



Waikoloa Beach Tsunami Restoration - Supplemental

Department of Land and Natural Resources
Office of Conservation and Coastal Lands
Small Scale Beach Nourishment – Category II Application

5) a. Maps submitted:



Figure 1 Project Location and Vicinity Showing Tsunami Damage to Beach



Figure 2 Waikoloa Beach Resort Master Plan

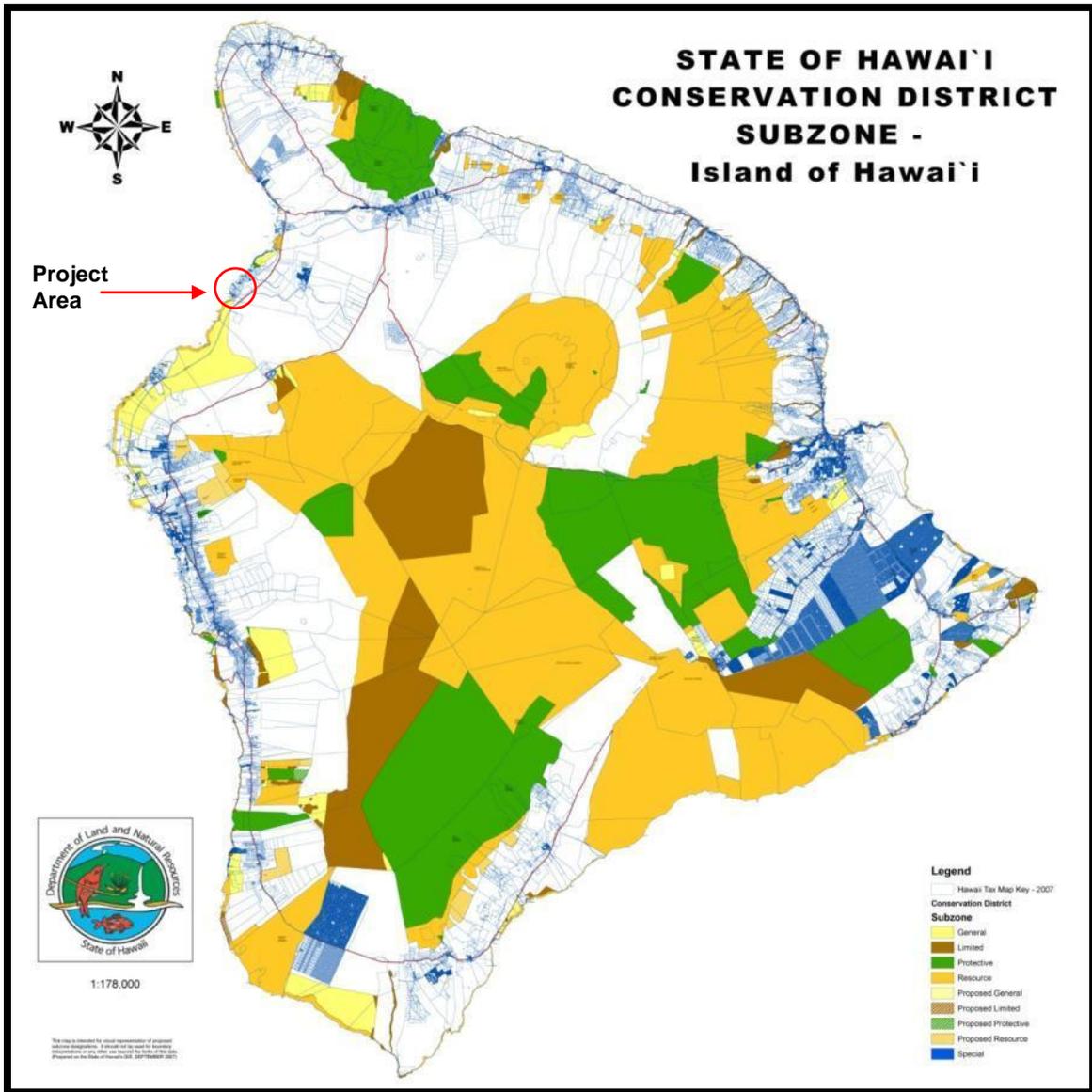


Figure 3 Island of Hawaii Conservation District Subzone Map

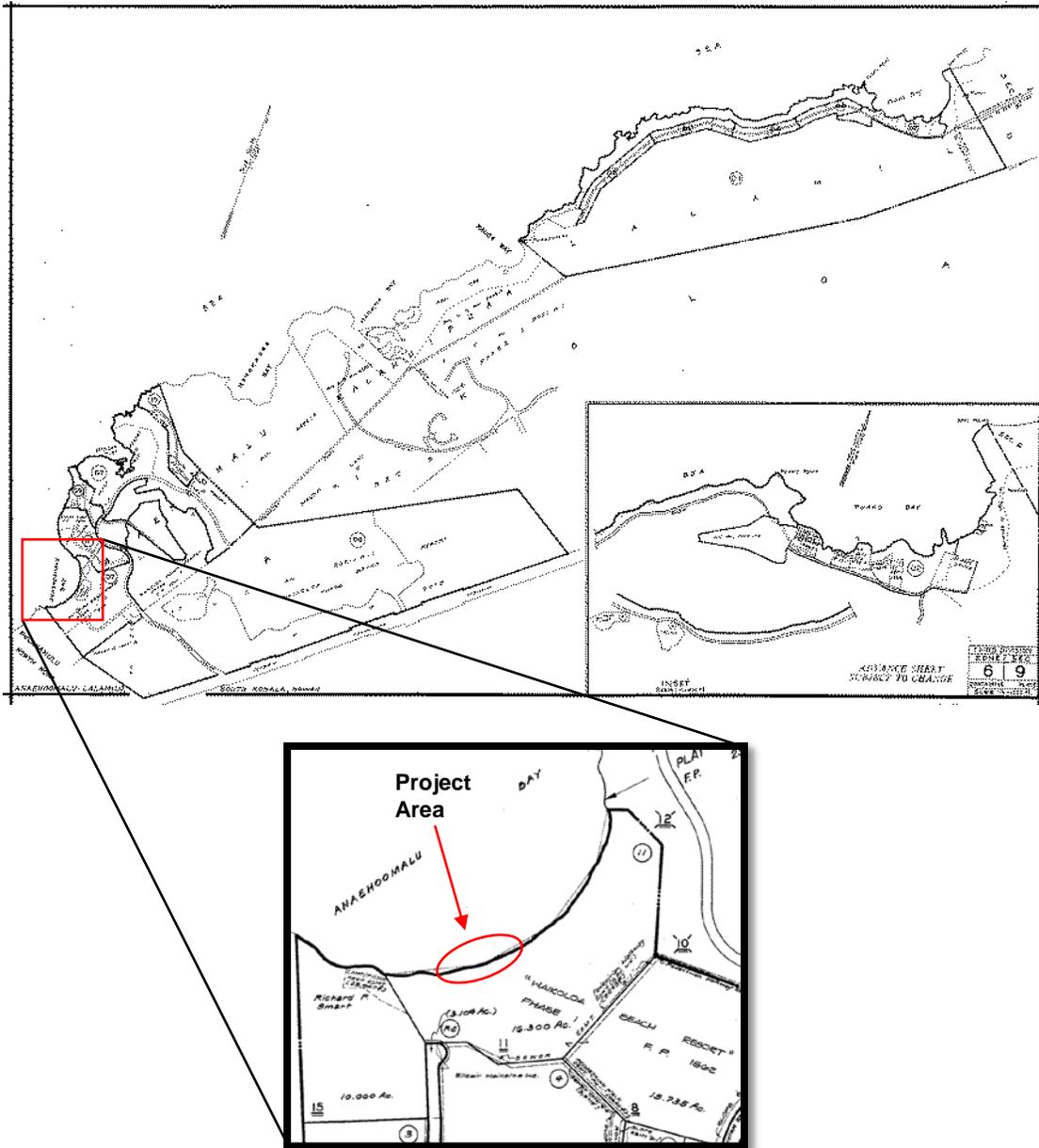


Figure 4 Tax Map Key, Island of Hawaii Zone 6, Section 9 with blow up for Parcel 011

b. Photos submitted:



