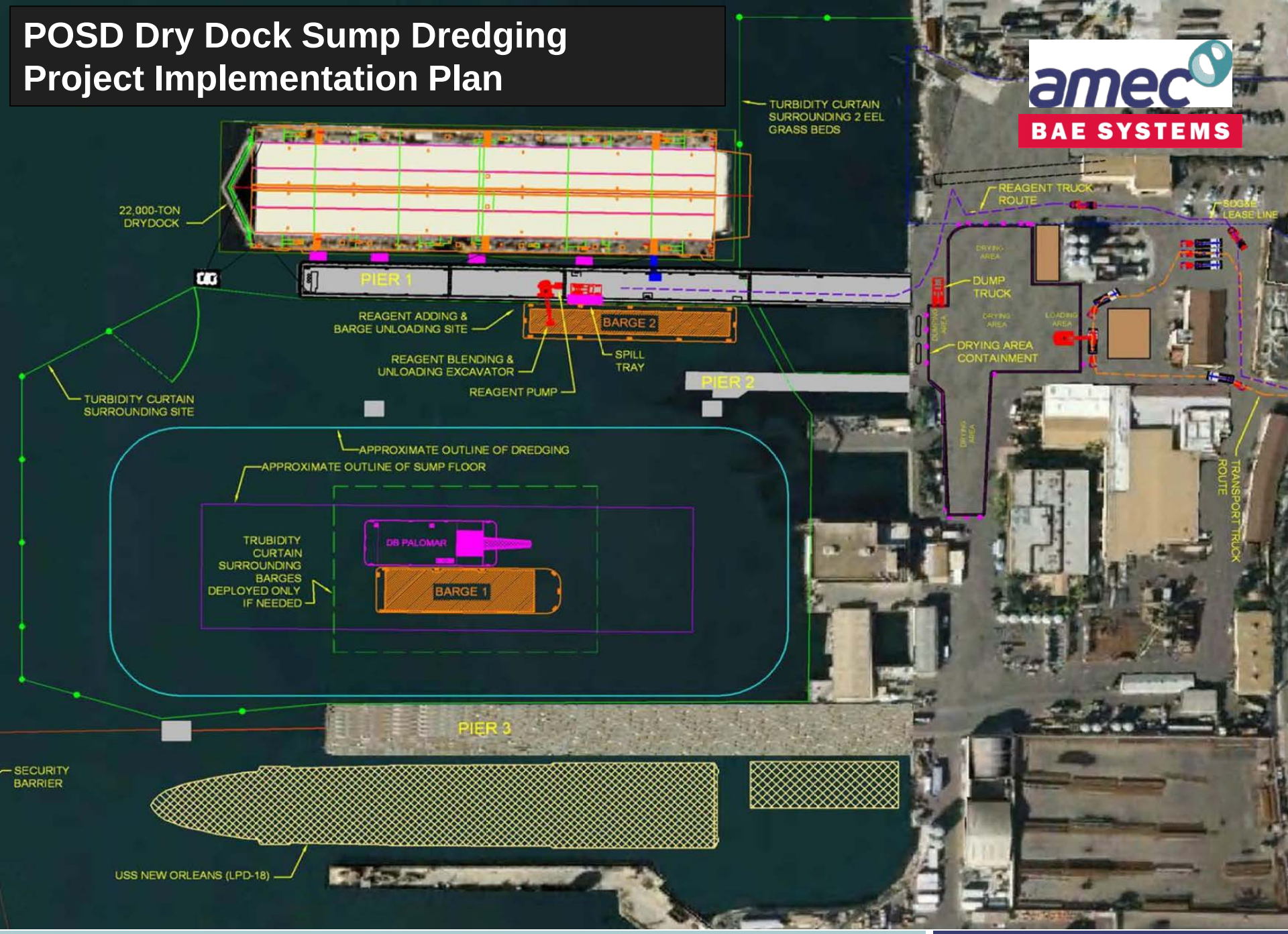
POSD Dry Dock Sump Dredging Cross Section



