

Climate Change Impacts in Hawaii: Emerging Law and Policy

Jim Buika

Coastal Resources Planner, Maui County
Ocean Resource Management Plan Working Group
May 2, 2013

ORMP Goals (Perspectives):

- 1) Connect the Land & Sea;
- 2) Preserve Our Ocean Heritage; and
- 3) Promote Collaboration & Stewardship

The 800-Pound Shark along the Shoreline: Gaps in Law and Policy to Protect Threatened Existing Development

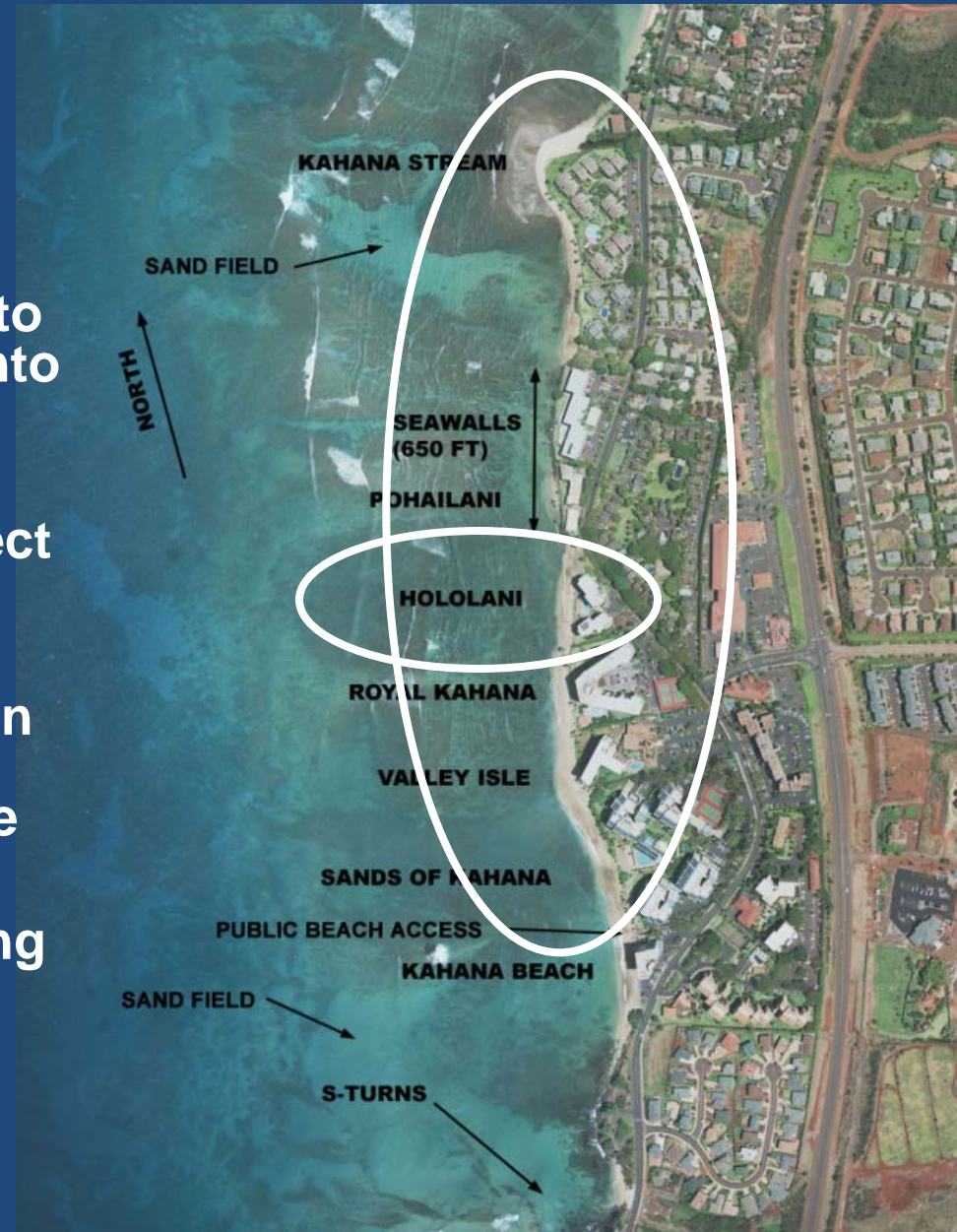
*Jim Buika, Coastal Resource Planner, Maui County
Climate Change Impacts in Hawaii:
Emerging Law and Policy
October 26, 2012*

What Gives Hawaii its sense of place?



