HCPO 2024

BALANCING CHANGE IN A DYNAMIC LANDSCAPE

Climate Change is Now

Integrating SLR & Coastal Threats into Planning for Beach Parks in Maui County

David Yamashita, County of Maui
Kitty Courtney, TetraTech, Inc.

HCPO 2024
BALANCING CHANGE IN
A DYNAMIC LANDSCAPE

Climate Change is Now

Integrating Sea Level Rise and Coastal Threats into Planning for Beach Parks in Maui County

Hawaii Congress of Planning Officials
September 2024/V1

Project Team

Department of Parks and Recreation

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Planning Department
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Office of Recovery
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Tetra Tech, Inc.

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With assistance from

UH Sea Grant Program

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Wes Crile, Coastal Dune Restoration Specialist

The Story

2020

Problem Identification

2021-22

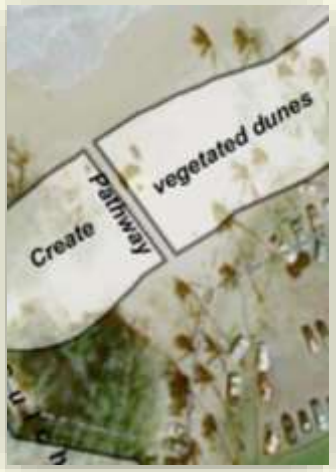
Vulnerability Assessment

2023

Policies

2024

Implementation



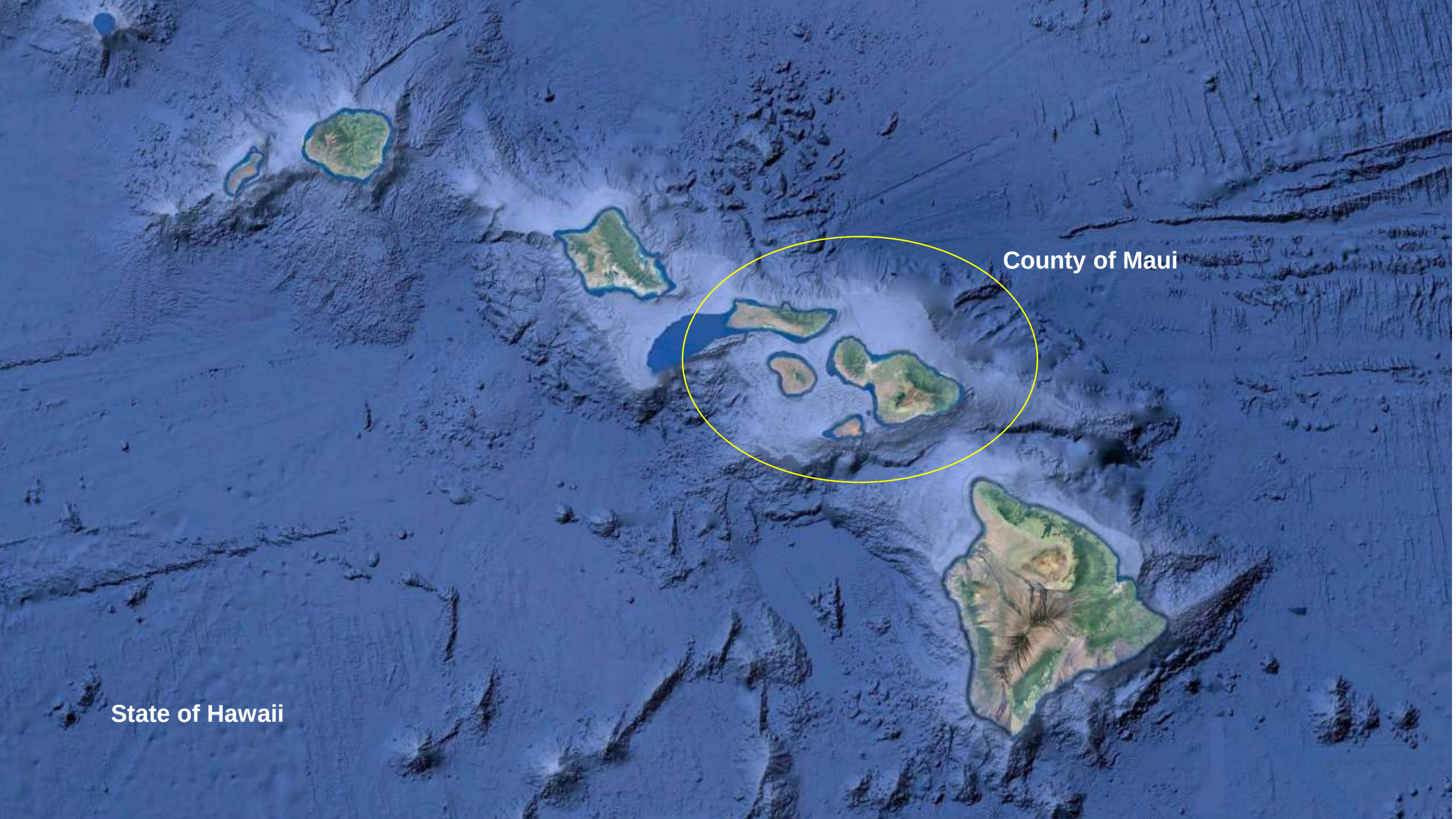
2025 >

Monitoring & Evaluation

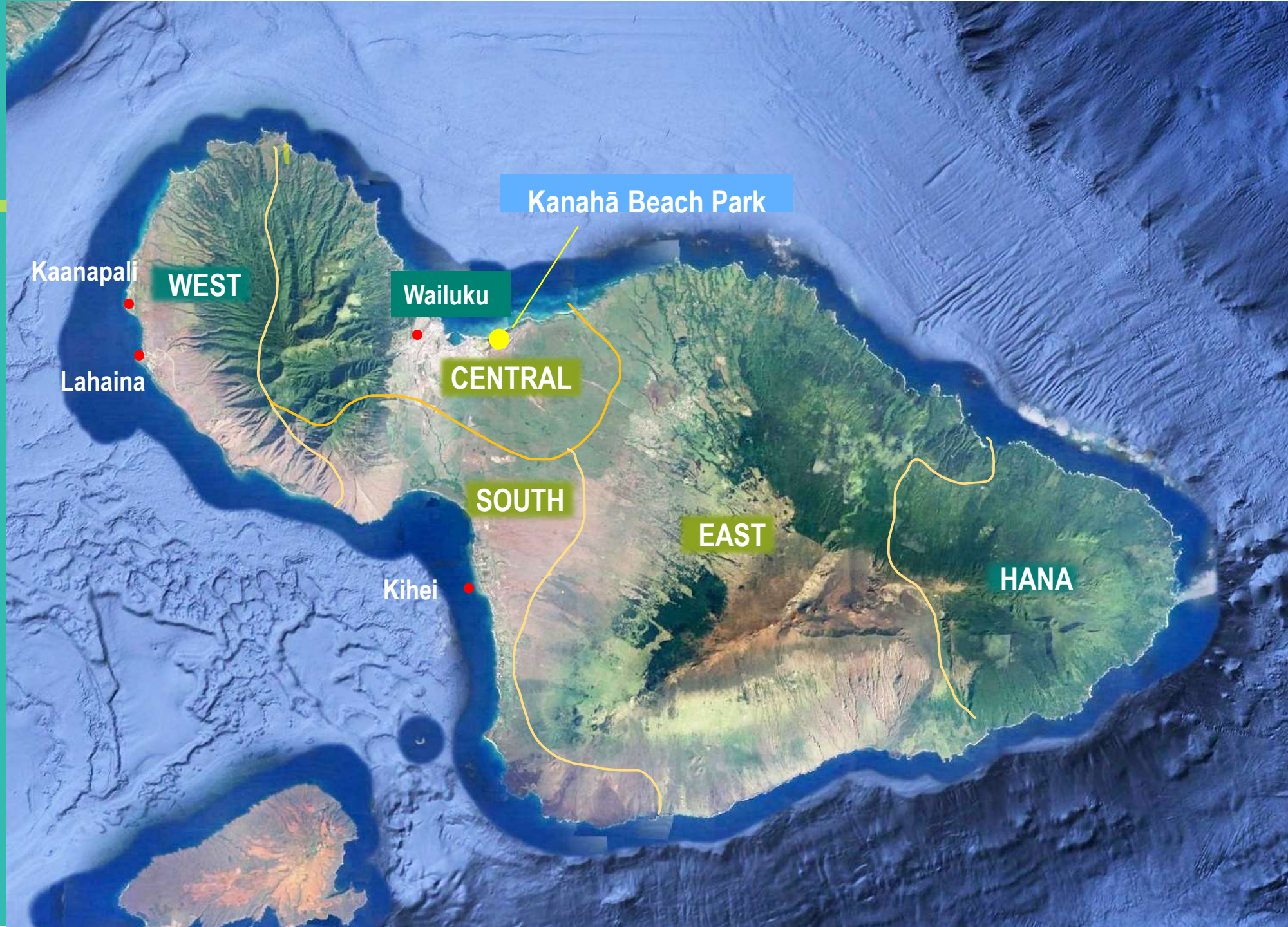
Problem Identification

Setting

Coastal Issues


County of Maui
State of Hawaii

Districts


Kanahā Beach Park
Kaanapali
WEST
Wailuku
CENTRAL
Lahaina
SOUTH
EAST
HANA
Kihei

64
BEACH PARKS

1
GOLF COURSE

LAND & FACILITIES

- ~ 160 parks & facilities
- 22 community centers
- 10 gymnasiums
- 22 playgrounds

Honoapiilani Hwy., Olowalu


CAT
Honoapiilani Hwy., south of Lahaina
08.14.2012


Front St., Lahaina


Kaanapali Beach Club


Kaanapali Beach Club


August 2020
PARK CLOSED
Baldwin Beach Park

August 2024

Baldwin Beach Park

September 2024

Photo: Maui News by Heidi Sherman/Sept 2024


Puamana Park

Questions?
What coastal issues are you experiencing?

Vulnerability Assessment

Methodology
Web-based Application
Results

OVERVIEW OF THE METHODOLOGY

VULNERABILITY ASSESSMENT

ADAPTATION POTENTIAL

- HIGH
- MEDIUM
- LOW

ADAPTATION STRATEGIES

- Assess park viability based on future access
- Restore dunes and/or preserve wetlands
- Retreat/acquire land and relocate structures
- Fortify/raise shoreline revetment
- Maintain shoreline access only
- Maintain facilities/monitor conditions

SEA LEVEL RISE EXPOSURE AREA (SLXRA)

WHAT MAKES UP THE SLXRA?