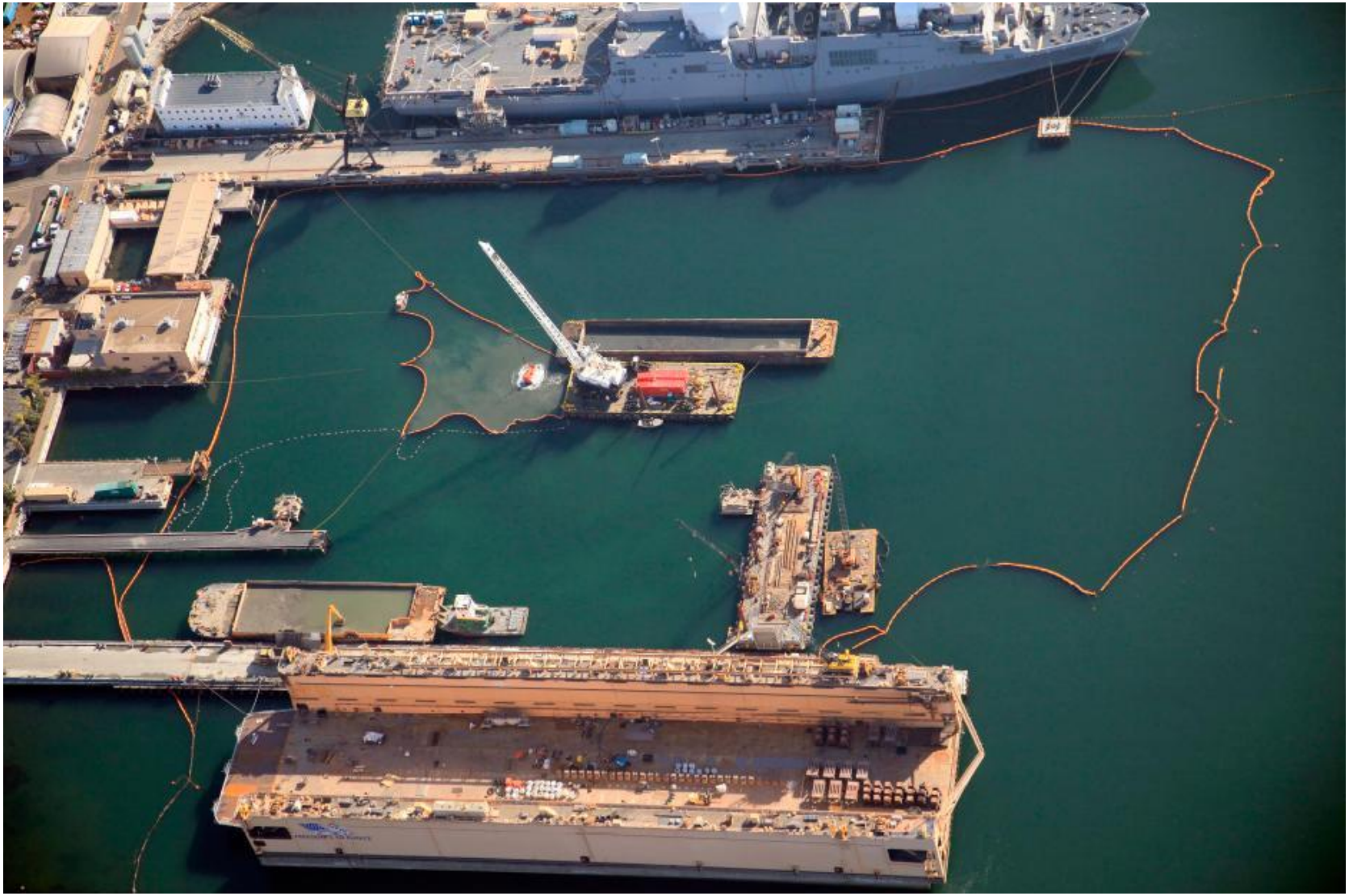
POSD Dry Dock Sump Dredging
Dredge Footprint Compared to CAO Area



POSD Dry Dock Sump Dredging Project Implementation Plan



POSD Dry Dock Sump Dredging
Dredging Area Showing Silt Curtain Deployment



POSD Dry Dock Sump Dredging Environmental Bucket

POSD Dry Dock Sump Dredging
Thickening Agent Injector and Mixer

POSD Dry Dock Sump Dredging
Injecting Thickening Agent

POSD Dry Dock Sump Dredging
Injecting Thickening Agent

POSD Dry Dock Sump Dredging
Transporting Sediment to Stockpile Area

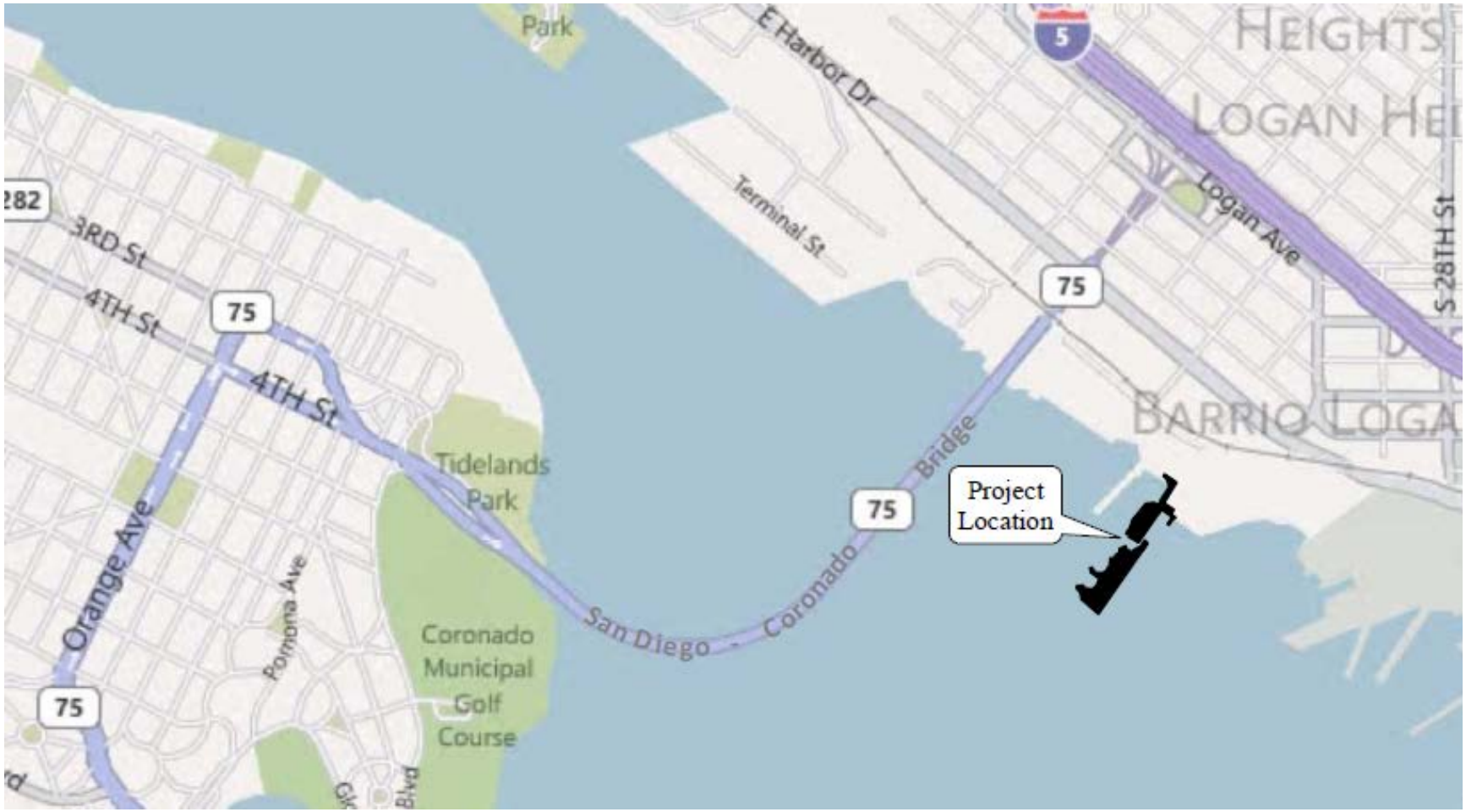
POSD Dry Dock Sump Dredging
Dredged Material Dewatering Recovery System

