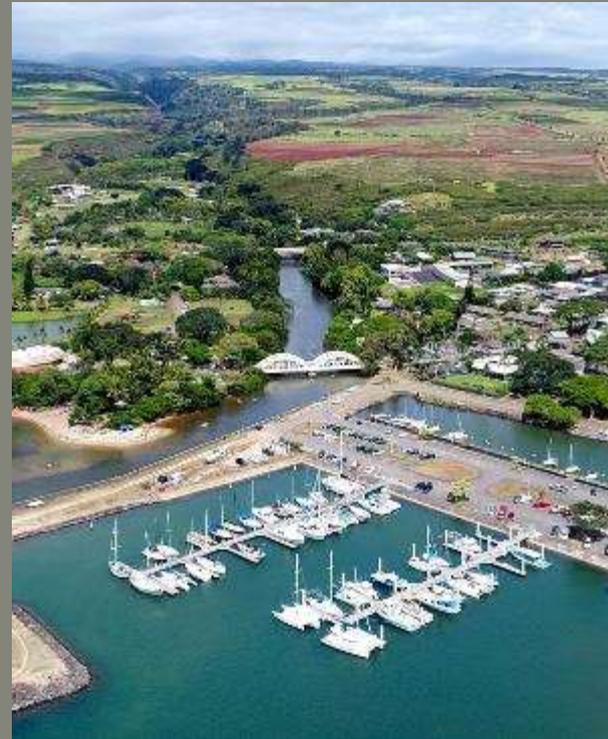


HALEIWA SMALL BOAT HARBOR

REGIONAL SEDIMENT MANAGEMENT AND POTENTIAL BENEFICIAL USE OF DREDGED MATERIAL

Jessica H. Podoski, P.E.
Coastal Engineer
U.S. Army Corps of Engineers
Honolulu District

Western Dredging Association Meeting
Honolulu, Hawaii
23 August 2018



State of Hawaii Department of Land
and Natural Resources
**DIVISION OF BOATING
AND OCEAN RECREATION**



**US Army Corps
of Engineers®**

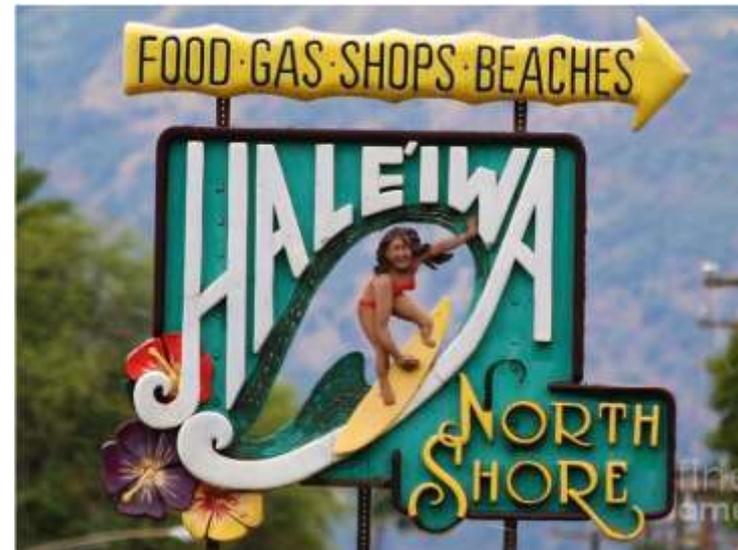


OUTLINE

- Project Background and Dredging Cycle
- Coastal Processes and Modeling
- Sediment Budget
- Potential Beneficial Use of Dredged Material
- Challenges and Next Steps



Haleiwa Harbor 1910



US Army Corps
of Engineers[®]



