# HĀNA HARBOR DEVELOPMENT PLAN HĀNA, MAUI



# **Final Development Plan**

Job HMP 40901



November 2011

DEPT. OF TRANSPORTATION HARBORS DIVISION



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Prepared by





## **1.0** INTRODUCTION OF DEVELOPMENT PLAN AND PROCESS

#### 1.1 Introduction

In 2008, Governor Linda Lingle signed into law SB 3227 (Act 200, SLH 2008), which addressed the aging condition of harbor facilities statewide. It expanded the formal partnership for the development of Honolulu Harbor between the former<sup>1</sup> Aloha Tower Development Corporation (ATDC) and the Department of Transportation Harbors Division (DOT Harbors) to a statewide jurisdiction for the implementation of the Harbors Modernization Plan (HMP). Through the efforts of State Senator J. Kalani English, who represents the community of Hāna, the measure also appropriated \$842 million for harbor expansion, improvements, and upgrades for seven commercial harbors statewide, including Hana Harbor. \$20 million in revenue bonds would be dedicated to the improvement of Hana Harbor. Finally, Act 200 transferred the administrative authority of Hana Harbor from the State Department of Land and Natural Resources (DLNR), Division of Boating and Ocean Recreation (DOBOR) to DOT Harbors. The only exception is that the existing small boat ramp facility adjacent to the pier remains under the control and jurisdiction of DLNR-DOBOR (Figure 1-5). This transfer of management jurisdiction was heard by the Board of Land and Natural Resources on September 9, 2010.

This project requires professional engineering services to include, but not be limited to, planning and development concepts which consider a range of alternatives for modernization of harbor improvements, with a focus on improvements for the Hāna community. The findings will result in the Hāna Harbor Development Plan (HHDP). A key component in formulating the HHDP is the engagement of community stakeholders.

#### **1.2** Purpose and Need for the Development Plan

Under the direction of ATDC, the first and foremost purpose of this development plan project was to explore with the Hāna community whether there is consensus to improve access to the community through Hāna Harbor and, if so, to what degree and form should such improvements be made? Should the severely damaged pier be replaced? What kinds of transport services should be permitted in Hāna? Should access be limited to emergency service only? Are there other transport options that do not require repair of the pier such as landing ship vessels? What are the land side requirements for certain pier improvements, i.e. if cargo deliveries are desired on a regular basis what land side facilities will be necessary? What are the navigational issues if commercial vessels are permitted to call at Hāna Harbor?

Overall, suitable harbor facilities and berthing piers help ensure the efficient and timely delivery and shipment of goods imported into our State. However, Hawaii's aging commercial harbor system has not kept pace with its growing economy. Specifically,

<sup>&</sup>lt;sup>1</sup> On July 1, 2010, ATDC was dissolved by Legislative action and authority over the Hāna Harbor Development Plan transferred to the Department of Transportation, Harbors Division.



improvements to the Hāna pier are important and will enhance the needs of the Hāna community. Although Hāna Harbor is currently designated as a commercial harbor under the jurisdiction of DOT Harbors, the reality is, and the community desires, that the facility serves as a passive recreational pier for the Hāna community.

#### Emergency Access

Senator English advocated for the funding because Hāna is at risk of being isolated in a natural disaster, and that subsistence and commercial fishermen deserve a better pier.<sup>2</sup> Hāna is approximately 50 miles from Kahului and access is limited to one road, the Hāna Highway (State Route 360). The road is narrow with numerous hairpin turns and crosses 59 bridges, 46 of which are only one lane. In the event of an emergency resulting in bridge closure, Hāna would be cut off from accessing goods and services in Kahului for some time.

Hāna Highway is the only road servicing the community, bridges on the Highway are aging, and there are only a few expensive flights in and out of Hāna Airport. Options are limited. For example, In October 2006, a 6.7 magnitude earthquake hit off the northern coast of Hawai'i Island and caused rock falls in East Maui. This resulted in a two-year closure of 10 miles of Hāna Highway between Kaupō and Kīpahulu. The rock fall also destabilized cliff faces and undermined sections of the road. This natural disaster cut-off access to and from the Hāna community and is one of the primary considerations for improvements to the pier. In these situations, a limited operational pier would serve as an important lifeline for the community and allow goods for daily sustenance and services to be more efficiently and economically accessed by the community.

### **1.3 Development Plan Process**

Work on this project commenced in January 2010, with small group meetings in Hāna. Two large group community meetings were held at Helene Hall in Hāna.

The HHDP's process was divided into four essential parts:

- *Pre-Assessment/Reconnaissance Phase:* The purpose of this phase was to identify the potential opportunities and constraints for design alternatives to be developed in a subsequent phase of study. This completed report was based on documents relative to the past and current pier conditions, resource mapping (including CADD and GIS), initial site visit to Hāna, small group meetings with key community groups, and consultation with Maritime Group LLC. Reconnaissance included engaging the community through public information meetings to help identify needs and concerns regarding project scope. (Draft report submitted April 28, 2010.)
- *Alternative Development Phase:* Included a range of alternatives that are considered as part of the assessment leading to the next phase of this project. The purpose of this report was to illustrate these alternatives, which includes a no-action option, a demo and no-build option, and about 2-3 demolition/redevelopment options. (Draft report submitted August 16, 2010.)

<sup>&</sup>lt;sup>2</sup> Millions Allotted for Hāna Bay Makeover, The Maui News, June 25, 2008



- *Conceptual Phase:* Developed a basis and cost estimate for the selected range of alternatives to be further evaluated. Rough order-of-magnitude costs for each design alternative and potential benefits from harbor operations and activities with alternative improvements implemented was examined. (Draft report submitted September 20, 2010.) A preliminary recommendation was reached and a third and final community meeting was held on March 29, 2011. Addressing comments from this meeting, a final recommendation was selected.
- *Final Development Plan Phase:* A final plan was developed that outlines and summarizes each phase of the project study that lead to decision-making and justification of the preferred development alternative.

#### 1.4 Historical Development of Hāna Harbor

Prior to the construction of the existing Hāna pier in the early 1920's, there was a boat landing at the inside shoreline of the harbor (*Figure 1-1*). Anchors and 24 fathoms of 1 <sup>1</sup>/<sub>4</sub> chain were on the beach used for stern mooring.<sup>3</sup> These were owned and used by the Inter-Island Steam Navigation Company.

Hāna pier was originally constructed for commercial shipping purposes by the sugar cane industry.<sup>4</sup> Railroad tracks used for transporting the sugar are still visible today (*Figure 2-7*). The pier is now primarily used for passive recreational purposes as past reliance on Hāna Harbor for trade subsided with the construction of a paved road between Hāna and Kahului Harbor. Since the pier's initial construction, a small-boat ramp and concrete dock were added circa 1988 to the mauka side of the pier. The boat ramp, which is outside the scope of this project because it falls under the jurisdiction of DLNR, and not DOT, is the only public access point for launching boats in the Hāna area.<sup>5</sup> The ramp also provides an entry point for snorkelers and divers for accessing the nearby coral reefs and other submarine environments.

The pier structure has fallen into disrepair over the years. Building plans dated in 1955 indicate that the pier had undergone temporary repairs. The steep-sloped nature of the pier's windward boulder revetment has lead to unstable conditions with rocks falling away. In 2003, the lower concrete slab of the boat ramp was pushed out of place by unusually high wave conditions. The dislocated slab was later lowered back into place and declared operational.<sup>6</sup>

Additionally, storm surge dislodged large sections of the pier and created holes on the deck of the pier. After investigations, the pier was declared unsafe and condemned. Recently (2010), the pier was fenced off for safety and liability reasons.

<sup>&</sup>lt;sup>3</sup> Letter to the Honorable Charles R. Forbes, Chairman, Board of Harbor Commissioners, Honolulu, T. H., May 1, 1916.

<sup>&</sup>lt;sup>4</sup> Mau'i County Planning Commission.

<sup>&</sup>lt;sup>5</sup> The closest boat ramp is in Wailuku/Kahului, 59 miles away.

<sup>&</sup>lt;sup>6</sup> AECOS, Inc., Hāna Wharf Improvement Project: Water Quality and Marine Survey of Potential Impact Areas in Hāna Harbor, Hāna, Mau'i (February, 2007)





Figure 1-1 Preliminary Survey for Proposed Hana Pier (1917, DOBOR files)



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Figure 1-2 Aerial View of Hāna Harbor (DOBOR files, 1963)





Figure 1-3 Aerial of Hāna Harbor (Google Earth, 2009)





Figure 1-4 View of Hāna Harbor, Pier, and Surrounding Community (Source: Floyd Stanley)





Figure 1-5 Boundary Delineation between Pier (DOT Harbors) and Boat Ramp (DOBOR)



# 2.0 SUMMARY OF EXISTING CONDITIONS

#### 2.1 Regional and Site Overview

The 1994 Hāna Community Plan describes the Hāna region as encompassing approximately 145,000 acres in the eastern portion of the island of Maui. The boundary of the region, from its northern shoreline at Makaīwa Bay, runs mauka along 'O'opuola and Waikamoi Streams, then along the boundaries of Haleakalā National Park and the Kahikinui Forest Reserve and finally makai along the boundary between Auwahi and Kanaio to Kanaloa Point on the southern shoreline of the region.

#### 2.2 Hāna Harbor

Hāna Harbor is located on the east side of the island of Maui (*Figure 2-1*). The project site sits in the ahupua'a of Kawaipapa (*Figure 2-2*). Additionally, the project site resides within the State Land Use Conservation District (*Figure 2-3*) and, specifically, is classified as a Resource Subzone (*Figure 2-4*). Finally, a portion of the project site is within the Maui County Special Management Area (*Figure 2-5*).





Figure 2-1 Project Location in Hāna, East Maui



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Figure 2-2 Map of Ahupua'a in East Maui



Figure 2-3 State Land Use District Classifications



Figure 2-4 State Land Use Conservation District Subzones





Figure 2-5 Maui County Special Management Area





Figure 2-6 TMK Map of Hāna Harbor (Maui County, 2010)



#### 2.3 Pier Condition

The Hāna pier was constructed almost 90 years ago, in the early 1920's. In 1999, a study was commissioned by the State's Department of Land and Natural Resources, Division of Boating and Ocean Recreation to investigate and determine the extent of the damage to, and deterioration of, Hāna pier.

The report, entitled "Preliminary Engineering Report and Field Investigation for Structural Condition Assessment to Hāna Wharf," and prepared by Arnold T. Okubo and Associates, Inc., described the pier as shaped like a "T" with its horizontal leg at the top approximately 340' long x 42'9" wide, and the vertical leg is approximately 130' long x 28' wide. The pier is nine feet above the water level and the deck slab area is approximately 18,100 square feet. Furthermore, the pier's structural framing consists of a 5 ½" thick reinforced concrete deck and 12" wide x 1'8" deep concrete beams spaced at 6'0" on centers. These beams are supported on 12" wide x 2'6" deep concrete beam girders spaced at 12'6" on centers. The pier is supported by 146 16 ½ octagonal concrete piles. The existing deck was designed for a deck live load of 270 lbs. per sq. ft. because it was designed to carry railroad traffic.

The Okubo report also revealed that the Hāna pier has extensive damage throughout its structural frame and has been determined to be structurally unsafe for any active loading or unloading activities, or for passive uses, such as fishing and other recreational activities (*Figure 2.7*). The entire pier has extensive corrosion and exposure of its reinforcing bars; concrete cracks and gaping holes; and spalling of the deck slab, beams, girders, and pile caps.

Most of the underside of the deck is severely deteriorated. The underside of the slabs beams, girders, and pile caps have extensive cracking and spalling of the concrete and severe corrosion and failure of the reinforcing bars. Above the water line, every pile had damage due to concrete "pop-out" caused by rebar corrosion, and severe rebar corrosion with complete loss of rebar.

Today, the pier has been formally condemned by the Department of Transportation-Harbors Division due to its unsafe condition. However, the pier is viewed as a community asset and is situated in an area that is very accessible to the general public. It continues to be an attraction, especially to local children who swim in the area.





1. View of Boat Ramp and Pier



2. Gate Barricading Entrance to the Pier



3. Gaping Hole on Pier-side of Gate



4. Hole in Pier





7. View of Pilings.



8. Closer View of Pilings



9. Closer View of Corrosion



11. View of Makai Side of Pier



12. View of Pier from Trail on Kau'iki



13. Another Hole with Exposed Rebar at Far End of Pier



14. Remnants of Train Tracks Used to Transport Sugar Cane

Figure 2-7 Existing Pier Conditions



5. Existing barrier installed by DOT-Harbors



10. View of Pier



#### 2.4 Condition of Surrounding Area

#### 2.4.1 Topography, Soils, & Geology

According to the U.S. Department of Agriculture Natural Resources Conservation Service soil survey area for the island of Maui, the soil type specific to the project site is Hāna silty clay loam (*Figure 2.8*). This consists of moderately deep, well-drained soils that formed in material weathered from volcanic ash over cinders and 'a'a lava. The soils are upland and have slopes of three to twenty-five percent.

#### 2.4.2 General Physical Environment of Hāna Harbor

Hāna Bay sits on the flanks of Haleakalā. The rugged volcanic terrain has resulted in a complex shoreline of predominately rocky bays and inlets. Beaches are typically mixed volcanic and reef-derived carbonate detritus. The region is sheltered from wind and waves from the south and west, but is directly exposed to prevailing trade wind weather from the northeast. Moisture-laden trade winds are lifted by the adjacent mountain, producing orographic rain showers and a lush tropical environment. Hāna has an average annual rainfall of 47 inches (as recorded at the Hāna Airport).<sup>7</sup>

Pu'uki'i (also called Pu'u Kū) is located off the north end of Ka'uiki Head in Hāna Bay, and is separated from the shoreline by a narrow channel. It is 1.5 acres and reaches a height of 60 ft. Pu'uki'i was formerly connected to the shore by a small bridge, which is now gone. The island is composed of a mix of solid lava flows and loose cinders, which make walking in steep areas difficult. There is a small underwater cave at the base of Pu'uki'i and several tide pools are present.<sup>8</sup>

#### 2.4.3 Bathymetry & Near Shore Bottom Conditions

The bathymetry in the immediate vicinity of the pier is complex. Depths of 15 to 20 feet in the bay and just off the pier end abruptly at a ledge just offshore of the ramp area (*Figure 2.9*). The ledge rises to a nominal 6-foot depth. The depths become gradually shallower as the ramp is approached. A shallow reef lies adjacent to the beach park side of the ramp approach and stretches for several hundred feet or more. This reef is a potential hazard for boaters landing at the ramp if the boats are allowed to swing over too far.

The seaward side of the breakwater has numerous large basalt boulders scattered in front of the breakwater. Nominal 6-foot depths also end abruptly at a ledge that plunges down to about 20 feet. The boulders rise close to the water surface and can be exposed during low tide and surge conditions.<sup>9</sup>

<sup>&</sup>lt;sup>7</sup> Hāna Ramp—Improvements to Rock Revetment and Boat Ramp Loading Dock, Maui, Final Environmental Assessment and Finding of No Significant Impact (FONSI), Sea Engineering and Shigemura, Lau, Sakanashi, Higuchi and Associates, Inc., May 2008.

<sup>&</sup>lt;sup>8</sup> Offshore Islet Restoration Committee-OIRC.

<sup>&</sup>lt;sup>9</sup> Supra.



### 2.4.4 Shoreline Conditions

The shoreline and surrounding environment is extremely rugged due to the volcanic terrain. The coast is formed by prominent lava outcrops, with isolated stream outlets forming cobble and sand pocket beaches. Similarly, the bathymetry in the bay is an irregular network of reefs with steep underwater relief.

The south end of the bay, adjacent to the boat ramp and wharf, is the site of Hāna Beach Park. The beach is 700 feet long and about 100 feet wide. A seawall protects much of the beach park shoreline behind the sand beach, and enables flat vegetated picnic areas. Shallow reefs offshore of the beach promote generally calm and safe swimming conditions. The coast on the west side of the bay is irregular and rocky, with small pocket beaches and lava rock shelves. Further north along the west side, a muliwai and cobble beach is formed by the confluence of the Kawaipapa and Holoināwāwae streams. Hāna Bay ends at the north end at the basalt rock lava flow forming Nānu'alele Point (Clark, 1980).

To the east of the ramp and pier, on the headland formed by Ka'uiki Head, which is on property owned by Hāna Ranch, shoreline access is poor due to steep terrain and exposure to prevailing trade wind wave conditions. Hāna Bay is bounded on the east by Pu'uki'i Island and Papaloa Island, volcanic remnants off of Ka'uiki Head. Kaihalulu Beach, on the south side of Ka'uiki Head, is a secluded sand beach formed from cinder sand eroded from adjacent bluffs.<sup>10</sup>

#### 2.4.5 Wind, Wave, and Tidal Cycles

Wind

The 2008 FEA by Sea Engineering reports that Hāna is directly exposed to the prevailing easterly trade winds, and occasional north winds. Winds from the south and west are mostly blocked by the island of Maui. Data collected at Kahului Airport by the National Climatic Data Center between 1958 and 1995 show typical wind speeds between 7 and 16 knots, occurring over 53 percent of the time, and an overall annual average speed of 11.6 knots. Typical wind directions are easterly trade winds blowing from between north-northeast and east-northeast, occurring more than 67 percent of the time. No wind data are available from direct measurements at Hāna, and speed and direction values are likely to differ somewhat from the Kahului values. Wind at both Hāna and Kahului is greatly influenced by the presence of Haleakalā.

