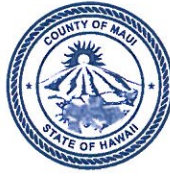


ALAN M. ARAKAWA  
Mayor

WILLIAM R. SPENCE  
Director

MICHELE CHOUTEAU McLEAN  
Deputy Director



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COUNTY OF MAUI

OFFICE OF THE MAYOR

## DEPARTMENT OF PLANNING

April 18, 2017

Honorable Alan M. Arakawa  
Mayor, County of Maui  
200 South High Street  
Wailuku, Maui, Hawaii 96793

APPROVED FOR TRANSMITTAL  
  
Mayor Date 4/20/17

For Transmittal to:

Honorable Elle Cochran, Chair  
and Members of the Infrastructure and Environmental  
Management Committee  
Maui County Council  
200 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Chair Cochran and Committee Members:

**SUBJECT: BEACH EROSION, SEA LEVEL RISE, STORMS AND  
FLOODING IMPACTS ON COUNTY INFRASTRUCTURE (IEM-26)**

In response to your letter dated March 29, 2017, we have prepared a table that provides the requested information on the Beach Management Plan's objectives and recommendations. Please excuse this response being one day late.

As we were given only ten working days to respond to your letter, we would ask that the attached table be used as a general guide and that it not be considered as a final document that represents the Department's full and complete analysis of each of the dozens and dozens of recommendations contained in the Plan. To provide a thorough analysis and prioritization would require consultation with various state and county agencies and other stakeholders and partners, and would take a great deal more time.

With this caveat being established, the attached table lists all of the objectives and recommendations of the Beach Management Plan, our current understanding of the status of each recommendation, a suggested priority ranking, the estimated cost of each recommendation (if known), and general notes and comments. The status is noted as completed (shaded in green), ongoing (shaded in yellow) or not yet started (shaded in red). The priority is noted as 1, 2 or 3, with 1 being the highest priority and 3 being the lowest, with completed items noted as n/a (not applicable).

We would like to note that approximately two-thirds of the recommendations are completed or ongoing, which suggests that the Plan's implementation is going well. Similarly, three of the five recommendations pertaining to sea-level rise (objective 3) are being addressed

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Honorable Elle Cochran  
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by the statewide Sea Level Rise Vulnerability and Adaptation Report, which suggests that there is good coordination and cooperation among state and county agencies to address these challenges. Both are positive indicators.

We would also like to note that there are other initiatives that support the objectives of the Beach Management Plan but that are not listed as recommendations. For example, the assistance provided by the University of Hawaii – Sea Grant Extension Agent is invaluable in addressing and implementing many, if not all, of these recommendations, and is a top priority for the Department.

If you have any questions or require additional information, please feel free to contact me. We look forward to working with the Council on these important issues.

Sincerely,



WILLIAM SPENCE  
Planning Director

Attachment

xc: Michele McLean, Deputy Director (pdf w/att.)  
James Buika, Shoreline Planner (pdf w/att.)  
Keith Scott, Shoreline Planner (pdf w/att.)  
Tara Owens, UH-Sea Grant (pdf w/att.)

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BEACH MANAGEMENT PLAN FOR MAUI