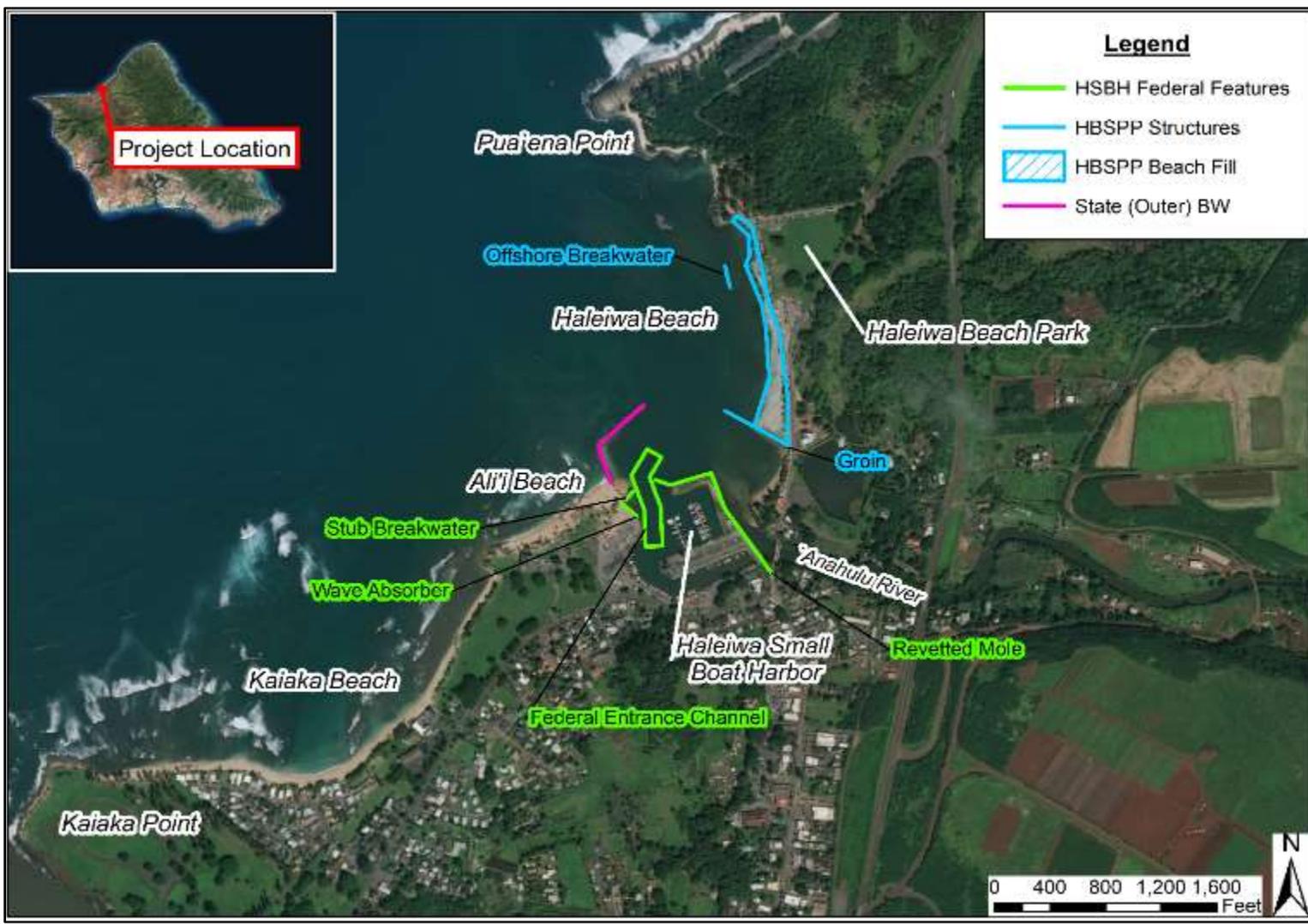
PROJECT BACKGROUND AND DREDGING CYCLE



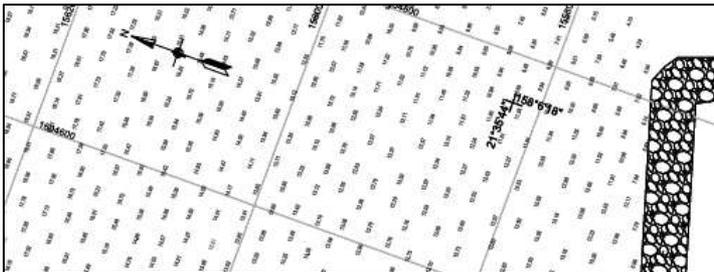
US Army Corps
of Engineers[®]



PROJECT AREA AND FEATURES

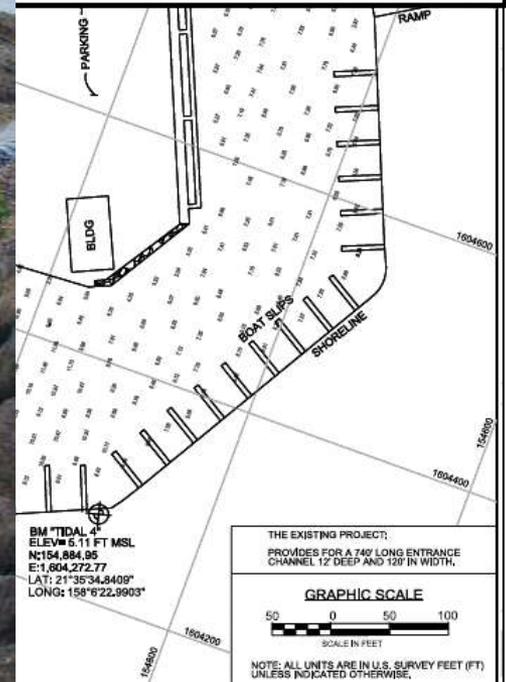


May 2018 Hydrographic Survey



Shoaling rate based on dredging and hydrosurvey history

YEAR	TYPE OF WORK	VOLUME (CY)	SHOALING RATE (CY/YR)*
1999	Maintenance Dredging	7,214	219
2000	Maintenance	6,500	650
		311	155
		800	160
		1600	200