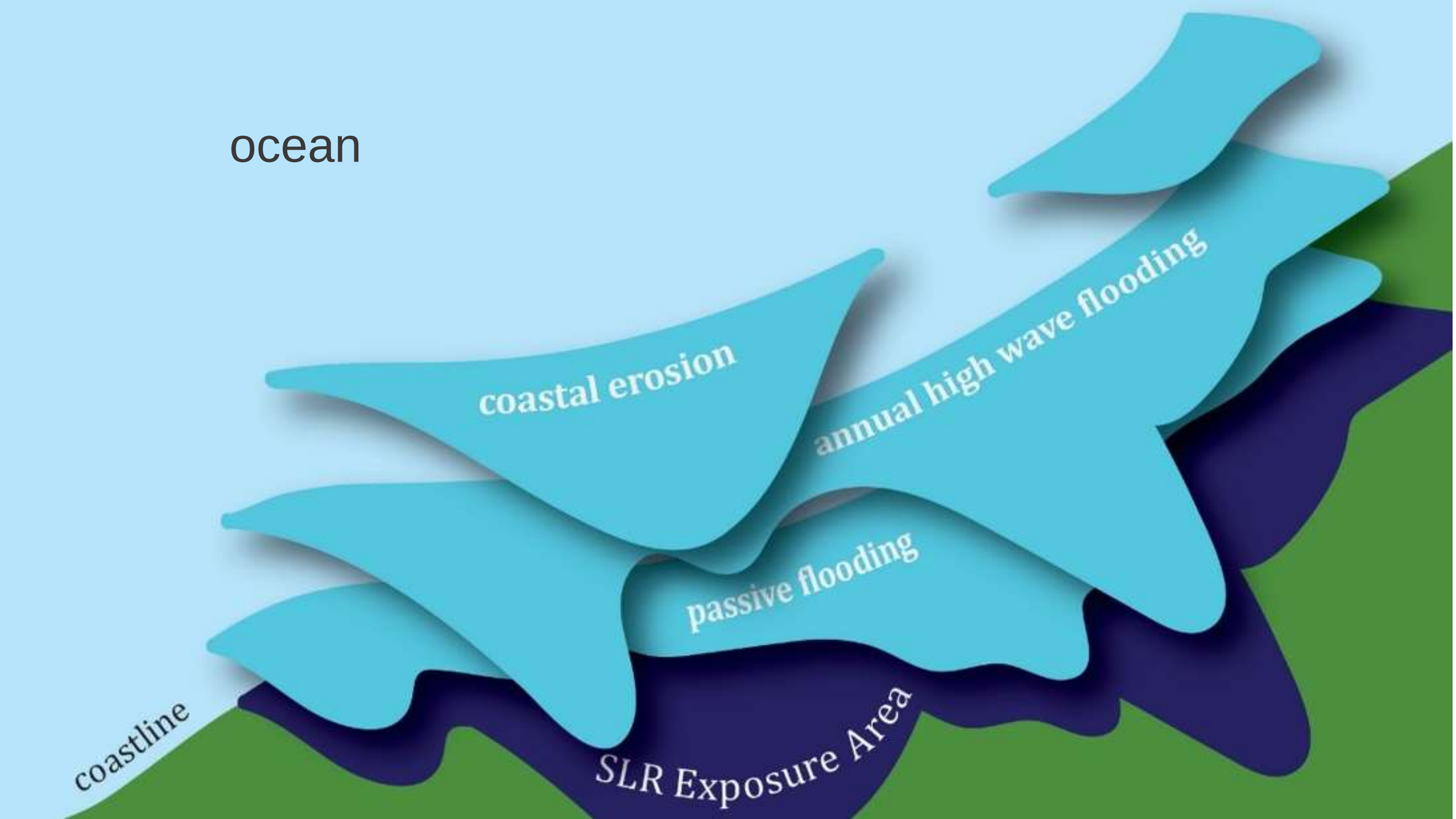
Coastal Erosion

+

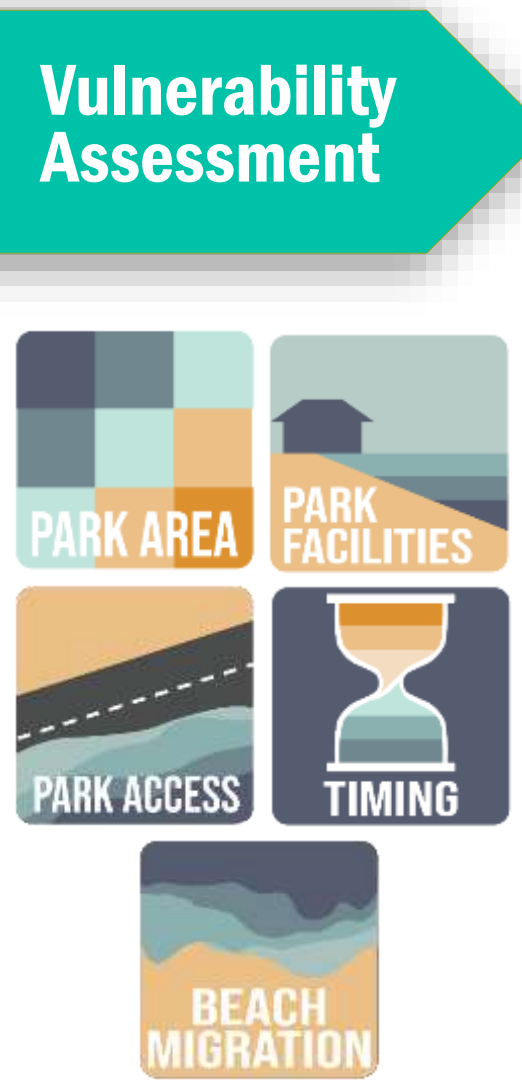
Annual High Wave Flooding

+

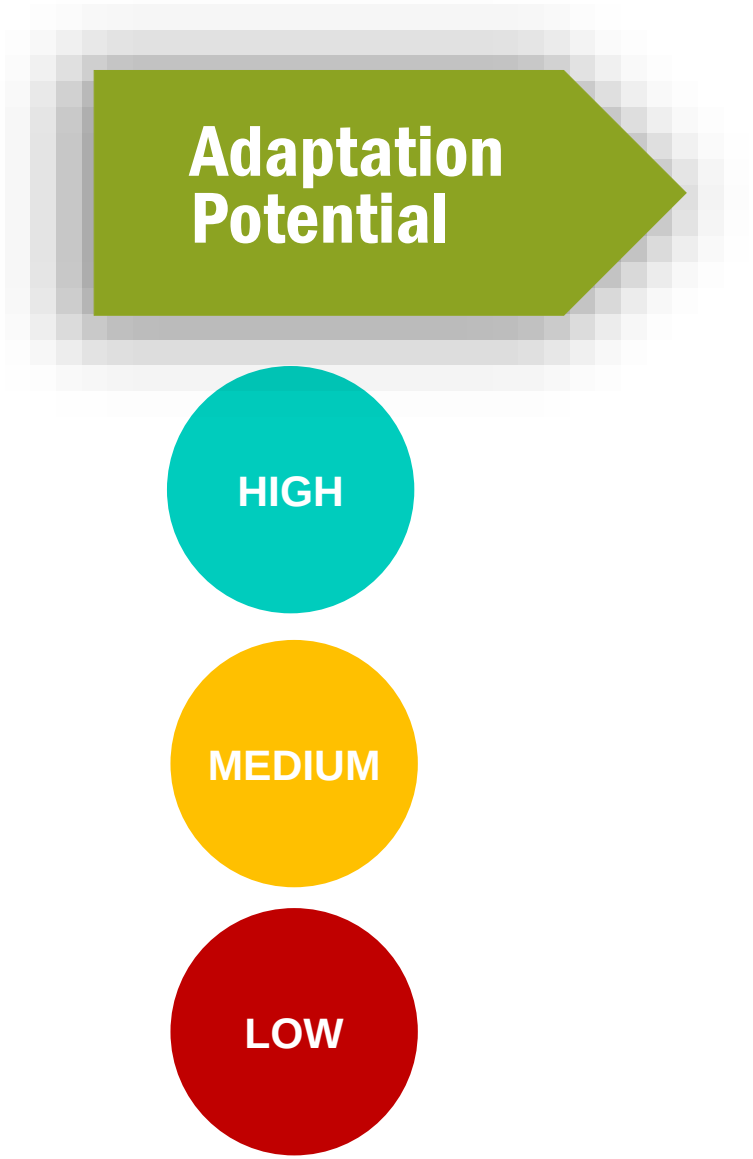
Passive Flooding


ocean
coastal erosion
annual high wave flooding
passive flooding
coastline
SLR Exposure Area

Assessment of near-term and medium-term exposure and impacts of sea level rise on park assets based on five indicators



Rating of each park's potential for adaptation to sea level rise based on the assessment of future conditions



Adaptation strategies based on future conditions, adaptation potential, and other factors

Adaptation Strategies

- Assess park viability based on future access
- Retreat/acquire land and relocate structures
- Restore dunes and/or preserve wetlands
- Fortify/raise shoreline revetment
- Maintain shoreline access only
- Maintain facilities/monitor conditions

VULNERABILITY ASSESSMENT

ADAPTATION POTENTIAL

- HIGH
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Kanaha Beach Park

Applying the methodology to a park

Regional Setting

Kanahā Beach Park

VULNERABILITY ASSESSMENT

ADAPTATION POTENTIAL

- HIGH
- MEDIUM
- LOW

ADAPTATION STRATEGIES

- Assess park viability based on future access
- Restore dunes and/or preserve wetlands
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- Maintain facilities/monitor conditions

Sea Level Exposure Area – 3.2’ (~2090)

Kanahā Beach Park

PARK AREA

Percent of park area in SLRXA-3.2 (~2070) **61%**

Adaptation Potential **Low**

A measure of park area exposed to chronic coastal flooding and land loss with 3.2 feet of sea level rise. The Sea Level Rise Exposure Area (SLRXA) is based on projections of passive inundation, erosion, and annual high wave run-up with sea level rise. The higher the percent area exposed the lower the adaptation potential.

PARK FACILITIES

Number of structures in SLRXA-2.0 (~2050) **4**

Adaptation Potential **Med**

A measure of the number of structures, parking lots and major upright structures, in the park such as pavilions and restrooms exposed in the SLRXA with 2.0 feet of sea level rise. The higher the number of structures exposed the lower the adaptation potential.

Park Access

Kanahā Beach Park

PARK ACCESS

Miles of road in SLRXA-3.2 within a 0.5 mile-park buffer	0.8
Adaptation Potential	Med

A measure of the miles of highway and roads exposed to chronic coastal flooding and land loss with 3.2 feet of sea level rise. The higher the number of miles of road exposed the lower the adaptation potential.

Beach Migration

Kanahā Beach Park

Percent of park area with sand and dunes	94%
Adaptation Potential	High

A measure of the availability of sand and dune material to facilitate landward beach migration and sustainability with sea level rise and provide coastal protection services. The higher the percentage of park area with sand and dunes the higher adaptation potential.

Timing

Kanahā Beach Park

TIMING		
	Difference in percent of area in SLRXA-3.2 and SLRXA-2.0	23%
	Adaptation Potential	Med

A measure of the timing of exposure of the park to two sea level rise projections. The lower the difference in % area between the two projections the lower the adaptation potential rating as sea level rise impacts are projected to occur earlier (~2050).