Objective and Recommendation	Status	Priority	Estimated cost if known	Notes
<b>1. Development of individual management plans for each shoreline segment</b>				
1.1a Sponsor a study to develop a shoreline assessment model to classify shoreline segments based on factors such as extent of upland development, recreational opportunities, cultural significance, environmental quality, and water quality.	Ongoing	3		Study on cultural impacts/vulnerabilities complete (Malama Mau Na Kahakai o Maui: Perpetuating the Care of Maui's Coastal Resources, 2009).
1.1b Develop individual (littoral cell) management plans for each of Maui's shoreline segments that take into consideration the factors mentioned in 1.1a).	Ongoing	1	\$100,000 to \$250,000 per year for three years or longer	Under way for Kahana, Kaanapali. Addresses 1.1b, 2.1a, 2.1c, 2.1d, 2.1e, 3.1c, 3.1d, 10.1a, 10.1b, 10.1c. EIS under way for Kaanapali.
<b>2. Guidelines for Shoreline Protection Measures</b>				
2.1a Encourage hazard avoidance in the form of retreat or relocation where possible.	Ongoing	1		To be included in 1.1b; part of management plan.
2.1b Establish a procedure for determining allowable shore protection measures.	Ongoing	1		To be included in 1.1b; part of management plan.
2.1c Develop a study to provide technical recommendations for the restoration of sandy shorelines through beach nourishment.	Ongoing	1		To be included in 1.1b; part of management plan.
2.1d Provide suggestions on alternative coastal protection designs where beach nourishment is not feasible.	Ongoing	1		To be included in 1.1b; part of management plan.
2.1e List acceptable structures for emergency (temporary) coastal protection.	Ongoing	1		To be included in 1.1b; part of management plan.
2.1f Determine suitable time limits for emergency shore protection measures and ensure that all emergency permits include a time limit and a description of the penalty for failure to remove the temporary shore protection measures by the time limit.	Pau	n/a		Analysis and recommendations complete; to be adopted by the Maui Planning Commission.
2.1g Require compensatory mitigation where lateral access and/or beach resources are lost or impounded by development.	Ongoing	2		Included as a mandatory condition for a variance under the Shoreline Rules (12-203-15e).
2.2a Establish a critical parcel purchase program to purchase eroding coastal properties that are sand sources for valuable public beach areas.	Ongoing	2		No formal program established; however parcels have been acquired (examples: Baldwin/Paia, West Maui).
<b>3. Sea-level Rise</b>				
3.1a Provide funding for the creation of high-accuracy LIDAR-based sea-level rise inundation maps for Maui's low-lying coastal areas.	Pau	n/a		LIDAR collected by federal agencies; data used for mapping the state-wide Sea Level Rise Adaptation report.
3.1b Take sea-level rise into consideration when reviewing development or redevelopment of low-lying and coastal areas.	Not Started	2		Data from the ICAC Sea Level Rise Vulnerability and Adaptation Report will make this easier.
3.1c Identify critical infrastructure at risk of sea-level rise inundation and develop relocation plans for this infrastructure.	Ongoing	1		The ICAC Sea Level Rise Vulnerability and Adaptation Report is addressing this.
3.1d Identify communities and developments at risk of sea-level rise inundation and develop long-term plans to address the associated issues of a rising water table including drainage and leach field failure, flooding, wetland formation and salt-water intrusion into aquifers, as well as coastal erosion and increased susceptibility to damage from storms, hurricanes, high surf and tsunamis.	Ongoing	2		The ICAC Sea Level Rise Vulnerability and Adaptation Report is addressing this.
3/1e Encourage and support open space, conservation easements, and decreased development density in low-lying coastal areas.	Ongoing	1		Open space land purchases have been made, taken into consideration during analysis and processing of SMA Major Permits.



BEACH MANAGEMENT PLAN FOR MAUI

Objective and Recommendation	Status	Priority	Estimated cost if known	Notes
<b>4. Beach Nourishment</b>				
4.1a Earmark beach-quality sand that is periodically removed from Maui's harbors for nourishment projects.	Ongoing	2		Used as a permit condition for dredging state harbors, currently coordinating with the US Army Corp of Engineers for future maintenance dredging of Kahului Harbor.
4.1b Restrict the export of Maui's dune sand resources, perhaps by introducing new legislation.	Not Started	2		Previous attempt to legislate not successful; no current effort.
4.1c Require a percentage of inland sand excavations to be stockpiled for beach replenishment.	Ongoing	2		"Draft Maui Island Opportunistic Sand Re-use Ordinance and Related Support Materials" (2016) completed.
4.1d Limit sand mining to quarries designated free of cultural sites.	Not Started	2		There is only one active sand mining operation (Ameron).
4.1e Identify, map, and sample potential offshore borrow sites.	Ongoing	1		Several identified (Kahana, Kaanapali, Napili, Stable Road).
4.1f Establish a County fund for cost matching private beach nourishment projects.	Not Started	2	\$300,000	Discussion ongoing to cost-share for the Kahana Bay Regional Beach Nourishment EIS.
4.1g Purchase a community offshore pump system for rent by private nourishment partners.	Not Started	3		
4.1h Provide tax incentives to community and commercial associations that participate in beach nourishment projects.	Not Started	3		
<b>5. Dune Preservation and Restoration</b>				
5.1a Use signs and fencing to restrict beach access to designated pathways.	Ongoing	1	\$50,000 - \$100,000 per year for two years	After FY18, may need ongoing funding for dune restoration program and coordination.
5.1b Establish moveable dune walkovers to provide pedestrian access while preserving dune vegetation.	Ongoing	2		Three constructed in South Maui by South Maui Volunteers. More planned.
5.1c Realign beach access paths such that they are not oriented parallel to the prevailing wind direction, in order to minimize wind-blown sand losses.	Ongoing	1		Examples in South Maui and Kanaha Park.
5.1d Develop educational materials for resorts and schools describing the critical role of dunes in maintaining healthy beach systems and ways to help protect and avoid damaging dunes.	Ongoing	3	See 5.1a	
5.2a Encourage and support dune restoration efforts (dune fencing, revegetation, sand nourishment, etc.).	Ongoing	1	See 5.1a	Ongoing through UH Seagrass Coastal Hazards Specialist.
5.2b Publish a handbook detailing the methodology for future dune restoration projects.	Not Started	3	See 5.1a	