<sup>&</sup>lt;sup>10</sup> FEA and FONSI, Sea Engineering and Shigemura, Lau, Sakanashi, Higuchi and Associates, Inc., May 2008.



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Figure 2-8 USDA Natural Resources Conservation Service Soils Survey for Hāna Bay (Published SSURGO data, 1972)



Figure 2-9 Bathymetry Contour of Hāna Bay (NOAA, 9th Ed., Updated May, 2009)



Waves

Hāna Bay is exposed to ocean waves approaching from the northeast and southeast compass quadrants (directions north clockwise through south). North Pacific swell, easterly trade wind waves, and southerly swell are the open-ocean waves that approach from this sector. The geographic orientation of Hāna offers protection from the southwest through northwest direction, but makes the area particularly susceptible to ocean waves coming from the northeast. While trade wind generated waves occur most of the time and generally come from the northeast quadrant, they tend to be of modest size with short wave periods and are generally nondestructive.

The large winter waves that affect Hawaii during the winter season are generated by intense low pressure weather systems to the north and west with gale and storm force winds blowing over large expanses of ocean. Occasionally (and predominately in the Fall and Winter) the storm systems become oriented in such a way that these strong winds blow toward the Hawaiian Islands from the northeast such that they directly impact Hāna.

A wave event of November 21, 2003 was a particularly severe high wave condition (heights of up to 40' were reported) that resulted in damage to the breakwater and boat ramp at Hāna pier.<sup>11</sup>

#### 2.4.6 Marine Water Quality

Hawaii's Water Quality Standards classify Hāna Bay as Class AA open coastal marine waters (HDOH, 2004) with water quality criteria pertaining to wet and dry coastal areas. Hāna is in a wet coastal area with an average annual rainfall, recorded at Hāna Airport, of 47 inches or 3.9 ft (1.2 m; NOAA/NWS, 2006b. As stated in water quality regulations (HDOH, 2004), "It is the objective of Class AA waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. To the extent practicable, the wilderness character of these areas shall be protected."<sup>12</sup>

#### 2.5 **Biological Resources**

#### 2.5.1 Marine Biological Resources

In 2006, biologists from AECOS, Inc. conducted a marine reconnaissance survey by snorkeling around the boat ramp area, which was divided into four survey areas: 1) boat ramp and dock; 2) west reef; 3) east revetment; and 4) east reef and wharf pilings. Area 1 includes the boat ramp, the concrete dock pilings, and the west side of the boulder revetment out to its terminus. Area 2 includes the reef adjacent to the boat dock out to a point parallel with the west end of the wharf. Area 3 includes the revetment boulders on the east side of the wharf and adjacent bottom out to 15 ft (5 m) away. Area 4 includes the reef located east of the wharf in about 20 ft (7 m) of water and the concrete wharf pilings out to the 5th set of pilings from shore.

<sup>&</sup>lt;sup>11</sup> Infra, page 36. *Honolulu Advertiser*, Nov. 22, 2003

<sup>&</sup>lt;sup>12</sup> Water Quality and Biological Survey Report, Appendix A to Hāna Wharf Improvement Project: Water Quality and Marine Survey of Potential Impact Areas in Hāna Harbor, Hāna, Maui, AECOS, Inc., February 2007.



While a variety of macro-algae, coral (rice, lobe, and Duerden's), herbivorous surgeonfish, and carnivorous saddle wrasse were present in the study area, overall, no endangered or threatened species were encountered during this marine survey.

### 2.5.2 Terrestrial Biological Resources

AECOS, Inc. also conducted an inventory of plant species in close vicinity to the pier, such as in the hillside bordering the bay, and the grassy areas on either side of the pier. Most of the species are non-native, such as croton (*Codiaeum variegatum*), an ornamental; and bridal wreath (*Stephanotis floribunda*), also an ornamental. The predominant shore side canopy tree was ironwood (*Casuarina equisetifolia*), an alien species from Australia and False Kamani (*Teminalia catappa*). Native species found include 'anaunau (*Lepidium bidentatum var. o-waihiense*), and endemic sub-shrub. No endangered or threatened species were encountered during the survey.

### 2.5.3 Littoral, Coral, and Benthic Resources

The planning team commissioned marine consultant Steven J. Dollar, PhD., of Marine Research Consultants, to conduct a baseline coral study of the general vicinity of the pier. The report, entitled *Preliminary Baseline Assessment of Reef Coral Community Structure in the Vicinity of the Wharf in Hāna Bay*, was completed in June 2010 (*See Appendix A*). A map included in the study, and based on fifty-eight calibration/validation sites that were evaluated using digital photography, proved to be a highly reliable assessment of coral community structure with an overall accuracy of about 94%.

Of particular interest are the coral communities in direct proximity to the wharf. On the inner side of the wharf, large coral mounds are interspersed with sand channels and patches. Fronting the outer, northern side of the wharf, the reef consists of a narrow limestone ledge that extends to the sand channel. The ledge is colonized with numerous flat circular plates of a single genus of coral (*Montipora*). While there are numerous live colonies, there is also an abundance of remnant dead and eroding plates of Montipora on the reef floor adjacent to the wharf.

A substantial portion of the vertical surfaces of the pilings on the outer edge of the wharf (visually estimated at ~20%) are colonized with extensive overlapping plates of *Montipora capitata*. Similar growth of the same species has been observed on submerged piling within Kahului Harbor. Pilings interior to the edge of the wharf are essentially barren of coral colonization, likely as a result of lack of exposure to light. Surprisingly, virtually no other macro-organisms were observed on any of the pilings. Pilings on the outer edge of the south side of the wharf were not colonized by overlapping plates of *Montipora*; rather this coral occurred in circular encrustations. Toward the end of the wharf, remnant dead and eroding plates were observed.

Coral cover varies greatly in abundance, and mitigation of effects to these communities will be an essential part of the planning effort.

The report was presented at the July 18, 2010, general community meeting in Hāna.



### 2.5.4 Known Threatened or Endangered Species and Habitats

A survey by AECOS, Inc. did not reveal any threatened or endangered marine or terrestrial species.<sup>13</sup> However, species that could possibly be encountered at the site include the green sea turtle (*Chelonia midas*) – listed as threatened in Hawaiian waters, the hawksbill turtle (*Eretmochelys imbricata*) – listed as endangered (Federal Register 1999 a, b), and the Hawaiian monk seal –listed as endangered (Federal Register, 2001). Procedures should be in place during construction to cease activity if one of these species is in the vicinity.

One native plant was identified in the project area, east of the wharf. The small plant, 'Anaunau (Lepidium bidentatum var. o-waihiense), is not endangered, but is considered a species of concern. Although construction staging is unlikely to spill over into the terrain where the plant occurs, construction personnel should be informed and aware of the species occurrence and value.

#### 2.6 Natural Hazards

Hāna Bay and the project site are quite susceptible to tsunami, stream flooding, storms, erosion, and volcanic/seismic activity.<sup>14</sup> The Atlas of Natural Hazards in the Hawaiian Coastal Zone reports on a program of research that assigns a relative ranking scale to seven natural coastal hazards: Tsunamis, stream flooding, high waves, storms, erosion, sea level, and volcanic/seismic activity. The ranking is based on the historical trends and natural factors influencing site vulnerability and hazard intensity in the Hawaiian coastal zone.

#### Wind

The wide exposure of the Hāna coast to wind and waves approaching from the north, east, and south, make the dynamic hazards associated with storms and waves relatively severe, ranking them at 4 and 3 respectively, with 4 being the highest, and 1 being the lowest.

#### Flooding

One of the highest flood heights recorded in Hāna Bay during the 1946 tsunami was 28 feet. The tsunami hazard is ranked high, at 4, at the low-lying coastal embayment. Stream flooding is also ranked high, at 4, at Hāna Bay where the coastal slope is low and streams empty to the sea.

Additionally, *Figure 2-10* shows that the project area lies within FEMA's Flood Insurance Rate Map designation A, meaning that there is a 1% annual chance of flooding and a 26% chance of flooding within a time span of 30 years.

<sup>&</sup>lt;sup>13</sup> Bremer, Leah; Guinther, Eric; Laing, Katie; AECOS, Inc., Hāna Wharf Improvement Project: Water Quality and Marine Survey of Potential Impact Areas in Hāna Harbor, Hāna, Maui (February 2007).

<sup>&</sup>lt;sup>14</sup> Fletcher, Charles III, Grossman, Eric E., Richmond, Bruce M., Gibbs, Ann E., Atlas of Natural Hazards in the Hawaiian Coastal Zone (2002).



Figure 2-10 FEMA's Flood Insurance Rate Map (FIRM #150003 0320 B)



#### Hurricanes and Storms

Most hurricanes and tropical storms approach from the east and pass to the south. As a result, the storm threat is ranked high, at 4, in Hāna Bay, where it faces directly toward approaching storms. In April 15 – 16, 1968, the Hāna District was declared a disaster area by the State of Hawaii, a result of 17 inches of heavy rains. Of this total, nearly 16 inches fell within 15 hours, and 1.8 inches fell within 15 minutes. This intensity categorized this event as a 100-year storm.<sup>15</sup>

#### Erosion

Hazards due to erosion are ranked high, at 4, and sea-level rise inside Hāna Bay are ranked moderately high, at 3.

#### Seismic

Threat of seismic activity is ranked moderately high, at 3, along the entire Hāna coast.

The Overall Hazard Assessment (OHA) for the Hāna coastline, which ranges from a low of 1 to a high of 7, is ranked relatively high at 6, at the stream mouth of Hāna Bay.

#### 2.7 Archaeological & Cultural Resources

Hāna is rich with historical significance, but there are no historic structures within the project area that are listed in the State and National Registers of Historic Places.

Very little archaeological work has been conducted in the Hāna area. Previous archaeological work conducted in the vicinity includes investigations by Walker (1931), Sochren (1963), Sterling (1969), Cordy (1970), Pearson (1970), Bevacqua (1972), Chapman and Kirch (1979), Landrum (1984), and Kolb (1991). The majority of these archaeological endeavors focus on Pi'ilanihale heiau, which is located about four miles on the coast north of the project area on Ulaino Road, and has been the subject of some of the most interesting archaeological work in the Hāna District. Cordy (1970) produced a detailed description of the site. Kolb (1991) conducted excavations aimed at delineating the stages of construction of this massive structure, comparing it to other heiau on Maui, and relating this evidence to political change on the island.<sup>16</sup>

In 1992, Cultural Surveys Hawaii conducted an archaeological inventory of approximately 400 acres of pasture land for an Environmental Impact Statement for the Hāna Ranch Country Club. The survey resulted in the identification of 51 sites, 31 of which were probably historic age and 19 sites which may be of prehistoric age. This historic age definition includes two probable habitation site remnants that may have been related to Land Commission Awards (LCA) within the project area. The remaining 29 sites of probably historic age have a probable agricultural function designation. Of

<sup>&</sup>lt;sup>15</sup> Pogue, Pamela, Rhode Island Emergency Management Agency, and Robert J. Collum, Jr., Maui County Civil Defense Agency, *The Maui County Hazard Mitigation Plan*, January 2006.

<sup>&</sup>lt;sup>16</sup> Rosendahl, Ph.D., Inc., Paul H., Archaeological Mitigation Program Hāna Medical Center Project Area, Land of Kawaipapa, Hāna District, Island of Maui, Hawaii, April, 1996.



these, 16 sites relate to farming which took place until at least the 1930's and 13 sites relate to sugar plantation or cattle operations.<sup>17</sup>

Adjacent to the project site on the south side of Hāna Bay entrance is Ka'uiki Head, the birthplace of Queen Ka'ahumanu, considered the favorite wife of Kamehameha.

Ka'uiki Head was one of the most fought-over pieces of territory in the Hawaiian Islands. It was especially hard-fought in 1765 when Kalani'opu'u of Hawai'i invaded East Maui, occupying Hāna and Kīpahulu. Later, in the Battle of Makaolehua, Maui warriors fighting for Kamehamehanui retook Hāna, but only reoccupied Ka'uiki Head after a prolonged siege.

The 'Ahahui Ka'ahumanu Society conducts their yearly protocol at the end of the pier, where there is a direct sight line to the cave of Queen Ka'ahumanu's birth.

#### 2.8 Ocean and Beach Recreational Resources

#### Swimming

Hāna Bay Beach is a black-sand beach located on the eastern shore of Maui, Hawai'i. The beach is popular for swimming, picnics, and outrigger canoeing. Hāna Bay has a large, black sand beach which is the result of lava eroding and washing into the ocean from a nearby stream. This area is well protected and is advertised in travel sites as a very safe place to swim. It is the perfect spot for picnics and water activities such as outrigger canoe races. Canoe clubs are often seen practicing this ancient Hawaiian sport in the late afternoon.

#### Pier activities

The boat ramp in Hāna Harbor is heavily used by the local population for launching fishing boats. Many activities also occur at the pier. Folks enjoy fishing, especially on the deeper, seaward side of the pier where more types of fish can be found at these depths and end up part of the local diet, and also sold to the Hotel Hāna-Maui restaurant.

Members of the Hāna Canoe Club train at the pier by running the length of the park, onto the pier, jumping off, and swimming back to their "hale," where the routine is repeated. Kūpuna, and tourists, enjoy strolling on the pier.

#### Hiking trails

There are small pocket beaches with red cinder sand around much of Ka'uiki Head. Tourists, in particular, can be seen trying to hike around the head, but the terrain is extremely steep and rugged. The coast on the ocean side is exposed to open ocean swell and trade wind waves, and is not safe. There is a trail to the lighthouse located on a small island just off Ka'uiki Head on the south side of Hāna Bay, marking the easternmost point of the island. The site and tower are closed, but it can be seen from Hāna Beach Park.

<sup>&</sup>lt;sup>17</sup> Keola Hāna Maui, Inc., Final Environmental Impact Statement for the Hāna Ranch Country Club, November 1992.



### 2.9 Infrastructure and Utilities

In the early 20<sup>th</sup> century, Hāna pier was an important commercial structure when the sugar industry was active. Barge companies such as Young Brothers, in the 1930's, made their way to Hāna to make deliveries of fuel and fertilizer for use by plantations the area. Remnants of train tracks that were used by trains to take goods from the barges to the plantations are still visible on the wharf. Today, the train tracks are no longer in use and there are no barge operations for deliveries of goods and services.

### 2.9.1 Power

Electrical service to Hāna is presently provided by Maui Electric Company, Ltd. (MECO) power lines. The installed generating capacity that are currently owned and operated by MECO on the island of Maui is 212.90 MW. The total generating capacity from these stations are supplied by 26 generating units at two power plant sites and one substation site on Maui. In addition, two standby diesel engine generators fueled with diesel fuel oil were installed in April 2001, at Hāna Substation No. 41, to provide electric power to the Hāna Community primarily during planned maintenance or unplanned power outages of the transmission line to Hāna. At the project site, there are two street lamps, one of which is burned out.

The current transmission grid on Maui consists primarily of seven 69 Kilovolt (KV) lines originating at the Ma'alaea power plant and four 23 KV lines originating at the Kahului power plant. An extension of one 23 KV line runs from Kahului, around the base of Haleakalā, through Pā'ia, and ends in Hāna. Transmission lines do not continue from Hāna around the eastern base of Haleakalā to Wailea.

#### 2.9.2 Telecommunications

The existing telephone system on Maui consists of a network of telecommunication links made by wire, fiber-optic lines, and microwave transmissions. Hawaiian Tel Company maintains overhead telephone lines. Radio stations provide microwave links off of the island, including a link that connects Hāna with the rest of Maui via Hu'ehu'e on the island of Hawai'i and Haleakalā. Regarding cable systems, Hāna is currently fed via microwave link between Hāna and Pu'u Ni'ani'au (on Haleakalā).

Telecommunication services are limited in the Hāna Community Plan Area due to the remote location of the region thus, gaps in service exist. Coverage areas and current deficiencies for each telecommunication service are briefly described below.

*Telephone:* Telephone service covers the whole region; no deficiencies exist.

*Wireless:* Wireless coverage is extremely limited throughout the region. Few companies service the area, providing consumers with very limited wireless options. Generally, the best coverage is in the Hāna town area. No wireless coverage is available in the southeast portion of the region between Kaupō and Kanaio.

*Internet:* Since telephone service covers the entire region, dial-up internet service is also available throughout the region. Other forms of internet service are extremely limited in the region.



#### 2.9.3 Roadways and Traffic

As described earlier, Hāna Highway (State Highways 360 and 330) is the main developed roadway serving the Hāna region from Kahului. A one-day traffic survey conducted in 2001 by the State DOT in the vicinity of Kailua Bridge along the Hāna Highway indicates that travel in both directions during the 24~hour period totaled 1,517 vehicles. During the peak A.M hour, 200 vehicles were counted and 90% of these vehicles were traveling in the Wailuku direction. During the peak P.M hour, 162 vehicles were counted and over 80% were traveling in the Hāna direction. The majority of users are Hāna residents traveling to and from work in Wailuku during normal business hours. Hāna Highway is also traversed by visitors traveling to and from Hāna.