POSD Dry Dock Sump Dredging
Dredged Material Dewatering Recovery System

Pier 4 Replacement Project Dredging Project Features

- Project Description
  - Demolition of 2 dilapidated piers and construction of a replacement Pier 4
  - Dredging with ocean and upland disposal
  - Waste classification and landfill acceptance of in-place sediments
  - Early warning (autonomous) system for water quality monitoring per EIR MMRP
  - Biological monitoring during dredging and pile driving (eelgrass, birds, marine mammals, turtles)
  - Post-dredge sediment confirmation testing in CAO remedial area per RAP requirements
- Disposal Volumes and Location
  - Upland disposal at Otay Landfill: ~19,000 cy total; ~6,000 cy within the remedial footprint (completed in June 2013)
  - Ocean disposal at LA-5: ~35,000 cy (dredging in 2014)
- Project Team
  - AMEC – Sediment characterization, permitting, and construction/post-construction monitoring
  - R.E. Staite – Demolition, construction, dredging, and disposal
  - Tierra Data – Water quality monitoring
  - Merkel & Associates – Biological monitoring
  - Triton Engineers – Project design

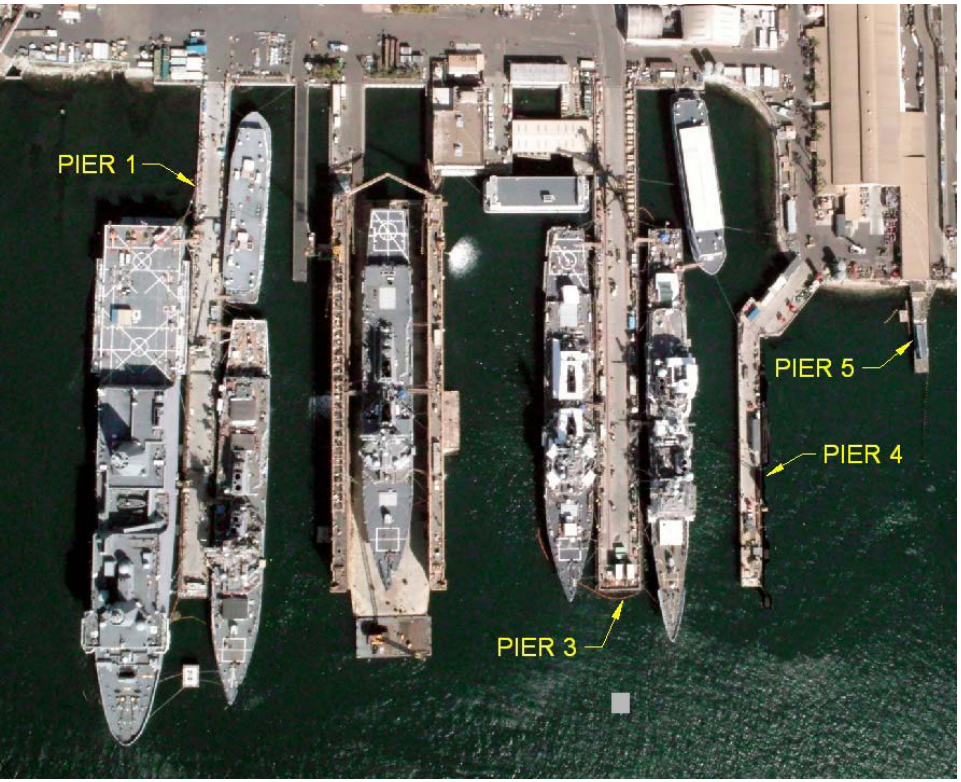
Pier 4 Replacement Project Dredging
Project Location



