



NAS Alameda Environmental Fieldwork Update

Alameda RAB Meeting Alameda Point

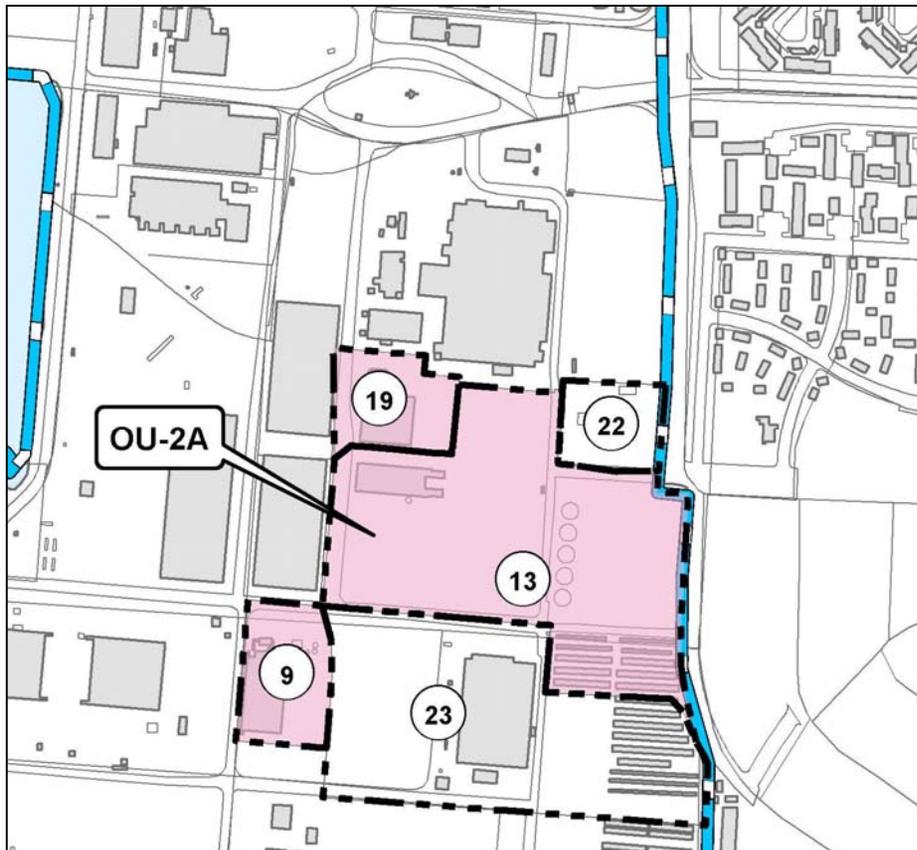
Mr. William McGinnis, PE
Navy BRAC PMO West
September 11, 2013