U.S. Army Corps of Engineers



COASTAL PROCESSES AND WAVE/CIRCULATION MODELING

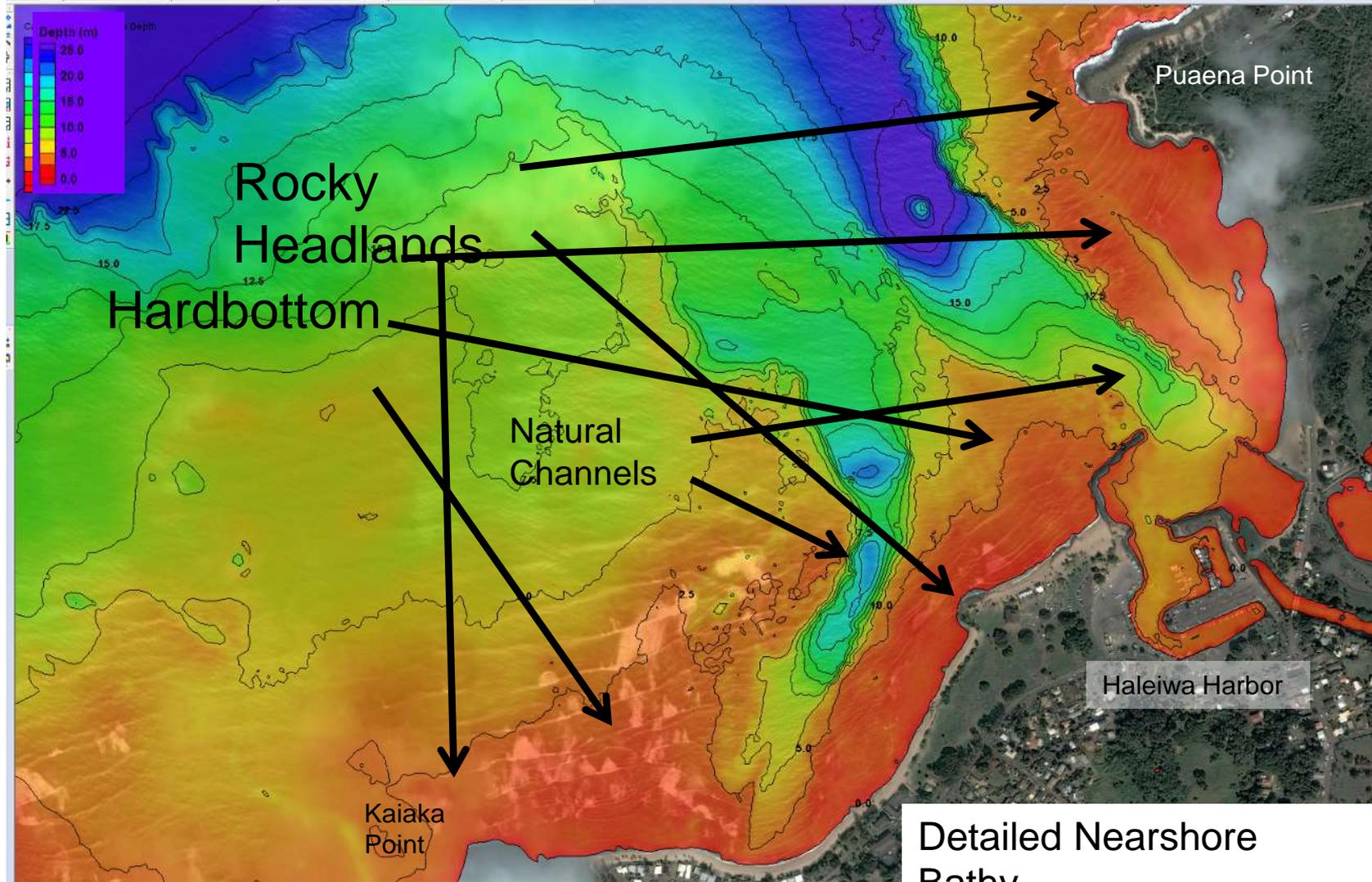


US Army Corps
of Engineers[®]