Med

Park Adaptation Potential

Park has medium potential to withstand impacts of sea level rise based on five indicators of vulnerability

Percent of park area in SLRXA-3.2 (~2070): **61%**

Adaptation Potential: **Low**

A measure of park area exposed to chronic coastal flooding and land loss with 3.2 feet of sea level rise. The Sea Level Rise Exposure Area (SLRXA) is based on projections of passive inundation, erosion, and annual high wave run-up with sea level rise. The higher the percent area exposed the lower the adaptation potential.

Number of structures in SLRXA-2.0 (~2050): **4**

Adaptation Potential: **Med**

A measure of the number of structures, parking lots and major upright structures, in the park such as pavilions and restrooms exposed in the SLRXA with 2.0 feet of sea level rise. The higher the number of structures exposed the lower the adaptation potential.

Miles of road in SLRXA-3.2 within a 0.5 mile-park buffer: **0.8**

Adaptation Potential: **Med**

A measure of the miles of highway and roads exposed to chronic coastal flooding and land loss with 3.2 feet of sea level rise. The higher the number of miles of road exposed the lower the adaptation potential.

Percent of park area with sand and dunes: **94%**

Adaptation Potential: **High**

A measure of the availability of sand and dune material to facilitate landward beach migration and sustainability with sea level rise and provide coastal protection services. The higher the percentage of park area with sand and dunes the higher adaptation potential.

Difference in percent of area in SLRXA-3.2 and SLRXA-2.0: **23%**

Adaptation Potential: **Med**

A measure of the timing of exposure of the park to two sea level rise projections. The lower the difference in % area between the two projections the lower the adaptation potential rating as sea level rise impacts are projected to occur earlier (~2050).

Additional Indicators to Support Planning and Decision-Making

Percent of the park area within the 1%CFZ-3.2: **95%**

Measures of park exposure to severe event-based flooding:
- *Storm surge: 1%-Annual-Chance Coastal Flood Zone (1%CFZ) modeled with 3.2 feet of sea level rise*

Percent of park area in FIRM Flood Zone A: **5%**

Measures of park exposure to severe event-based flooding:
- *Riverine flooding: 1%-Annual-Chance Flood Zone based on historical data (Flood Insurance Rate Map (FIRM) Zone A).*

Is park adjacent to federally designated critical terrestrial habitat for monk seals?: **No**

The critical terrestrial habitat for the Hawaiian monk seal extends 5 m inland from the shoreline. This habitat is expected to migrate landward as sea level rise.

Kanahā Beach Park

Maui County Department of Parks and Recreation
Vulnerability and Adaptation Study 2022
Prepared by Tetra Tech, Inc.

Med **Park Adaptation Potential**

Park has medium potential to withstand impacts of sea level rise based on five indicators of vulnerability.

Adaptation Strategy: Restore dunes and/or preserve wetlands

Dune restoration will provide natural protection of coastal development from coastal hazards such as erosion, high waves, and storm surge. Existing and emerging wetlands mitigate flood hazards. Both sand dunes and wetlands provide habitat for native plants and wildlife. Some parks may support both dune restoration and wetland preservation. Alternative: None, any future park development should support open space/habitat restoration

Example Actions *Scientists project that sea level is likely to rise a minimum of 2 feet between 2050 - 2070 and 3.2 feet between 2070-2100. All of Maui County's beach parks will experience a loss of acreage with 2.0 feet of sea-level rise. Thus, the impacts of sea-level rise could be significant for most beach parks at an earlier point (around 2050) in the projected ranges and/or from a severe storm event.*	**2025** **5 years**	**2030** **10 years**	**2035** **15 years**	**2040** **20 years**	**2045** **25 years**	**2050** **30 years**
Coordinate with relevant county and state entities to understand how sea level rise vulnerabilities outside park boundaries, to development, roads, and other critical infrastructure, will be addressed	■					
Remove park structures and other obstructions that disrupt the natural movement of sand	■	■				
Rebuild/restore primary sand dunes and stabilize using native vegetation	■	■				
Preserve existing and emerging wetlands	■	■				
Designate access paths to minimize the impacts of human foot traffic to dunes and wetlands	■	■				
Install signs to build awareness of value of dune restoration and wetland preservation	■	■				
Proactively remove remaining structures and other obstructions in SLRXA-2.0			■	■		
Monitor and reevaluate park adaptation potential and strategy		■		■		■
Remove any park structure in the SLRXA-3.2 partially or fully damaged by severe coastal flood events and storms	■	■	■	■	■	■
Coordinate with relevant state and county entities and cultural descendants to apply district-specific cultural protocols/vetted actions for adaptation activities and/or storm impacted park areas	■	■	■	■	■	■

Web-based Application

Tool for Public and Department Staff

ADAPTATION POTENTIAL

High – 14 parks

Medium – 39 parks

Low – 12 parks

ADAPTATION POTENTIAL BY DISTRICT

ADAPTATION STRATEGIES

Maintain facilities & monitor conditions

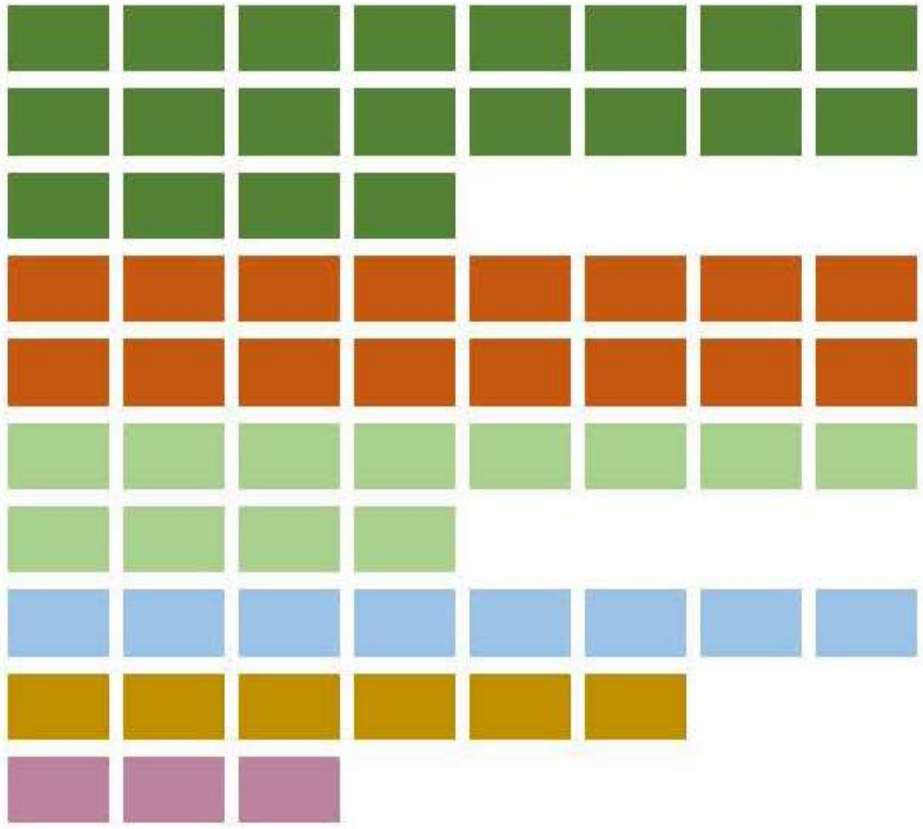
Assess park viability based on future access

Restore dunes/preserve wetlands

Maintain shoreline access only

Retreat/acquire land/relocate structures

Fortify/raise shoreline revetment



Questions?
What methodologies/indicators are you using to assess vulnerability to sea level rise?

Policy & Plan Development

Draft Policies

Regional Adaptation Planning

Rapid Response Action Plans

Key Takeaways

DRAFT POLICIES

Prioritize nature-based adaptation that restores coastal ecosystems and maintains ocean dependent uses.

DRAFT POLICIES

Limit construction of new facilities exposed to 3.2 feet of sea level rise.