Existing Problem that requires Legal and Policy Solutions Today

- Problem: Threatened existing development
- Condos, roads, and critical infrastructure, built 30-to-50 years ago, were built too close to the ocean and are now falling into the ocean.
- We do not have adequate solutions in our tool kit to protect threatened development while preserving the coastal zone.
- Without new laws and policies in place to provide for additional mitigation tools, Hawaii will lose its sense of place.
- Our coastal environment is being negatively impacted by our requirements to protect failing development & infrastructure.





**Existing
development
becomes further
threatened even
when old
seawalls are
undermined and
fail**



Recent Emergency Permit: Kahana Sunset AOA

Life Safety and Potential Structural Collapse



Recent Emergency Permit: Kahana Sunset AOA

Life Safety and Potential Structural Collapse



Maui has lost more than four miles of sandy beach in past century — report

By **LEE IMADA**, News Editor

HONOLULU — Eighty-five percent of sandy beachfront has eroded and 4.2 miles has been lost on Maui in the past century, according to a U.S. Geological Survey and University of Hawaii report released this week.

Those percentages were the highest in the report covering 150 miles of sandy shoreline or “essentially every beach” on Maui, Oahu and Kauai.

“The entire Kihei coast is eroding, except for a handful of places where sand is being trapped by walls,” said Charles Fletcher, associate dean of the University of Hawaii School of Ocean and Earth Science and Technology and lead author of the report “National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands.”

The “spires of the French Frigate Shoals” will be the inevitable fate of the Hawaiian Islands in millions of years and sea level rise is a natural factor in erosion, the report said. But the erosion is not all natural, and seawalls are among the leading man-made culprits.

In Kihei, which the report said lost 1.2 miles of beaches from 1900 to 2007, Fletcher noted how seawalls sprung up one after another along the Halama Street area near Kalama Park as residents attempted to protect their shorefronts. Erosion rolled north and beaches were lost.

“If you have a beefy seawall, it will protect the land

See BEACHFRONT on the next page



University of Sydney / **ANDREW D. SHORT** photo

Kaanapali Beach has shown an annual erosion rate of 3.2 inches over the last century, according to a U.S. Geological Survey and University of Hawaii report. Maui has lost 4.2 miles of sandy beach in the last century, according to the report, which is titled “National Assessment of Shoreline Change: Historical Shoreline Change in the Hawaiian Islands.”