Figure 5 Satellite Image of Waikoloa Beach, 10 November, 2010



Figure 6 Satellite Image of Waikoloa Beach, 12 March, 2011 (Post-Tsunami)



Figure 7 March 2012 photograph documenting continued beach deflation. Over two feet of exposed root ball lead to the removal of this coconut tree after the 2011 tsunami.



Figure 8 March 2012 photograph documenting wall failure and beach deflation at the south end of Kuualii Fishpond.



Figure 9 March 2012 photograph documenting berm volume loss along the southern portion of Kuualii Fishpond.



Figure 10 March 2012 photograph documenting significant berm volume loss in areas where the fishpond wall was destroyed by the 2011 tsunami.



Figure 11 March 2012 photograph looking north along the middle portion of Kualii Fishpond, where the fishpond wall was breached and significant berm volume loss is evident.



Figure 12 March 2012 photograph looking north along the middle portion of Kualii Fishpond, where the fishpond wall was breached and significant berm volume loss is evident.



Figure 13 March 2012 photograph looking south along the northern portion of Kualii Fishpond, where the fishpond wall was destroyed and significant berm volume loss is evident. The wedge of sand is a product of sand transported into the pond during the 2011 tsunami.



Figure 14 March 2012 photograph looking north at the north end of Kuualii Fishpond.

c. Shoreline Survey:

Waves wash the beach berm and drain into Kuualii Fishpond on an annual basis. Both Kuualii and Kahapapa Fishponds are connected to the ocean through an auwai at the north end of Kahapapa pond. We propose that the shoreline, as a result of annually occurring waves which overwash the beach and the interconnected nature of the fishponds, be considered the mauka border of the fishponds. Both fishponds are identified as Resource Subzone.

Shoreline Delineation:

State Certification Map (If Applicable):

d. Other surveys:

A shoreline condition survey was completed by Ailana Surveying on February 25, 2012. This was not for shoreline certification purposes, but clearly details the conditions of the shoreline, beach, and ponds at that time.