Hāna Highway is famous for its one-lane bridges, hairpin turns, and spectacular scenic vistas. There are 56 bridges in this section north of Hāna, 46 of which have only one lane. The earliest bridges are dated back to 1911, making them nearly 100 years old. Their age alone could be representative of their structural integrity. The roads are up against the cliff side, so rock falls and landslides during inclement weather are not uncommon. When this happens, either a traveler waits until road crews clear the road, or could travel via County route 31, from Hāna south to Kīpahulu, which turns into Pi'ilani Highway about 13 miles southwest of Hāna.

County Route No. 31, between Huelo and Kīpahulu, was designated the Hāna Highway Historic District on March 19, 2001, and was listed on the Hawai'i State Register of Historic Places. Listing on the National Register followed on June 15, 2001.

The Hāna Highway Historic District extends from Hō'alua Bridge near Huelo in the Makawao District to Koukou'ai Bridge in the Kīpahulu District. There are 59 bridges within the Historic District. The County of Maui prepared a Preservation Plan<sup>18</sup> with a comprehensive approach to managing the 14 bridges along the Hāna Highway that falls under their jurisdiction, which is on the portion of highway from Hāna to Kīpahulu. The remaining bridges are under the jurisdiction of the State of Hawai'i.

The Preservation Plan identified these 14 bridges as functionally obsolete.<sup>19</sup> Ten of these are structurally deficient.<sup>20</sup> These 10 pose a critical issue of public safety due to the potential for structural failure. Although the County could justify closing these bridges to traffic on this basis, the impact of such closure on the community would be significant since each is part of the only continuous road around the eastern half of the island.

Within Hāna Town itself, Governor Linda Lingle in 2008 released \$1,765,000 for the construction of improvements between Uakea Road, which provides a secondary access to Hāna Town and Hāna Harbor, and Keawa Place in the Hāna Historic District to improve driver safety. The project involves extending culverts at two locations,

<sup>&</sup>lt;sup>18</sup> Wilson Okamoto & Associates, Inc., Final Preservation Plan for County of Maui Bridges Within the Hāna Highway Historic District, December 2001

<sup>&</sup>lt;sup>19</sup> One in which the deck geometry, load capacity, clearance, or approach road alignment no longer meet the usual criteria for the transportation system it serves.

<sup>&</sup>lt;sup>20</sup> One that has been restricted to lighter vehicles, requires immediate rehabilitation to remain open, or has been closed.



widening the roadway from one to two lanes to facilitate two-way traffic, and paving the shoulders between Ka'uiki Street and Pa'ani Park to provide an all-weather pedestrian path. Design has been completed and DOT will be requesting allotment release and approval for construction by the end of 2011.

### 2.9.4 Potable Water

The Hāna region is serviced in part by the Maui County Department of Water Supply, Hāna Water Resources, and Hāna Water Company. The County's system is served by three deep wells at Wākiu and Hāmoa, located at the north and south ends of the system, respectively. The Hāna Water Resources system, consisting of two deep wells in Wānanalua and Helani (inoperable), serves the Hotel Hāna-Maui, Hāna Ranch and estates, and commercial establishments in Hāna. The Hāna Water Company system, consisting of a single deep well, serves the Ka'elekū Agricultural Park, one-half mile south of Hāna Airport. The water source is basal groundwater. A series of pipelines connect these sources to Hāna Town.

The projected demand for water in the Hāna region is based on projections supplied by the County of Maui Socio-Economic Forecast Study Update<sup>21</sup>. The projections include population growth projections to the year 2020 as well as household, employment, and visitor unit growth for each island and community plan region. Total water demand for the region is expected to increase from 0.2 million gallons per day (mgd) in 2001 to 0.33 mgd by the year 2020, an overall increase of 0.13 mgd, or approximately 65 percent of present consumption. The greatest needs are for single-family use.

The need for backup and redundancy for all areas of the system are being addressed by improved transmission between Wākiu and Hāmoa, and the addition of another well at Hāmoa. The Wākiu and Hāmoa portions of the system are planned to be connected, and one additional backup well will be added to supplement the Hāna System.

#### 2.9.5 Wastewater Treatment

The Hāna region is not presently served by a County wastewater treatment facility. Facilities in this region must provide individual treatment systems. However, the County of Maui has two FY 2014 capital improvement projects planned to provide a sewer master plan study for both Upcountry and East Maui.

#### 2.10 Socio-Economic Conditions

#### 2.10.1 Population & Economic Trends

The population in Hāna in 2000 was 1,867<sup>22</sup>. In recent years, Hāna has seen job losses and a decrease of children and young adults, probably due to lack of employment. Slow growth is projected over the planning period provided the visitor economy remains healthy. Without policy intervention, Hāna may also experience new population

<sup>&</sup>lt;sup>21</sup> SMS, May 2002

<sup>&</sup>lt;sup>22</sup> Draft Maui Island Plan, December 2009


resulting from an in-migration of mainland retirees who may not actively seek local employment.

The regional economy of Hāna is based primarily on diversified agriculture, the visitor industry, government services, and subsistence activities. Diversified agricultural activities include ranching, tropical fruit, flower and foliage, and taro cultivation<sup>23</sup>. Visitor industry economic engines include the Hotel Hāna-Maui and various bed and breakfasts. Government services include County fire and police, schools, and health services. Subsistence activities include fishing and farming by locals.

# 2.10.2 Public Service Facilities<sup>24</sup>

Within the Hāna Community Plan Region (CPR), public service facilities are mostly adequate to meet population through 2030. These include schools, libraries, recreational facilities, police, and emergency medical services (*Figure 2-11*). Hāna is currently served by only one fire station, but an additional station closer to Ha'iku is proposed by the Maui Department of Fire Control to serve future population and commercial growth.

# Schools & Library

Students in the Hāna area are served by the Hāna Elementary/High School, which had an enrollment of 337 in 2009. Students served by Ke'anae Elementary School, which had an enrollment of 0 in 2009<sup>25</sup>, are bussed to Hāna Elementary/High School. Approximately 22%, or 1 in 5 students, is enrolled in special education, which is the highest percentage among Maui County's CPRs. There are no private schools in the Hāna area. DOE projects enrollment to drop by 38% by 2011. Hāna Elementary and High Schools currently have excess capacity that can accommodate any future growth to 2030.

The existing Hāna Library is 6,309 square feet and is integrated with the Hāna School. No new libraries are planned for the area. However, the existing library is targeted for renovation. The Hāna area has a 2030 facility space surplus of 4,733 gross square feet based on the forecasted population.

# Parks

The Hāna area has 13 County parks or public athletic facilities totaling 28.7 acres. Due to the linear nature of the community (residing mainly along the shoreline and the highway) most of the parks are within the coastal strip, and quite accessible to the community's residents. Most of the parks exist at the neighborhood park level. The community currently has access to 2 tennis courts, 2 sports fields and 1 sports court, in addition to the many supplemental facilities that are provided by the Hāna School Complex.

The Hāna region needs an additional 6.4 acres of community oriented park space over the next twenty-five (2005-2030) years to meet its needs for recreation space. By 2030, the

<sup>&</sup>lt;sup>23</sup> Hāna Community Plan, 1994

<sup>&</sup>lt;sup>24</sup> R.M. Towill Corporation, Public Facilities Assessment Update, County of Maui, March, 2007.

<sup>&</sup>lt;sup>25</sup> Official Enrollment Count, 2009-2010 School Year, Department of Education, State of Hawai'i.



existing community recreational facilities will need to be supplemented by a sport court. Despite the overall facility and community-oriented park needs of this community, there

is still land area available that is more than adequate to accommodate any existing and future park and facility development. The large numbers of shoreline access points within this area provide an excellent addition to the public facilities, but should not be used to replace the need for public park space.

# Police

The Hāna CPR falls within the Maui Planning District's District III - Hāna. This district is served by one police station with 9 budgeted uniformed patrol officers and an estimated share of 3 investigative officers. The district is divided into 2 motorized beats, each patrolled by a single officer. In year 2004, the Hāna Station received 2,054 calls for service, or 228 per officer, representing 3.6 percent of total calls for service in the County. Given the current staffing of 12 officers, police service in Hāna district is determined to be adequate through the study horizon of 2030. Expansion of existing services within the region period is not required.

# Fire Control

The Hāna Station serves this community plan area. The residential population in Hāna is slowly increasing and creating demand for fire facilities to upgrade fire stations and provide more coverage. Further, projected population growth will result in an increasing strain on the community's fire control unit through the year 2030. The major opportunity for Hāna is the addition of a fire station closer to Ha'iku. This would take pressure off the Hāna Station by reducing its service boundaries.

# Hospitals and Emergency Medical Services

There are two main hospital facilities on Maui: Maui Memorial Medical Center and Kula Hospital, neither of which is near the Hāna community. The Hāna community is serviced by the Hāna Health Center (HHC) which is a private non-profit clinic. In 2008, the HHC served 1,721 individual patients. There were 5,782 medical visits, of which 378 were urgent care visits and 24 were emergency visits. Additionally, there were 54 emergency transports after the patient was treated and stabilized at the HHC, 38 by air ambulance, 16 by ground to one of the main facilities. The HHC also provides dental services, complimentary health programs, and enabling programs such as meals to kūpuna, fitness classes, and assistance with applications for publicly supported health insurance.<sup>26</sup>

Due to the character of the "road to Hāna" (Hāna Highway), the service area for Hāna ambulatory care is approximately 40 miles, or a radius of approximately 20 miles. Demand for ambulances to serve Hāna cannot be justified on the basis of population. However, due to the distances that must be traveled through remote areas, Hāna currently has two ambulances. This is expected to be adequate throughout the planning period to 2030.

<sup>&</sup>lt;sup>26</sup> 2008 Annual Report, Hāna Health



# Airports

Hāna Airport is a small commercial transport airport with limited terminal and airfield capabilities. The limiting factor at the airport is the length of the runway. At 3,605 feet, the airport can only support limited short-range, interisland aircraft. Aircraft with greater range are required to fly to Kahului or Honolulu International Airport to re-fuel before continuing to their destination. Hāna Airport cannot currently expand because of topography and land ownership constraints.

In 1999, 8,093 interisland passengers, zero tons of cargo and mail, and a total of 4,918 aircraft operations went through Hāna Airport. In 2025, it is projected that 13,400 interisland passengers will travel through Hāna Airport, zero tons of cargo and mail and 7,500 aircraft operations will go through this airport. Only 3 aircrafts (1 single-engine and 2 multi-engines) are based at Hāna Airport.

# Solid Waste

Hāna Landfill occupies approximately 6 acres of a 34-acre parcel owned by the County. The landfill services residents of the Hāna Community Plan region, and has a designed lift of 30 feet and an estimated capacity of 290,400 cubic yards. The 34-acre County parcel is shared by Recycle Hāna, which separates out scrap metals, glass, plastic, cardboard and green waste for recycling and composting.

The landfill accepts solid waste and receives approximately 4 tons daily, which translates 1,460 tons per year or 3,650 cubic yards. The Hāna Landfill has an estimated capacity of 217,000 cubic yards dedicated to waste burial. Approximately 109,500 cubic yards of waste will be disposed of at the Hāna landfill between the years 2000 and 2030. At the future (year 2030) annual waste generation rate of 3,437 tons (or approximately 8,600 cubic yards), the remaining 107,500 cubic yards of landfill capacity will extend landfill operations into the 2040's.





Figure 2-11 Public Facilities in the Hāna Community



# 3.0 SUMMARY OF COMMUNITY, AGENCY CONSULTATION AND OUTREACH

This study commenced in January 2010 and the Pre-Assessment phase of work included developing a working relationship within the Hāna community to determine whether there is consensus to improve access to the community through Hāna Harbor. The planning team purposefully sought to identify potential affected users of the pier to facilitate an understanding of community needs and concerns. Small group meetings with key community members were initially held to understand the range of issues and to get the "pulse" of the community.

Meetings with governmental agencies at all levels were also conducted to identify areas of jurisdiction, authority, and necessary permits and approvals that would be required upon future action. Also, meetings with potential commercial harbor users (i.e. barge operators) and other identified parties of interest were also conducted to assess existing needs, capabilities, and consideration for future operational activities that are suitable to the lifestyle needs and overall character of the Hāna community.

# 3.1 Site Visits and Small Group Meetings

On February 18 and 19, 2010, the project team, consisting of the former ATDC; State Department of Transportation, Harbors Division; consultant Group 70 International, Inc.; and Kaimipono LLC, held small group meetings in Hāna with residents and community members, with emphasis placed upon meeting with kūpuna and subsistence-based fishermen. The purpose of the meetings was to gather input on how the community sees the pier and harbor and what they would want for the future. The community groups that have been contacted and involved in this portion of the project are listed in *Table 3-1*.

The planning team also met with key stakeholders in business and government, as shown in *Tables 3-1 and 3-2*.

A smaller project team returned to Hāna on March 18 and 19, 2010, and met with a group of kūpuna, the 'Ahahui Ka'ahumanu, the Hāna Canoe Club, Hasegawa General Store, and with more fishermen. A subsequent meeting with Hāna Ranch was held in Honolulu.

# 3.2 Issues and Concerns

Whether by government stakeholders, Hāna residents, or business people, the following were concerns and goals echoed by each group.

# 3.2.1 Government

U.S. Army Corps of Engineers (USACE); United States Coast Guard (USCG)

The purpose behind meeting with both the USACE and USCG was to inquire whether they had any interests or concerns. The USCG does not have jurisdiction or authority over Hāna Harbor because it is a non-commercial harbor and there is no security risk.



The USCG would get involved only if the USACE got involved because the USCG would then review the project.

The USACE does not get involved with piers and shore side facilities. Therefore, they could probably only get involved with replacement and reconstruction of the pier through a Congressional earmark for a navigational study of the waters surrounding the pier, then the pier itself could be folded into the study. However, Congress likely would not prioritize a study of Hāna Harbor. Chair Oberstar and Representative Hirono examined the pier from the air and the House Transportation and Infrastructure Committee estimated a complete replacement of the pier would cost \$25 million.

At the project's onset, the expectation of the Consultant was to: 1) conduct field investigations; 2) review "as-built" and other existing plans, studies, reports, and records on file with the Harbors Division; 3) coordinate all activities with ATDC and other pertinent State personnel and appropriate organizations as designated by the State, or as required; 4) provide all applicable sketches and calculations; 5) perform professional planning, engineering, architectural, and financial analyses of existing situations; 6) provide professional recommendations on designs and procedures proposed by the ATDC concerning planning, engineering, architectural, and financial matters; 7) prepare final master plans, technical specifications, and proposal documents fully describing the work required for the development of the Project for incorporation into relevant development materials; and 8) prepare project cost estimates as requested by the ATDC.

The focus was to see what the community wanted in a pier, and what type of design would satisfy the main criteria outlined in Chapter 4.

(As of July 1, 2010, ATDC was effectively dissolved by Legislative action (no funding budgeted) and DOT Harbors Division assumed complete responsibility of, and authority over, this Project.)

The State Department of Transportation Harbors Division is governed by HRS §266. All commercial harbors<sup>27</sup> fall under the care and control of the DOT. Section 266-1.6 identifies Hāna Harbor as a commercial harbor under the jurisdiction and administrative authority of DOT Harbors Division.

Under its statutory mandate, the Harbors Division focuses on essential daily management and operations of the commercial harbor system rather than development of new expansion opportunities.

The goal of DOT Harbors is to make a final decision on the future of the pier. Most recently, DOT condemned the pier. However, children still found a way around the gated barriers, resulting in continuing liability issues for the State. In response, DOT Harbors instituted short-term fixes through funding from special maintenance projects. The burned-out street lamp will be replaced and the gate to the pier may also be

<sup>&</sup>lt;sup>27</sup> "Commercial Harbor" means a harbor or off-shore mooring facility which is primarily for the movement of commercial cargo, passenger and fishing vessels entering, leaving, or traveling within the State, and facilities and supporting services for loading, off-loading, and handling of cargo, passengers, and vessels. HRS §266-1.



replaced in the near future. The large gaping holes just beyond the gate were covered by a barrier to prevent anyone from falling in inadvertently and injuring themselves.

Over the long-run, the concerns of DOT Harbors include the management and on-going maintenance of the pier. Typically, such costs are paid through revenue generated from commercial pier operations. However, if Hāna pier is not commercialized, there would be limited funds to maintain the pier.

# State DOT Harbors Division, Maui District

The Harbor Master had some questions and offered recommendations. Firstly, it was suggested the team determine who the Hāna community is; whether it is the long-time residents, only in the immediate area of Hāna, or the entire District of Hāna. Secondly, the team should ask why anything is being done to the pier. Would improvements be strictly for emergency response capability? If this is the case, the agency may be required to take resources and personnel in/out of Hāna during an emergency.

The agency's underlying concern about improving the harbor is the lack of staff to manage the harbor and long term operation and maintenance expense without revenues to cover the cost. Currently, the function of the Hāna pier is limited to recreational use, despite the pier's condemnation.

In an emergency situation, resupplying Hāna does not require a pier because there are other options such as Logistics Support Vessels (LSV), and possibly the airport, but its capabilities need further investigation.