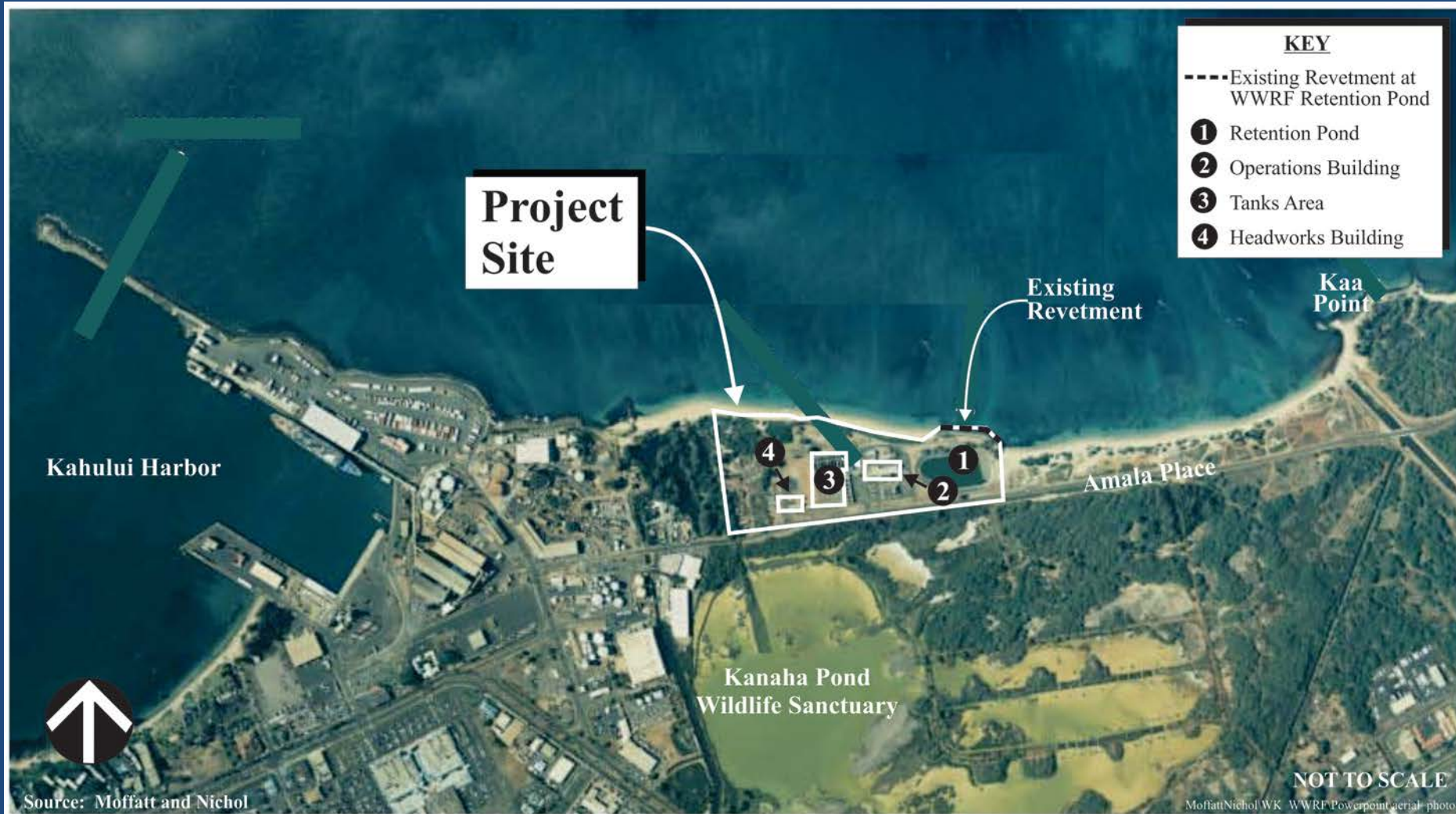


1200-foot revetment completed to protect threatened coastal highway in West Maui. Another 1200-foot revetment is planned for completion along same road.