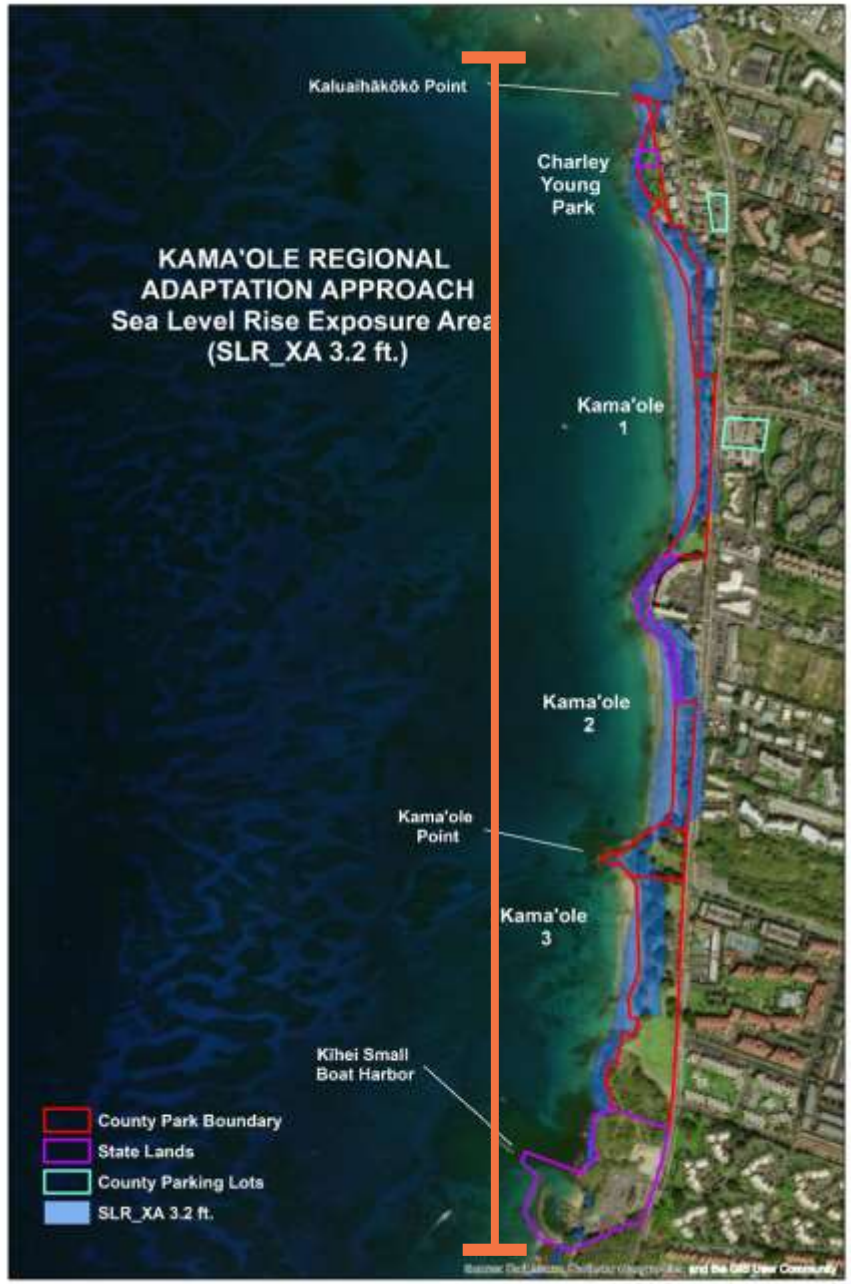
DRAFT POLICIES

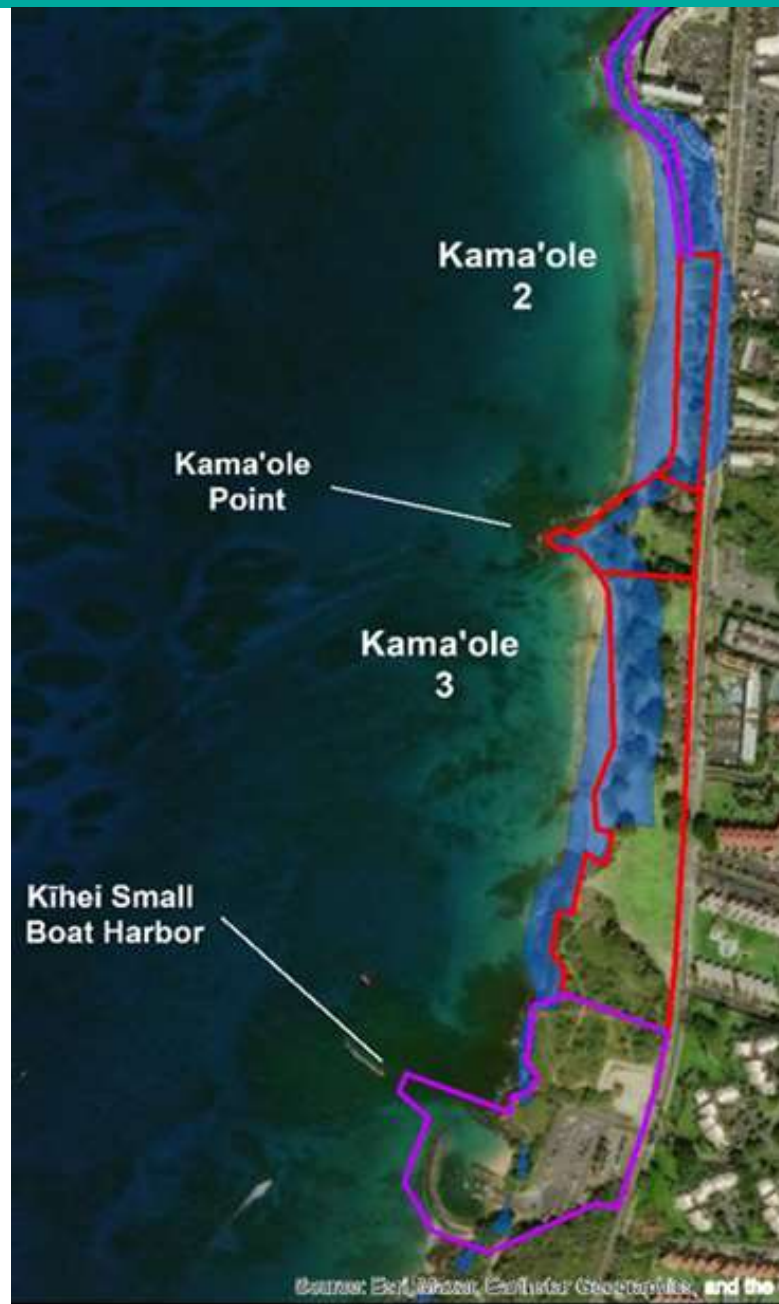
Protect public safety by removing park structures and features damaged or exposed by severe coastal flooding and storm events.

DRAFT POLICIES

Retain undeveloped park land outside hazard areas for future parks.

DRAFT REGIONAL ADAPTATION APPROACH/STRATEGIES





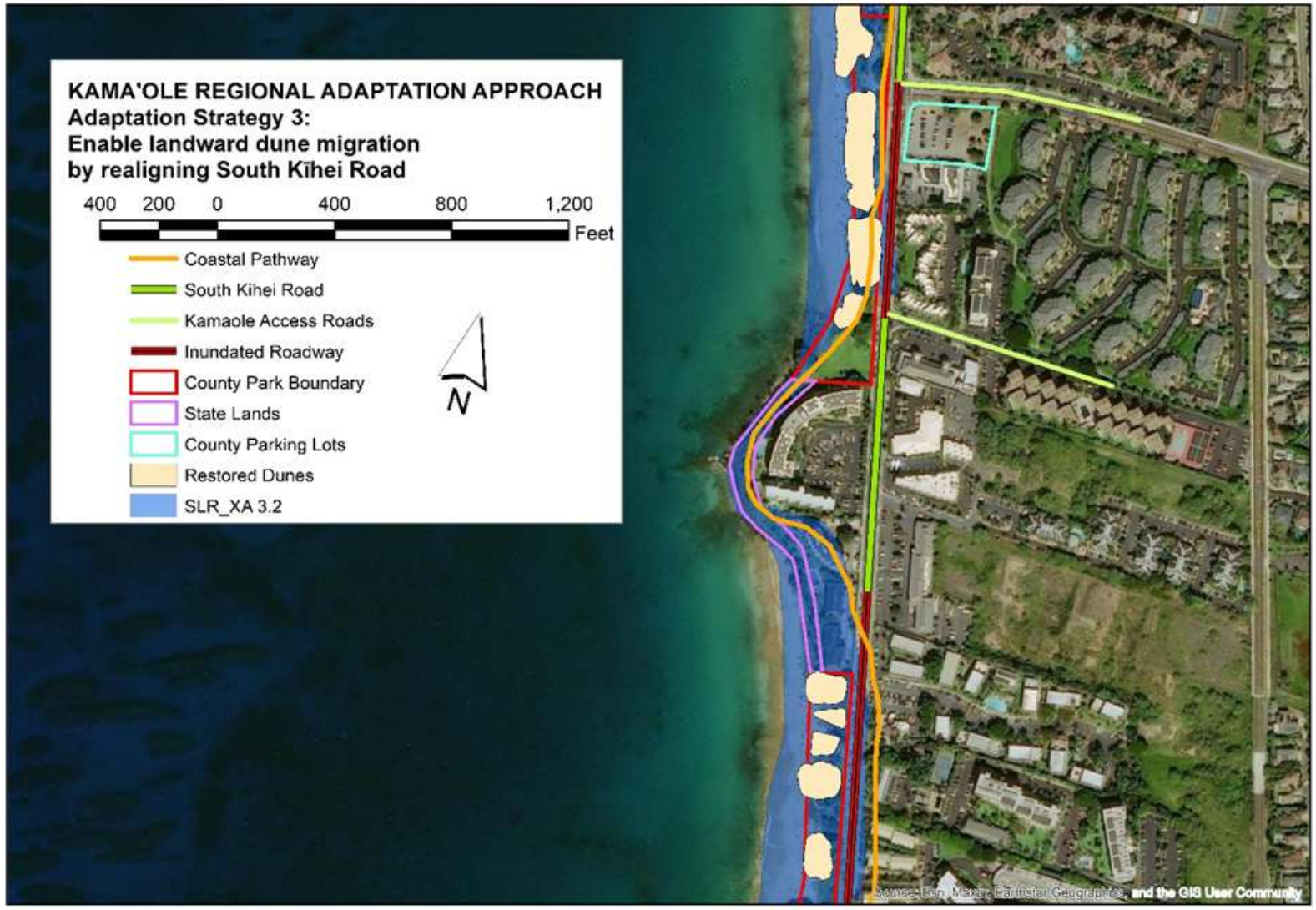
Adaptation Strategy 1: Maintain dunes and restore gaps along the shoreline region

- Maintain existing park infrastructure
- Reduce shoreline access pathways to reduce damage from foot traffic
- Install dune educational signage installed to reinforce good practices
- Install dune fencing to encourage passive dune restoration to fill gaps
- Plant and maintain native dune vegetation
- Augment sand for active dune restoration based on opportunistic availability of appropriate sand (dredging of Kihei Boat harbor) within the shoreline region

Adaptation Strategy 2: Enable landward dune migration by relocating park infrastructure

- Relocate park infrastructure including parking lots and restrooms outside the SLRXA-3.2
- Maintain and expand dunes where appropriate

Adaptation Strategy 3: Enable landward dune migration by realigning South Kīhei Road



- Realign South Kīhei Road exposed to SLRXA-3.2
- Expand and maintain dunes
- Develop a low impact regional coastal trail

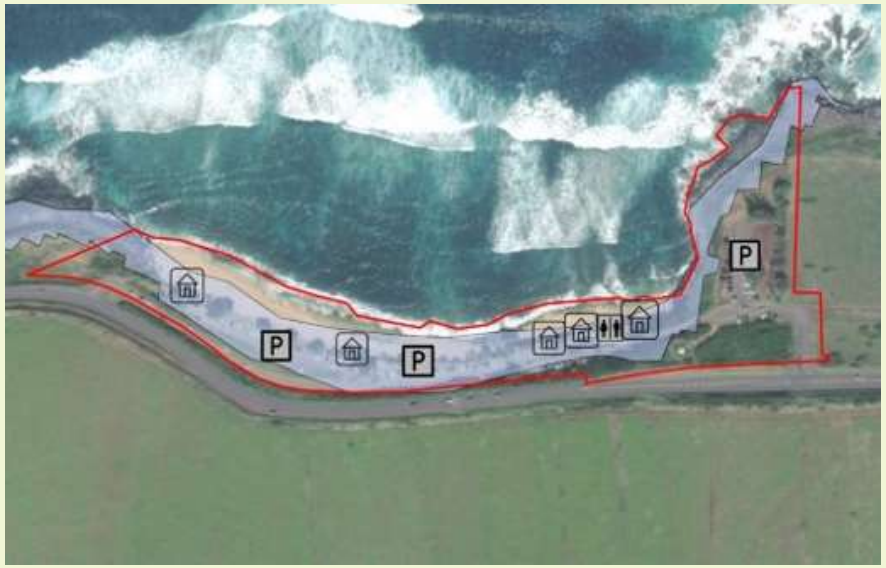
RAPID RESPONSE PLANS – DRAFT

Developed Rapid Response Plans for Parks with Lowest Adaptation Potential (12 parks)

Plan Components (4 pages/plan)

1. Triggers for Implementation
2. Project Context
3. Vulnerability Concerns: Previous Events, Flood Zone, Multi-hazard Threats
4. Adaptation Strategy
5. Proposed Scope and Sequence of Activities
6. Permit Pathway
7. Project Partners, Affected Groups, and Key Contacts
8. Project Cost Estimates and Funding Category

RAPID RESPONSE PLANS – DRAFT



Maui Beach Parks Vulnerability and Adaptation Study **RAPID RESPONSE ACTION PLAN: HO'OKIPA BEACH PARK** **TMKs: 2-2-5:004:025; 2-2-5:004:072**	
1	**Triggers for Plan Implementation**
	• Existence of structures and/or trees that pose public safety hazards • Event that results in any incidence of partial flooding and/or damage of structures or exposure of cultural resources, iwi kupuna by high tides, storm surge, or other hazards • Availability of adequate funding for proactive implementation • Use Hazard/Damage Survey Tool to document trigger(s)
2	**Project Context**
	This ten-acre beach park is located on Maui's north shore about two? miles east of Paia, accessed from Hana Highway. The land use context is undeveloped coastline on either side and cattle pasture lands mauka (south). Although the projected sea level rise will only affect 55% of the total park area, most of the actively used park and facilities are located within the SLRXA 2.0 and therefore has a low potential for adaptation. There are eleven facilities at this park, and all but the parking area on higher ground in the east are within the exposure area. These include a paved parking area and driveway throughout the park, a restroom structure, three pavilions, two lifeguard towers (one is a wooden structure and one is a modern removable structure), a retaining wall, and storage structure and dirt parking lot. Aside from the beach itself, the Ho'okipa Beach Park area is 0% sand covered.
3	**Vulnerability Concerns: Previous Events, Riverine Character, Flood zone, Multi-hazard Threats**
	Ho'okipa Beach Park is classified as low adaptation potential. Just over half of the park area and ten of the eleven structures will be inundated with two feet of sea level rise. All of the major park facilities with the exception of the eastern parking area are within the SLRXA 2.0. The exposure area does not extend to Hana Highway, so future access at this projection level is not impacted. Due to its elevation above the beach itself, 0% of the park is within the FIRM A-flood zone. The actively used sections of the park site and most facilities will be affected, and the site prepared for the impacts of inundation. There are not major streams or drainages mauka of Ho'okipa Park, however there is the potential with excessive runoff from the pasture lands and Hana Highway that could impact the park area.