It was recommended that the planning team also meet with the U.S. Army Corps of Engineers, barge service operators, and the U.S. Army or U.S. Navy.

# County of Maui Mayor's Office

The purpose behind meeting with Mayor Tavares's office was to keep the office informed with regards to proposed improvements at Hāna Harbor. The Mayor's biggest concern is the safety surrounding the existing pier. The office also asked whether the pier will be left the same or be constructed at a different size.

# County of Maui Civil Defense (CMCD)

Group 70 conducted a phone interview with CMCD Administrator Gen Iinuma. The agency's goal was to ensure that, in the event of an emergency, that goods, services, and emergency response can be provided to the Hāna community in a timely and efficient manner. The agency also viewed Hāna Harbor as a possible secondary access point in the event that Kahului Harbor is disrupted by a hazardous event.

Improvements probably cannot be too robust as that will cause people to question the need. However, CMCD finds value in a structurally robust pier that could withstand storm surges and provide options for emergency operations. However, if only considering emergency access and delivery response needs, any new harbor design should be able to withstand high demand and use of activity over a short period of time. Specifically, the structure would need to support the weight and activity of loading/off-loading activities from a barge or comparable vessel.

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The use of LSVs during emergency events is one possible solution. However, there are questions as to whether or not there is sufficient draft and depth to navigate through the harbor onto shoreline, as well as environmental concerns by high intensity activity. (Barge operators indicated that a landing craft could operate in waters less than 6 feet deep.)

Additionally the use of the existing DOBOR boat ramp limits the size of cargo and ship that could be brought in. Therefore, having a rebuilt wharf that could support the scenario of high intensive use for short periods of time seems to be the best solution.

Other emergency response options for CMCD include the use of Hāna Airport and bringing in goods via Chinook helicopter. However, as described previously, these options have limiting circumstances.

# *County of Maui Planning Department (CMPD)*

The CMPD recommends that any proposed harbor improvements maintain the character of Hāna as a whole, which is rural and pristine. The Hāna community is one of the few intact cultural *kipuka*, where the culture is still intact and still practicing the old way of doing things.

Given that the pier is over 50 years old, the CMPD recommends contacting the State Historic Preservation Division (SHPD) to verify historical documentation standards. Furthermore, tsunami and other storm surge events have left only a few remnants in the built environment of historical character and significance, so the team should consider saving what is possible.

The process to update the 1994 Hāna Community Plan will probably begin towards the end of 2010. The CMPD anticipates that the Hāna community would encourage very little to no growth and to keep the existing lifestyle as it is.

# County of Maui Parks and Recreation (CMPR)

The CMPR has oversight over the beach park portion of Hāna Harbor. The park is a high use area by the community and by tourists, who either are part of a tour group or on their own. Due to this, parking is an issue. The primary issue CMPR is facing is the overuse of the existing facilities that are getting very old.

Hāna Bay and the beach park are the best places for family oriented activities that include children. The project needs to ensure that that lifestyle is maintained and protected.

# 3.2.2 Community

The planning team conducted two rounds of small group meetings and three general community meetings.

As mentioned earlier, the purpose of the small group meetings was to meet with key community members and leaders to get a feel for how the community envisioned the pier as part of the community's future.



# General Community Meetings

The Reconnaissance Phase of this Plan formally engaged the community through conducting two initial public information meetings to gather input and identify community needs, concerns, and issues relative to the project scope. These general community meetings were held on May 17 and July 8, 2010, in Hāna (*See Appendix C*). A final community meeting was held in Hāna March 29, 2011, to present the selected alternative and gather feedback.

The primary goal of the meeting on May 17 was to present the various alternatives for pier design that were based on small group community input, as well as on the input of other stakeholders. Environmental impact on coral was a key issue at this meeting. If construction commenced, the community wanted assurances that the environment would return to its original condition. The planning group's marine consultant was unable to report his findings at this meeting because he was unable to begin his study due to rough weather conditions.

The purpose of the July 8 general community meeting was to present the findings of the coral study, which was completed in mid-June. Option 7, based on input from the 1<sup>st</sup> meeting, was also presented at this meeting. This meeting began with a site visit to the pier. Attendees voiced their concerns about safety issues relating to holes in the deck, inadequate lighting, and the inoperable boom hoist. When the meeting continued in the community hall, attendees accepted the findings of the coral study, which was presented by Steve Dollar. Mike Hunneman, an engineering consultant, was also available to answer any questions audience members had regarding costs and pier design.

The March 29, 2011 meeting was held in order to present the selected pier design option. The option selected by DOT was Alternative #7, Narrowed Reinforced "T" Option/Twin Mooring Support, and Pedestrian Access (Same Footprint as Existing Pier). The community voiced their concerns primarily with the use of stainless steel/aluminum versus concrete, noting safety and maintenance issues. These concerns were relayed to DOT.

The following paragraphs outline the primary concerns that were raised by the Hāna community throughout all of the meetings:

## Safety.

The most important issue voiced by the community was the unsafe condition of the pier, which has caused it to be condemned. However, even if it is formally closed to the public, people have still found ways around the barrier, resulting in a public safety issue.

Another safety issue is the boom hoist that is no longer operational. Children have been seen swinging off of it and diving into the water.

Lack of adequate lighting can also lead to dangerous situations when maneuvering boats to and from the shore, especially since there is no appropriate turnaround area. Inadequate lighting on the pier may also prevent users from seeing the various holes in the existing decking. In response, DOT Harbors have installed barriers to holes in the pier deck.



The pier has been used by boaters and children alike. The material used in the construction of the pier is important; the use of stainless steel/aluminum can be hot for keiki feet, and become slippery when wet.

While outside the scope of this study, the parking area has also experienced some safety issues. Since the parking area abuts the hillside of Ka'uiki Head, which is comprised mostly of cinder ash, rockslides have occurred, causing damage to parked cars. Furthermore, the trail leading from the pier to the birthing cave of Queen Ka'ahumanu has become more difficult to hike on since its cinder ash composition and natural erosion makes it unstable.

## No commercialization of the harbor.

Members of the community voiced strong opposition to the commercialization of the pier, as many believe doing so would destroy their fertile fishing ground and the overall resources of the harbor, as well as encourage the type of development growth that would not keep Hāna in its pristine condition. While the community acknowledged looking towards the future of Hāna is important, an option to maintain the existing character and lifestyle is preferred. This is the meaning of "Keep Hāna Hāna."

If improvements to the pier resulted with the ability for limited barge service, the community expressed a preference for emergency resupply, evacuation, and the opportunity to haul unwanted bulk items out of Hāna. Residents also acknowledged the value of improving the pier to have the capacity to provide emergency response service to the area. Other individuals further elaborated that some limited barge operation that provided goods to Hāna would be good, as currently, the only means of bringing materials, equipment, supplies to Hāna is through the existing highway. One individual stated that nothing should be done and that as a historic structure it should be allowed to deteriorate naturally.

## Meet the needs of the local community.

Hāna Harbor is central to the social fabric of the community—fishermen fish for their income and sustenance; children learn to swim, fish, and to carry on traditions; families gather for activities; a canoe club utilizes the pier for training; kūpuna and local residents enjoy walking along the pier. The community wants this passive and active recreational lifestyle protected.

Any improvements should meet the needs of the local community first. Some members inquired as to the status of DOBOR improvements that were to be completed, including improvements to the boat ramp, the designation of trailer parking with trailer access, and a boat landing area. Several fishermen requested that the boat loading dock be extended for greater utility. Pier design and structural improvements should also consider unique surge conditions and seasonal storm events that have damaged the existing pier over the years.

The pier is significant from a cultural perspective. The 'Ahahui Ka'ahumanu Society conduct their protocol to honor Queen Ka'ahumanu by utilizing the makai end of the pier as a visual line-of-sight to the birthplace of the Queen, a cave in Ka'uiki. In earlier times, the society held the service at the cave but deteriorating conditions of the trail and the aging of its members has made this impossible to continue.



# Accessibility.

Since the harbor is viewed as important to the life of the community, it should be accessible to everyone, especially to kūpuna, disabled residents, and pedestrians in general.

The community looks forward to an improved pier, but has expressed skepticism about the State carrying out any improvements. This is reinforced by the recent experience of proposed improvements to the existing boat ramp which were approved but not started. The project has not yet commenced due to financial constraints at the State level. The approved funding proved inadequate when the revetment wall repair needed to be included in the overall project cost and this had not been part of the original design. To help resolve their fear, the community feels that immediate repairs such as a new loading dock, to accommodate 1-2 boats, and repairs to improve safety should be implemented while a larger plan for the entire pier is being considered.

## Infrastructure limitations.

Infrastructure limitations, such as road access and weight limits for bridge crossings (Hāna Hwy), are major constraints and significantly affect the overall efficiency of transporting goods and services to Hāna, resulting in the higher costs of doing business being passed on to the consumer. Air transport is not a viable option due to the low frequency of airport use and the limitations of Hāna Airport, as previously identified.

## Benefits to the Local Community.

Many issues were raised about maintaining the Hāna lifestyle, which is the main benefit and attraction of Hāna. Improvements should resist any disturbance of the marine ecosystem. Growth in commercial and subsistence fishing should be accommodated, but yet be limited in use. Infrastructure should be improved to sustain another large storm event and enhanced beach facilities should be addressed. An alternate location for the pier, possibly at a different spot in the harbor, should also be taken into account because of the shallow depth, daily swells, and tides. During the construction phase, construction jobs should be allocated to local folks as much as possible.

The goal of the Pre-Assessment phase was to identify opportunities and constraints, ultimately leading to guidance for a range of design options to be further considered by the community throughout the development plan process.

# 3.2.3 Business

The planning team met with the business community at the Hotel Hāna Maui. Generally, while this group would welcome an opportunity to transport goods and services through a barge operation in the harbor, issues such as invasive species and increased commercialized activity were also a concern.

Hāna Ranch, which owns 4,500 acres of ocean front property, currently transports approximately 800 head of cattle out of Hāna every year, mostly to Upcountry Maui. The ability to transport their product by barge or ship would be very helpful.



# Barge Operators

Barge operators have also provided input on the concept of operating in Hāna Harbor. Due to Hāna's remote location, and the small market, it would not be economically feasible to bring in goods and services by barge on a regular, week-to-week basis. It was estimated that serving Hāna on a regular basis would result in a loss of \$3-\$4 million annually. However, on an annual or bi-annual basis, or on a contract basis, and in emergency situations, barge operators feel that they could provide the operations for these services, as they do for Kalaupapa and other isolated locations across the Pacific.

A standard barge is approximately 340', while the smallest barge utilized by one of the operators is 286'. From a pier design perspective, barge operators indicate that the new pier would need to support at least 20 tons of forklift operations. Only a roll on roll off (RORO) system would make any sense from a design, logistics, operational and economic perspective. Otherwise the pier would need too many other features and the market at Hāna does not currently justify anything more.

Adequate maneuverability for unloading operations is needed, as well as a staging area adjacent to the pier to support emergency operations.

The water around the existing pier is deep enough without a need for additional dredging. Barge operations require a draft of 15-18 feet and the current depths next to the pier range from 20-23 feet.

# 3.3 Challenges of Pier Improvement

The (former) Aloha Tower Development Corporation Strategic Plan, March 2010, for Hāna Harbor included the development of infrastructure, demolition as necessary, expansion of facilities and acquisition of additional land. The main objective behind the proposed development plan is to ensure a safe and viable access point to the Hāna community during an emergency situation when roads and the airport are closed or blocked.

The Hāna community emphasized the importance of "Keeping Hāna Hāna" and maintaining the rural character of the area. A safer and improved pier will, more than likely, attract additional, and more intense, pier users. Existing commercial activities observed at Hāna Harbor include kayak and snorkel adventure outfits (Maui Kayak and Snorkel). In the general Hāna area, other outfits offer sightseeing tours of Hāna, a Hāna lava tube adventure, and a Hāna waterfall hiking tour.

Pier improvements designed to maintain the rural character of the Hāna area, and limit the use of the pier to its current passive recreational state would be in direct conflict with the mission and objectives of the DOT Harbors Division, who now have jurisdiction over the pier and this development plan. Therefore, under its mandate, it would be difficult to limit commercial users from utilizing the pier. Alternatives and recommendations are discussed further in Chapter 9.

The design of the pier can have an impact on the extent of pier operations. The existing pier currently has ten moorings, and, depending on the preferred pier design option ultimately selected, the proposed improvement would only have two dolphin moorings,



one at each end of the pier. Option 7, for example, has a narrowed reinforced section of the pier that could limit the type and activities of vessels that may moor to the pier.

However, the proposed development plan only calls for improvements to the pier itself, and not for any infrastructure that would be required to sustain increased pier activity, such as roads, parking, fuel stations, and the like. There is a separate plan for improvements to the rock revetment and boat ramp loading dock, but that, also, is limited and primarily to support existing boat ramp operations.



Name	Affiliation
'Ahahui o Ka'ahumanu, Hāna Chapter	Cultural Org,
Akule Hale	Community Org.
American Marine Corporation	Barge operator
Fishermen (Capt. Mark and Malia Collins)	Key Community Members
Hana Airport (Interviewed a private vendor)	Business
Hāna Business Council (Tim Johnson)	Business
Hāna Canoe Club	Community Org.
Hāna Offshore Fishermen's Association	Community Org.
Hāna Ranch (Amber Starr)	Business/Land Owner
Hāna School (Richard Paul)	Community Org.
Hāna Senior Center "Hale Hulu Mamo"	Community Org.
Hāna Youth Center (Keoki Kalani)	Community Org.
Hasegawa General Store (Neil Hasegawa)	Business
Hawai'i Pilots Association (Captain Edward W Enos, Jr.)	Community Org.
Hotel Hāna-Maui (Mark Stellings)	Business
Kūpuna	Key Community Members
Sause Brothers Ocean Towing	Barge operator
Sheraton Hāna Hotel	Business/Land Owner
Young Brothers	Barge operator

# Table 3-1 Hāna Community and Business Consultation List



# Table 3-2 Agency Consultation List

Name	Affiliation
US Army Corp of Engineers, Honolulu Engineering District	Federal
US Coast Guard, US Department of Homeland Security, District 14	Federal
US Fish and Wildlife Service, Pacific Island Office, Coastal Program, Offshore Islet Restoration Committee	Federal
State of Hawai'i Legislature, State Senate 6th District (Senator Kalani English)	State
State of Hawai'i Legislature, House of Representatives, 13th District (Representative Mele Carroll)	State
Department of Business, Economic Development & Tourism, Hawaii Tourism Authority	State
Department of Land and Natural Resources, Division of Forestry & Wildlife	State
DLNR, Boats & Ocean Recreation, Engineering Division	State
DLNR, Office of Conservation and Coastal Lands	State
DLNR, State Historic Preservation Division	State
DLNR, State Parks	State
Department of Transportation, Harbors Division	State
Hāna Advisory Committee	County
Mau'i County, Office of the Mayor	County
Mau'ï County, Councimember Bill Kauakea Medeiros	County
Mau'i County, Civil Defense	County
Mau'i County, Department of Parks and Recreation	County
Mau'i County, Planning Department, Long-Range Division	County



# 4.0 ANALYSIS OF DESIGN ALTERNATIVES

## 4.1 Alternate Design Schemes from 1999 Okubo Report

The 1999 Okubo report evaluated four alternate design schemes that assessed preliminary tasks to repair the pier and the associated estimated cost for these repairs. One of the main conclusions of this report was that the pier was determined to be structurally unsafe for any type of use and beyond economic repair. The preferred recommendation at that time was to completely demolish and remove the existing pier and replace it with a new pier slab deck.

The four alternate design schemes included the following options:

- 1. Repair Existing Pier Deck;
- 2. Demolish and Replace with New Pier Deck;
- 3. Demolish and Replace with New Smaller Pier Deck Area; and
- 4. Complete Demolition and Removal of Existing Pier.

## 4.2 Additional Options

As part of the Reconnaissance Phase, four additional alternatives were included for evaluation—the first two were based on project meetings with key members of the Hāna community and barge operators, and a third and fourth were based on comments received at the general community meetings held in Hāna on May 17, 2010, and July 18, 2010.

The four additional alternatives are:

- Narrowed Reinforced "T" Option/Twin Mooring Support and Narrowed Catwalk for Pedestrian Access;
- 6. Narrowed "T" and Shortened "I" Option/Twin Mooring and Catwalk for

Pedestrian Access (Near shore in Previously Undeveloped Area);

- Narrowed "T" Option/Twin Mooring Support and Catwalk for Pedestrian Access (Same Footprint as Existing Pier); and
- 8. Fully Reinforced "T" Option Designed for Barge Mooring and Berthing Forces (Same Footprint as Existing Pier).

## 4.3 Evaluation of Emergency Access to Hāna

The primary justification for completing the development plan is to assess the necessary improvements required to assure that the Hāna community is accessible during an emergency situation, such as an earthquake, tsunami, or some other major natural disaster event. In the past, disaster events causing road closures or discontinued air service have isolated Hāna residents from the rest of the Maui community. The plausible



scenario of Hāna being completely isolated for a long duration of time is the primary motivation to evaluate options to improve or replace the existing pier.