BEACH MANAGEMENT PLAN FOR MAUI

Objective and Recommendation	Status	Priority	Estimated cost if known	Notes
<b>6. Coral Reef Ecosystems, Water Quality, and Upland Activities</b>				
6.1a Continue to educate the public—especially the ocean recreation users such as ocean activity centers and dive/snorkel tour boat operators—on the importance of coral reef ecosystems and how to reduce damage to these resources.	Ongoing	1		Non-governmental organizations are doing this.
6.1b Support studies to determine the status of Maui's coral reef ecosystems.	Ongoing	1		Non-governmental organizations are doing this.
6.1c Aim to eliminate the need for wastewater injection wells.	Ongoing	2		Department of Environmental Management
6.1d Ensure that upland construction and agricultural practices become more environmentally responsible by increasing public awareness.	Ongoing	2		West Maui Ridge to reef Initiative (sss.westmaui r2r.com)
6.1e Provide BMP workshops to contractors at construction sites.	Ongoing	3		Department of Public Works
6.1f Improve enforcement of the grading ordinance.	Ongoing	3		Department of Public Works
6.1g Implement suggestions of the West Maui Watershed Owners Manual including guidelines for the reduction of soil erosion and the development of and adherence to best management practices protective of coastal water quality.	Ongoing	1		
6.1h Review existing water quality standards, testing, and enforcement.	Ongoing	3		Non-governmental organizations are doing this.
6.1i Support a study of nearshore circulation patterns to help determine environmental impacts of various drainage master plans.	Not Started	3		
6.1j Evaluate site plans with an eye to minimize both impervious coverage such as pavement and disruption of natural drainage and vegetation. Encourage the use of pervious materials that allow for the infiltration of stormwater.	Ongoing	1		Taken into consideration with SMA Assessments (SMX) and SMA Major permits.
6.1k Conduct workshops for landscape designers and landscape maintenance personnel, in particular for resorts and golf courses, on ways to create landscape design and maintenance plans that minimize the need for irrigation, fertilizers, pesticides and herbicides.	Ongoing	2		Non-governmental organizations are doing this.
<b>7. Shoreline Setbacks and Coastal Erosion Hazard Data</b>				
7.1a Continue to fund updates to Maui's annual erosion hazard maps every 5 to 10 years.	Ongoing	1	\$200,000-\$250,000	\$100,000- \$125,000 each for Maui and Molokai islands; contracts with UH and SOEST to complete updates.
7.1b Develop a study to determine high hazard areas for hurricane and tsunami impacts, and incorporate this information into shoreline setback determination, to be no further makai than measured by existing methods.	Not Started	3		
7.1c Incorporate performance standards (e.g., construction style and estimated lifetime of structure) into the determination of shoreline building setbacks, to be no further makai than measured by existing methods.	Ongoing	2		Analysis and recommendations for update to shoreline rules completed for increase to shoreline setback rules (12-203); to be adopted by the Maui Planning Commission.
7.1d Develop a study of coastal bluff erosion for bluff properties that have been developed and will potentially be developed in the future.	Not Started	3		
7.1e Develop interim policies for setback requirements on coastal bluff properties.	Not Started	3		
7.1f For sandy shorelines, increase Maui's shoreline setbacks to 70 times the erosion rate plus a 40-foot buffer for already developed residential lots; to at least 250 feet for undeveloped lots with smaller commercial/residential projects; and to at least 400 feet for undeveloped lots with large commercial projects.	Ongoing	2		Analysis and recommendations for update to shoreline rules completed for increase to shoreline setback rules (12-203); to be adopted by the Maui Planning Commission.
7.1g Amend both the county's Special Management Area (SMA) Rules and Shoreline Rules to extend county jurisdiction to the ocean.	Not Started	3		
7.1h Establish a rule and/or ordinance that no certified shoreline shall be located makai of the previous shoreline.	Pau	n/a		Decided by the Hawaii Supreme Court (Diamond II case)
7.1i Protect accreting lands with a permanent ban on seaward extensions of any improvements other than minor structures permissible under the shoreline rules of the Maui Planning Commission.	Pau	n/a		Decided by the Hawaii Supreme Court (Diamond II case)