RAPID RESPONSE PLANS - DRAFT

4	**Adaptation Strategy**
	Near Term Strategy: incrementally remove all physical improvements as well as large trees from the park to avoid impacts and hazards created by the anticipated sea level rise and revegetate with native plants. ***Long Term Strategy Options:*** maintain ocean access; seek acquisition of adjacent properties outside of SLRXA 3.2, identify a future park site or consolidate park activities with other parks. ***Impacts of Adaptation Strategy:*** the proposed actions will have no negative impacts to the surrounding areas except for loss of facilities that are currently used by the public (see affected groups in Section 7).
5	**Proposed Scope and Sequence of Activities**
	1. Review and revise scope and sequence, based on triggers and current circumstances. 2. Develop demolition plan for structure removal, disposal, and land remediation 3. Develop a Site Restoration Plan. 4. Develop and execute an Archaeological Monitoring Plan and cultural protocols for exposure of iwi kupuna and other cultural resources. 5. Acquire all required permits to conduct proposed activities, adjust plans to comply with permit conditions. 6. Remove any large trees that become root-exposed and become a safety risk 7. . 8. Remove restroom/mechanical building. Remove all underground and overhead utility connections to the property boundary. Relocate outdoor warning siren to a location outside of SLRXA-3.2. Install portable toilet facilities through the usable life of the park. 9. Revegetate the park with low-lying native vegetation per Site Restoration Plan. 10. Remove paved parking lot, maintain unpaved parking area. 11. Maintain shoreline access until safe passage is no longer ensured.

RAPID RESPONSE PLANS - DRAFT

Project Partners, Affected Groups, and Key Contacts

County
Parks and Recreation
Public Works
Planning Department
Emergency Management

State
DLNR OCCL

6	**Permit Pathway**		
	Review and revise scope and sequence, based on triggers and current circumstances, to confirm the required array and sequence of permits for all activities. Currently, they include an SMA-Minor permit from the County of Maui and a Beach Restoration Permit from the State OCCL.		
7	**Project Partners, Affected Groups, and Key Contacts**		
	Key personnel • District supervisor Project partners to DPR (overall project coordination) include: • Department of Public Works to coordinate the removal of structures and utility lines • Office of the Mayor (communications to the public) • County Planning Department (Special Management Area (SMA) Permit approval) • Emergency Management Agency (for outdoor warning siren relocation) • State Department of Accounting and General Services • Department of Management (ADA coordination for ongoing accessibility requirements) • Department of Fire & Public Safety (ocean safety concerns) • DLNR Office of Conservation and Coastal Lands (OCCL) Other affected organizations to consult with include: • Aha moku		
8	**Project Cost and Funding Category**		
	DY – please refer us to staff for unit costs for removals, etc. Estimates at this point in time and will need to be revised. Source for cost estimate, park maintenance superintendent		
	No. Units	**Description**	**Estimated Cost**
	1	Demolition and Disposal Plan and Site Restoration Plan	
		Cultural protocols and monitoring	
		Required permitting preparation and fees	
	1	Relocate Lifeguard Tower	
	XX		
	1	Pavilion (Hazmat survey, utilities?)	
	1	Restroom	

Questions?
What policies and strategies are you considering or developing?

Implementation

Dune Restoration
Kama‘ole CIP

University of Hawai'i Sea Grant College Program

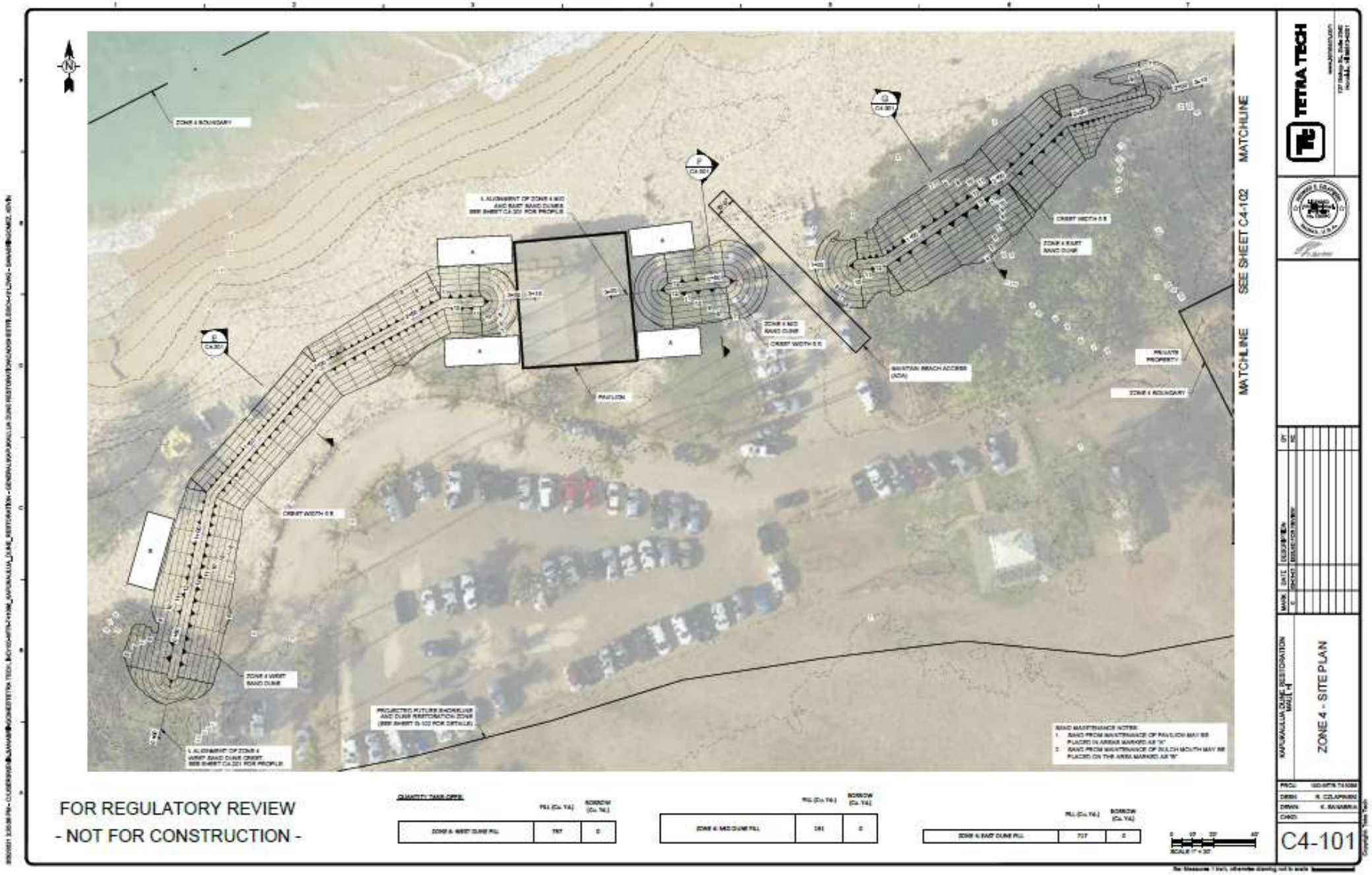
Hawai'i Dune Restoration Manual

2022

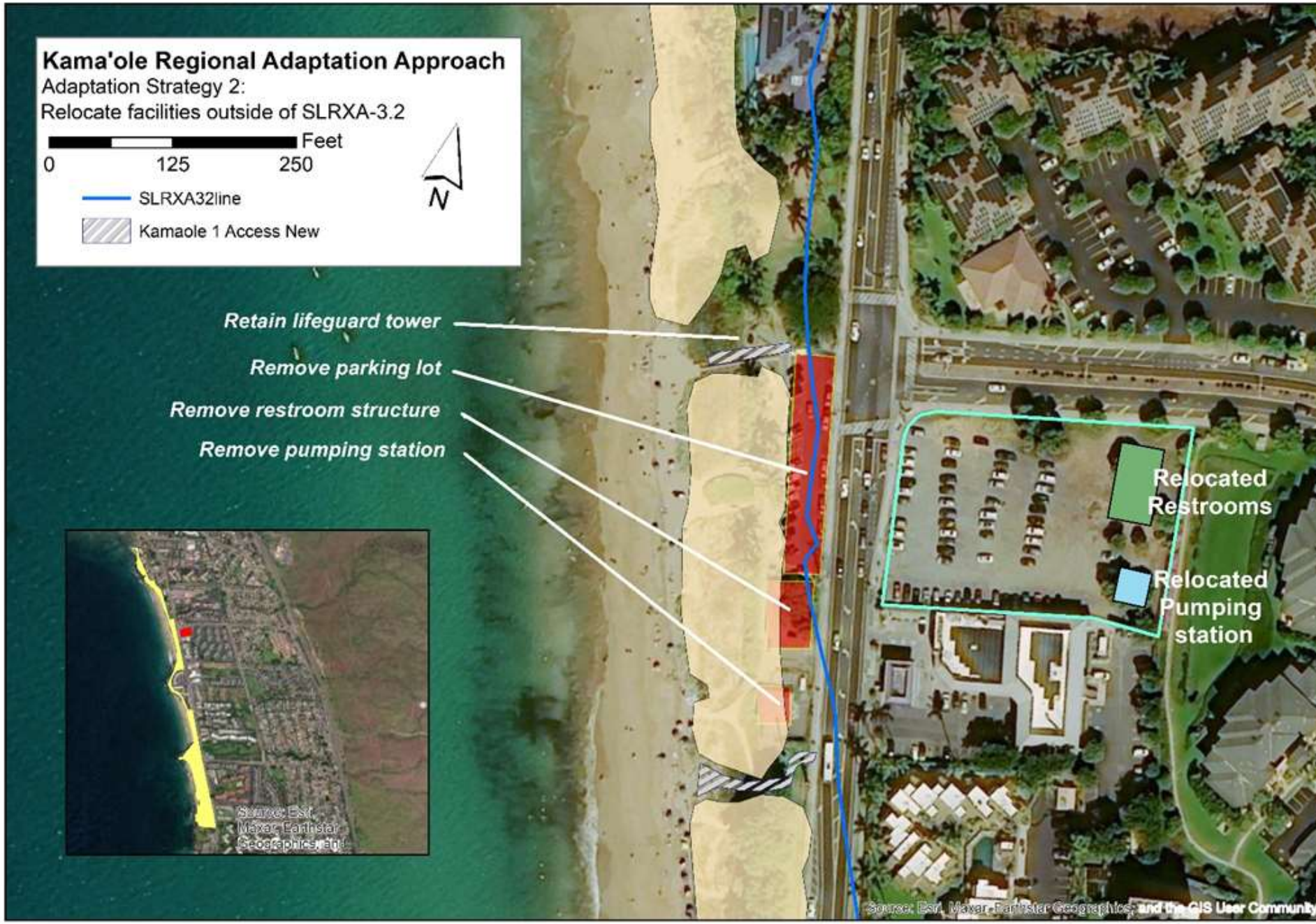
Lower Paia Park before and after restoration actions