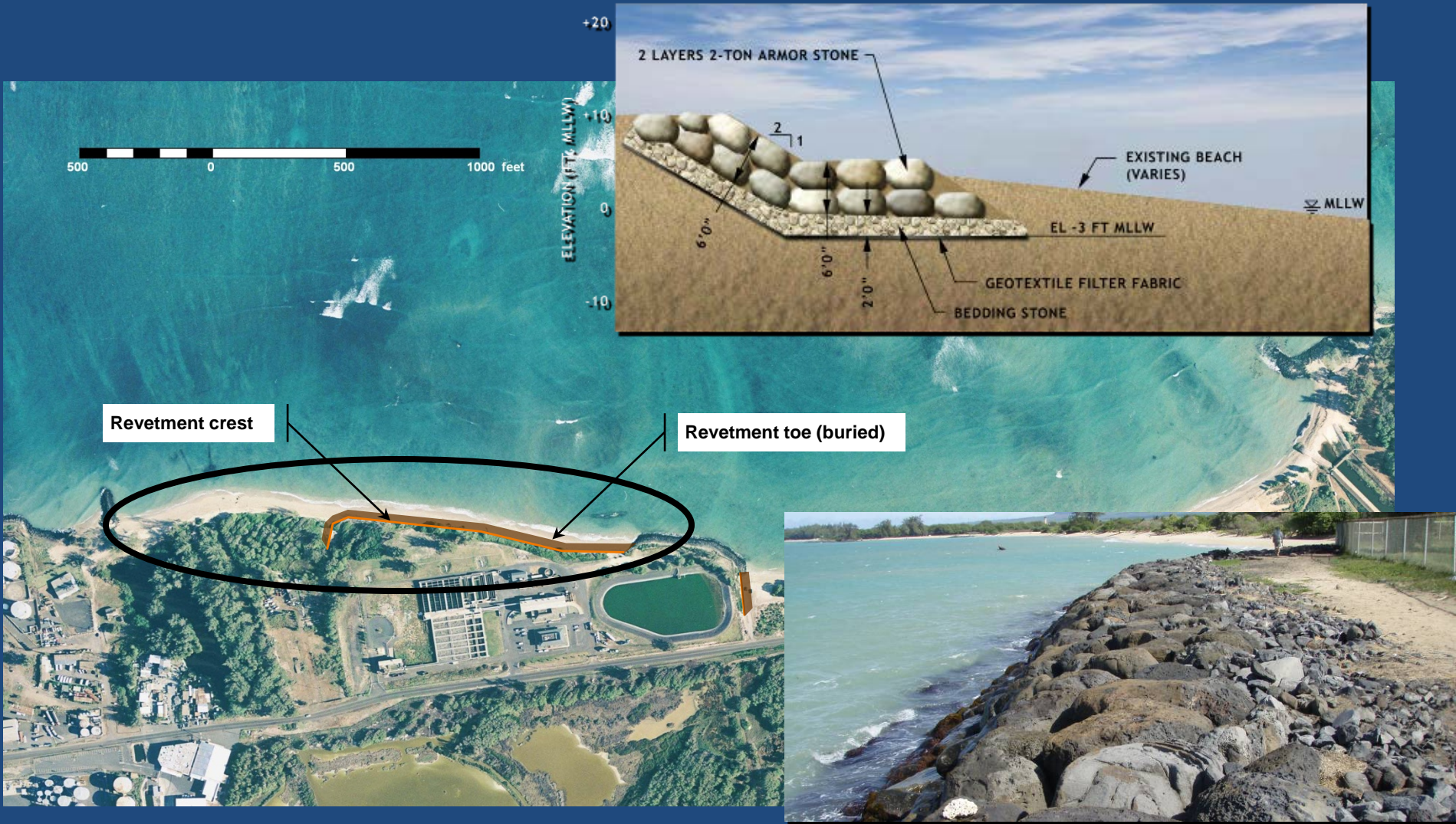
Over the next several years, Maui will add another mile of sea walls to our shoreline.

06.04.2012

1200-Foot Revetment Planned to Protect Wastewater Treatment Plant in Maui



1200-Foot Revetment Planned to Protect Wastewater Treatment Plant in Maui



Our Current Tool Kit:

Cost-effective Protection of Threatened Structures

1. Emergency Protection with temporary sand bags (geotubes)
2. Rock revetment with Variance under Shoreline Rules (& State permits)
3. Seawall with Variance under Shoreline Rules (& State Permits)



Result of these limited Protective Solutions:

Loss of beaches with ongoing cumulative impacts to shoreline



Stabilized -
beach lost
land preserved

Unstabilized -
land lost
beach preserved

La

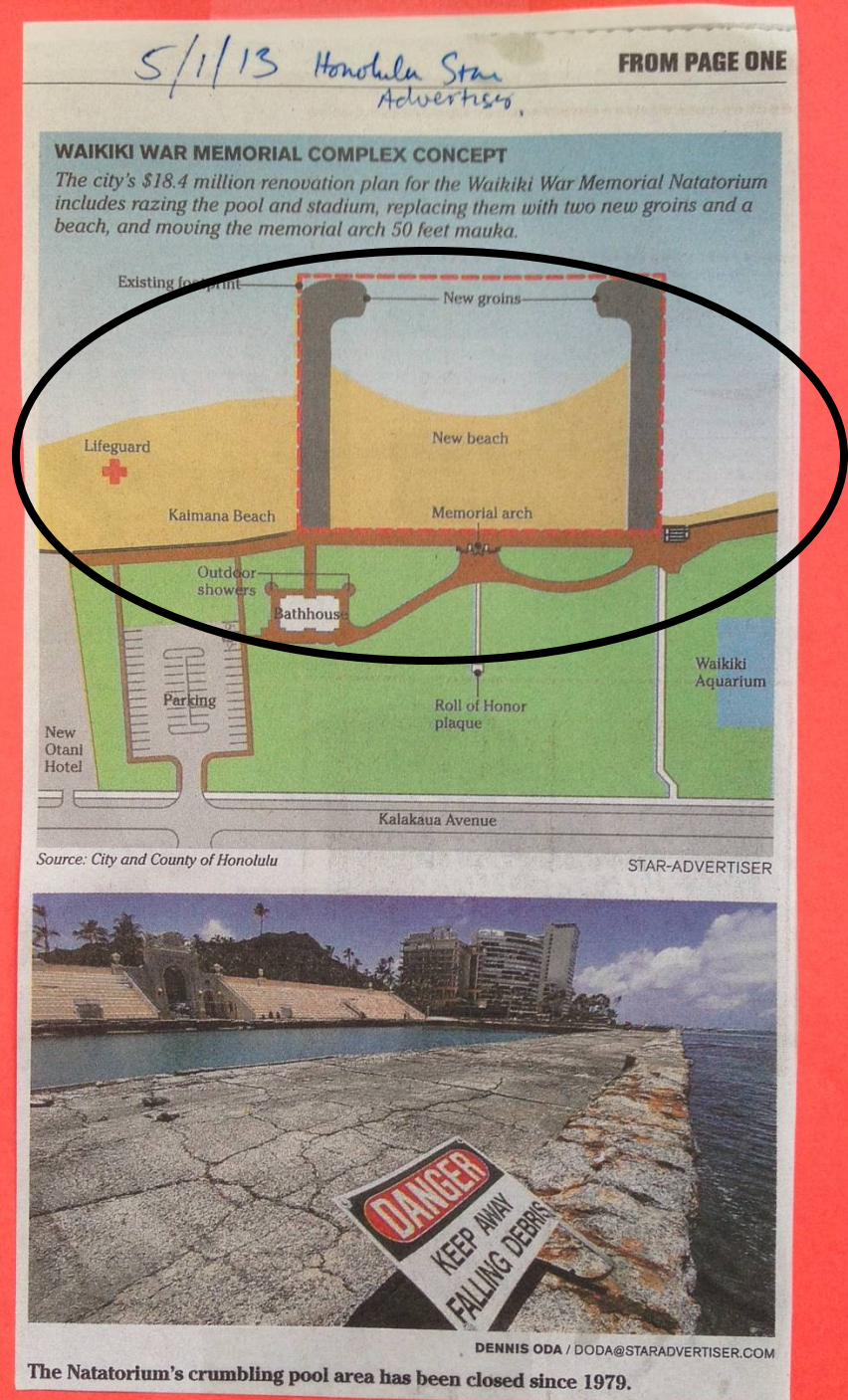
1. In
e
o
s
b
b
s

C
i
p
c
p
s



Honolulu Natatorium in the News...5/1/13 Using groins to create a beach...

What we need is
streamlined
permitting of groins
and offshore
structures to create
a cost-effective
solution... and add
to our tool kit.





Beach Nourishment

If We Do...

- Expensive
- Sand Source
- Environmental Impacts
- Water Quality
- Stability

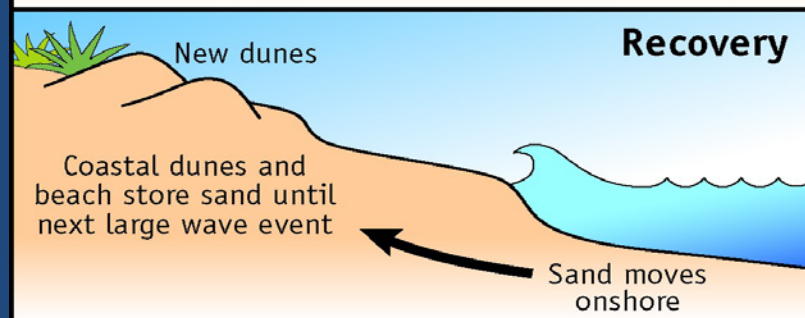
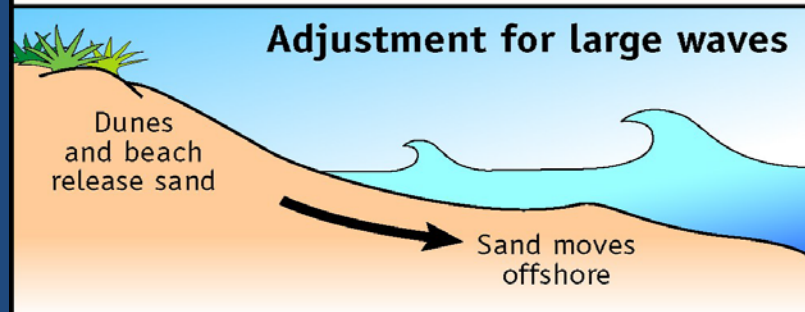
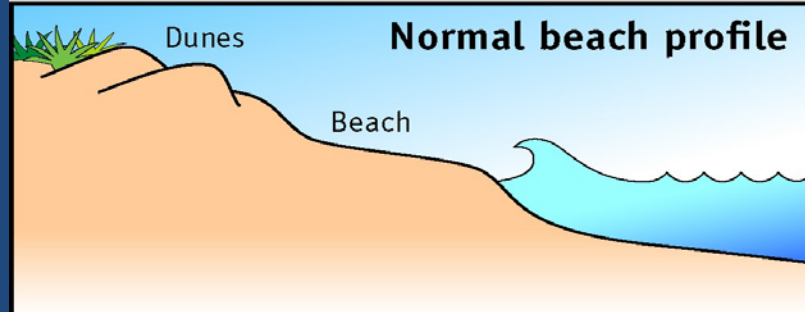
If We Don't...