Nearshore Bathymetry

- Two natural channels (Kaiaka Bay and offshore Haleiwa Harbor)
- Hardbottom Areas
- Rock headlands enclosing littoral cell and affecting longshore transport



Detailed Nearshore Bathy



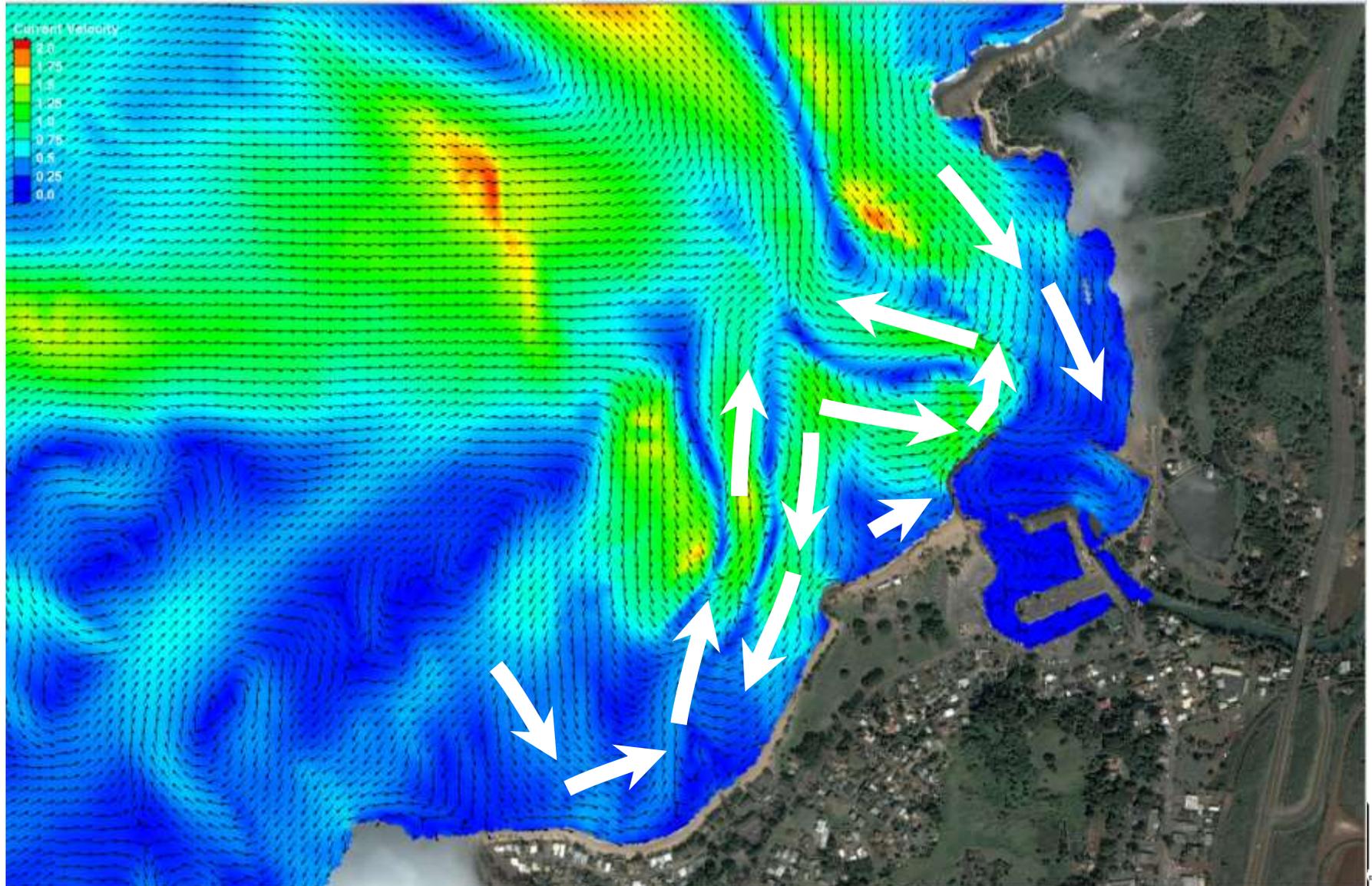
Haleiwa Region: Waves and Circulation



CMS Flow Currents from Steering Run (Waves \Leftrightarrow Circulation)

• Approximate 10-year event (January 1998)

$H_o = 8.0\text{m}$, $T_p = 16\text{-}22\text{s}$, $\text{Dir} = 320\text{ deg (NW)}$