Project Area/Restoration Zones
Baldwin Park Littoral Cell
(beach cell)
Rinzai Mission Zone
1
2
3
4
5
6
7
1. PYCC/Lower Paia Park
2. Secret Beach
3. Rinzai Mission Zone
4. Baldwin Beach Park
5. Ironwood Forest
6. Dune Blowouts
7. Wawau Point/Baby Beach

Zone 4 - Baldwin Beach Park Dune Restoration Design



HMGP Grant Proposal
Collaborative Project among DPR – DEM

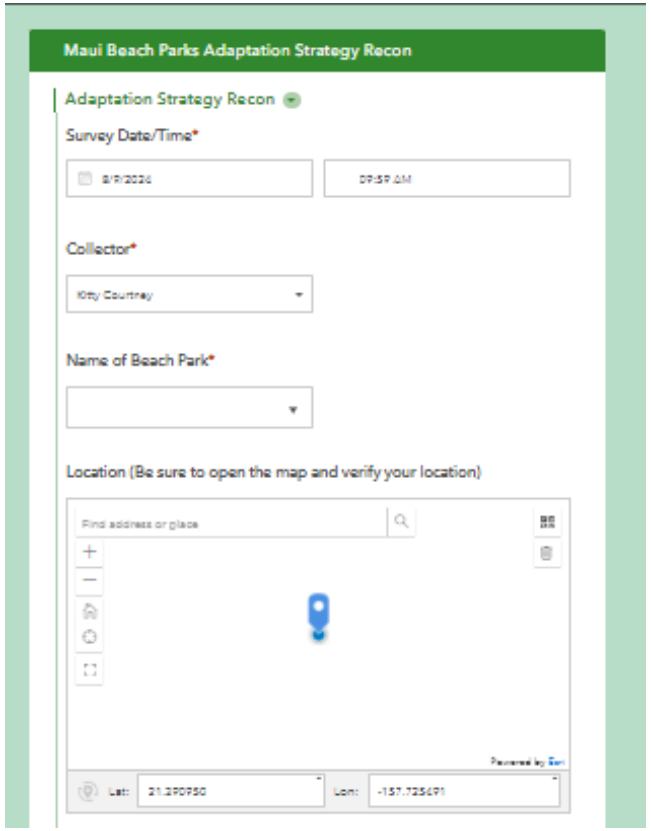


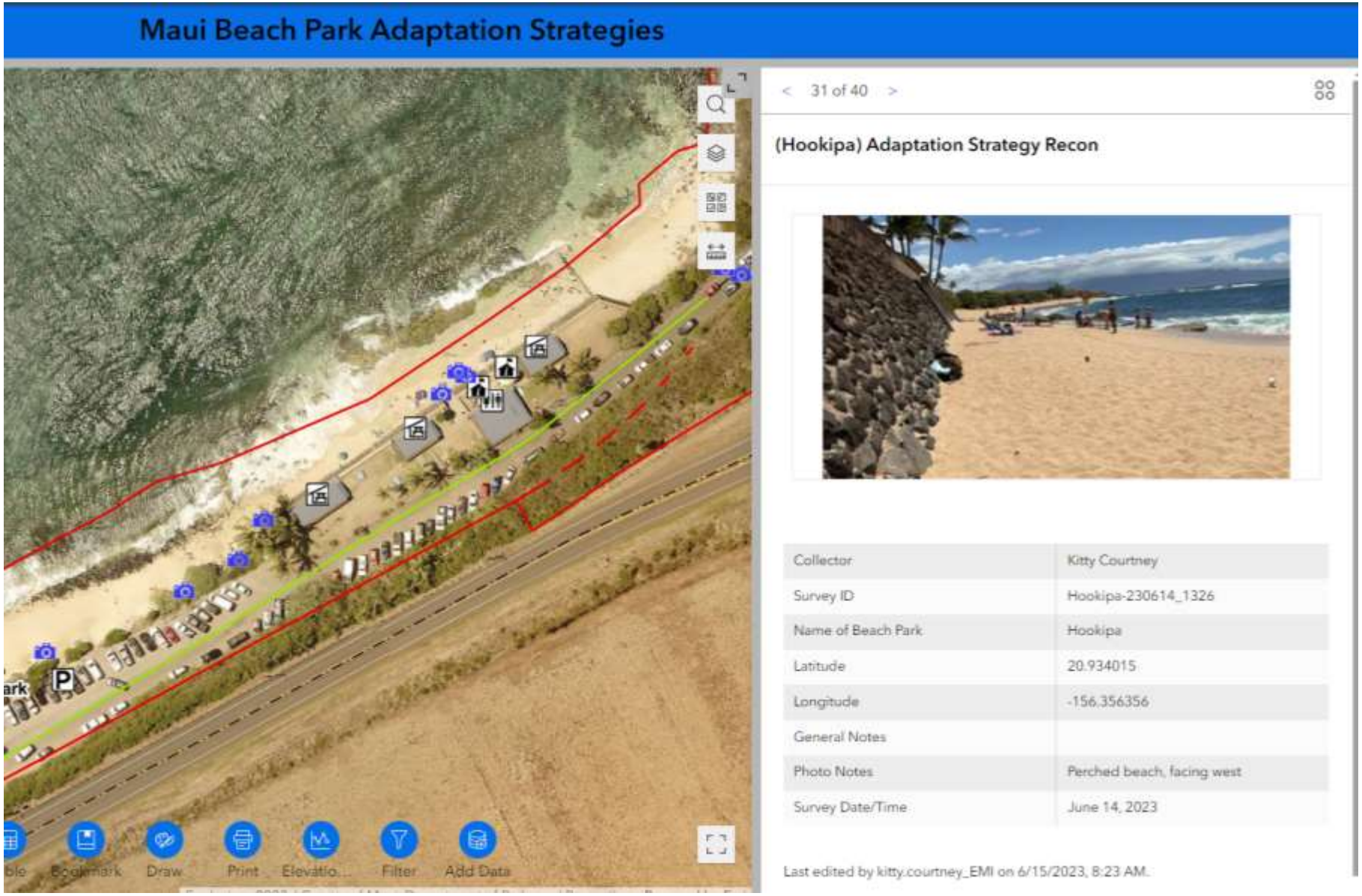
Questions?
What adaptation measures are you implementing?

Monitoring & Evaluation

Park Survey App

123Survey Tool





Questions?
What tools or methods are you using to monitor changing conditions?

Insights & Priorities


Not Just A Parks Problem
PARKS
Beach Park
PUBLIC WORKS
Major Collector Road
WATER/PUBLIC WORKS
Underground Utilities
MECO
Electrical Poles & Lines

Time to Plan & Budget Is Now

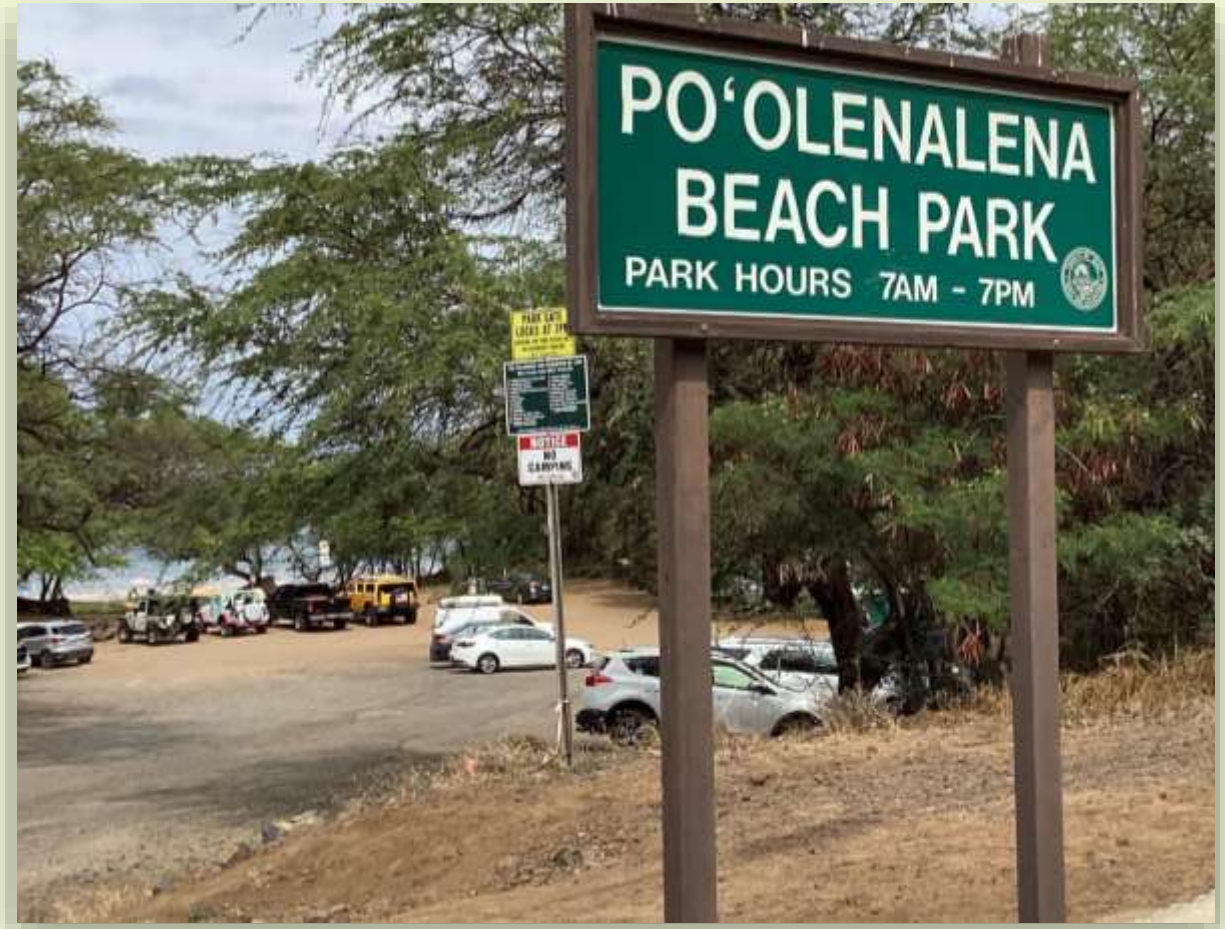
Engage the Community

5 YEAR PRIORITIES

Prepare adaptation plans and strategies for high-risk beach parks

- Baldwin
- Hoaloha

5 YEAR PRIORITIES



Integrate adaptation strategies into capital improvement project (CIP) planning

- Making decisions on investing in park infrastructure based on SLR vulnerability

5 YEAR PRIORITIES

Identify structures that could be affected by high waves & coastal erosion

- Developed 12 park preparedness plans

5 YEAR PRIORITIES

Prepare and apply cultural protocols for inadvertent discoveries.