Although utilizing an improved or redeveloped pier as an emergency access point is the main and preferred transportation alternative, other transportation options were evaluated in generalized terms for their potential merits and limitations. An evaluation of these options and the primary opportunities or constraints affiliated with these options is discussed below.

# 4.3.1 Ground Transportation:

The Hāna Highway is the only road in and out of the Hāna community. The highway is very narrow, with bridges as narrow as 12.5', yet is heavily traversed by residents and tourists alike. The average drive time for passenger vehicles from Kahului to Hāna is about 2 hours. Drive times are longer for commercial trucks and trailers, extending to possibly 3 to 4 hours, and may include the need to periodically limit traffic to a single direction along some sections of the road. During post-recovery from an emergency event, there would be additional need to coordinate a convoy system for delivery operations to/from Hāna. The major downside to this option is that other natural disaster events in recent times, such as the 2006 earthquake, have resulted in the highway being closed in both directions, cutting off the Hāna community from accessing emergency supplies and daily necessities. This situation could easily replicate itself during other emergency events.

# 4.3.2 Airline Transportation:

Hāna Airport is about two miles from Hāna Harbor, making it very convenient when delivering goods into Hāna during an emergency. However, the airport is a very small commercial transport airport with limited terminal and airfield capabilities. The limiting factor is the length of the runway. At 3,605 feet, the airport can only support limited short-range, interisland aircraft. The airport cannot currently expand due to topography and land ownership constraints.<sup>28</sup> A complete discussion on the capacity of Hāna Airport is included in the Pre-Assessment Report, page 2-15.

# 4.3.3 Military Reserve Helicopter Transportation:

This option has been implemented before in emergency situations, but requires military approval and declaration by the Governor for activation. After the 2006 earthquake event, the Maui County Civil Defense Agency transported emergency goods via Chinook helicopters that landed in open fields in Kīpahulu. A Chinook is designed to meet an Army requirement to transport a 15,000 pound (7.5 tons) sling load over a 30 mile radius. A 20' container has a capacity of approximately 1,164 cubic feet, and a maximum payload of 62,000 pounds (31 tons), over four times the capacity of a Chinook helicopter.<sup>29</sup> This option becomes cost prohibitive for longer periods of service because a Chinook helicopter is not able to transport as many goods and supplies as a 286' barge or a 20' container.

<sup>&</sup>lt;sup>28</sup> Public Facilities Assessment Update, County of Maui, 2007.

<sup>&</sup>lt;sup>29</sup> (<u>http://www.shipping-container-housing.com/shipping-container-standard-dimensions.html</u>).



# 4.3.4 Logistics Support Vessel (LSV):

This emergency option was suggested by barge operators, harbor operations personnel, and some community residents interviewed by the planning team. LSV vessels are capable of transporting and delivering goods via the ocean but have some requirements for minimum water depths. They have capacity to land on the beach in Hāna Harbor, where goods and materials would be unloaded and transported. This option requires a declaration of emergency by the Governor of Hawai'i, as well as prior approval by the military. The Maui County Civil Defense Agency suggested that long-term environmental impacts are possibly associated with this option due to the potential high intense loading/off-loading activity occurring on the shoreline. Some of these impacts would possibly include coral and reef habitats being destroyed, sand loss, and water degradation during landing. A recommendation by Maui Civil Defense that an assessment of the reef should be conducted to show which options exist for using these types of vehicles.

All of the above transportation options have merit, but their benefits are restricted by one or more reasons, such as excessive costs, capacity limitations, need for an emergency declaration by the Governor, activation and mobilization of support agencies, and the potential of harm on environmental resources and conditions. Repairing or replacing the pier would provide an opportunity to access the Hāna community during an emergency situation and provide a safe pier for the general community to continue its customs, traditions, and everyday activities for generations to come. The above transportation alternatives address the emergency access issues, but not other important community values. This comprehensive view guided the planning team to focus on repairing or replacement of the existing pier as the preferred alternative.





Figure 4-1 Example of a Chinook Helicopter: Boeing CH-47 (http://www.chinook-helicopter.com/model\_comparison/comparison.html)



Figure 4-2 Example of a Logistics Support Vessel (LSV) (http://www.flickr.com/photos/unc-cfc-usfk/3286907527/)



# 4.4 Additional Considerations for Pier Repair Options

Important considerations for the following repair options include the passive recreational benefits to the community, such as fishing, swimming, walking, and informal gatherings; possible effects to existing marine communities of reef corals in the area of the pier. The pier is also important to events and activities associated with cultural sites adjacent to the pier, such as the sea cave at the base of Ka'uiki Hill where Queen Ka'ahumanu was born.

# 4.4.1 Baseline of Coral Habitat

The planning team commissioned Marine Research Consultants, a marine biology consultant, to conduct a baseline coral study of the general vicinity of the pier. The study, *Preliminary Baseline Assessment of Reef Coral Community Structure in the Vicinity of the Wharf in Hāna Bay*, was completed in June 2010 (*See Appendix A*). A map included in the study, based on fifty-eight calibration/validation sites that were evaluated using digital photography, proved to be a highly reliable assessment of coral community structure with an overall accuracy of about 94%.

Of particular interest are the coral communities in direct proximity to the wharf. On the inner side of the wharf, large coral mounds are interspersed with sand channels and patches. Fronting the outer, northern side of the wharf, the reef consists of a narrow limestone ledge that extends to the sand channel. The ledge is colonized with numerous flat circular plates of a single genus of coral (*Montipora*). While there are numerous live colonies, there is also an abundance of remnant dead and eroding plates of Montipora on the reef floor adjacent to the wharf.

Coral cover varies greatly in abundance, and mitigation of potential impact to these communities will be an essential part of the proposed recommendation.

# 4.4.2 Storm Surge

Hāna has experienced very powerful storm surges and wave action. One such event occurred on November 21, 2003. Breaking wave heights up to 40 feet were reported during this event.<sup>30</sup> During that swell event, which was a particularly severe high wave condition, damage apparently resulted to the pier and boat ramp. Wave setup during very large wave conditions is on the order of 1.5 to 2.0 feet. Storm surge at Hāna due to the combined effects of wind setup and sea level pressure reduction is on the order of 0.5 feet and would affect any future design of the pier.<sup>31</sup>

# 4.4.3 Historical Significance

The existing pier is eligible as an historic property and would require an assessment and evaluation of its historical significance in coordination with the U.S. National Park Service, Heritage Document Programs and the DLNR, State Historic Preservation Division (SHPD), Architectural Branch. SHPD's very preliminary comments include that the Secretary of the Interior's Standards would recommend repair of the existing pier (in

<sup>&</sup>lt;sup>30</sup> Honolulu Advertiser, Nov. 22, 2003.

<sup>&</sup>lt;sup>31</sup> FEA Hāna Ramp—Improvements to Rock Revetment and Boat Ramp Loading Dock, Maui, 2008.



kind,) if that would meet the needs of the community. SHPD itself would prefer to retain the character of the existing pier structure.

County Preservation staff, Stanley Solamillo, stated that the County would like an opportunity to review the pier and will require a Historic American Building Survey (HASB) report before any demolition action.

Additionally, the historical and cultural significance of Ka'uiki Hill, which is adjacent to the harbor, should be addressed in the planning, design, construction, and operations of an improved pier system. This would involve coordination and consultation with SHPD, Archaeological and Cultural/History Branches, the Office of Hawaiian Affairs, and interested Native Hawaiian organizations.

# 4.4.4 Additional Cost Factors

Kai Hawai'i, a structural engineering consultant, prepared cost estimates for the options that follow. Kai Hawai'i updated the cost estimates from the 1999 Okubo report to reflect 2010 dollars. These updated figures include costs for reinforcement of pier to withstand barge operations. It is unclear whether the existing pier is equipped with such reinforcements as there are no as-built drawings available to confirm. Costs for remote work location and contingency are also included. (*See Estimated Costs in Appendix B.*)

Additional costs to also factor in:

- *Environmental Mitigation:* Potential impacts to marine environments around the pier must be taken into consideration. At this juncture, however, the cost of mitigation efforts is unknown and difficult to determine because the project has not been designed and it is not certain as to what government agencies will require as mitigation actions. Should mitigation actions be required, a future assessment to enumerate specific impacts to corals will likely be necessary.
- *Repair of Revetment and Turn-around Area:* While the boat ramp itself is under the jurisdiction of DLNR-DOBOR, the turnaround area next to it, as well as the revetment the ramp is attached to, is under the jurisdiction of DOT Harbors. Potential cost is outside the scope of this HHDP, but will be something to consider in the future.



# 5.0 DESCRIPTION OF VARIOUS PIER DESIGN OPTIONS

# 5.1 Option 1

Repair Existing Pier Deck (Arnold T. Okubo & Associates Report)

# Description

This option includes a repair and retrofit of what currently exists of the pier, and is closest to preserving its historical character. The pier structure was built in the early 1920's, but has sustained major structural damage over the years from powerful storm and wave surges. In the 1999 Okubo report, this option consisted of repairing the existing damaged concrete deck slab, beams, girders, pile caps, and piles—labor intensive type of work. Approximately 95% of the concrete deck slab, beams, girders, pile caps, and piles require extensive repairs.

The current 2010 study has identified additional factors that will require updating the pier to modern engineering standards to meet a projected need of emergency service operations. The modifications primarily include repairing the underside of the 18,000 sq. ft. pier, including the existing deck slab, beams, girders, pile caps, and piles. The repair would consist of the removal of all loose, unsound concrete, removal and replacement of all rebar that is corroded beyond a given point, and repairing with a marine grade concrete. The new pier deck will have the capacity to support vehicles to load and offload barges. Additional piles would also be added to reinforce the pier for barge mooring and berthing loads. Mooring appurtenances (bollards, cleats) would be added, as well as curbing and handrails around the perimeter of the pier.

# Costs

In 1999, the estimated cost for this option was \$10M, or \$552/SF. The high cost is primarily derived from extensive reinforcement, retrofit, and renovation activities for a pier in a dilapidated state. In 2010, the same level of effort would yield a cost of \$27.6M or \$1,524/SF. With the additional modernization factors, the 2010 cost estimate is \$34M, or \$1,889/SF.

# Advantages

Many in the community voiced their preference to retain at least a large part of the pier, primarily due to its historical and sentimental value. Since its construction in the early 1920's, the pier has played a large part in community's social fabric. Local children through the generations have learned to swim there; it's where canoe clubs seasonally train for and race; it's where kūpuna and local fishermen go and fish for subsistence purposes on a daily basis; it's where cultural organizations conduct their protocol and practice, as needed; and the pier is where people, both locals and visitors, go to walk and enjoy Hāna Bay and the coastal environment.

## Disadvantages

The strongest disadvantage of this option is its cost. The \$20M appropriated by the Hawai'i State Legislature covers the development plan and actual construction of pier improvements. This option far exceeds what is currently budgeted. It is uncertain and



perhaps improbable during these economic times to assess whether additional funding could be allocated for any additional costs above and beyond current allocation.

Improving the existing pier would invariably attract potential users that currently do not have a means to access and moor to the existing pier since it was designed for commercial uses. This would probably result in some impacts to the quality and character of Hāna's social demographics, economics, and overall quality of life. A full assessment of possible social and economic impacts beyond preliminary engineering estimates for each pier design option is beyond the current scope of this project.



Repair Concrete Deck Slab, — Beams, Girders, Pile Caps, and Piles (18,100 S.F. of Deck Area)



Figure 5-1 Repair Existing Pier Deck. (Option 1). Based upon Preliminary Engineering Report (1999, Arnold T. Okubo & Associates).



# 5.2 **Option 2**

Demolish and Replace with New Pier Deck

# Description

In the 1999 Okubo report, the redevelopment option consisted of removing the entire 18,100 SF existing concrete deck and replacing the pier with a new concrete deck and repairing the concrete piles. Under this scenario, the new concrete deck area will match the existing deck area of 18,100 SF. The allowable design live load on the deck will be 100 psf. Additionally, the replaced deck will match as much of the original character and aesthetic of the existing historic pier, as practically feasible.

The current 2010 study has identified additional factors that will require updating the pier to modern engineering standards to meet a projected need of emergency service operations. The modifications primarily include a new 18,000 SF deck that will be designed to have the load capacity to support vehicles and equipment for loading/offloading barges, for rollon/rolloff capability, and to be designed for barge mooring and berthing forces. This add-on design requirement under the 2010 scenario for Option 2 would also require the pier to have new fenders attached to the ocean side of the pier for barge docking. Bollards and cleats will be installed at various locations on the pier for barge mooring. A handrail will be mounted to the perimeter of the new pier and access pier.

# Costs

The estimated cost in 1999 for the base Okubo option was \$7M, or \$387/SF. This translates to \$11.0 M or \$608/SF in 2010. With the additional modernization factors, the 2010 cost estimate is \$15.5 M or \$856/SF.

# Advantages

The primary advantage is that the replacement of the pier deck would allow the continuation of cultural and everyday activities conducted at the pier. The pier is important to the social fabric of the Hāna community. During community meetings, the kūpuna reminisced and described the historical context of the pier, how Navy boats used the pier and how, for generations, the children in Hāna used the pier as a "right of passage" by learning to swim and by jumping off from "Little Rock", and then ultimately, "Big Rock."

# Disadvantages

While the cost of this option is not as prohibitive as Option 1, improving the existing pier and maintaining and reinforcing the 337' length of the pier deck for barge operations would invariably attract additional and multiple users that currently do not have a means to access and moor to the pier. This could result in a major change to the social demographics, economics, and quality of life of the Hāna community and such impact is beyond the current scope of this project.



 New Concrete Wharf Deck (18,100 S.F.)



Figure 5-2 Removal and Replacement of Concrete Deck and Piles (Option 2). Based upon Preliminary Engineering Report (1999, Arnold T. Okubo & Associates).



# 5.3 Option 3

*Removal and Replacement with Reduced Area of Deck and Piles (Arnold T. Okubo & Associates Report)* 

# Description

This option includes the removal of the entire damaged concrete deck and replacing it with an 8,400 SF new smaller concrete deck area and repairing the concrete piles that will remain. The other piles will be cut at the mud line and removed. The proposed length of the pier would be 200', as opposed to the existing 337'. Barring any environmental restrictions, the cost estimate that follows assumes the unused pilings will be cut down to the mud line, removed, and discarded of.

# Costs

The estimated cost in 1999 for this option was \$4M, or \$480/SF of deck area. This translates to \$7.2M or \$889/SF in 2010.

## Advantages

Constructing a smaller pier at 200' would have a definite cost savings of \$8.3M from Option 2.

## Disadvantages

The shortened length of the pier would have an effect on how the community currently uses the pier—for cultural protocol, canoe regattas, subsistence and recreational fishing, and leisurely pedestrian strolls. A shortened pier would eliminate access to some of the most commonly used fishing areas, and the 'Ahahui o Ka'ahumanu Society would no longer have the line of sight Queen Ka'ahumanu's birth cave during their yearly protocol.

Additionally, a 200' pier, according to barge operators, would not be able to support the smallest barge currently in operation—286'. Not being able to accommodate the barge operations would preclude the primary purpose behind this pier project, which is to access the Hāna community through the harbor and pier during an emergency situation.

Furthermore, a change in the existing footprint of the pier may impact water circulation and quality, leading to possible changes to currents and the littoral patterns in the bay. Analysis of such impacts is beyond is this current scope of work. Furthermore, less surface area of a smaller deck may not be able to disburse wave energy that emanates with seasonal powerful storm and wave surges that occur in Hāna Harbor.





Figure 5-3 Removal and Replacement with Reduced Area of Deck and Piles (Option 3). Based upon Preliminary Engineering Report (1999, Arnold T. Okubo & Associates.



# 5.4 Option 4

Demolition/Removal and No-Build (Arnold T. Okubo & Associates Report)

# Description

This option involves the complete demolition of the 18,100 SF concrete deck and all of the 146 concrete pilings, which will be cut at the mud line and removed. There would be no effort to rebuild any type of pier structure.

## Costs

The estimated cost in 1999 for this option was \$1.2M, or \$66/SF. This translates to \$3M, or \$165/SF, in 2010. Unknown additional costs that would need to be considered are for environmental mitigation since coral exists on the pilings, and the cost of removal, transport, and disposal of demolished materials. A 50% additional cost for remote location, and 10% for contingency must also be included.

## Advantages

One advantage to this option is the low cost. Furthermore, since the pier is deteriorated and condemned, an unsafe structure will no longer pose any threat to members of the public who use the pier. Any liability issue for the State will be removed.

## Disadvantages

The purpose of the HHDP was to explore with the Hāna community whether there is consensus to improve access to the community through Hāna Harbor and, if so, to what degree and form should such improvements be made. Secondly, the HHDP identifies planning issues and strategize to assess alternatives to improve access to the Hāna community. Demolishing the pier, without rebuilding anything in its stead, would not meet the goals of the HHDP, the Legislative intent, and the wishes of the Hāna community.

Since there will no longer be a pier structure under this option, there may be greater impacts to the coastline generated by powerful storm and wave surges common in Hāna Harbor. Unforeseen impacts to beach erosion, and changes in the area's littoral patterns, ranging from surf breaks to fishing ko'a that people have become accustomed to, and rely on, for subsistence purposes, may occur.