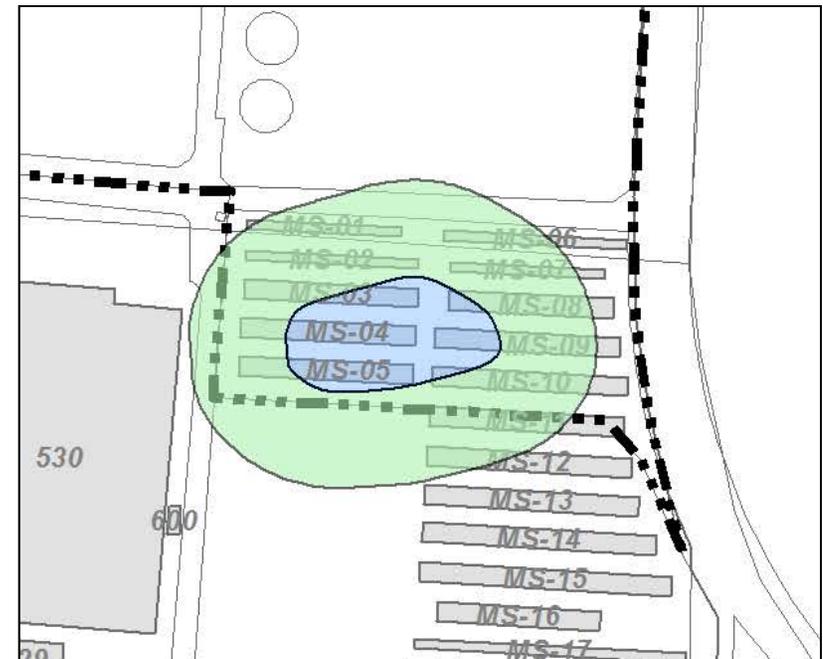
Site 13 Area



OU2A Location



Site 13 Plume Area



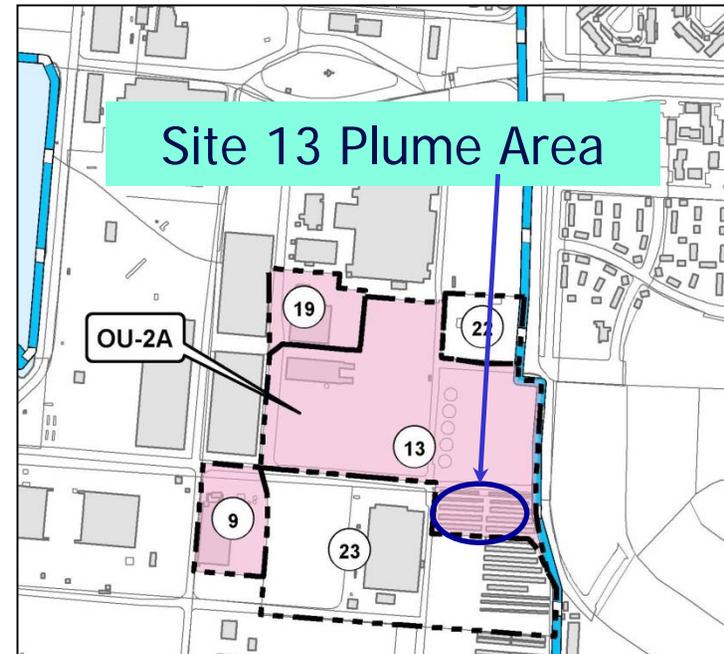


Site 13 In-situ Bio Remedial Action



Mobilization to Site: March 17

- Monitoring well (4) installation
- Biovent well (54) installation
- Auger boring (23) emplacement
- Direct push injections
- Phase 1: March (calcium peroxide)
- Phase 2: July (Klozur CR)
- Phase 3: December (calcium peroxide)



Monthly bio-vent operations and maintenance began in August 2014. Groundwater performance monitoring is being conducted quarterly to evaluate effectiveness.