5 YEAR PRIORITIES

Coordinate with county and state agencies on adaptation planning

- DEM/DPR proposal to FEMA to move park facilities and sewage transfer station

Key Takeaways

Regional Approach

Where appropriate, develop shoreline management strategies adjacent to park boundaries especially in areas with dunes and beaches

Natural & Cultural Resources

Prioritize protection and restoration of natural and cultural resources

Collaborative Management

Engage County and State entities in developing and implementing adaptation strategies

Dune Restoration

Prioritize dune restoration/ landward migration where sand deposits are available

Park Infrastructure

Allow only park infrastructure that supports ocean recreation and is located outside areas exposed to SLR and other hazards

Public Safety

Use aging/damaged park infrastructure as an opportunity for removing structures at risk to SLR and other hazards

Link to App

https://www.mauicounty.gov/BPVAStudy

Mahalo

Q + A

App Backup Slides

COUNTY OF MAUI
BEACH PARK VULNERABILITY STUDY






Project Overview

STUDY OBJECTIVES

Assess vulnerability of parks to coastal hazards and sea level rise

Determine the potential for each beach park to adapt to future conditions.

Develop a prioritization framework for investments in park infrastructure

Recommend policies, strategies, and actions to address the short and long term impacts of climate change.

Project Overview

INDICATORS USED TO ASSESS EXPOSURE AND POTENTIAL IMPACTS OF SEA LEVEL RISE ON PARK ASSETS

% of park area in SLRXA-3.2 (~2070)

Number of facilities in SLRXA-2.0 (~2050)

Miles of road in SLRXA-3.2 within a 0.5 mile-park buffer

% of park area with sand and dunes

Difference in % of park area in SLRXA-3.2 and SLRXA-2.0

ADDITIONAL INDICATORS TO CONSIDER IN PLANNING DECISIONS

Percent of the park area within 1%CFZ-3.2

Percent of park area within the FEMA FIRM Zone A

Park is adjacent to federally designated critical terrestrial habitat extends 5 m inland from shoreline and will migrate landward as sea level rises

Adaptation and Mapping Tool

District Selector: Central | East | Molokai | South | West | All Districts

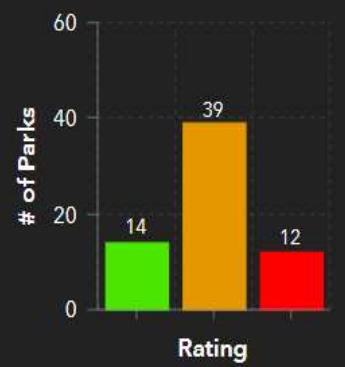
1,009
Total Park Acreage
Last update: a few seconds ago

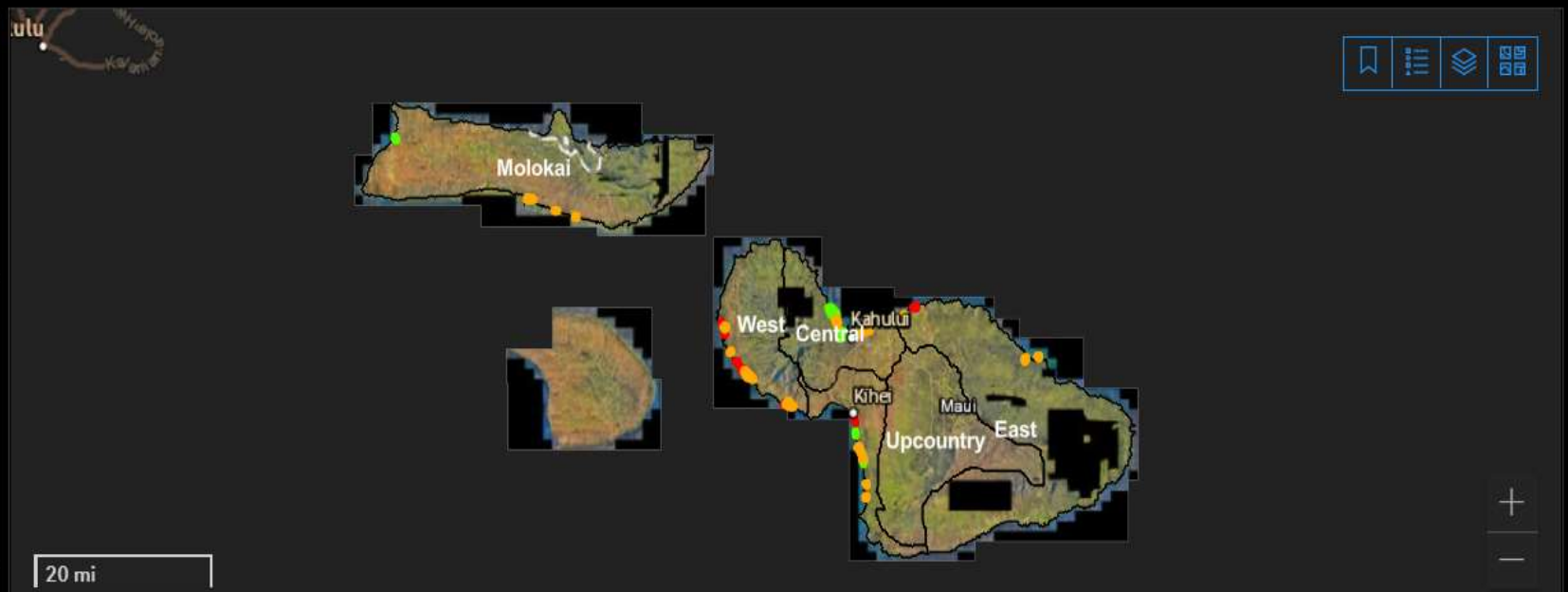
291.9
Acreage in SLRXA-3.2
Last update: a few seconds ago

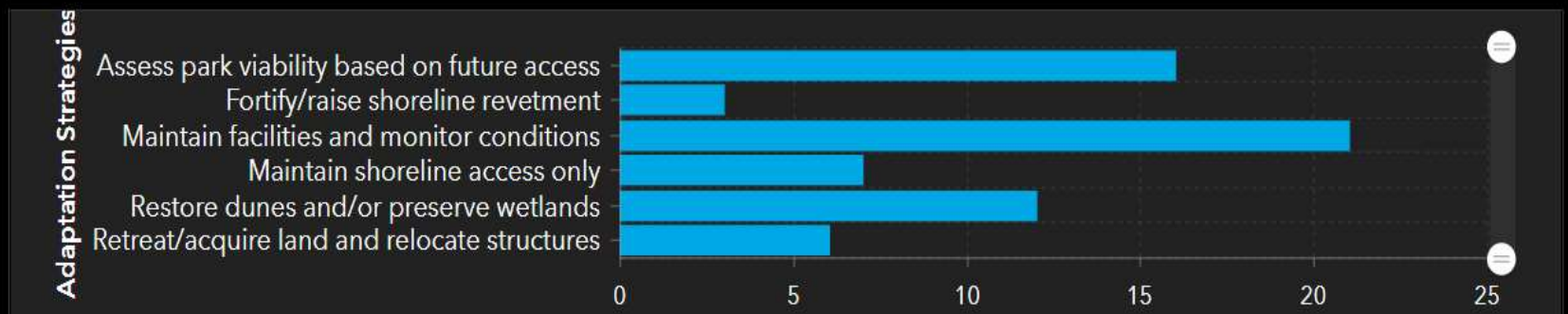
250
Total Facilities
Last update: a few seconds ago

103
Facilities in SLRXA-2.0
Last update: a few seconds ago

Adaptation Potential







Last update: a few seconds ago

Park List

- "Duke" Maliu Regional Park
- Charley Young Park
- Charley Young Park Parking Lot
- D.T. Fleming Park
- HA Baldwin Park
- Halawa Park

Last update: a few seconds ago

1 of 65

"Duke" Maliu Regional Park

District	Molokai
% Park Area in SLRXA-3.2	23
Facilities in SLRXA-2.0	0
Total Roads in SLRXA-3.2 (mi)	0.6
% of Park Area with	0

Park Profile Click Link

Last update: a few seconds ago

Adaptation and Mapping Tool

District Selector: Central | East | Molokai | South | West | All Districts

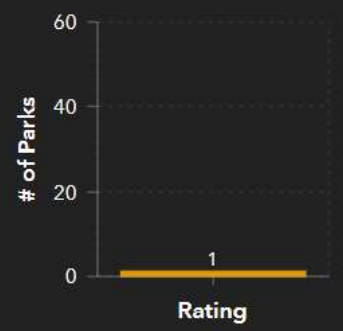
100
Total Park Acreage
Last update: a minute ago

61.1
Acreage in SLRXA-3.2
Last update: a minute ago

12
Total Facilities
Last update: a minute ago

4
Facilities in SLRXA-2.0
Last update: a minute ago

Adaptation Potential



Last update: a minute ago

Park List

- Kamaole Point
- Kamehameha Brick Palace
- Kamehameha Iki
- Kanaha Beach Park
- Kaonoulu Park
- Kaunakakai Lighthouse Park

Last update: 3 minutes ago

Kanaha Beach Park

District	Central
% Park Area in SLRXA-3.2	61
Facilities in SLRXA-2.0	4
Total Roads in SLRXA-3.2 (mi)	0.8
% of Park Area with Sand and Dunes	94

Park Profile Click Link

Last update: a minute ago

EXTRA SLIDES


08.14.2012

Regional Shoreline Management

SHORELINE REGION

- SHORELINE SUBREGION
- SHORELINE SUBREGION
- SHORELINE SUBREGION

Primarily delineated by traditional ahupua‘a boundary as an initial step, then adjusted by the dominant large-scale physical features that influence the configuration of the coastline including orientation, wave exposure, geomorphic features, coastal processes, and hydrology.