Larger copy is attached

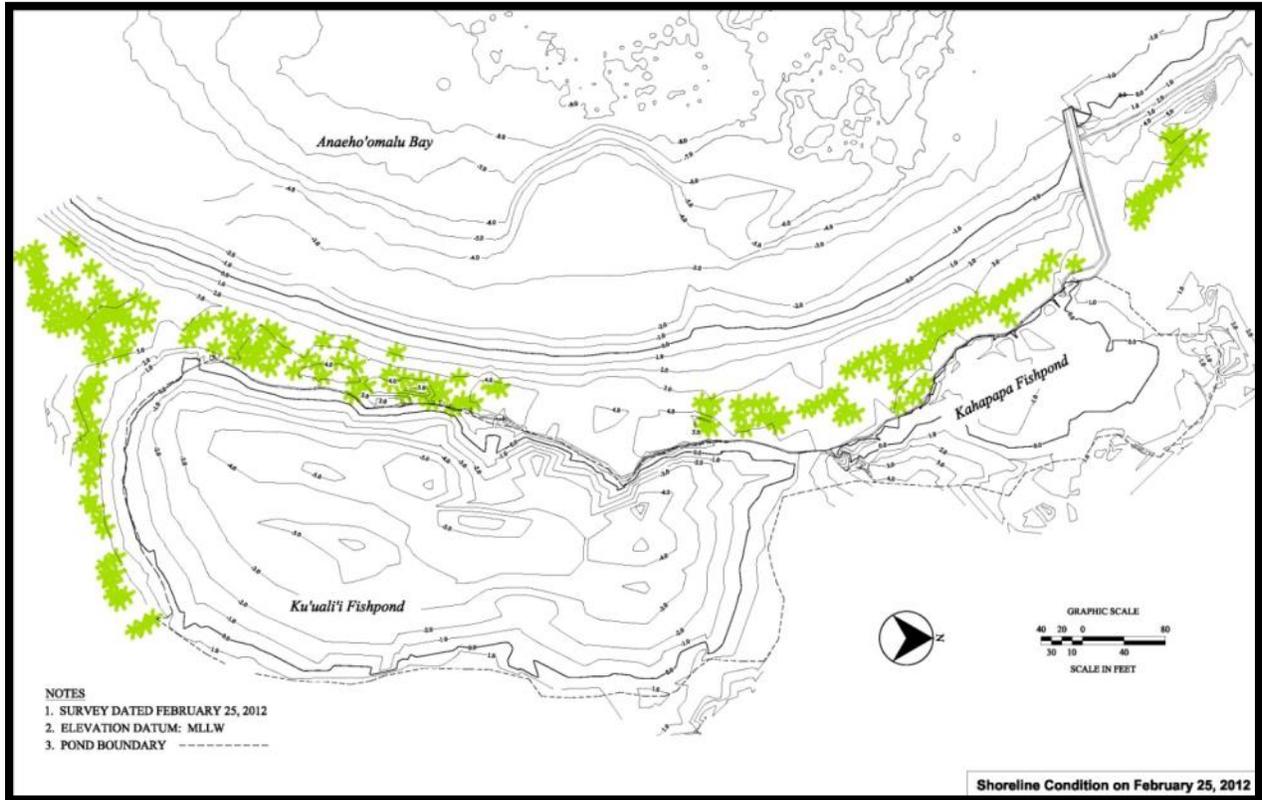


Figure 15 February 2012 shoreline condition survey by Ailana Surveying

7) d. Describe the overall project scope and purpose and evidence of need for proposed activities:

This project is designed to address the berm and dune sand volume loss associated with the March 11, 2011 tsunami. Of the approximately 9,000 cubic yards of sand lost from the beach as a result of the tsunami, 5,600 cubic yards remain missing from the subaerial beach profile.

This project is a direct response to the tsunami related beach deflation.

Loss of 5,600 cubic yards of sand has resulted in shoreline regression across the entire beach length. In addition, the loss has reduced berm heights by more than one foot in the region makai of Kuualii Fishpond, resulting in an increased vulnerability to annual wave overwash.

This section of sandy coastline has been relatively stable over the previous several decades. This project is not intended to perturb the natural system, rather it is intended to restore it to pre-tsunami conditions.

Alternatives include:

- No action – Was ruled out as it results in the ongoing reduction of the coastline’s hazard mitigation capability and leaves the fishpond vulnerable to increased wave overwash.
- Full beach profile restoration – Was ruled out because of potential issues with working in Class AA waters; because focusing the sand higher on the beach profile improves natural coastal hazard mitigation; and because restoring the lower berm heights would not substantially reduce the annual occurrence of wave overwashing into the fishpond.

e. Provide a brief assessment of the primary causes of beach erosion or sand loss for the project site and describe the ability of the proposed project to correct or mitigate the problem. Provide an estimate of the designed residence time of the nourishment project and any anticipated follow up nourishment(s).

The March 11, 2011 tsunami, generated from the massive earthquake in Japan, breached the beach and transported a significant volume of sediment from the beach to both the mauka fishpond (Kuualii Fishpond) and a large deposit on the makai edge of the beach profile, as shown in the shoreline condition map from February 25, 2012. Emergency repairs to the beach sealed the breach and allowed the beach to gradually restore sand volume to the beach profile. Initial losses were estimated at 9,000 cubic yards. Following the emergency repair, approximately 3,400 cubic yards of sand returned to the beach, leaving a 5,600 cubic yard deficit. Sand loss has resulted in a decrease in berm elevation of more than a foot and shoreline recession along the entire beach.