While this option pencils out to be the most cost-effective option, the indirect costs to the community are uncertain. As mentioned earlier, the pier, over the generations, played a vital role in the social fabric of the community. No longer having this landmark for the community would diminish an important part of what defines Hāna. As a result, the assessment of this option is that it is not a desired alternative.



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Figure 5-4 Demolition/Removal and No-Build (Option 4). Based upon Preliminary Engineering Report (1999, Arnold T. Okubo & Associates).





Figure 5-5 Rendered View of Complete Demolition/Removal and No-Build (Group 70 International, Inc.)



In addition to the four updated design options from the 1999 Okubo Study, the following three design options were presented at the first general community meeting on May 18, 2010, based on input from barge operators and members of the Hāna community.

# 5.5 Option 5

Narrowed Reinforced "T" Option/Twin Mooring Support and Narrowed Catwalk for Pedestrian Access

## Description

This option would be the same length as the existing pier of 337'. However, only a 132' x 42'9" area would be reinforced to specifically support barge operations and associated traffic. This reduced reinforced length could still support the loading bearing weight of intense roll-on/roll-off barge operations and tie-down of today's typical barge. Each end of a barge would tie down to the two, seven-pile dolphin moorings on both ends of the pier.

The pedestrian catwalk is narrowed and constructed with no-load bearing materials. This would limit access to pedestrian use only or light passenger vehicle for service operations only.

## Costs

When this option was presented to the community, there were comments and input that eventually evolved into Option 7. There was a concern whether a narrowed pedestrian walkway would be able to sustain the powerful wave surges that occur in Hāna Harbor. Furthermore, altering the footprint of the pier, in this case, by narrowing the existing pedestrian walkway, could have an impact on benthic habitat and water circulation and quality. For these reasons, a cost estimate was not completed since it is not a favored option by meeting participants.

## Advantages

The maintained 337' in length would allow continued community activities such as cultural protocol, recreational fishing, and pedestrian access. The reinforced "T" section is designed to support loading bearing weight and horizontal forces of barge docked as well as ongoing loading/offloading operations during emergency situations. This design also supports a class or type of vessel that is preliminarily understood to have minimal impact on surrounding coral habitat. Dimensions of the reinforced section were designed to meet the minimal loading requirements of the smallest vessel available to-date and that is projected to still be in use and operation beyond a 5-10 year projection.

## Disadvantages

While this design would allow continued cultural and recreational use by fishermen, residents, and visitors due to the maintained length of the pier, several concerns were raised. As stated, there was a concern regarding the narrowed catwalk withstanding wave surge and the possible impact of the design on water circulation and quality. Additional studies beyond the scope of this HHDP would need to be completed to verify the extent of these impacts.



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Figure 5-6 Narrowed Reinforced "T" Option/Twin Mooring Support and Narrowed Pedestrian Access (Option 5). Preliminary Conceptual Design (2010 HHDP Planning Team).



# 5.6 Option 6

Narrowed Reinforced "T" and Shortened "I" Option/Twin Mooring and Narrowed Catwalk for Pedestrian Access (near shore in previously undeveloped area).

# Description

The length of the reinforced narrowed "T" is similar to Option 5. The "I," or bridge, would be shortened from 137.5′ to 68′. This design was explored for several reasons. First, this option is believed to save on construction cost due to the shortened bridge. Second, the length of the existing bridge ends right where the depth of the water (15′) is able to support a larger barge, similar to what was used to transport sugar cane. A smaller class barge, however, can function in shorter depths.

# Costs

When this option was presented to the community, there was concern about how this design could have a tremendous impact on the existing boat ramp, located at the entrance to the pier, which is frequently used by fishermen. Boats launch from the ramp directly into the water and require a certain amount of space to maneuver. A shortened "I" would likely impact the launch area, leaving a smaller space for boats to maneuver, especially the larger boats, and create a dangerous situation. For these reasons, a cost estimate was not prepared.

# Advantages

The potential advantage of this option was the probable cost savings in construction due to the shorter bridge and the installation of pilings in shallower water. A shortened bridge, with a reduced reinforcement area, could potentially lead to cost savings.

# Disadvantages

There are several disadvantages associated with this option. As mentioned above, the design of this option could interfere with boat ramp operations, which is located at the front of the pier. This design may also affect cultural protocol activities by groups who utilize the northeastern end of the pier to pay homage to the birthplace of Queen Ka'ahumanu, located in a cave along the trail to Ka'uiki. This option changes the line of sight and further study is needed to verify the impact of this design on this issue.

The shortened "I" would bring the end of the pier closer to shore and in shallow waters. The ongoing subsistence practice of local fishermen would be disrupted as the best fishing, according to the fishermen, are in deeper water, which is where the existing pier is currently located. Furthermore, costs for environmental mitigation may increase since the new pilings to support the new pier deck would be placed in a previously undeveloped area. A shorter "I" would likely impact an area near shore that is previously undeveloped and has live coral. The baseline coral study, in Appendix A, found species of Montipora capitata located near shore. Total percent coral cover is 57.0 and 48.3, respectively. The highest percent coral cover found is 66.4 in location 029.

An altered footprint of the pier will likely impact water circulation and quality. Powerful storm and wave surges that occur in Hāna Harbor could lead to beach erosion, and even affect surf and fishing conditions that pier users have become accustomed to.



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Figure 5-7 Narrowed Reinforced "T" and Shortened "I" Option/Twin Mooring and Narrowed Catwalk for Pedestrian Access (Near shore in Previously Undeveloped Area) (Option 6). Preliminary Conceptual Design (2010 HHDP Planning Team).



# 5.7 **Option** 7

Narrowed Reinforced "T" Option/Twin Mooring Support, and Pedestrian Access (Same Footprint as Existing Pier)

# Description

After presenting Option 5 at the May 17, 2010 general community meeting in Hāna, residents made several recommendations, which resulted in the evolution of Option 5 into Option 7. This design option would repair and reutilize existing piles, but remove the entire existing concrete deck, including girders, beams and pile caps. A new deck will be constructed that will serve as a rollon/rolloff platform for barges during an emergency event. The rollon/rolloff pier will be approximately 9,000 SF, and will have new fenders attached to the ocean side of the pier for barge docking. One 7-pile mooring dolphin will be installed at both ends of the pier for assisting in the mooring of the supply barges. An additional 8,250 SF pier will be constructed for pedestrian loads only and would be mounted to the primeter of the new pier and access pier, except at the rollon/rolloff face of the pier.

# Costs

The estimated cost is about \$13M, or \$753/SF (total of 17,250 SF).

# Advantages

The advantages of this design option are that it encapsulates the following concerns and desires of the Hāna community, as well as potential barge operators. This option would provide:

- 1. A safe and usable pier for emergency situations;
- 2. An opportunity for the Hāna community to continue using the pier for recreational fishing and swimming, cultural activities, and leisurely pedestrian activities;
- 3. An opportunity for barges more appropriate in size to Hāna, and other smaller sea craft, to moor onto the pier, maintaining the rural character of the pier and the community;
- 4. An unchanged footprint that would preserve the same water circulation and quality that currently exists, as well as possibly limiting environmental impact to surrounding coral habitat; and
- 5. A more cost effective design than a complete repair and retrofit, or repair of the existing pier deck.

# Disadvantage

After presenting this option to the community on May 18, there were no comments or concerns raised.


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Figure 5-8 Narrowed Reinforced "T" Option/Twin Mooring Support and Catwalk Access Same Footprint as Existing Pier (Option 7). Preliminary Conceptual Design (2010 HHDP Planning Team).



# 5.8 Option 8

Fully Reinforced "T" Option/Twin Mooring Support and Pedestrian Access (Same Footprint as Existing Pier)

### Description

This option would be similar to Option 7 except that the entire pier area, instead of just 132' of it, would be reinforced for barge operations. This design option would remove the entire existing concrete deck, including girders, beams and pile caps. A new 18,100 SF deck will be constructed and designed to have the load capacity to support vehicles and equipment for loading/offloading barges, for rollon/rolloff capability, and to be designed for barge mooring and berthing forces. The new pier will have new fenders attached to the ocean side of the pier for barge docking. No mooring dolphins will be necessary. Bollards and cleats will be installed at various locations on the pier for barge mooring. A handrail will be mounted to the perimeter of the new pier.

Unlike Option 2, which is very similar to this option when modernization factors apply, this option may not necessarily retain the historic aspects of the original pier; more modern materials may be utilized.

#### Costs

The estimated cost is about \$15.2M, or \$840/SF (total of 18,100 SF).

#### Advantages

The advantages are similar to those of Option 7. This option would provide:

- 1. A safe and usable pier for emergency situations;
- 2. An opportunity for the Hāna community to continue using the pier for recreational fishing and swimming, cultural activities, and leisurely pedestrian activities;
- 3. An opportunity for barges more appropriate in size to Hāna and other smaller sea craft to moor onto the pier, maintaining the rural character of the pier and the community;
- 4. An unchanged footprint that would preserve the same water circulation and quality that currently exists, as well as possibly limiting environmental impact to surrounding coral habitat; and
- 5. A more cost effective design than a complete repair and retrofit, or repair of the existing pier deck.

### Disadvantages

Reinforcing the entire existing pier deck would invariably attract additional and multiple users that currently do not have a means to access and moor to the pier. While this issue might be addressed by management policies and programs, this will require additional resources to implement. This may result in a major impact to the social demographics, economics, and quality of life of Hāna and such impact is beyond the current scope of this project.





Figure 5-9 Fully Reinforced "T" Option/Twin Mooring Support and Pedestrian Access, Same Footprint as Existing Pier (Option 8). Preliminary Conceptual Design (2010, HHDP Planning Team)



#### 5.9 Option 9

No-Action.

#### Description

This option would leave the pier in its existing state, with no improvements, repairs, or demolitions.

#### Costs

There are no costs associated with this option, with regards to demolition and construction, environmental mitigation, remote location, or cost to repair the revetment and boat turnaround area. There is greater likelihood of accidents and injury in a decaying structure and costs associated with this are uncertain.

#### Advantages

The advantage of this option would be that no monies would be expended on improving the pier or making it safe. Also, existing coral habitats would be undisturbed.

#### Disadvantages

Disadvantages to this option include:

- Leaving the pier in its existing dilapidated and dangerous condition would pose a hazard to the surrounding community, especially folks who continually use the pier. The State would continue to be liable for injuries since, as long as the condemned structure remains, there is increased liability from negligence claims.
- A pier where it is unsafe to moor would strictly limit opportunities to access the Hāna community during an emergency situation.
- The activities currently carried on at the pier by the community would cease because the pier would continue to deteriorate through the years.
- This option does not meet the purposes of the HHMP or the legislative intent of the appropriations.



#### 5.11 Additional Considerations for all Demolition and Rebuild Options

- Due to the community's skepticism that a new pier would not be built after the old pier was demolished, coordination of decision-making at the State level is needed to ensure there is no lapse in funding, as well as no additional time between demolitions and rebuild activity.
- During demolition and construction, an area of land is required for stockpiling of equipment and materials.
- Consider possible short-term impacts from equipment and ongoing activity during demolition and construction that could create disturbance in the water to existing habitats.
- The pier is currently condemned and will continue to be non-usable during demolition and construction.
- The coordination of efficient pier removal and disposal of structural material waste should also be taken into consideration.
- Local fishermen requested that the boat ramp remain useable during construction activity. This will require coordination with DOBOR.



# 6.0 **PRIORITIZATION CRITERIA AND EVALUATION MATRIX**

#### 6.1 Criteria

In narrowing down the nine alternative design options, the planning team evaluated each option based on several factors. Except for the cost factor, the following factors weighed equally in the assessment:

- Cost
- Emergency accessibility
- Community input and desires
- Environmental impact
- Legislative intent

#### 6.1.1 Cost

Given the present fiscal climate in the State, as well as the outlook over the next few years<sup>32</sup>, the cost factor is likely non-negotiable. Twenty-million dollars in revenue bonds have been allocated to the planning, design, and construction of any improvements to Hāna Pier. Thus, the design that is ultimately selected must fall within this cost limit, and also allow for any unforeseen contingencies.

#### 6.1.2 Emergency accessibility

The primary purpose behind Senator J. Kalani English's push for funding to improve Hāna Pier was to ensure that the Hāna community could access goods, services, and supplies during an emergency situation, especially one that leads to road or airport closures. As described in this report, Hāna is a very remote community with limited access by road, airport, and sea.

#### 6.1.3 Community input and desires

A large and key component of this project was community outreach in order to determine their needs and desires with regards to improvement of the pier. The pier plays a significant role in the community's social, cultural, and recreational fabric so community input is important in making the best assessment.

#### 6.1.4 Environment impact

Environmental impact was also a factor in evaluating each design option. While a survey by AECOS, Inc. did not reveal any threatened or endangered marine or terrestrial species, there are species that could possibly be encountered at the site such as

<sup>&</sup>lt;sup>32</sup> 4.6% general fund tax revenue growth rate for FY 2011; 6.0% in FY 2012 through FY 2014; and 5.0% growth rate in FY 2015 and FY 2016. Hawai'i Council on Revenues, State Department of Taxation, May 2010. Also, State budget director, Georgina Kawamura, told the Senate Ways and Means Committee the state generated \$14.6 million more than it spent in FY 2010, but because the year began with a \$36.8 deficit (left over from FY 2009) the state actually finished the 2010 fiscal year \$22.3 million in the hole. KGMB Hawai'i News Now, August 17, 2010.



the green sea turtle, the hawksbill, and the Hawaiian monk seal. Procedures should be in place during construction to avoid harm if one of these species is present in the vicinity.

One native plant was identified in the project area, east of the wharf. The small plant, *'Anaunau (Lepidium bidentatum* var. *o-waihiense)*, is not endangered, but is considered a species of concern. Although construction staging is unlikely to spill over into the terrain where the plant occurs, construction personnel should be informed and aware of the species occurrence and value.

Our Baseline Assessment described coral community structure on submerged structures comprising the Hāna pier and surrounding area. Coral cover varies greatly in abundance and mitigation of effects to these communities will be an essential part of the planning effort.

During the planning team's outreach with barge operators, one possible impact that was brought to the table was beach erosion. This was referred to during discussions relating to LSV-type landing vessels. Also, beach erosion and alterations to benthic habitat could be factors as the footprint of the pier changes, thus changing water circulation and quality and leading to beach erosion.

Related to the above is a potential change to the wave and current patterns in the Bay and how it may impact the fishing and recreation activities of the community. Alternatives may worsen or improve existing surge conditions and swimming areas.

Hāna is rich with historical significance, but there are no historic structures within the project area that are listed in the State and National Registers of Historic Places. The pier itself is eligible for consideration as a significant historic property.

Adjacent to the project site, Ka'uiki Head, on the south side of Hāna Bay entrance, is the birthplace of Queen Ka'ahumanu.

### 6.1.5 Legislative intent

The \$20 million in revenue bonds for the development plan and pier was appropriated because of Senator English's desire to ensure that the Hāna community is accessible during emergency situations. It is one of the primary considerations for improvements to the pier. Access to Hāna is currently limited to one road, which is susceptible to closure during an emergency such as an earthquake or tsunami. An improved pier could then serve as an important lifeline by providing an alternative method for goods and services to be brought into the Hāna community.



# 7.0 SUMMARY OF RECOMMENDED DESIGN OPTIONS

#### 7.1 Three Preferred Pier Design Options for Further Consideration

After numerous small and one-to-one meetings with the community, government stakeholders, and business, as well as two general community meetings, three options emerged as more favorable than others:

#### 7.1.1 Option 2:

This option seemed to be a preferred option based on cost and the fact that some historical aspect of the pier would be retained. In this case, the existing pilings would be repaired and included in the new pier structure.

#### 7.1.2 Option 7:

This emerged as a preferred option during the May general community meeting. This design is cost-effective, can accommodate barge operations, everyday community and cultural pier activities can continue, and the existing footprint will be unchanged, precluding a change in water quality and circulation.

#### 7.1.3 Option 8:

This option is Option 7, but taken one step further. Instead of only the "T" portion of the pier being reinforced for barge operations, the entire pier deck will be reinforced and designed to modern engineering standards, mitigating the concern of withstanding wave and storm surges.