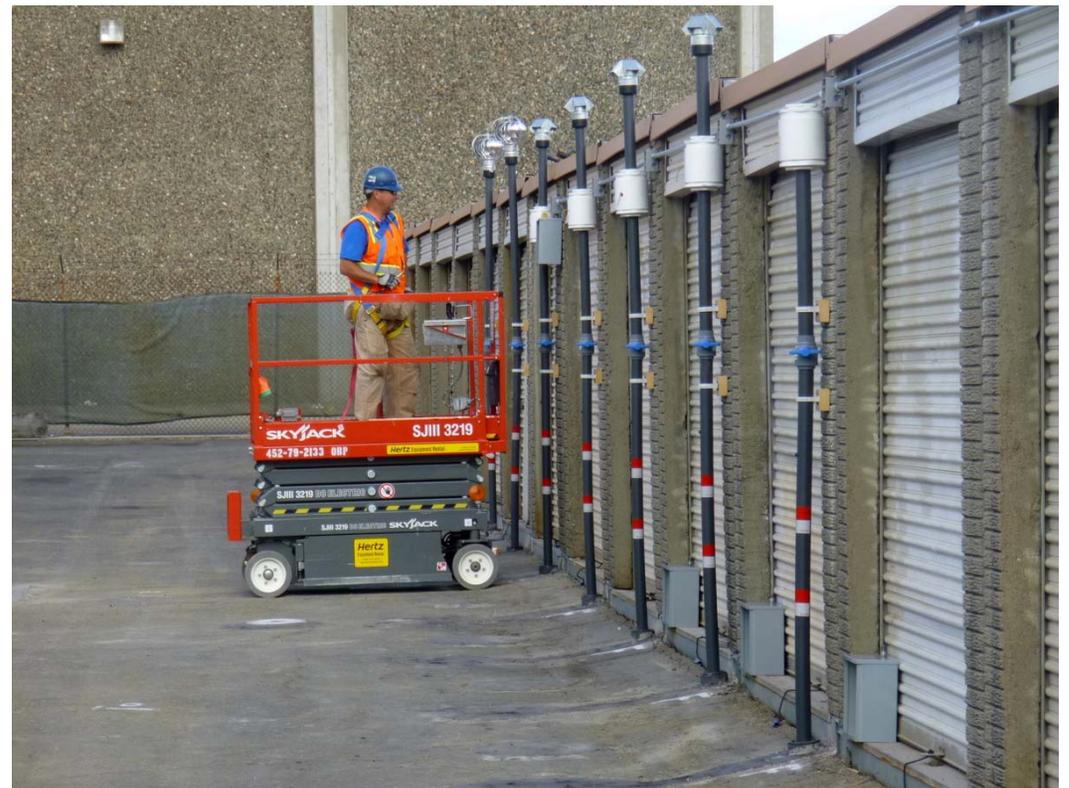


Site 13 – Benzene Plume





Site 13 In-situ Bio Remedial Action





Site 13 In-situ Bio Remedial Action





OU-2C Field Work in 2014



Field work conducted at Operable Unit (OU)-2C in 2014 includes:

- Radiological clean-up on the 2nd floor of Building 400 (Site 10)
- Further investigation of the drain lines (storm water and former industrial waste lines) associated with Sites 5 and 10