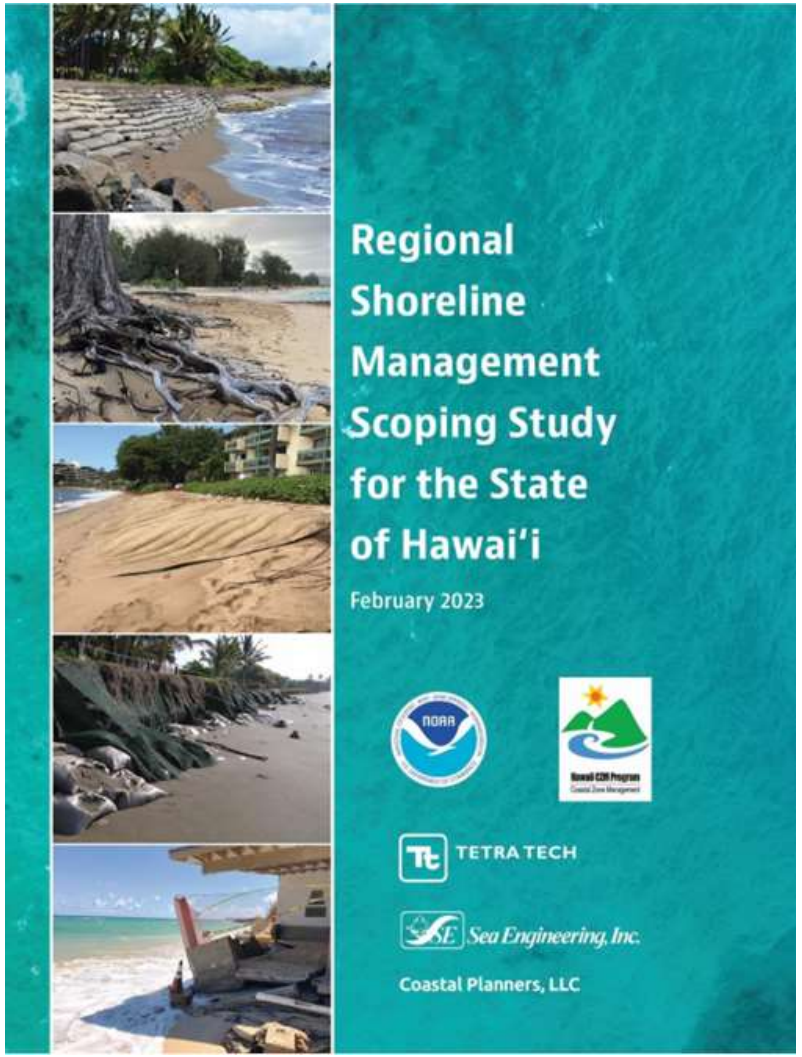
Examples of large-scale features include:

- Headlands
- Embayments
- Drainages
- Fringing reefs

Primarily delineated by smaller-scale cultural and physical features that influence coastline behavior including localized changes in orientation, wave patterns, and circulation.

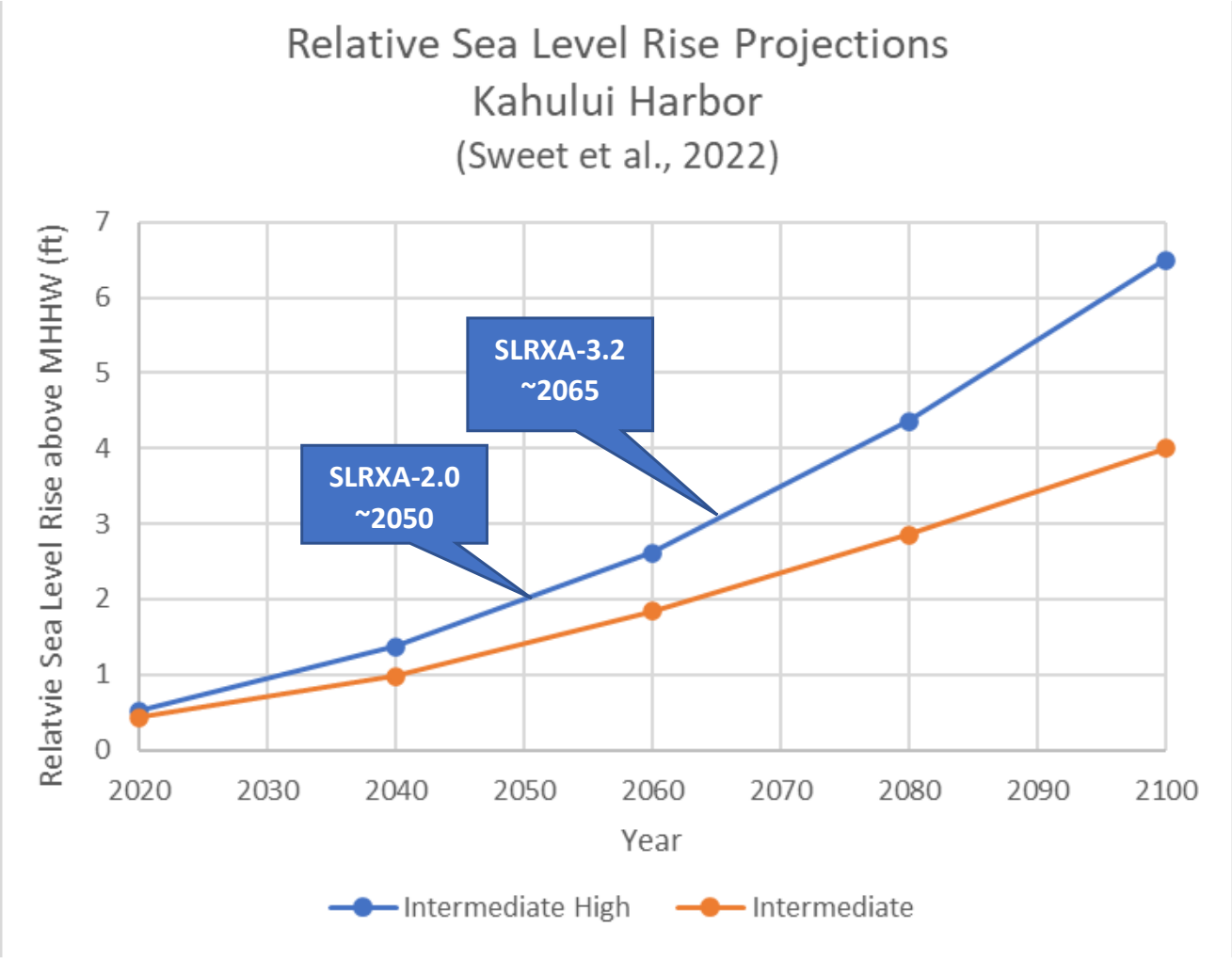
Examples of small-scale features include:

- Small headlands and drainages
- Reef structure and water depth
- Sediment sources and transport patterns
- Man-made structures (groins, loko i‘a)



https://storymaps.arcgis.com/stories/e76bd1de3cfb45ccbc7f1eaab196cdeb

Planning Horizons and Triggers



- Sea level rise time horizon
- Frequency of high tide events
- Major shoreline change event
- Chronic shoreline erosion

Baldwin Beach Park


August 2006


August 2009


SLRXA-2.0
~2050
SLRXA-3.2
~2065

Mahalo From the Project Team

Q + A

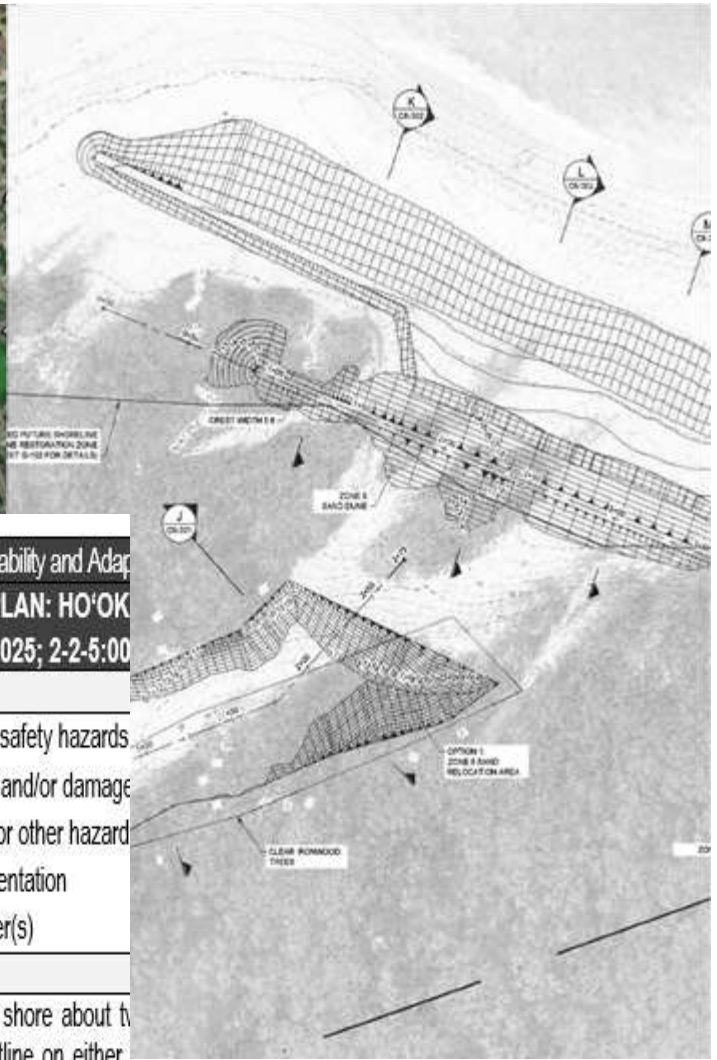
COASTAL EVENTS	ASSESSMENT	BROAD STRATEGIES	DETAILED STRATEGIES	RAPID RESPONSE PLANS	DUNE RESTORATION

ADAPTATION POTENTIAL

- HIGH
- MEDIUM
- LOW

ADAPTATION STRATEGIES

- Assess park viability based on future access
- Restore dunes and/or preserve wetlands
- Retreat/acquire land and relocate structures
- Fortify/raise shoreline revetment
- Maintain shoreline access only
- Maintain facilities/monitor conditions



Maui Beach Parks Vulnerability and Adap

RAPID RESPONSE ACTION PLAN: HO'OK

TMKs: 2-2-5:004:025; 2-2-5:00

Triggers for Plan Implementation

- Existence of structures and/or trees that pose public safety hazards
- Event that results in any incidence of partial flooding and/or damage resources, iwi kupuna by high tides, storm surge, or other hazard
- Availability of adequate funding for proactive implementation
- Use Hazard/Damage Survey Tool to document trigger(s)

Project Context

This ten-acre beach park is located on Maui's north shore about t Highway. The land use context is undeveloped coastline on either

Organization

- Existing Situation
- Methodology
- Application
- *The App*
- Findings
- Policies
- Adaption Strategies
- Rapid Response Plans
- Dune Restoration

Organization

Existing Situation
Methodology
Application
The App
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Policies
Adaption Strategies
Rapid Response Plans
Dune Restoration

Organization

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Wetlands

Kanahā Beach Park