SEDIMENT BUDGET



US Army Corps
of Engineers[®]



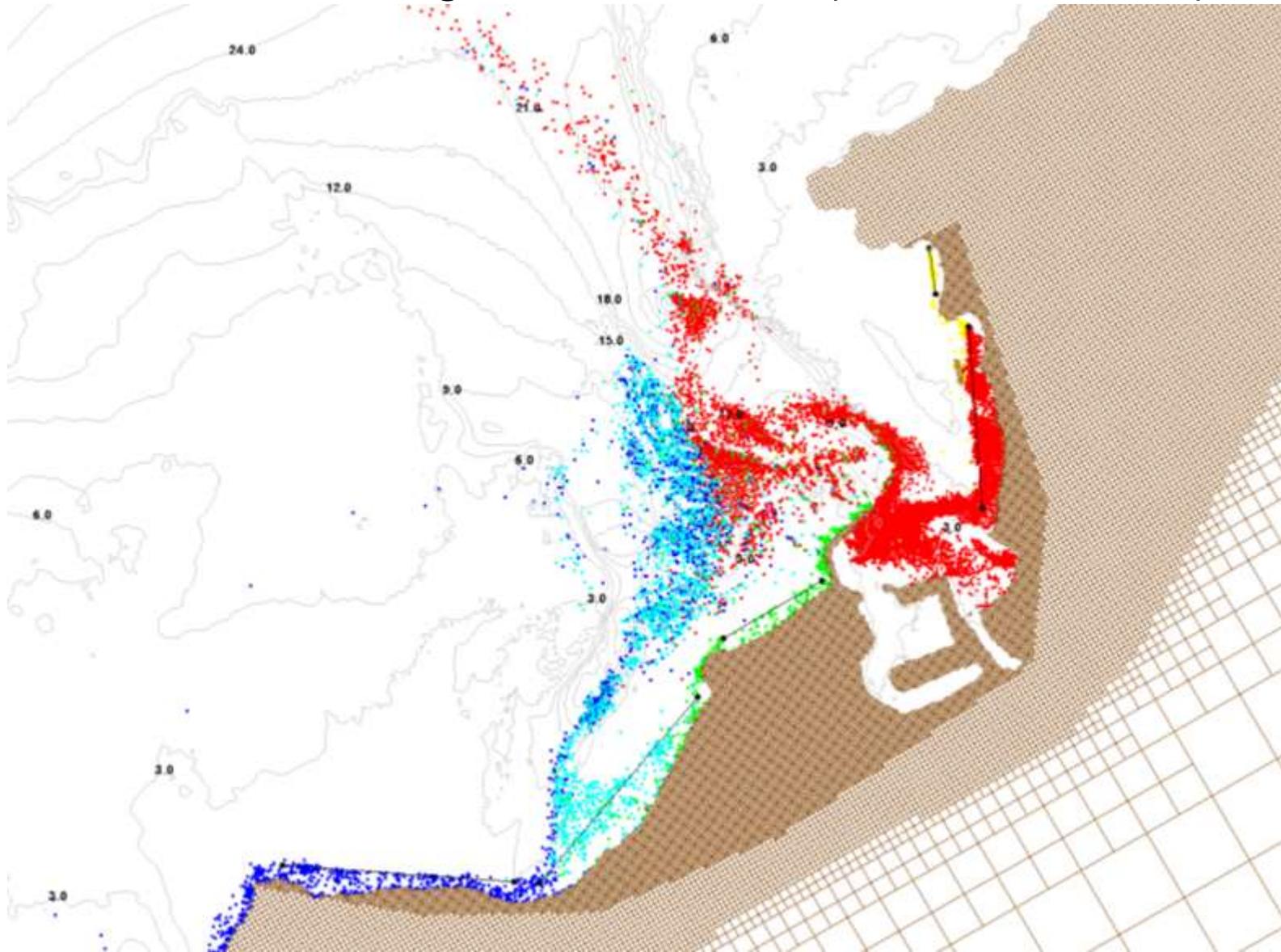
Haleiwa Region Littoral Cells



US Army Corps
of Engineers[®]