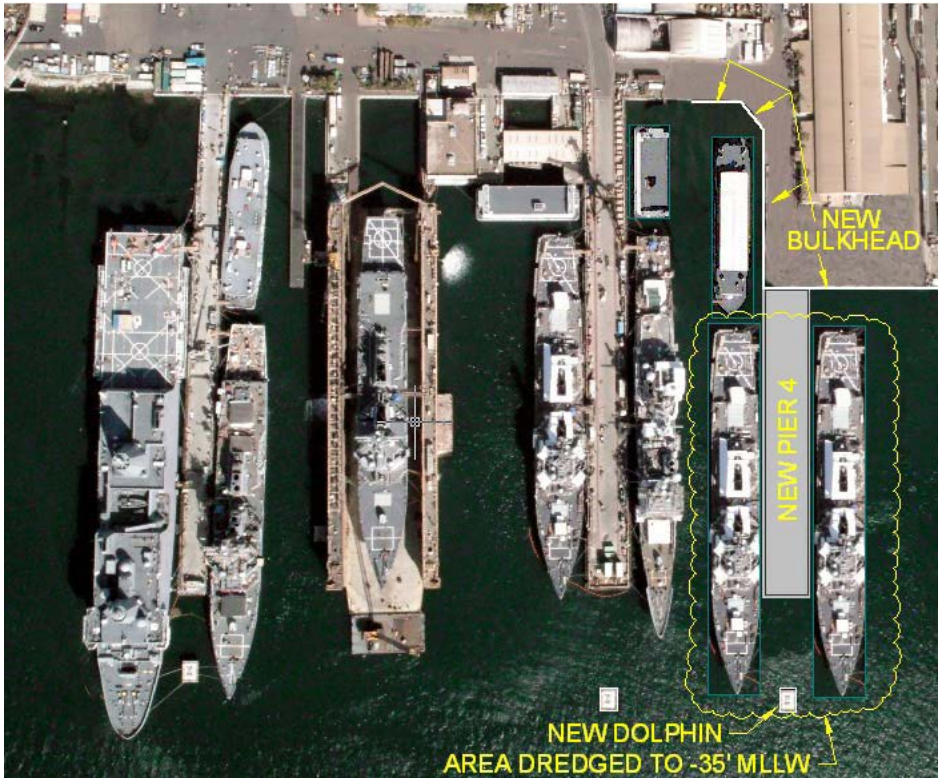
Pier 4 Replacement Project Dredging
Recently Demolished Piers 4 and 5