BEACH MANAGEMENT PLAN FOR MAUI

Objective and Recommendation	Status	Priority	Estimated cost if known	Notes
<b>8. Proactive Development of Coastal Lands</b>				
8.1a Encourage developers and landowners to pre-consult with various experts and governmental agencies familiar with coastal erosion in order to get appropriate recommendations on project design.	Ongoing	2		
8.1b Adopt the recommendations made in the Hawaii Coastal Hazard Mitigation Guidebook for coastal planning and development, and provide these recommendations to developers.	Not Started	2		Currently used as reference, even though not officially adopted
8.1c Make the Beach Management Plan for Maui available to developers, contractors, and landowners as a reference guide.	Pau	n/a		
8.1d Encourage greater setbacks for large structures such as hotels and condominiums, and slab-on-grade structures.	Not Started	2		
8.1e Discourage slab-on-grade construction for coastal properties.	Not Started	2		Shoreline planners educate shoreline project applicants.
8.1f Encourage minor structures to be non-permanent and portable.	Ongoing	1		Incorporated into the Shoreline Rules. Shoreline planners educate shoreline project applicants.
8.1g Encourage developers to construct building additions on the mauka side of the structure.	Ongoing	2		Shoreline planners educate shoreline project applicants.
8.1h Add to best management practices a requirement that lot depth be maximized to avoid shallow oceanfront subdivisions. A minimum 500 ft lot depth should be required in new subdivisions.	Not Started	3		
8.1i All new subdivisions and major redevelopments shall restore any existing or recent coastal dune systems to specified standards.	Not Started	1		
<b>9. Interagency Cooperation</b>				
9.1a Maintain ongoing discussions and improve coordination on shoreline matters with other agencies in order to avoid duplication, streamline permit processing, and encourage more environmentally sensitive shoreline protection measures.	Ongoing	1		County planners participate in Ocean Resource Management Plan (ORMP) monthly meetings, which include state, federal and county personnel.
9.1b Support the establishment of an independent state agency charged with managing the entire coastal zone.	Not Started	3		
9.1c Expand Maui's Shoreline Rules or augment SMA boundaries to include all primary dunes.	Not Started	3		Papohaku Dunes on Molokai requires this action.
9.1d Clarify and strengthen the role of sister agency comments so that they are more than just advisory in nature.	Pau	n/a		Agency transmittals have been revised to ask the agency to identify comments to be considered conditions.
9.1e Establish a bimonthly coastal council of permitting agency representatives and advisory personnel to discuss and resolve the disposition of coastal applications	Not Started	3		
9.2a Proactively plan highway construction, park improvements, and other infrastructure projects with input from sister agencies with overlapping purview.	Ongoing	1		Planning Department coordinates with other county departments.
9.2b Agencies with coastal projects should be required to seek pre-consultation with sister agencies and solicit expert opinions when proposing new projects in the coastal zone.	Not Started	3		Already encouraged.