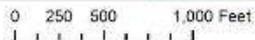
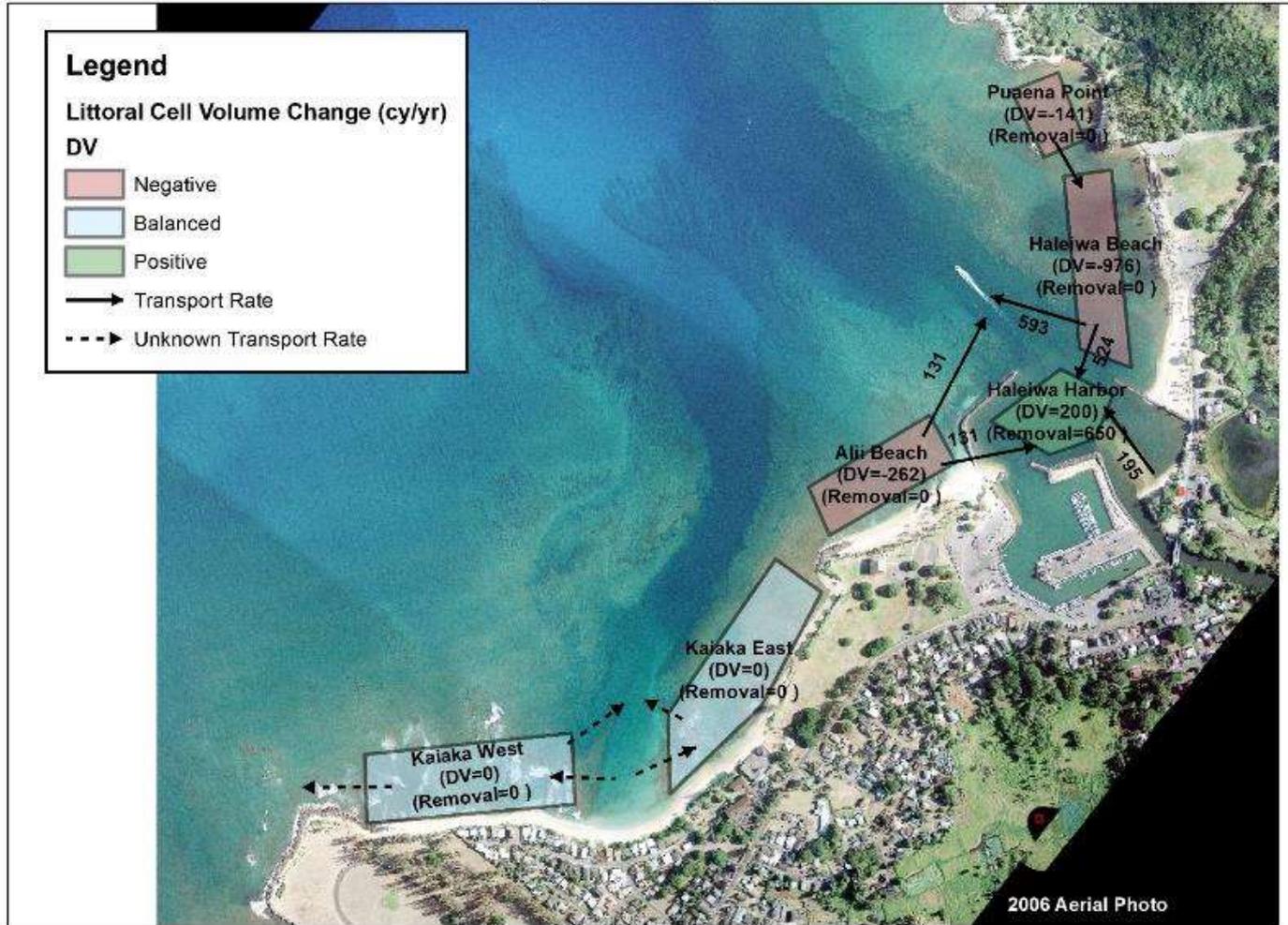
Particle Tracking Model Results (2 hour intervals)



US Army Corps
of Engineers[®]



Haleiwa RSM: Post-Project Sediment Pathways (1988 - 2006)



Haleiwa Harbor: Shoaling from Alii Beach



US Army Corps
of Engineers[®]



POTENTIAL BENEFICIAL USE OF DREDGED MATERIAL



US Army Corps
of Engineers[®]



Evaluation of Disposal Options:

- **Stockpiling:**
 - Sandy dredged material would be stockpiled at Haleiwa Beach Park and turned over to the City and County of Honolulu.
 - Silty material would be taken to the Offshore Dredged Material Disposal Site (ODMDS) or beneficially reused.
- **Beach Placement:**
 - Sandy dredged material to be placed on Haleiwa Beach in the area of greatest erosion, which is immediately in front of the seawall by the comfort station.
 - The silty material would be taken to the ODMDS or beneficially reused.
- **Upland Disposal (Landfill):**
 - Dredged sediment would be taken to the PVT Landfill in west Oahu.
 - Distance to the landfill is about 35 miles from the project site.
- **South Oahu ODMDS:**
 - All dredged sediment would be taken via barge to the South Oahu ODMDS.
 - The site is about 48 miles from Haleiwa Harbor.