Pier 4 Replacement Project Dredging
Recently Demolished Pier 4

Before Demolition



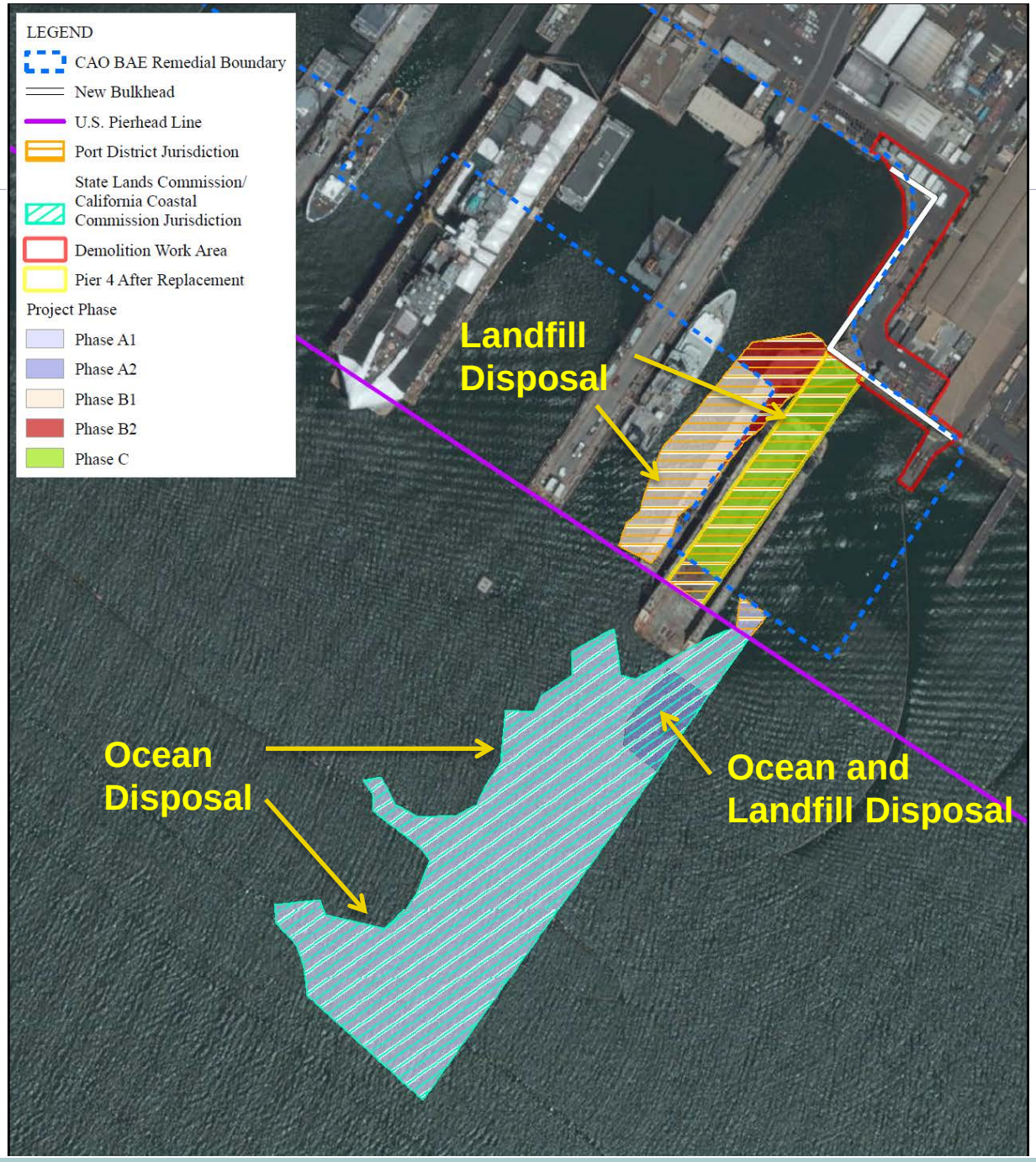
Alignment of New Pier 4



Pier 4 Replacement Project Dredging
Sediment Core Collection

Pier 4 Replacement Project Dredging Sediment Core Collection

Pier 4 Replacement Project Dredging
Sediment Core Collection

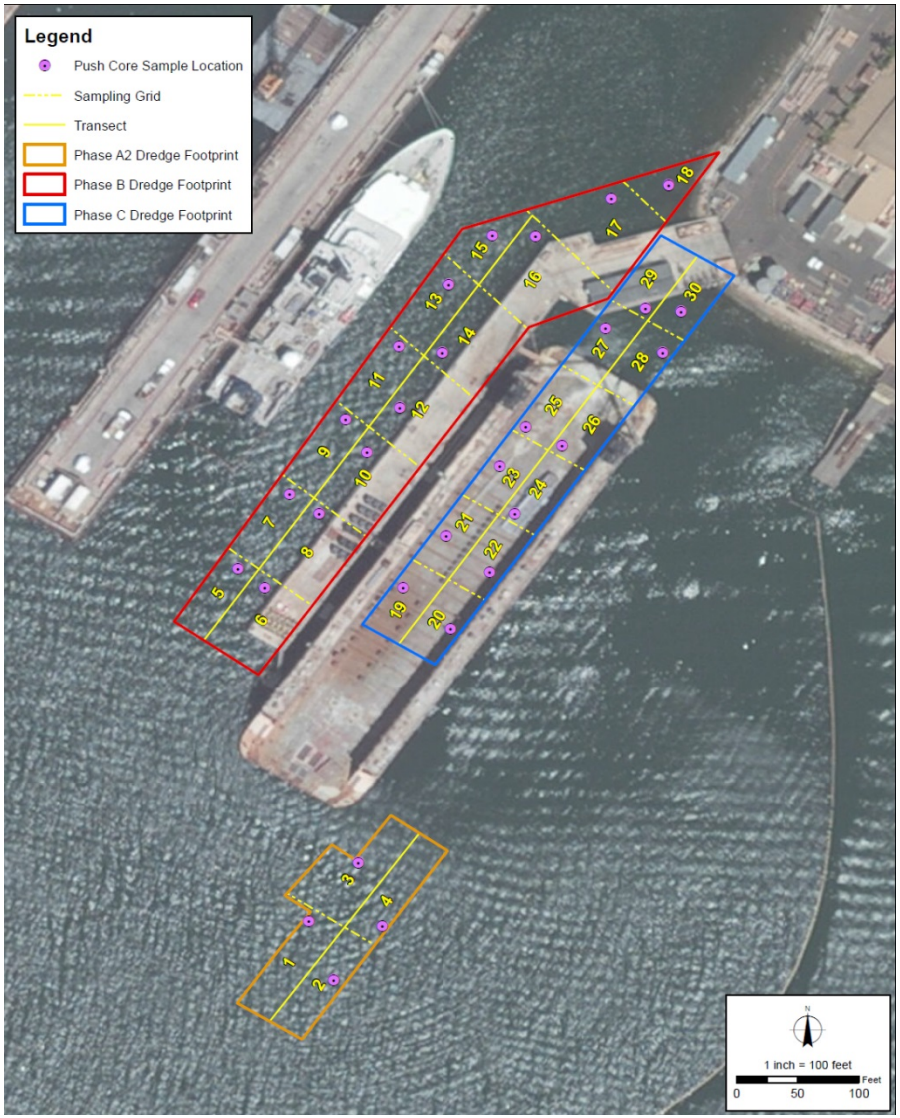


Pier 4 Replacement Project Dredging

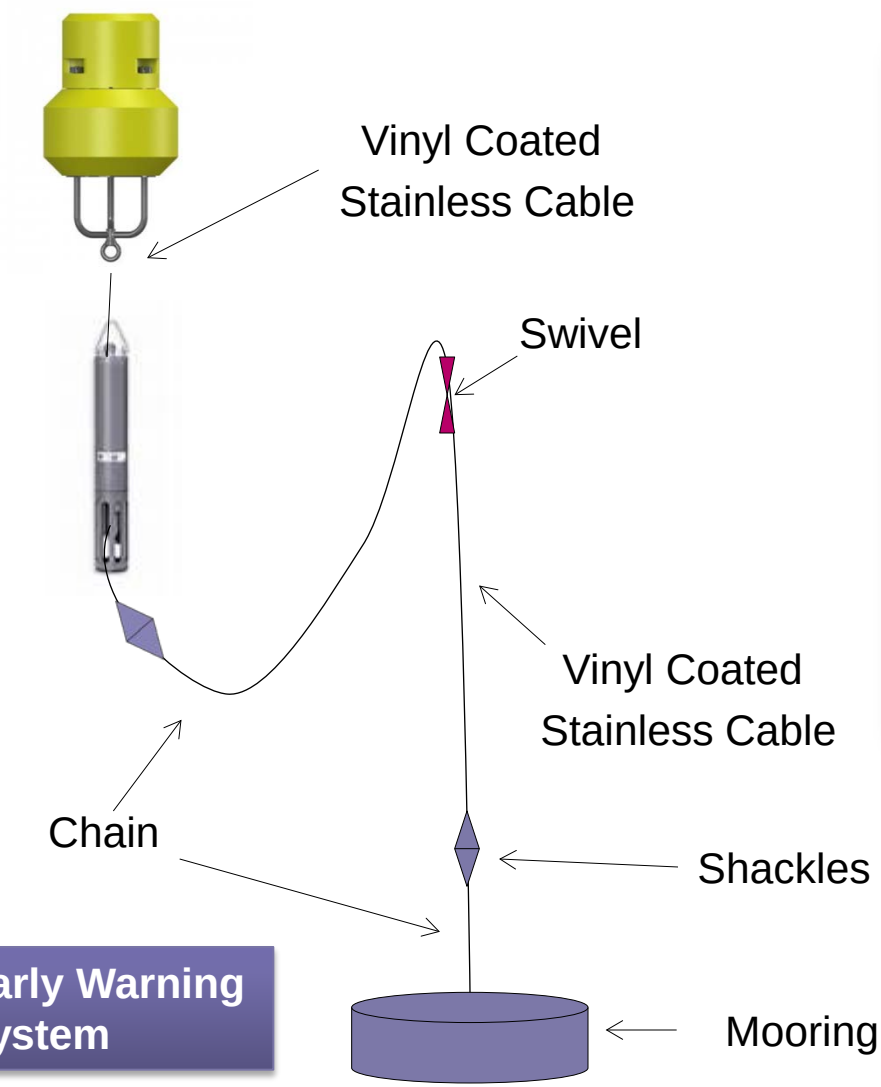
Dredge Footprints Showing Areas Permitted for Upland and Ocean Disposal and CAO Boundary