OU2C -Building 400 Clean Up





OU2C - Storm Water Line Investigation





OU2C - Industrial Waste Line Sampling





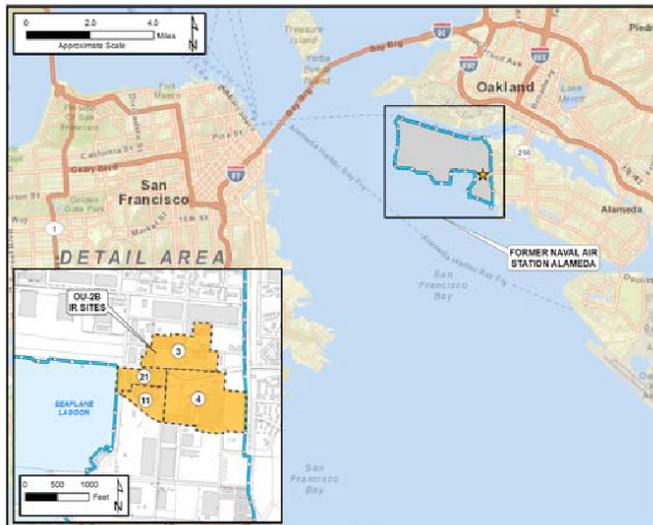
OU-2C Schedule



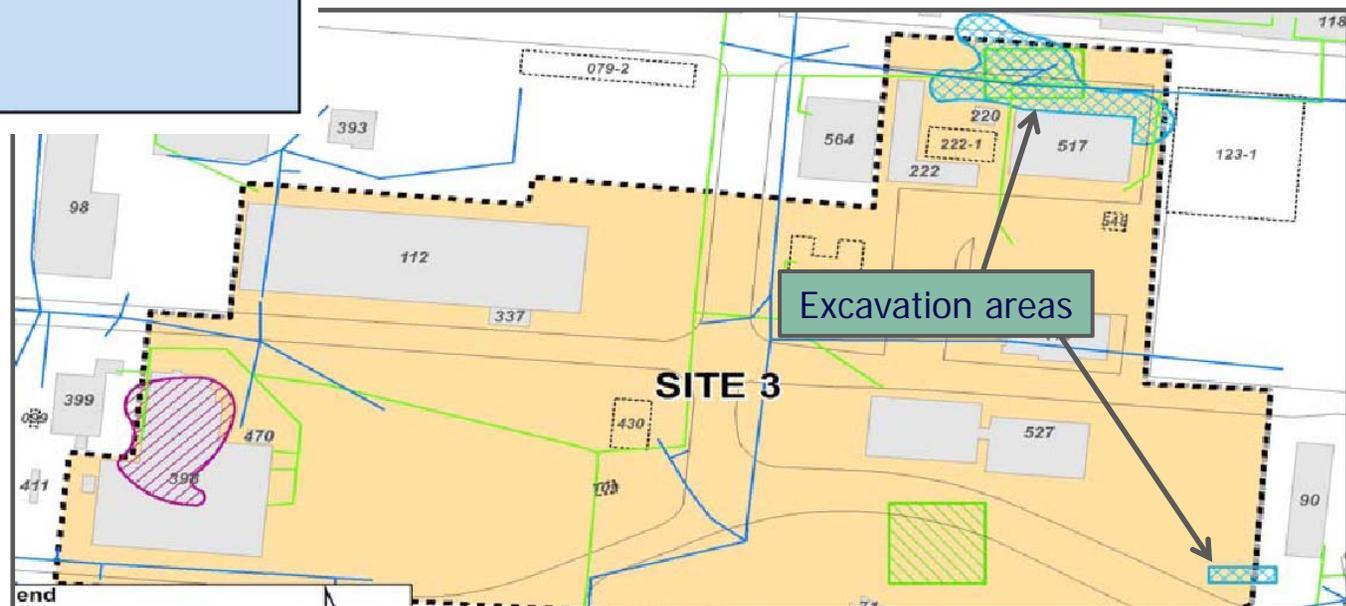
- March 2014: Completed the storm water line component of the drain line investigation
- May 2014: Finalized the Record of Decision for OU-2C excluding the drain lines outside the buildings
- June – August 2014: Conducted radiological clean-up of the 2nd floor of Building 400
- July – September 2014: Conducted former industrial waste line component of the drain line investigation; field work completed, laboratory analysis in progress
- January 2015: Draft Reports issued for agency review
- 2015: Begin Building 5 radiological cleanup and Site 5 groundwater cleanup
- 2016: Finalize Record of Decision for OU-2C drain lines outside the buildings



Site 3 – Soil Excavations



- Excavations for lead contaminated soil began in early-August 2014
- Excavation completed in mid-August and confirmation samples collected
- Confirmation results meet criteria