- Shoreline Hardening
- Storm Damage
- Ecosystem Damage
- Shoreline Access
- Tourism/economy



Proactive Takeaway: Protecting & Restoring Dunes Protects Existing Development

Seasonal beach profile adjustments



Large waves, which tend to occur seasonally in Hawaii, cause a beach to temporarily change its profile.



degraded dunes



healthy dunes

Expanding Our Current Tool Kit: Laws and Policies to Create **Additional Cost-effective** Options: ***Law to Protect our Existing Limited Sand Sources***



1. **Preserve existing known sand sources for beach nourishment.**
2. **Research legal avenues to restrict deportation of ancient sand dune deposits. Stop sand deportation ASAP.**
3. **Develop Ordinance to require beneficial uses of excavated sand from major public and private developments.**

Conclusion: Expand Our Current Tool Kit with Laws and Policies to Create Additional Cost-effective Options

Create an interagency policy to research, expedite, and test offshore interventions as solutions to protect development, to include groins, breakwaters, and reef balls.

Implement new State legislation to subsidize Beach Nourishment for public and private projects

Preserve existing known sand sources for Beach Nourishment. Provide local ordinances to stop deportation of ancient sand dunes.

Restrict use of excavated sand only for public good.

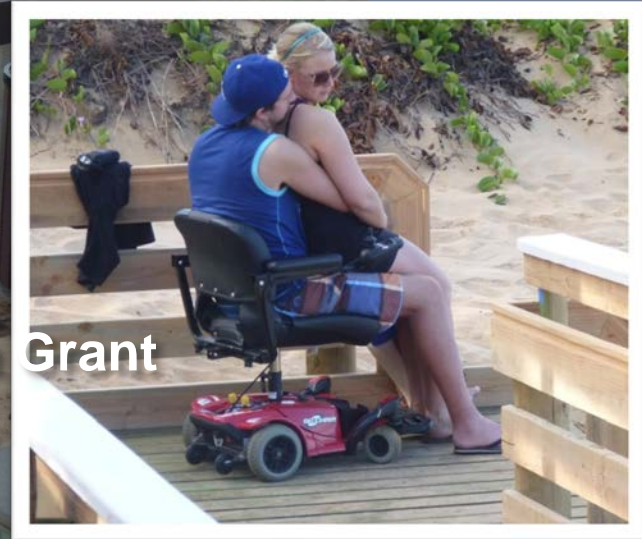
Create and fund a program to identify offshore sand deposits for future excavation.

Mahalo Nui Loa

**KAMA'OLE III
DUNE
WALKOVER**

Maui Coastal Zone Management Team

Jim Buika, Coastal Resource Planner
Anna Benesovska, CZM Planner
Tara Owens, Coastal Hazards Specialist, UH Sea Grant
Jeffrey Dack, Environmental Section Supervisor



DUNE RESTORATION



Kamaole II Beach Park
March 7, 2011

KAHANA VILLAGE *IN PROGRESS*



DUNE RESTORATION



KAMAOLE III DUNE WALKOVER