Pier 4 Replacement Project Dredging Landfill Classification and Approval

- Provided Republic Landfill staff with a waste classification proposal
- Collected 30 push-core samples for analysis of 17 heavy metals, PCBs, and extended range TPH
- Five composites were analyzed for VOCs, SVOC, pesticides, and herbicides
- Waste profile classification and acceptance of in-place sediments
- No sediment stockpile and reanalysis necessary (except paint filter test)



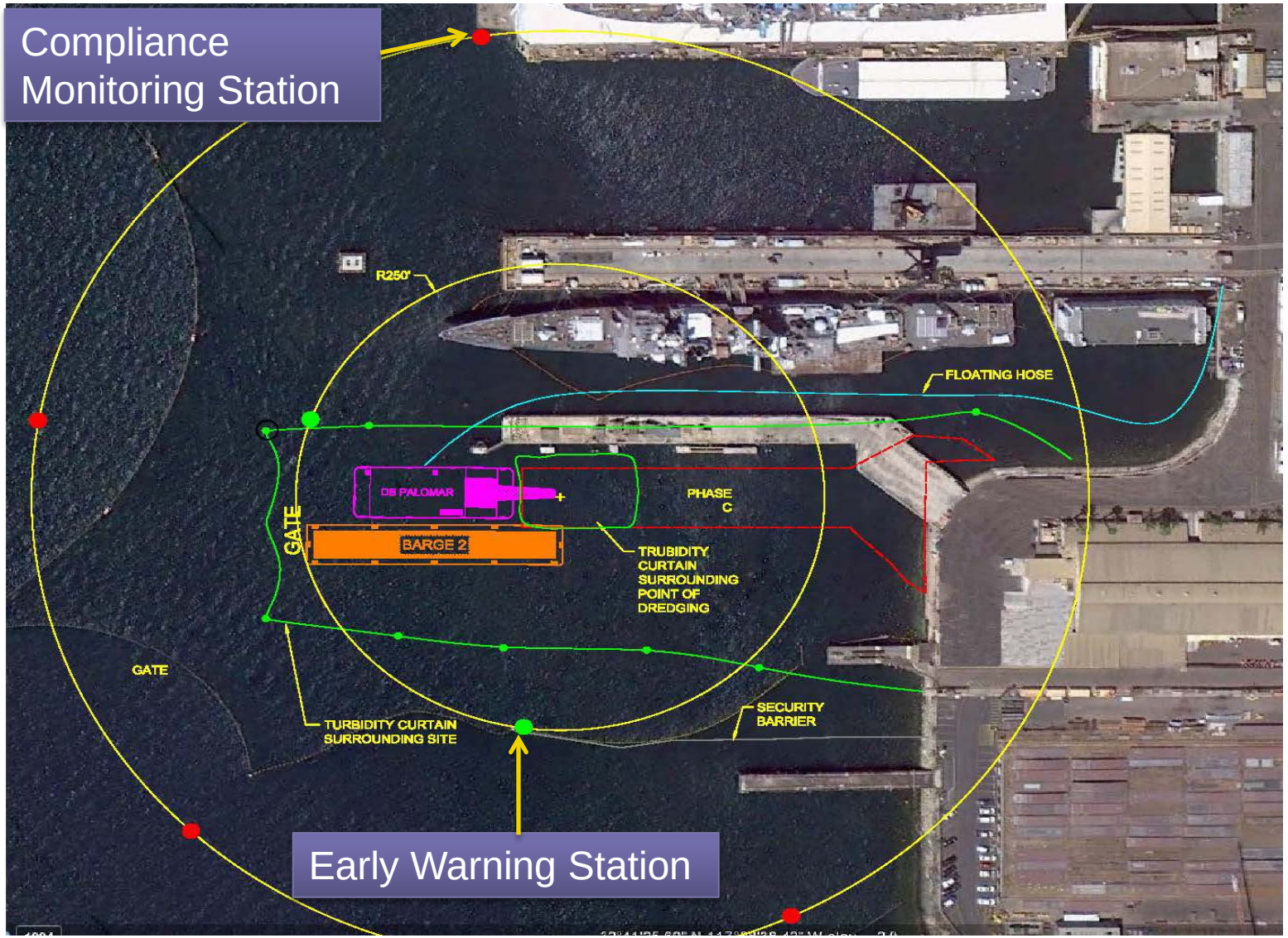
Pier 4 Replacement Dredging Project
Dredge Water Quality Monitoring