This project, a onetime addition of sand to the beach berm and dune, is intended to replace the subaerial sand lost to the marine environment as a direct result of the tsunami. This project is not intended to address any chronic erosion issues that may be present at the site. As such, the volume is limited to that lost during the event. Placement higher on the profile, to increase berm elevation and create a minor dune feature at the mauka edge of the beach, is intended to

minimize future sand losses resulting from normal wave conditions.

Since there is no known, significant average annual erosion rate for the project beach, and placement is intended to focus sand volume storage higher on the beach profile, the project life-cycle is expected to be on the order of decades, barring future catastrophic events. In addition, reshaping the dune that anecdotally existed on the beach prior to the second half of the last century improves coastal hazard mitigation and limits sand losses into the fishpond from annual wave overwash.

No further maintenance efforts are planned at this date.

f. Describe the method of sediment extraction and delivery, type of equipment to be utilized and construction methods.

The sand resource is previously dredged beach quality sand from Haleiwa Harbor. Currently, Hawaiian Cement has sufficient volume remaining in stockpile to complete the project.

Sand will be transported to the Island of Hawaii via barge, and delivered to the project site by large dump trucks. Trucks will access the site through Kuualii Place, following a short construction road from the end of Kuualii Place to the beach berm, and cross the beach to deposit sand directly at the nourishment area. Bulldozers will grade the beach fill to predetermined lines and grades, as drawn from the finished surface and profiles shown in section 7)g. The project site will be staked with rebar, with finished grade elevations marked, at regular intervals along the beach, including the top of slope on the makai side of the new berm. The +2.3 contour will be staked and marked with a typical, 30" high, construction fence to ensure that neither sand fill nor equipment encroach upon the mhhw limit.

Mobilization and demobilization are expected to take one week, cumulatively. Placement and grading are expected to progress at a rate of 500 cubic yards per day, or faster. Fill and grade activities are expected to take approximately 10 work days, depending on weather. Project duration is expected to be three weeks.

All work will be conducted above mhhw (+2.15 feet mllw at Kawaihae, Station 1617433). As an added buffer, the makai construction limit and fence will be placed at +2.3 feet mllw. No fill will be placed, nor work conducted, below mhhw.

Post-grading surveys will be completed before the end of the project to ensure that placement location and volume are accurate.

Upon successful completion of the project, the beach and berm will be cleaned of all construction related material and debris. The bulldozers will backblade the berm surface upon departure, leaving the beach and berm surfaces relatively smooth and aesthetically pleasing.

g. Provide scale drawings or photographs (with scale bar) of area to be excavated and filled. Include an estimate of the area (ft²) to be nourished. Delineate property boundaries, certified shoreline (if available), location and cross-section of beach profiles, existing and



proposed temporary structures with cross-sectional views of any proposed temporary structures. Provide an estimate of the elevations and dimensions of the project area and a range of water depths of proposed activities.

Attached below is the project map (Figure 20), showing the area of beach berm to be restored. Total area is **41,940** square feet, or **0.96** acres. The entire project area is within TMK (3) 6-9-007:011. Locations of representative beach profiles are shown in Figure 21. Representative beach profiles are shown in Figures 22.

The current beach berm elevation varies between +3 and +4 feet mllw, in the project area. The proposed berm elevation is approximately +6 feet mllw. The fill's makai face is designed to slope at 1V:3H. The berm will be roughly horizontal, and will extend to the makai face of the pond wall on a level plane.

Centerline length down the berm, in the area of the beach restoration, is **approximately 645 feet**. Average berm width in the restoration **area is 68 feet**.

No work will be conducted, nor fill placed, at or below mhhw.