Site 3



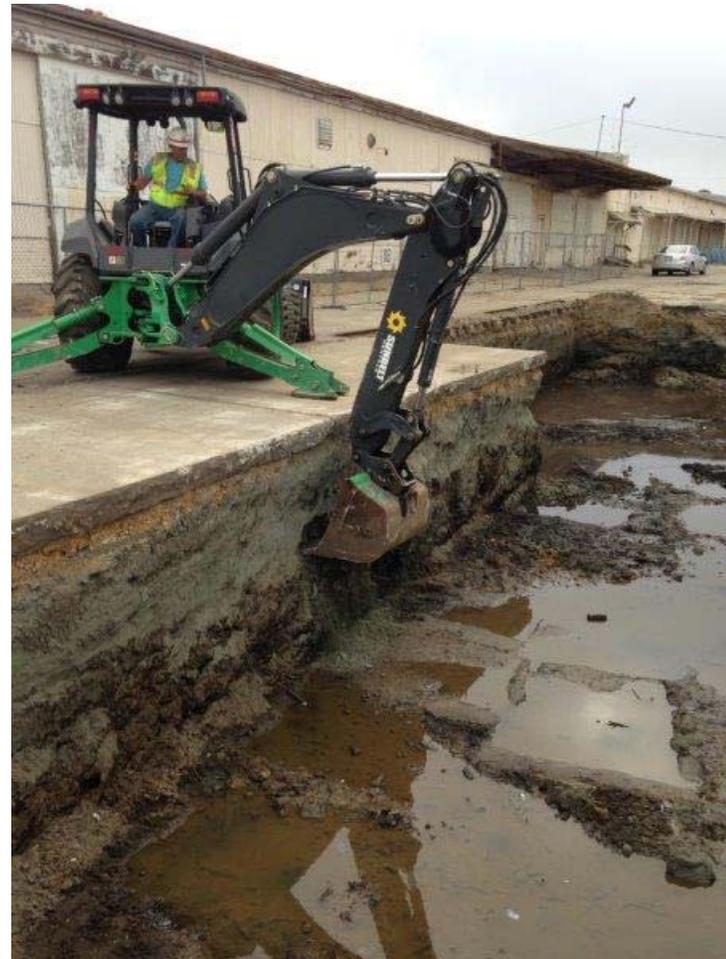


Site 3





Site 3





ALAMEDA OPERABLE UNIT 1 – IR SITE 6



ENHANCED IN-SITU BIOREMEDIATION (ISB) OF CHLORINATED SOLVENTS IN GROUNDWATER

- Site 6 was a former aircraft maintenance facility
 - 5.6 acres including Hangar 41 (unoccupied)
- 2007 ROD selected ISCO, ISB and/or MNA
- ISCO performed in 2010
 - Contaminants of concern (**COC**) include trichloroethene (**TCE**), cis-1,2 dichloroethene (**DCE**), and **vinyl chloride**.
 - ISCO was effective but remediation goals (RG) not yet met.
 - RGs are drinking water maximum contaminant levels (MCLs).
- **ISB** groundwater treatment implemented from July 9, 2014 to September 4, 2014.



SITE 6 - ENHANCED BIOREMEDIATION



- ***Anaerobic bioremediation*** was enhanced at Site 6 by introducing a food-grade lecithin (called EHC-L™). Lecithin ferments and generates hydrogen. Hydrogen is then used as energy source by bacteria to sequentially remove chlorine atoms from TCE, DCE, and vinyl chloride (*i.e., biotic reductive dechlorination*).
- Approximately 221,600 gallons of groundwater was extracted and amended with EHC-L and powdered iron. Iron bolsters the biodegradation process by forming iron sulfides which degrade chlorinated solvents without biological activity (*i.e., abiotic reductive dechlorination*).