Early Warning System

Compliance Monitoring

Pier 4 Replacement Project Dredging Water Quality Monitoring Stations



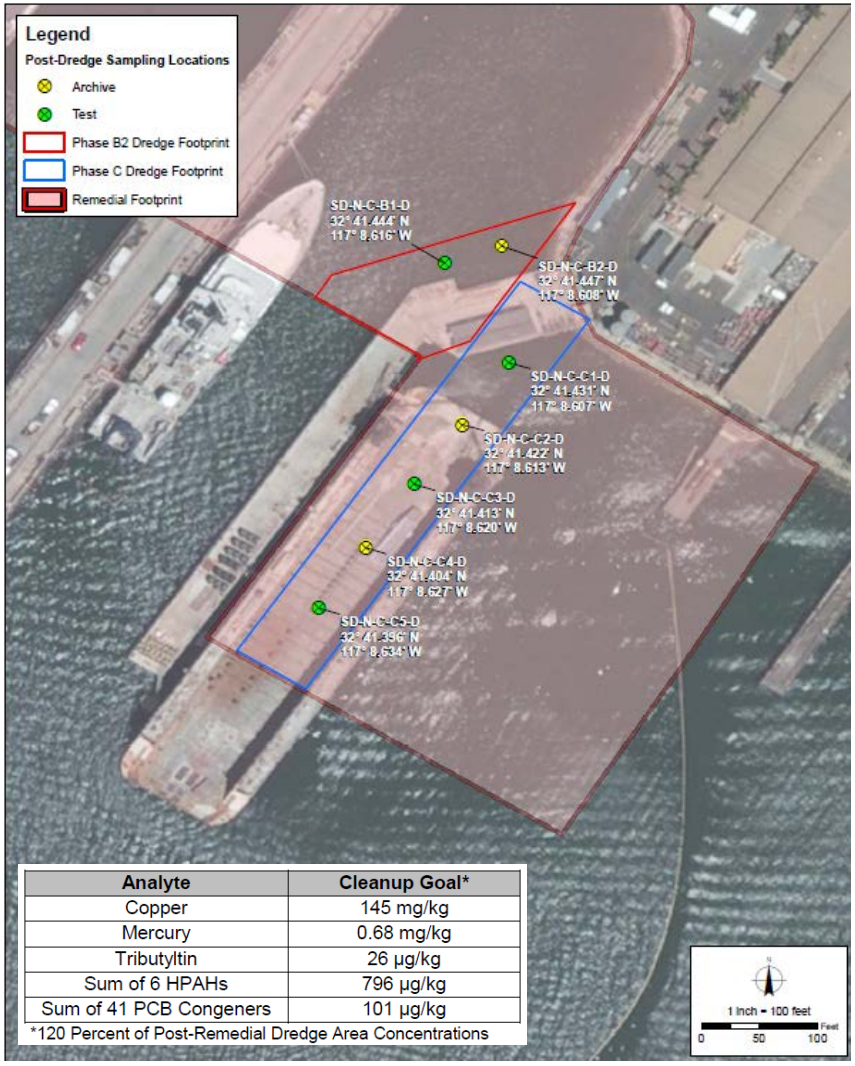
Pier 4 Replacement Project Dredging
Dredging Operations

Pier 4 Replacement Project Dredging
Sediment Thickening with Cement

Pier 4 Replacement Project Dredging
Bulkhead Replacement

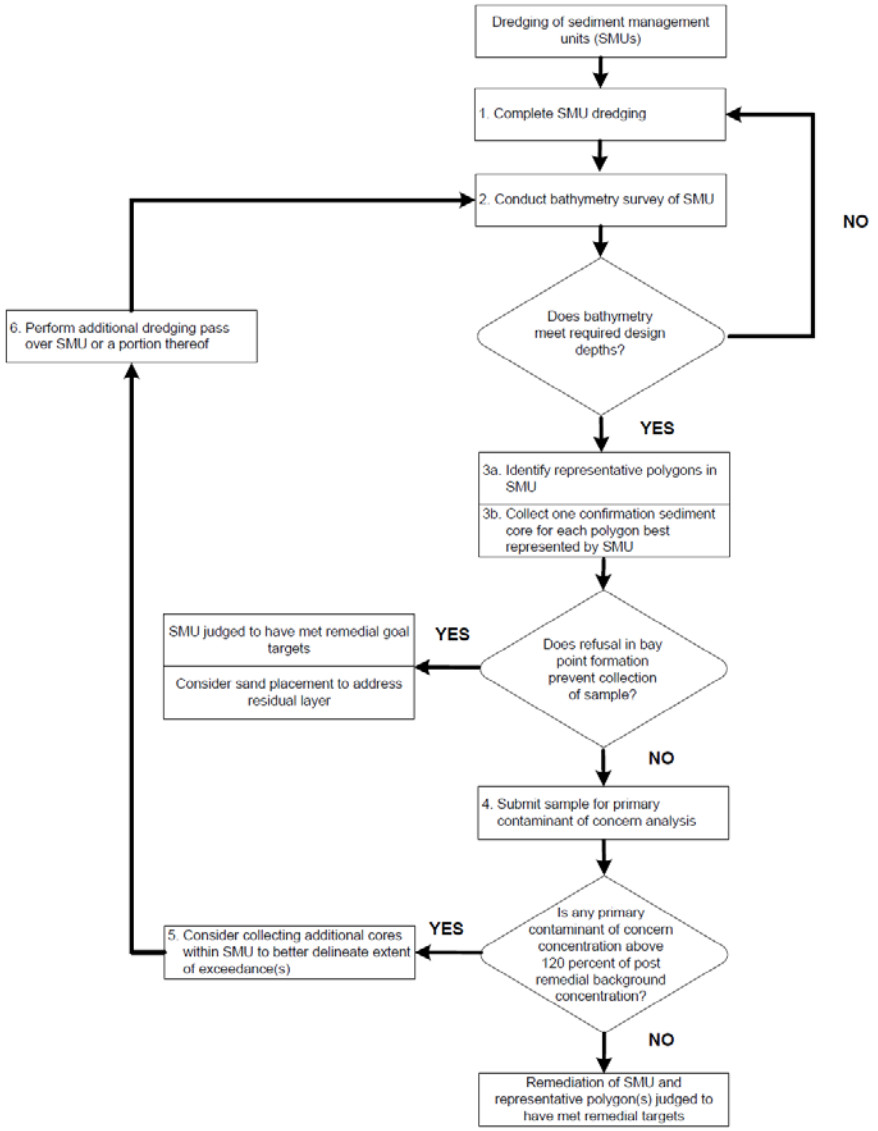
Pier 4 Replacement Project Dredging Bulkhead Replacement