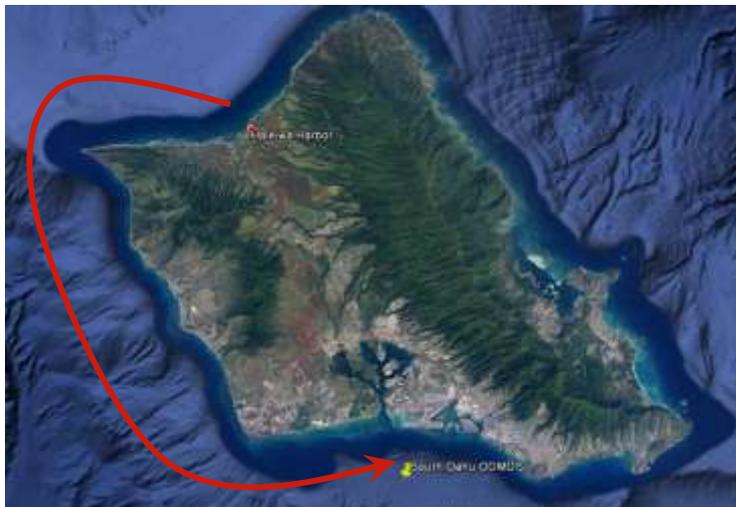


US Army Corps
of Engineers[®]



Construction and Disposal Cost Comparison

COST ESTIMATE FOR DREDGE DISPOSAL OPTIONS (rough order of magnitude)					
DISPOSAL METHOD	MOB/DEMOB COST	DREDGING VOLUME (CY)	DREDGING COST	TOTAL CONSTRUCTION COST	DREDGING UNIT COST (\$/CY)
Stockpile	\$501,000	6500	\$594,000	\$1,095,000	\$91
Beach Placement	\$501,000	6500	\$621,000	\$1,123,000	\$96
Landfill	\$501,000	6500	\$1,221,000	\$1,722,000	\$188
South Oahu ODMDS	\$623,000	6500	\$213,000	\$836,000	\$33



Least cost disposal method is offshore disposal at the South Oahu ODMDS (48 mile haul distance)



US Army Corps
of Engineers[®]