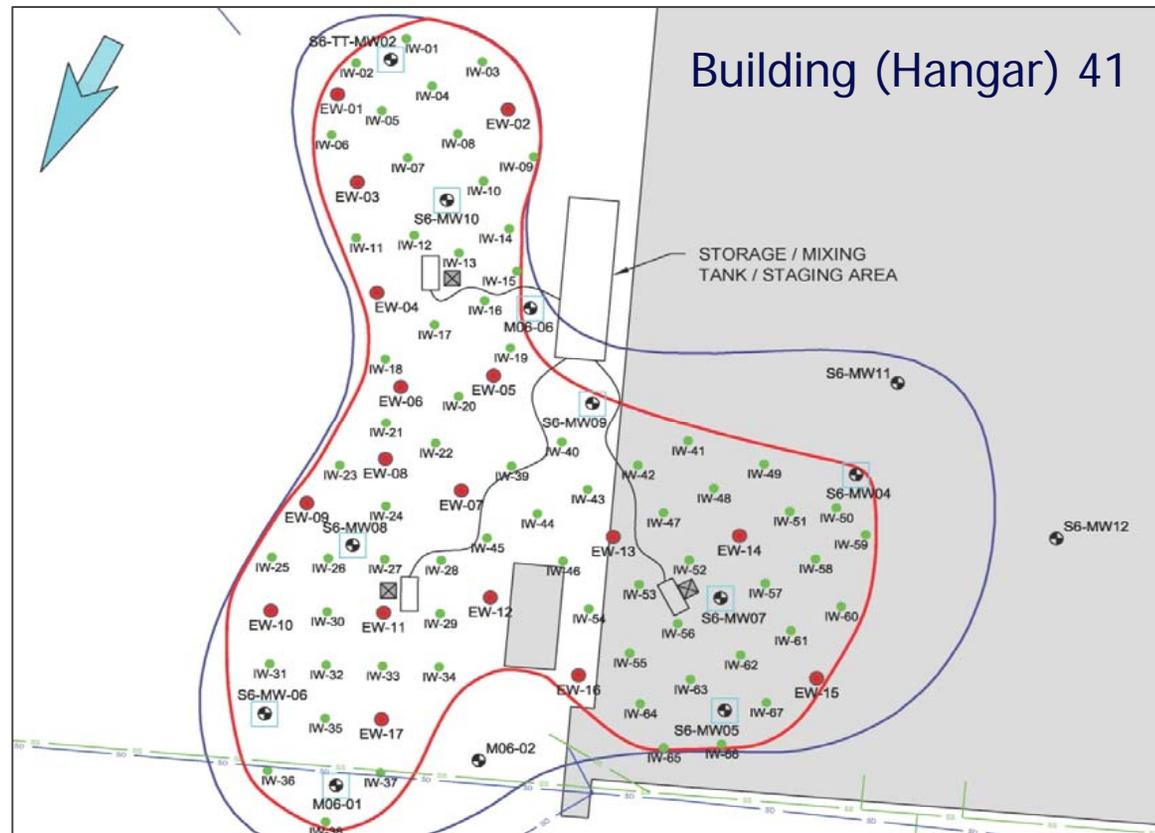


ENHANCED ISB TREATMENT LAYOUT



66 Injection Wells and 27 Extraction Wells
Treatment area is 42,000 sq ft., depth - 11 feet bgs

- Injection Well
- Extraction Well





IR SITE 6 ISB PHOTOS



ISB Treatment area looking northeast towards





IR SITE 6 ISB PHOTOS



Artemis racing sailboat (above)
inside Bldg. 41 needed to be
removed before system (right)
was installed.





IR SITE 6 ISB PHOTOS



View Looking West from Bldg. 41

- Background shows two 10,000 gallon mixing tanks surrounded by totes of lecithin.

- Foreground shows valve assembly and 5-gallon tank holding *dehalocoides* (bacteria that degrade chlorinated solvents)





SITE 6 PHOTOS



Graduated cylinder with 5-gallon tank of *dehalocoides* to measure dechlorinating bacteria "innoculation". Tank on the left is nitrogen to push the bacteria into the manifold.

Powdered iron mixing into extracted groundwater in top of 10,000 gallon tank





SITE 6 PHOTOS





NEXT PHASE: PERFORMANCE MONITORING



- **Monthly geochemistry measurements**
 - September through November 2014
- **Four Quarters of Groundwater Sampling**
 - November 2014 – August 2015
- **Evaluate Treatment Effectiveness and Report**