Pier 4 Replacement Project Dredging
Post-Dredge Confirmation Testing



Analyte	Cleanup Goal*
Copper	145 mg/kg
Mercury	0.68 mg/kg
Tributyltin	26 µg/kg
Sum of 6 HPAHs	796 µg/kg
Sum of 41 PCB Congeners	101 µg/kg

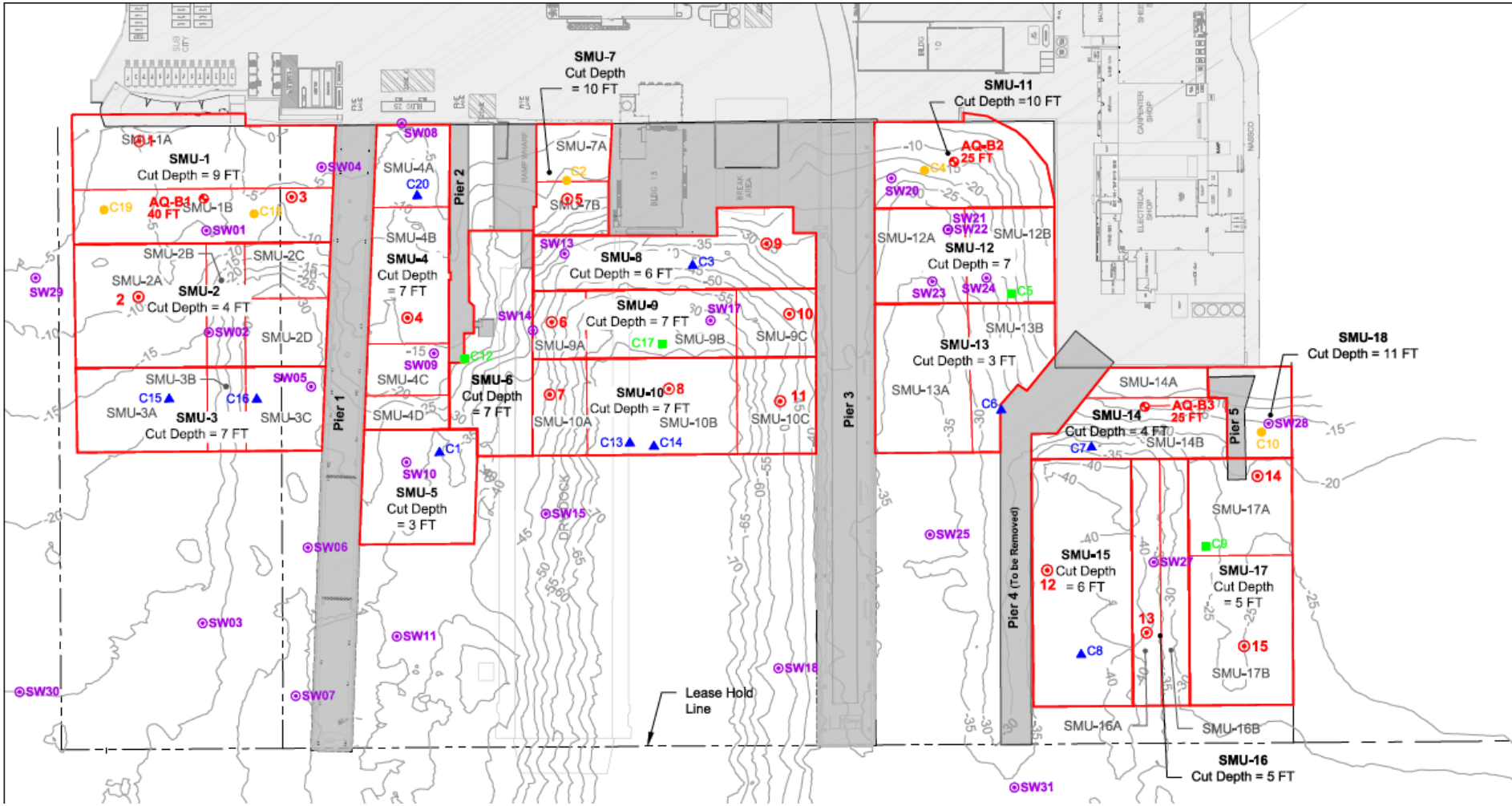
*120 Percent of Post-Remedial Dredge Area Concentrations



San Diego Clean Bay Project ("The Big Dig")
Project Features at BAE Systems

- Project Description
  - RWQCB Cleanup and Abatement Order (CAO No. R9-2012-0024)
  - Dredging with upland disposal; some wharf and pier improvements
  - Waste classification and landfill acceptance of in-place sediments
  - Early warning (autonomous) system for water quality monitoring
  - Biological (birds, marine mammals, turtles) monitoring during dredging operations
  - Sediment confirmation testing to meet post-dredge cleanup goals identified in the CAO
  - Post-remedial monitoring – sediment chemistry, toxicity, and bioaccumulation analyses at 2 and 5 years post-remediation; benthic infaunal analyses 3 and 4 years post-remediation
- Disposal Volumes and Location
  - Upland Disposal at Otay Landfill: ~ 105,000 cy (Dredging likely to begin September 2014)
- Project Team
  - AMEC – Sediment characterization and landfill classification
  - Anchor QEA – Project planning and design
  - Merkel & Associates – Biological monitoring plans and surveys
  - Dredging and dredge/post-dredge environmental monitoring – TBD

San Diego Clean Bay Project
Sediment Management Units



San Diego Clean Bay Project
CAO Dredging/Construction Footprints

Recent Dredging Projects at BAE Systems San Diego Ship Repair - Questions

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Thank You WEDA!