# Table 7-1 Summary Matrix of Alternative Design Options

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
Description	Repair Existing Pier Deck; repair and resuse existing piles.	Demolish and Replace with New Pier Deck; repair and reuse existing piles; retain historical character to the extent possible.	Demolish and Replace with New Smaller Pier Deck Area; repair and resuse existing piles.	Complete Demolition and Removal of Existing Pier, including cutting piles at the mudline and removing.	Narrowed Reinforced "T" Option/Twin Mooring Support and Narrowed Catwalk for Pedestrian Access	Narrowed Reinforced "T' and Shortened "T" Option/Twin Mooring and Narrowed Catwalk for Pedestrian Access (Nearshore in Previously Undeveloped Area)	Narrowed Reinforced "T" Option/Twin Dolphin Mooring Support, and Pedestrian Access (Same Footprint as Existing Pier); repair and reuse existing piles.	Fully Reinforced "T" Option Support and Pedestrian Access (Same Footprint as Existing Pier), with no Dolphin Mooring Support; repair and reuse existing piles.	No-action
Cost (2010)	1999 Okubo report: \$27.6M or \$1,524/SF; With additonal modernization factors: \$34M or \$1,878/SF.	1999 Okubo rerpot: \$11M or \$608/SF; With additional modernization factors: \$15.5M or \$856/SF	\$7.2M or \$398/SF	\$3M or \$166/SF	No estimate.	No estimate.	\$13M or \$753/SF (total of 17,250sf)	\$15.2M or \$840/SF	\$0
Advantages	Preserve historical and sentimental value	Allows the community to continue with everyday pier activities.	Cost savings advantage.	Cost savings advantage; unsafe pier will be removed.	Community can continue with everyday activities; reinforced "T" limits area of barge activity.	Possible cost savings advantage due to shorter bridge.	Safe and usable pier; continue daily and cultural pier activities; barges have limited mooring capacity; unchanged footprint; cost effective.	Same advantages as Option 7, except the entire deck area would be reinforced for barge operations; open to pedestrians; cost-effective.	No monies would be expended; coral habitats would be left undisturbed.
Disadvantages	Most expensive option; attract additional and multiple users with no current means to access and moor to pier.	Attract additional and multiple users with no current means to access and moor to pier.	Shortened pier would affect everyday use by community such as fishing and cultural protocol; may not accommodate smallest barge at 286'; change in footprint consequences on water circulation and quality.	Negative impact to the community: no landmark, no community activities; change in footprint consequences; no facility for emergency operations; would diminish an important part of what defines Hāna.	Concerned that narrowed catwalk may not withstand wave surge; change of footprint consequences.	Interfere with boat ramp operations; affect daily and cultural protocol activities; possible environmental effect in undeveloped area; altered footprint consequences.	The only comment and concern raised during the general community meeting was whether the unreinforced sections of the pier would be able to withstand storm surges.	Similar disadvantages as Option 7, since the only difference would be that the entire deck area would be reinforced for barge operations; additional resources may be required to enforce management policies and programs regarding pier usage.	Existing state of pier would evolve into a more dangerous condition; no emergency access; daily and cultural community pier activities would cease.
Preferred Alternative		x					x	x	



# 8.0 PRELIMINARY EVALUATION OF APPLICABLE FEDERAL, STATE, AND COUNTY OF MAUI LAND USE ENTITLEMENTS, APPROVALS, AND PERMITS

This section assesses Federal, State, and Maui County environmental and land use statutes, plans, policies, and controls that could potentially apply if the improvements for Hāna Harbor were to be implemented.

#### 8.1 Federal Laws, Statutes, and Permits

Currently, the Hāna Harbor Development Plan is under the jurisdiction of the State Department of Transportation, Harbors Division. As such, this plan, and any subsequent implementation steps, are currently identified as a State-based initiative. However, in the event that future development and implementation of the HHDP would include securing Federal stimulus monies or forming a partnership with a Federal agency, there would be a need to comply with several Federal mandates and statutes. Below is a discussion of laws that would apply if the project evolved to include a Federal partner or funding source.

#### 8.1.1 National Environmental Policy Act

Enacted in 1969, the National Environmental Policy Act (NEPA) requires that consideration be made of any potentially adverse environmental effects that could result from proposed federal developments. In enacting NEPA, the United States Congress recognized that nearly all Federal activities affect the environment in some way and mandates Federal agencies to consider the effects of potential actions on the quality of the human environment. The Council of Environmental Quality (CEQ) is tasked to ensure that federal agencies meet their obligations under NEPA. Regulations for implementing NEPA are provided under Title 40 (Protection of the Environment), Chapter V, Parts 1500 to 1508 by the CEQ.

Under Part 1508.18, a major Federal action is defined as either new or continuing activities subject to Federal control and responsibility. These activities include projects or programs entirely or partially financed, assisted, conducted, regulated, or approved by a Federal agency.

Discussion: If the Hāna Harbor project were to include a future partnership with a Federal agency and/or receive Federal funding, it is anticipated that these activities would meet the definition of a "major Federal action" under NEPA, thereby requiring a need to conduct a NEPA environmental review.

#### 8.1.2 Department of Homeland Security Small Vessel Security Strategy

The Department of Homeland Security (DHS) Small Vessel Security Strategy (SVSS) exists within the framework of other security strategies. The overarching goals of the SVSS are to: enhance maritime security and safety based on a coherent framework with a layered, innovative approach; develop and leverage a strong partnership with the small vessel community and public and private sectors in order to enhance maritime



domain awareness; leverage technology to enhance the ability to detect, infer intent, and when necessary, interdict small vessels that pose a maritime security threat; and enhance cooperation among international, Federal, state, local, and the private sector (e.g., marinas, shipyards, small vessel and facility operators), and, in coordination with the Department of State and other relevant federal departments and agencies, international partners.

The SVSS aims at ensuring the maritime domain remains a secure environment, where small vessel operators are able to safely earn a living, travel, and recreate freely, without unduly burdensome government regulations and with the freedom to sail upon the navigable waters of the United States.

Discussion: As project development proceeds, there may be a need to evaluate the established goals within the SVSS and as appropriate, identify and implement the objectives that help to fulfill the necessary levels of anticipated operation and use of an improved harbor system.

#### 8.1.3 Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) was enacted to protect fish and wildlife when Federal actions result in the control or modification of a natural stream or body of water. The statute requires Federal agencies to take into consideration the effect that water-related projects would have on fish and wildlife resources; take action to prevent loss or damage to these resources; and provide for the development and improvement of these resources. The FWCA requires that mandatory consultation occur with federal and state wildlife agencies to provide equal consideration of wildlife conservation with other features of a water resource development program.

Discussion: If the Hāna Harbor project were to be constructed, licensed or permitted by a Federal agency and involve the construction of dams, levees, impoundments, or water-diversion structures which would result in the modification of Hāna Bay, then the participating federal agency would need to consult with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Services (NMFS) to develop measures to mitigate project-related losses of fish and wildlife resources.

#### 8.1.4 Endangered Species Act and Marine Mammal Protection Act

The Endangered Species Act provides a legal means by which identified ecosystems that are determined to be essential to the sustainability of an endangered or threatened species can be conserved. Under this Act, the USFWS is responsible for all terrestrial and freshwater species, as well as migratory birds. Likewise, the Department of Commerce, National Marine Fisheries Service is responsible for the protection of marine, estuarine, and anadromous species.

The Marine Mammal Protection Act (MMPA) was enacted to protect and manage population stocks of marine mammals that are, or may be, in danger of extinction or depletion as a result of human activity. The MMPA establishes a moratorium, with certain exceptions, on the taking of marine mammals and/or their products into the United States.

Discussion: The project area is adjacent to Pu'uki'i Islet, which is identified as a State Seabird Sanctuary for known nesting habitat of 'ua'u kani (Wedge-tail Shearwater) and noi'o (black



noddies). Additionally, plant observations on the islet indicated that three endangered plant species, including a grass (Ischaenum byrone), maiapilo (capparis sandwichania), and lepidium bidentatum va. o-waihiense. The possibility of the green sea turtle, the hawksbill, and the Hawaiian monk seal could possibly be encountered at the site. Future project development should include coordination with USFWS; NMFS; and the State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife; DLNR, Division of Aquatic Resources to determine potential affects of preferred design alternative to terrestrial and marine habitats, with specific consideration to known endangered or species of concern.

# 8.1.5 National Marine Sanctuaries Act

The National Marine Sanctuaries Act authorizes the Secretary of Commerce to designate and manage areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or esthetic qualities as National Marine Sanctuaries. The primary objective of this law is to protect marine resources, such as coral reefs, sunken historical vessels or unique habitats. The Act also directs the Secretary to facilitate all public and private uses of those resources that are compatible with the primary objective of resource protection. Sanctuaries, frequently described as national parks of the sea, are managed according to site-specific Management Plans prepared by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Sanctuary Program (NMSP), within NOAA's Ocean Service. The NMSP is responsible for the day-to-day administration and management responsibilities of the Act.

Discussion: The Hawaiian Islands Humpback Whale National Marine Sanctuary was created by Congress in 1992 to protect humpback whales and their habitat in Hawai'i. The Sanctuary, which lies within the shallow (less than 600 feet), warm waters surrounding the main Hawaiian Islands, constitutes one of the world's most important humpback whale habitats. The Sanctuary includes areas along the southwest and northwest coastline of Maui, including Molokini Shoal, Kīhei, Lahaina, and Honolua-Mokuleia Bay.

Although Hāna Harbor is not within the boundary, any proposed development and future operations would need to consider indirect effects to the Sanctuary, specifically any routing of service and operations that would traverse through the Sanctuary.

#### 8.1.6 Magnuson-Stevens Fishery Conservation and Management Reauthorization Act

The purpose of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act is to conserve and manage the fishery resources found off of U.S. coastal waters as well as anadromous and continental shelf fishery resources. The act is intended to promote the protection of essential fish habitats (EFH) in the review of projects conducted under Federal permits, licenses, or other authorities that affect or have the potential to affect such habitat. As such, consultation and coordination with NMFS is to be conducted to identify specific actions that have the potential to adversely affect EFHs.

*Discussion: As the project proceeds to the environmental review phase, coordination with NMFS will be ongoing to identify any issues relative to the protection of EFHs.* 



#### 8.1.7 Marine Protection, Research, and Sanctuaries Act

The Marine Protection, Research and Sanctuaries Act (MPRSA) authorizes the United States Environmental Protection Agency (EPA) to regulate the dumping of all types of materials into ocean waters and to prevent and/or strictly limit the dumping into ocean waters any material which would adversely affect human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. Under Section 103, MPRS requires that dredged material disposal be evaluated, whereupon a permit is issued for transportation and disposal of dredged material meeting EPA criteria.

Discussion: If the preferred design alternative were to include disposal of dredged materials, the project would need to coordinate with the EPA to fulfill MPRSA requirements.

#### 8.1.8 National Historic Preservation Act

The National Historic Preservation Act of 1966 (NHPA) establishes a general policy of supporting and encouraging the preservation of prehistoric and historic resources for present and future generations by directing Federal agencies to assume responsibility for considering such resources in their activities. The statute sets forth a multifaceted preservation scheme to accomplish these policies and mandates at both the State and Federal levels. NHPA is implemented under 36 Code of Federal Regulations (CFR) Part 800 (Protection of Historic Properties).

Under NHPA, the Section 106 process requires Federal agencies to take into account the effect of proposed activities on historic properties. The process requires federal agencies with jurisdiction over a proposed federal action or federally assisted undertaking to do two things related to historic resources: a) take into account the effects of the action or assisted undertaking upon historic properties and b) afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the proposed federal actions.

The Federal agency must determine if the proposed undertaking will have an adverse effect, which is defined by whether the action "may alter directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." If the proposed Federal action may have an adverse effect to any identified historic property, then all parties must be consulted to resolve the adverse effect by means of developing and evaluating alternatives to avoid, minimize, or mitigate the effects. If there is an agreement as to the resolution of adverse effects, then a Memorandum of Agreement (MOA) is developed.

Discussion: The existing pier is eligible as an historic property and would require an assessment and evaluation of its historical significance in coordination with the U.S. National Park Service, Heritage Document Programs and the DLNR, State Historic Preservation Division (SHPD), Architectural Branch. SHPD's very preliminary comments include that the Secretary of the Interior's Standards would recommend repair of the existing pier (in kind,) if that would meet the needs of the community. SHPD itself would prefer to retain the character of the existing pier structure.



County Preservation staff Stanley Solamillo stated that the County would like an opportunity to review the pier and will require a Historic American Building Survey (HASB) report for any demolition action.

Additionally, the historical and cultural significance of Ka'uiki Hill, which is adjacent to the harbor, needs to be addressed in the planning, design, construction, and operations of an improved pier system. This would involve coordination and consultation with SHPD, Archaeological and Cultural/History Branches, the Office of Hawaiian Affairs, and interested Native Hawaiian organizations.

#### 8.1.9 River and Harbors Act and Clean Water Act

The Rivers and Harbors Act of 1899 (RHA) regulates activities in the navigable waters of the United States. Section 10 of the RHA stipulates that building of any wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in any port, roadstead, haven, harbor, canal, navigable river, or other water of the United States, outside established harbor lines, or where no harbor lines have been established, is prohibited except on plans recommended by the Chief of Engineers. Section 10 jurisdiction applies to activities below the mean high water mark. Additionally, the excavation, fill, or any manner of alteration or modification of a course, location, condition, or capacity of a port, harbor, or enclosure within the limits of any breakwater or channel of any navigable water is prohibited unless work is recommended by the Chief of Engineers.

The Clean Water Act (CWA) regulates discharges of dredged or fill material into waters of the United States. Both Federal laws and their related policies apply to activities conducted on the island in the effort to eliminate any potential of pollutant discharge and to make the nearby waters safe for fish, shellfish, wildlife, and people. Section 401 of the CWA requires state certification for a project to be in compliance with established effluent limitations and water quality standards. Further, Section 402 establishes discharge requirements under the National Pollutant Discharge Elimination System (NPDES). As such, effective in March 2003, all construction sites over one acre will be considered Section 402 point source discharge. Additionally, Section 404 of the CWA requires a permit through the Secretary of Engineers to be obtained prior to any discharging of dredged or fill material at specified disposal sites. In the State of Hawai'i, the State Department of Health, Clean Water Branch administers the NPDES and Section 401 Water Quality Certifications.

Discussion: Further coordination with the U.S. Army Corp of Engineers, Honolulu Engineering District and with State Department of Health, Clean Water Branch to fulfill requirements of the RHA and CWA will be required during project development and implementation.

# 8.1.10 Coastal Zone Management Act and Chapter 205A, Hawaii Revised Statutes (HRS)

In 1972, the Federal government enacted the Coastal Zone Management Act to protect and preserve the natural resources, land and water uses of the coastal zone. This process is achieved by providing assistance to coastal states, to develop and manage Coastal Management Programs. Enforcement authority for the Federal Coastal Management



Program (Public Law 104-150, as amended in 1996) has been delegated to the State of Hawai'i under Hawai'i Revised Statutes (HRS), Chapter 205A.

On the State level, the Coastal Management Program (CMP) is a comprehensive state plan that establishes and enforces standards and policies to guide the development of public and private lands within the coastal areas. In the State of Hawai'i, the CMP is articulated in the State Coastal Zone Management (CZM) Law (Chapter 205A, HRS), which is administered by the Office of Planning in the Department of Business Economic Development and Tourism (DBEDT). State CZM policy follows guidelines for coastal activities established by the federal CZM program and is intended to provide recreational resources; protect historic, scenic, and coastal ecosystem resources; provide economic uses; reduce coastal hazards; and manage development in the coastal zone.

The authority of each county's responsibilities within the State of Hawai'i as applicable to the protection of coastal lands and resources is outlined in Part II of Chapter 205A, HRS. Part II identifies controls and policies for development within an area designated as the Special Management Area (SMA) on the County level.

Discussion: Reference Maui County Special Management Area discussion for further detail.

#### 8.2 State of Hawai'i Statutes, Administrative Rules, Approvals, & Permits

#### 8.2.1 State Environmental Review Process, Chapter 343, HRS

Administered under the requirements of Chapter 343, Hawai'i Revised Statutes (HRS), and Chapter 200, Title 11, Hawai'i Administrative Rules, the State environmental review process is required for a project or program that proposes one or more of the following nine land uses or administrative acts: 1) use of State or County lands or funds; 2) use of any lands classified as Conservation District; 3) use within the Shoreline Setback Area; 4) use within any historic site or district; 5) use within the Waikīkī Special district; 6) any amendment to County General Plans; 7) reclassification of State Conservation District lands; 8) construction or modification of helicopter facilities; 9) proposes any wastewater facility with specified exceptions, waste-to-energy facility; landfill; oil refinery; or power generating facility.

Any program or project that triggers the necessity for a state environmental review must complete the review process prior to seeking final approval to proceed with the proposed action. The process requires the preparation of an Environmental Impact Statement (EIS) that must be "accepted" by the approving agency to verify that all requirements of the process have been fulfilled. An EIS is a disclosure document that assesses the potential effects of a proposed project or program on the environment. Where impacts are identified, the EIS must provide mitigation measures that either prevent or reduce negative effects. Further, the EIS must provide alternative methods, designs, or strategies for the proposed action and explain why these alternatives were eliminated from further consideration.

Discussion: A 343, HRS state environmental review would be required prior to project implementation. The project area resides on State property under the management of the State Department of Transportation, Harbors Division. Additionally, the project area resides within



the State Conservation District and within the Shoreline Setback Area, as established under Maui County.

#### 8.2.2 State Land Use Districts, Chapter 205, HRS

Under Chapter 205, HRS, all lands of the State are to be classified in one of four categories: urban, rural, agricultural, and conservation lands. The State Land Use Commission (LUC), an agency of the State Department of Business, Economic Development, and Tourism (DBEDT), is responsible for each district's standards and for determining the boundaries of each district (Chapter 205-2(a), HRS). The LUC is also responsible for administering all requests for district reclassifications and/or amendments to district boundaries, pursuant to Chapter 205-4, HRS, and the Hawai'i Administrative Rules, Title 15, Chapter 15 as amended. Under this Chapter, all lands in Hawai'i are classified into four land use districts: (1) Conservation, (2) Agricultural; (3) Urban, and (4) Rural.