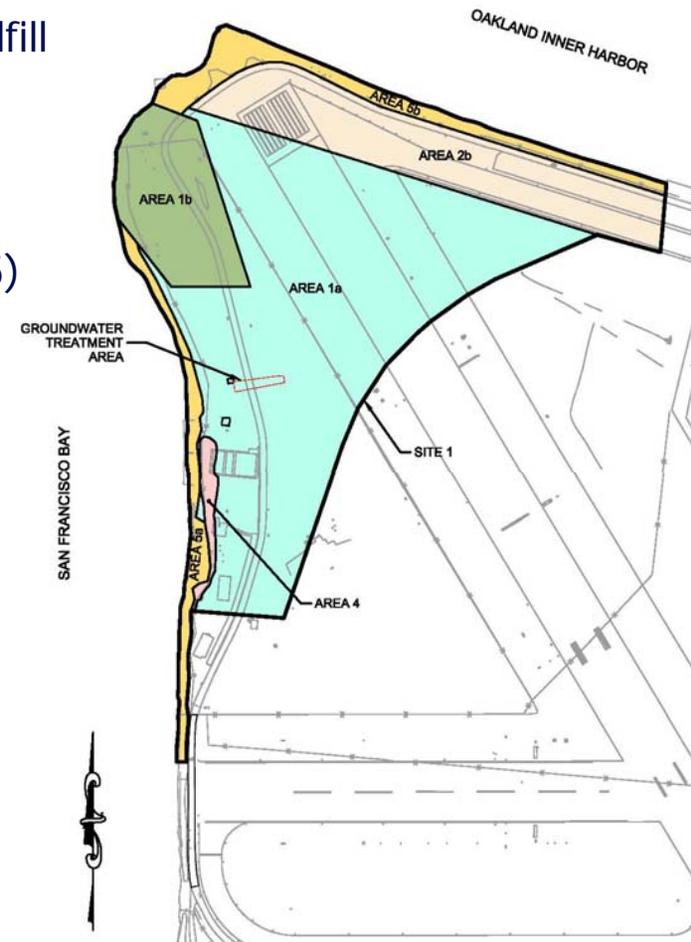
Site 1 – Summary



Implementation of the cover remedy at the former landfill includes:

- Installation of a waste isolation bulkhead (WIB)
- Select excavation of burn waste
- Placement of riprap in exposed beach areas (Area 5)
- Radiological scanning
- Soil cover placement

Field work is planned to be completed by the Summer of 2015





Site 1 – Summary



Preliminary work activities:

- Stormwater BMPs installed and deployment of silt curtain (continue throughout the project)
- Clearing of vegetation and tree chipping
- Placement of crushed asphalt road along the northwest shoreline for the installation of the WIB
- Demolition of above ground structures
- Revetment placement on beach of Area 5a





Site 1 – Current Activities



On-going activities:

- Surface gamma scans to identify and remove radiological hot spots
- Excavation of bayside and harbor side setback areas and the burn area select excavation
- Segregate radiologically impacted material for offside disposal
- Placement of the WIB templates and sheet pile driving of the WIB steel sheets
- Pulverizing and removing the harbor side taxiway



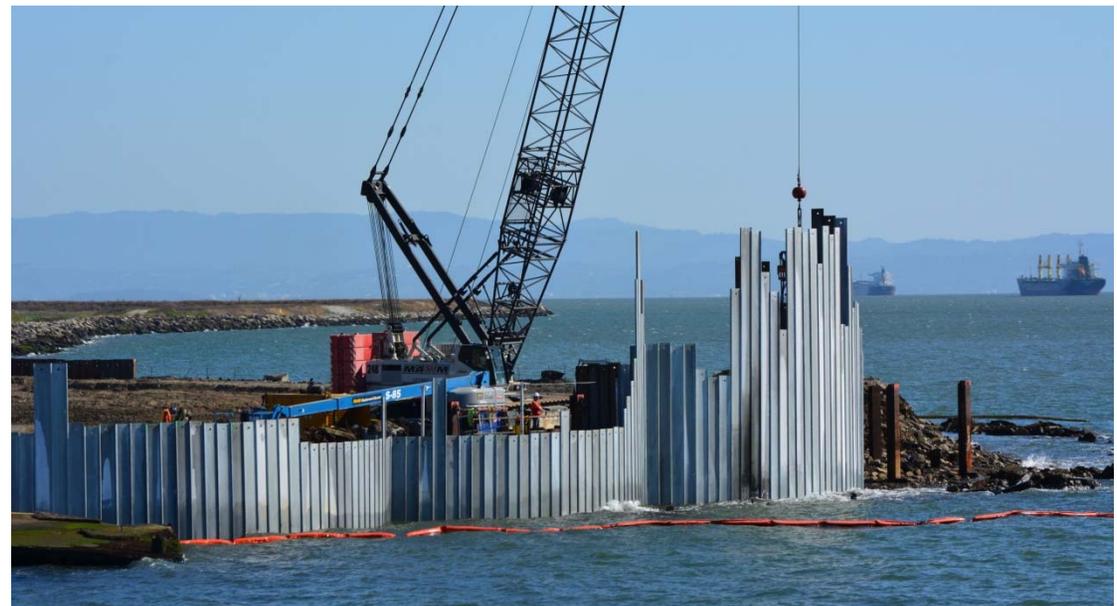


Site 1 – Current Activities





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