BEACH MANAGEMENT PLAN FOR MAUI

Objective and Recommendation	Status	Priority	Estimated cost if known	Notes
<b>10. Beach Management Districts</b>				
10.1a Establish beach management districts at locations experiencing chronic erosion, as well as other types of coastal settings, especially those proposing to implement beach restoration projects.	Not Started	2		Under consideration at Kahana Bay and Halama Street. Hui established on Stable Road. (See 1.1b)
10.1b Set up a mechanism at the county and/or state levels for evaluating petitions to form a beach management district.	Pau	n/a		Mechanism in place (Chapters 3.70 and 14.36-14.60, MCC). See 1.1b
10.1c Encourage the formation of not-for-profit organizations to facilitate beach nourishment for multi-property projects and communities.	Ongoing	2		Existing on Stable Road and Napili Bay. In process for Kahana Bay and Halama Street. See 1.1b
<b>11. Public Awareness and Education</b>				
11.1a Identify key target audiences (e.g., schools, community associations, neighborhood boards, rotary clubs, developers and contractors, ocean activity owners, county commissions, etc.).	Ongoing	2		
11.1b Continue disseminating information by issuing press releases, publishing booklets and posters, and giving presentations at conferences and to key user groups.	Ongoing	2		
11.1c Sponsor the creation of a web site on coastal processes, development guidelines, and beach management.	Not Started	3		
11.1d Partner with local scientists and environmental groups to sponsor K-12 teacher training workshops.	Ongoing	3		
11.1e Create a Maui Environmental Education Fund using monies generated by land development projects.	Not Started	3		
<b>Objective and Recommendation</b>				
<b>12. Research</b>				
12.1a Commission new research projects in coastal and marine science and marine policy on all scales.	Ongoing	3		
12.1b Fund studies that seek to better understand site-specific causes of coastal erosion and beach loss.	Not Started	3		
12.1c Sponsor a study on the incorporation of the impacts of episodic events such as hurricanes and tsunami into shoreline setbacks.	Not Started	3		Same as 7.1b
12.1d Sponsor a study on bluff erosion.	Not Started	3		Same as 7.1d
12.1e Sponsor a study on sea-level rise inundation hazard areas.	Pau	n/a		The Sea Level Rise Adaptation Report is addressing this.
12.1f Sponsor a study on locating offshore sand resources with potential for beach replenishment.	Ongoing	2		County sponsored for Kahana Bay in FY15 (\$160,000 with required match; completed); studies for Napili, Kaanapali and Stable Road funded by others.
12.1g Encourage Maui Community College to take a more active role in marine science education and research by further developing its Marine Option Program.	Ongoing	3		
12.1h Seek participation in research on marine issues from other universities, ocean user groups, and other government agencies.	Ongoing	2		
12.1i Create a Maui Environmental Research Fund with funds generated by a combination of new development projects, tourism, and major resource users.	Not Started	3		Same as 11.1e
12.2a Update the County's database of coastal aerial photographs at least every five years and no longer than every 10 years so that county planners can make informed decisions with reasonably up-to-date information on shoreline development.	Ongoing	2	See 7.1a	
12.2b Help support the continued collection of data on water quality and algal blooms.	Ongoing	1		Conducted by the Maui Nui Marine Resource Council and other Non-governmental organizations.

BEACH MANAGEMENT PLAN FOR MAUI

Objective and Recommendation	Status	Priority	Estimated cost if known	Notes
<b>13. Funding Mechanisms</b>				
13.1a Allocate a portion of the annual budget to a dedicated beach management fund, which would be used for land banking, shoreline access and beach and dune restoration projects as well as continued coastal zone research and monitoring.	Not Started	2	\$100,000 - \$350,000 per year for three years or longer	
13.1b Pass an ordinance to direct revenue from fees, fines, penalties, regular as well as after-the-fact SMA and shoreline permits, violations and county-initiated settlement agreements to a revolving fund for coastal land acquisition and beach, dune, and shoreline access restoration.	Ongoing	2		
13.1c Identify strategies for generating more revenue earmarked for beach management.	Not Started	2		
13.1d More effectively pursue matching funds from outside agencies.	Not Started	2		
13.1e Conduct a pilot beach mitigation banking program pursuant to HRS 205A to provide a market-based mechanism that compensates the public for lost shoreline access on impaired coastlines by purchasing publicly-valued, intact sandy shorelines for long-term conservation and public use.	Not Started	2		
13.2a Build relationships with and between non-governmental, community and environmental groups to raise funds, coordinate land acquisition, and carry out coastal research and monitoring.	Ongoing	2		
13.2b Support and recognize volunteer efforts of non-governmental, community and environmental groups who are active in coastal stewardship.	Ongoing	1		