The Conservation district is the most restrictive classification and is defined to include areas necessary for: protecting watersheds and water sources; preserving scenic and historic areas; providing park lands, wilderness, and beach reserves; conserving indigenous and endemic plants, fish and wildlife, including those which are threatened or endangered; preventing floods and soil erosion; forestry; open space and areas where existing openness, natural conditions or present state of use, if retained, would enhance the present or potential value of abutting or surrounding communities, or would maintain or enhance the conservation of natural or scenic resources; areas of value for recreational purposes; other related activities; and other permitted uses not detrimental to a multiple use conservation concept.

Discussion: The project area is located within the State Conservation District.

#### 8.2.3 Conservation District Use Permit, Chapter 183C, HRS

Under Chapter 183C, Hawai'i Revised Statutes, the State Board (BLNR) and Department of Land and Natural Resources (DLNR) are responsible for establishing categories of use and activities within designated State Conservation lands. These entities are also responsible for establishing and enforcing restrictions, requirements, and conditions on the use of these lands.

Conservation lands are classified into five subzones: protective, limited, resource, general, and special. The first four subzone classifications are hierarchical, i.e. the protective subzone lands are considered to be the most environmentally sensitive and thus have the most restrictive uses, and the subsequent levels -- limited, resource, and general -- are less restrictive.

Conducting activities and land uses within the Conservation District requires some level of permitting, either on the departmental or board level. Hawai'i Administrative Rules Title 13, Chapter 5, Subchapter 3 details the types of activities that upon issuance of the appropriate level permit are typically acceptable within each respective subzone classification. The evaluation of permit applications includes the following criteria:



- 1. The proposed land use is consistent with the purpose of the conservation district.
- 2. The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur.
- 3. The proposed land use complies with provisions and guidelines contained in Chapter 205A, HRS, entitled, "Coastal Zone Management," where applicable.
- 4. The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region.
- 5. The proposed land use, including buildings, structures, and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.
- 6. The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, which would be preserved and improved upon, whichever is applicable.
- 7. The proposed land use will not be materially detrimental to the public health, safety, and welfare.

Discussion: The project area is located within the Resource subzone. Additionally, the islets of Pu'uki'i and Papaloa are within the Protected subzone. According to the State Office of Conservation and Coastal Land records, there have been no past Conservation District Use Permits issued for the project area. It is anticipated that the project implementation will require filing a CDUP application after a State 343, HRS EIS has been finalized and approved.

### 8.2.4 Historic Preservation Review, Chapter 6E-8, HRS

Chapter 6E, HRS outlines the management, regulation, and designation of historic and cultural property in the State of Hawai'i for the public good. Under Section 6E-8, before a State agency commences any project which may affect historic property, aviation artifact, or a burial site, the agency shall advise DLNR-SHPD and allow the department an opportunity for review of the effect of the proposed project on historic properties, aviation artifacts, or burial sites, consistent with section 6E-43, especially those listed on the Hawai'i register of historic places. The proposed project shall not be commenced until DLNR-SHPD has given its written concurrence.

Discussion: The project will need to fulfill the requirements of the State Historic Preservation Review process and meet the objectives of 6E-8, HRS.

### 8.3 Maui County Plans, Approvals, & Comprehensive Zoning

#### 8.3.1 Maui County Special Management Area

Implementation of Chapter 205-A, HRS within Maui County is achieved through rules established in Title MC-12, Subtitle 02, Chapter 202 (Special Management Area Rules). The purpose of the Special Management Area Permit is to regulate any use, activity or operation that qualifies as a "development," and has a total cost of fair market value of \$125,000 or more; or has significant adverse environmental or ecological effect within the Special Management Area. The purpose of the permit application provides a means to preserve, protect, and where possible, restore the natural resources of the coastal zone



of Hawai'i by establishing special controls on development within the areas along the shoreline so as to avoid the permanent loss of valuable resources and the foreclosure of land use and management options, and insure that adequate public access is provided to beaches, recreational area, and natural reserves.

Discussion: A portion of the project area is within the Special Management Area. Therefore, it may require a Major Use application to be filed and subsequently approved by the Maui County Planning Commission.

#### 8.3.2 Maui County General Plan (Current & 2030 Update)

The General Plan for the County of Maui was adopted in 1980, and has been subsequently updated, most recently in 1990. The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and the development of the County and the social, economic, and environmental effects of such development. The Plan seeks to guide the sequence, patterns and characteristics of Maui County development.

The Maui County General Plan is guided by five major themes. The proposed project is supportive of Theme No. 2: Prepare a Directed and Managed Growth Plan. This theme supports quality of life for residents through balancing growth demands with provision of human services and physical infrastructure.

The County of Maui Department of Planning has been in the process of updating its General Plan. The General Plan 2030 initiative has put forth that the Countywide Policy Plan, Maui Island Plan and Community Plans will comprise the future General Plan which will guide future growth and policy creation in the County. Currently draft versions of the Countywide Policy Plan and the Maui Island Plan are available for review.

Discussion: During subsequent phases of study and project development, there will be a need to demonstrate how the design and operation of an improved harbor will meet the anticipated future growth and economic objectives that are detailed in the 2030 General Plan.

#### 8.3.3 Hāna Community Development Plan

The Hāna Community Plan, first adopted by Ordinance 1247 in 1982, was updated in 1992-93. The Hāna Community Plan, one of nine (9) community plans for Maui County, reflects current and anticipated conditions in the Hāna region, and advances planning goals, objectives, policies and implementation considerations to guide decision making in the region through the year 2010. The plan focuses on issues of land use, environment, cultural resources, economic activity, housing, urban design, physical infrastructure, social infrastructure, government, and establishes planning standards for development and design.

Discussion: Project implementation may need to consider how it fulfills the objectives of the Hāna Community Development Plan relative to social infrastructure, specifically to keep Hāna Bay safe and effective in the recreational use of the bay and the adjoining parks. Of note, there are no specified transportation objectives in the Hāna Community Development Plan that addresses improvements to the harbor.



# 8.3.4 Maui County Comprehensive Zoning Ordinance

According to the Maui County Code, the purpose and intent of the Comprehensive Zoning Ordinance (Ord. 2031 § 2 (part), 1991) is to regulate the utilization of land in accordance with the land use directives at the State level as well as the county charter, general plan, and community plans.



# 9.0 **R**ECOMMENDATIONS

#### 9.1 Pier Design

The criteria for pier design included cost of construction, the ability to meet community expectations, the ability to withstand emergency barge operations, and environmental impact. *Table 7-1* summarizes the nine various pier design options, laying out the advantages, disadvantages, and cost for each. The initial recommendation was that Option 7 would best meet the listed criteria. After presenting this option at the final community meeting, the community voiced their concerns in using stainless steel/aluminum over reinforced concrete. This information was relayed to DOT, resulting in a new **Option 7A**, *Fully Reinforced "T" Option/Twin Mooring Support and Pedestrian Access (Same Footprint as Existing Pier)*.

Option 7A was developed as the design option for Hāna pier because the design is costeffective, it can accommodate barge operations, everyday community and cultural pier activities can continue, and the existing footprint will be unchanged, precluding a change in water quality and circulation.

#### 9.1.1 **Option 7A**

Fully Reinforced "T" Option/Twin Mooring Support and Pedestrian Access (Same Footprint as Existing Pier)

#### Description

After presenting Option 7 as the selected alternative at the March 29, 2011 general community meeting in Hāna, residents were concerned about the decking material, which resulted in the evolution of Option 7 into Option 7A. This option would be similar to Option 7 except that the entire pier area (excluding moorings) would be constructed of reinforced concrete. This design option would remove the entire existing concrete deck, including girders, beams and pile caps. A new 17,250 SF deck will be constructed and designed to have the load capacity to support vehicles and equipment for loading/offloading barges, for rollon/rolloff capability, and to be designed for barge mooring and berthing forces. The new pier will have new fenders attached to the ocean side of the pier for barge docking. One 7-pile mooring dolphin will be installed at both ends of the pier for assisting in the mooring of the supply barges. A handrail would be mounted to the perimeter of the new pier and access pier, except at the rollon/rolloff face of the pier. Unlike Option 7, this option helps to retain the historic aspects of the original pier.

#### Costs

The estimated cost is about \$14.7M, or \$852/SF (total of 17,250 SF).



#### Advantages

The advantages are similar to those of Option 7. This option would provide:

- 1. A safe and usable pier for emergency situations;
- 2. An opportunity for the Hāna community to continue using the pier for recreational fishing and swimming, cultural activities, and leisurely pedestrian activities;
- 3. An opportunity for barges more appropriate in size to Hāna and other smaller sea craft to moor onto the pier, maintaining the rural character of the pier and the community;
- 4. An unchanged footprint that would preserve the same water circulation and quality that currently exists, as well as possibly limiting environmental impact to surrounding coral habitat; and
- 5. A more cost effective design than a complete repair and retrofit, or repair of the existing pier deck.

#### Disadvantages

Reinforcing the entire existing pier deck would invariably attract additional and multiple users that currently do not have a means to access and moor to the pier. While this issue might be addressed by management policies and programs, this will require additional resources to implement. This may result in a major impact to the social demographics, economics, and quality of life of Hāna and such impact is beyond the current scope of this project.



Final Development Plan



Figure 9-1 Fully Reinforced "T" Option/Twin Mooring Support and Pedestrian Access, Same Footprint as Existing Pier (Option 7A). Preliminary Conceptual Design (2011, HHDP Planning Team)



### 9.2 Management and Operations

An outstanding issue requiring reconciliation relates to pier management and on-going maintenance of the pier. This document makes clear that the goals and mission of DOT Harbors Division, who has jurisdiction over Hāna Pier and the Hāna Harbor Development Plan, may conflict somewhat with the expressed desires of the Hāna community. DOT Harbor's mission and responsibility is to operate commercial harbors, while the Hāna community would like to maintain the rural environment by not commercializing the pier.

DOT's policy is for the cost of operation and maintenance of Hāna Harbor and pier to be absorbed and partially subsidized by the revenues generated at the biggest commercial harbors in Honolulu. Inter-island shipping is largely subsidized at some level by the piers in Honolulu. Therefore, the cost for the operation and maintenance of Hāna pier would be partially covered by revenues generated in Honolulu. Hāna pier will remain non-commercialized.

The following recommendations were considered prior to the new DOT instituting the policy direction above.

### 9.3 Maintain Jurisdiction of Hāna Pier with the DOT Harbors Division

#### DOT Harbors Division

The mission of the DOT Harbors Division, who now oversees this project, is to effectively manage and operate a statewide commercial harbors system that facilitates the efficient movement of people and goods to, from, and between the Hawaiian Islands. They are focused on the essential daily management and operations rather than development of new expansion opportunities. Proposed improvements to Hāna pier, and the authorization for funding, were incorporated under the Commercial Harbors Modernization Plan. The goals of this Statewide plan are to: 1) provide a harbor system that addresses critically needed improvements and promotes harbor user operational efficiencies; 2) provide a harbor system with expanded capacity to accommodate Hawai'i's projected growth in cargo volume; and 3) ensure Hawai'i's continued economic growth through improved harbor infrastructure.

Since the pier is under the jurisdiction of DOT Harbors, and DOT Harbors oversees the commercial harbor system, it would be within the mission of DOT Harbors that the Hāna pier incorporates a commercial aspect. If DOT Harbors will be paying for the pier improvements by floating a revenue bond, commercial activity would help insure that the bond is repaid. Revenues would be generated from wharfage, rentals, dockage, port entry fees, mooring charges, and other harbor fees and charges. If revenue is not generated, then an alternate funding source needs to be identified. As described in Management and Operations above, that alternate funding source may by absorbed and subsidized by Honolulu harbors.

However, even if the pier is commercialized, currently there would not be enough of a critical mass of activity to pay for the cost of the pier, as well as for ongoing maintenance. The remote location of Hāna, along with the lack of resources and



infrastructure to support commercial activity, as well as the minimum number of services in the area, could possibly limit commercial activity in Hāna Harbor.

What would impacts be to the Hāna community with this option?

During small group meetings and general community meetings, the community expressed that they would like to keep Hāna in its existing quiet and pristine condition, with no commercial operations at the pier. The issue of the possibility of commercialization was not raised during these meetings as the initial focus was to obtain input on how the community sees the pier in the future.

On July 1, however, there was a transfer of authority from ATDC (former) to DOT Harbors, which came with it a change in mission and goals. The question now, at least for the DOT Harbors Division, was how will the pier be paid for, operated, and maintained if there are no commercial activities generating revenue?

Therefore, the question for the Hāna community was whether a commercialized pier is something they could live with. If a funding source was not identified, there was a possibility that a new pier would not get built and the existing pier will either be demolished or left to deteriorate on its own. Other options may be available and these will be considered in future decisions. Some alternatives that were discussed are summarized below.

### 9.4 Transfer Jurisdiction over Hāna Pier to Another State Agency

### DLNR-Division of Boating and Ocean Recreation

In September 2010, the Board of Land and Natural Resources recommended to the Governor that Governor's Executive Order No. 2850 be cancelled. The recommendation also included a set aside to the Department of Land and Natural Resources, Division of Boating and Ocean Recreation for Hāna Boat Launching Ramp and related purposes; and a set aside to the DOT Harbors Division for Hāna Wharf and related purposes.

DOBOR's mission is to "enrich the lives of Hawaii's residents and visitors by providing facilities for recreational boating and supporting opportunities for ocean activities." Even prior to the pier's condemnation, the pier was primarily used by the community and by visitors for passive recreational activities such as walking, cultural activities, fishing, and canoe races and practice. Based on community input, fishing boats would launch from the ramp, but hardly tie up to the pier, so the pier was rarely even used for mooring.

If the decision is made to maintain the pier in its present non-commercial state, consideration should be given to transferring jurisdiction over Hāna Pier to DOBOR because DOBOR's mission would support recreational boating and ocean activities.

### 9.5 Partnership Between the State and the County of Maui

A partnership between the State and the County of Maui would allow the costs of operation and maintenance to be paid for by two funding sources that have an interest in Hāna Pier.



*County of Maui Parks and Recreation (CMPR)* 

If the pier is to remain in a passive recreational state, with no commercial activity, it could be included under the jurisdiction of the CMPR, which already manages Hāna Beach Park and its facilities. The boat ramp facility would remain under DOBOR.

However, jurisdiction over waters and related activities has traditionally been with the State, not the Counties. Also, the County probably does not have adequate resources, in terms of money and personnel, to maintain the pier for recreational purposes.

#### *County of Maui Civil Defense (CMCD)*

Another consideration would be for the CMCD to oversee management of the pier, especially if they would utilize the pier facility for emergency purposes. However, emergency events probably occur only rarely, not often enough to justify the agency supplying resources to maintain and manage the pier.

#### 9.6 Lease Opportunities

Another option to generate revenue for maintenance and operations of Hāna Pier is to allow a special facility lease on the pier for maritime and marine operations. Section 266-51 HRS identifies special facility<sup>33</sup> projects that are permitted at a pier for persons or entities engaged in maritime and maritime-related operations through a special facility lease. Ground rents generated from these special facilities would be paid into the harbor special fund. Revenue could also be generated for the harbor special fund by payment to the DOT all costs of operation, maintenance, and repair of the special facility.

#### 9.7 Recommendation

If the Hāna community is willing to have a sufficient commercial harbor and pier, then management and maintenance should stay under the DOT Harbors Division as doing so would be in line with the agency's mission. Management and maintenance of Hāna Harbor Pier should not be the sole responsibility of the County. The County lacks the resources and expertise in managing and maintaining harbor facilities.

<sup>&</sup>lt;sup>33</sup> "Special Facility" means one or more buildings, structures, or facilities on land owned by the State for maritime and marine operations, including cargo handling and control; storage, repair, maintenance, and servicing of marine and marine-related equipment; processing and canning of fish and fish products; and offices and accommodations for the personnel and employees of persons engaged in maritime and maritime-related operations. *Section 266-51(1) HRS*.



# **10.0 NEXT STEPS**

The overall goal of the Hāna Harbor Development Plan is to address planning issues to strategize, identify, and assess alternatives to improve access to the Hāna community through the harbor, especially in an emergency situation that leads to road or airport closure. A key component in the formulation of this plan was to engage key community stakeholders and ensure their voices are acknowledged and integrated into the development plan.

An end goal of this plan is to provide a recommendation of a preferred design option to improve existing pier conditions. The recommendation of Design Option 7A is based on information derived by past and present updates to existing feasibility studies, completion of due diligence analysis, derivation of a basis of design and the associated order of magnitude of potential costs.

This recommendation will be taken into consideration for future studies to be developed during the technical design phase of the project, which is beyond the scope of this plan.

For the next phase of project development, this plan recommends the following:

- Geotechnical soil study
- Wave modeling and circulation study
- Preliminary Pier Structural Integrity Analysis

Following the technical studies, a preliminary design will be developed. Simultaneously the permitting and entitlement activities should begin. The following permit approvals will likely be needed:

- U.S. Army Corps of Engineers, U.S. CFR Section 10 and Sections 401, 402 Permit
- Conservation District Use Application, HRS Chapter 183C
- HRS Chapter 343 Environmental Impact Statement
- HRS Chapter 6E Historic Site Review, possible Historic American Building Survey (HABS) documentation



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