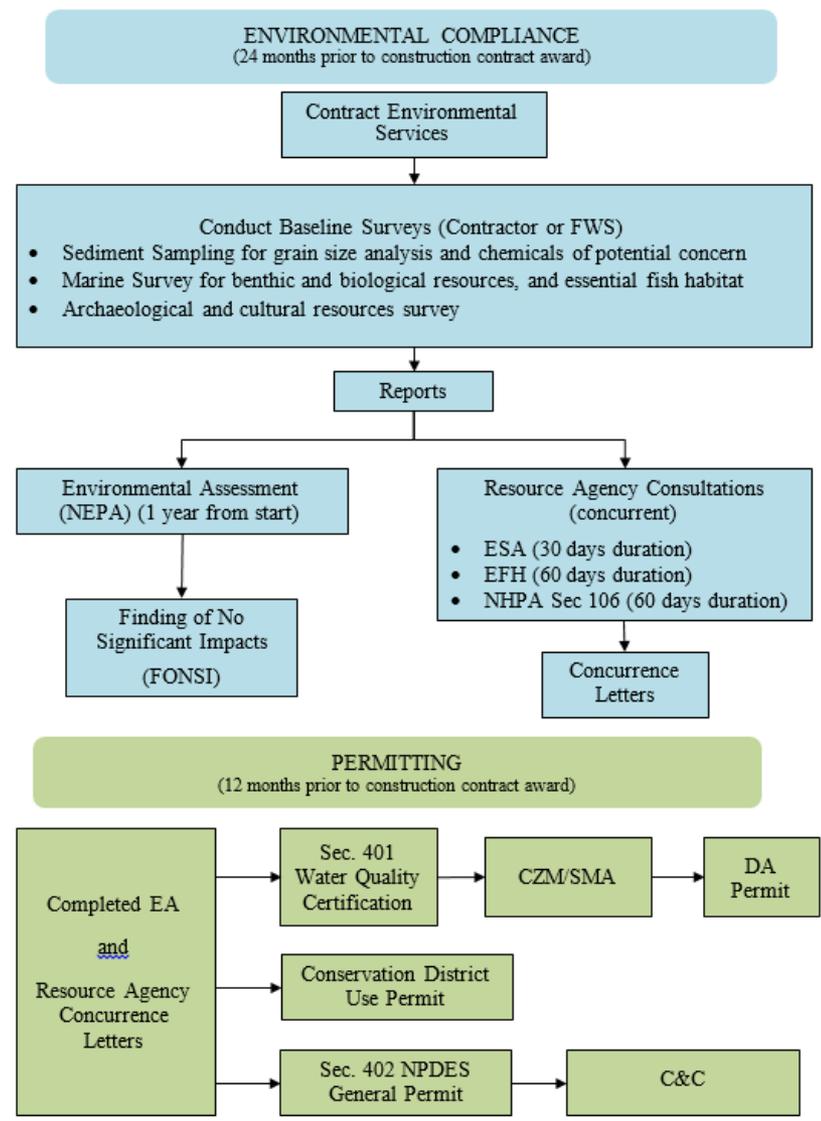
CHALLENGES AND NEXT STEPS



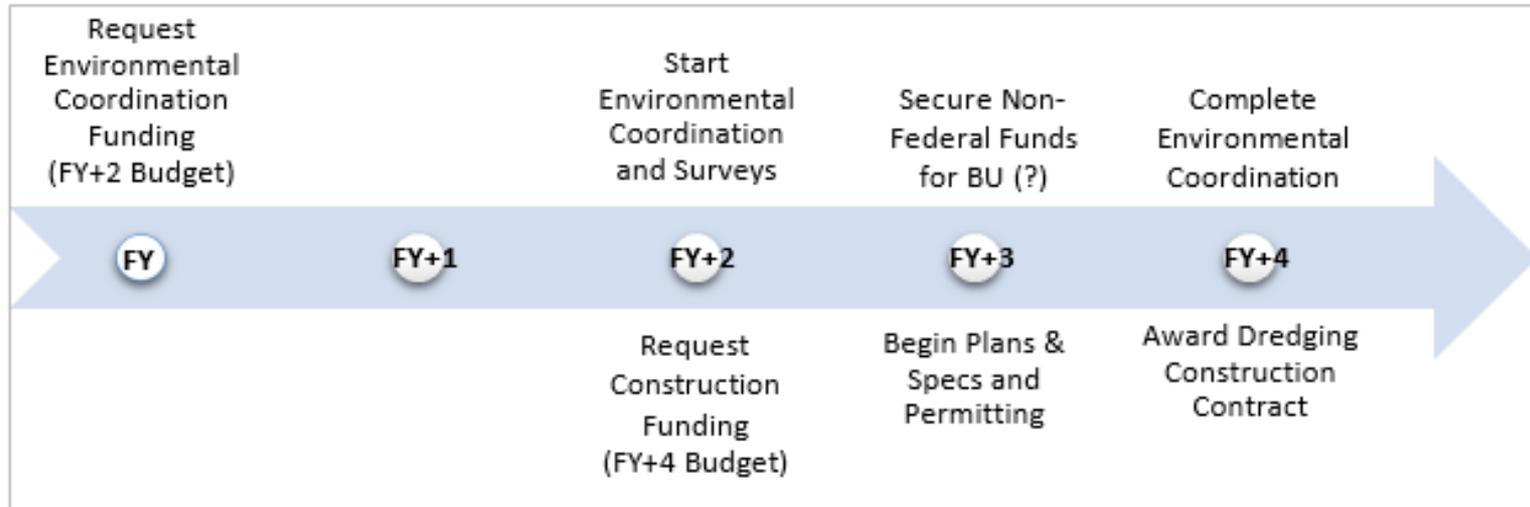
US Army Corps
of Engineers[®]



Regulatory and Permitting Road Map



Beneficial Use Timeline



- Request Environmental Coordination funding 4 years out
- Coordinate non-Federal sponsor cost-share funding well in advance



US Army Corps
of Engineers[®]



Next Steps Toward Beneficial Use at Haleiwa Harbor

- **Establish a deposition basin near Ali'i Beach**
 - Identify environmental coordination and permit requirements for a deposition basin.
 - Secure funding for development of a deposition basin implementation plan.
- **Determine approximate non-federal costs** (pre-construction and construction) for disposal of dredged material at locations not covered by the Federal Standard.
- **Discuss with potential stakeholders and non-federal sponsors the possibility of cost-sharing in incremental costs beyond the Federal Standard.** Identify federal authorities for cost-sharing in beneficial use of dredged material. Facilitate between agencies and stakeholders in identification of non-federal funding sources. Section 1122 Authority??
- **Budget for pre-construction O&M dredging funds at least four years in advance of contract award.** This will provide enough time for environmental investigations and coordination to enable non-federal cost sharing above the Federal Standard.



US Army Corps
of Engineers ®



Thank you



US Army Corps
of Engineers[®]