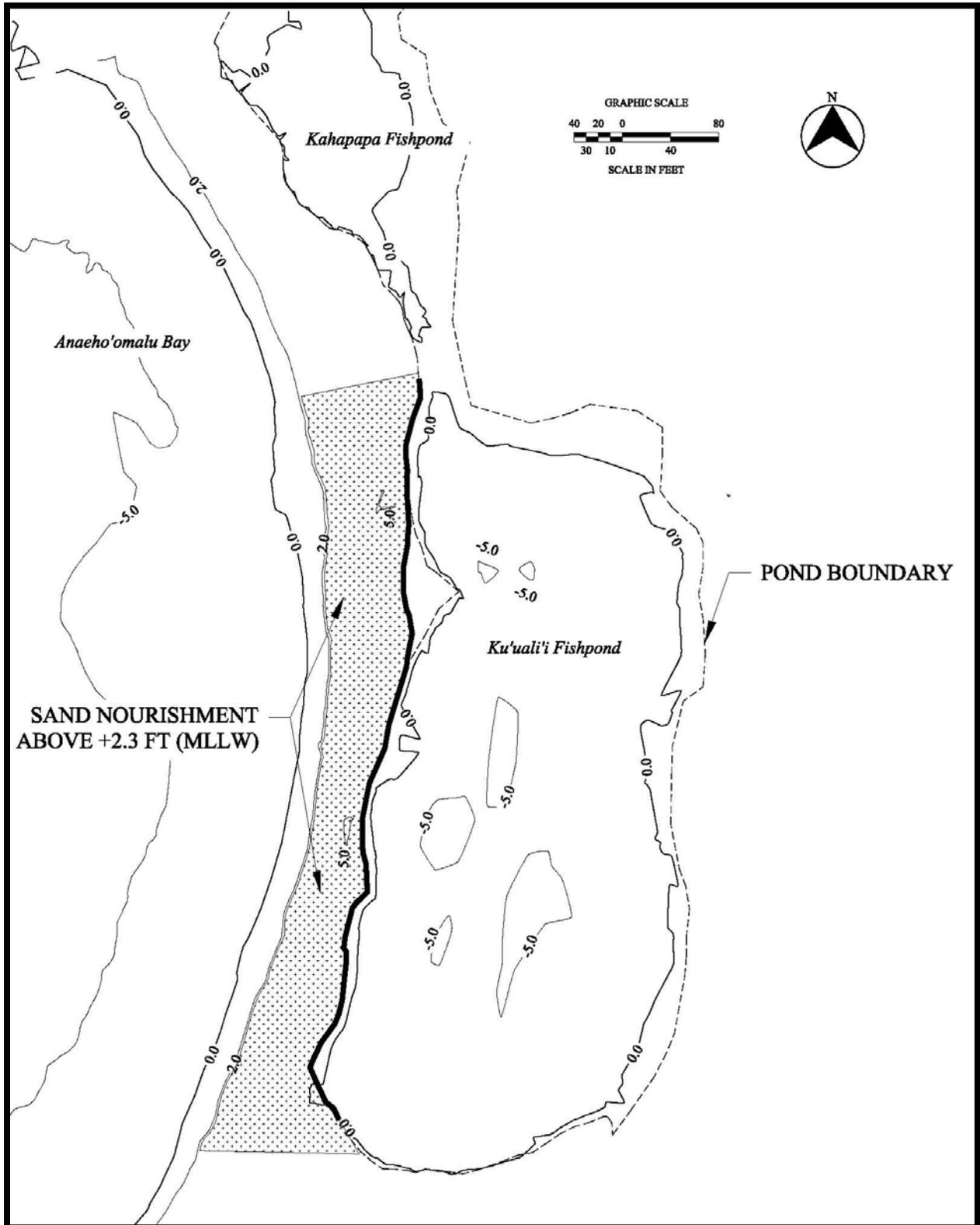


Figure 16 Project area map showing beach berm restoration area and previous emergency repair

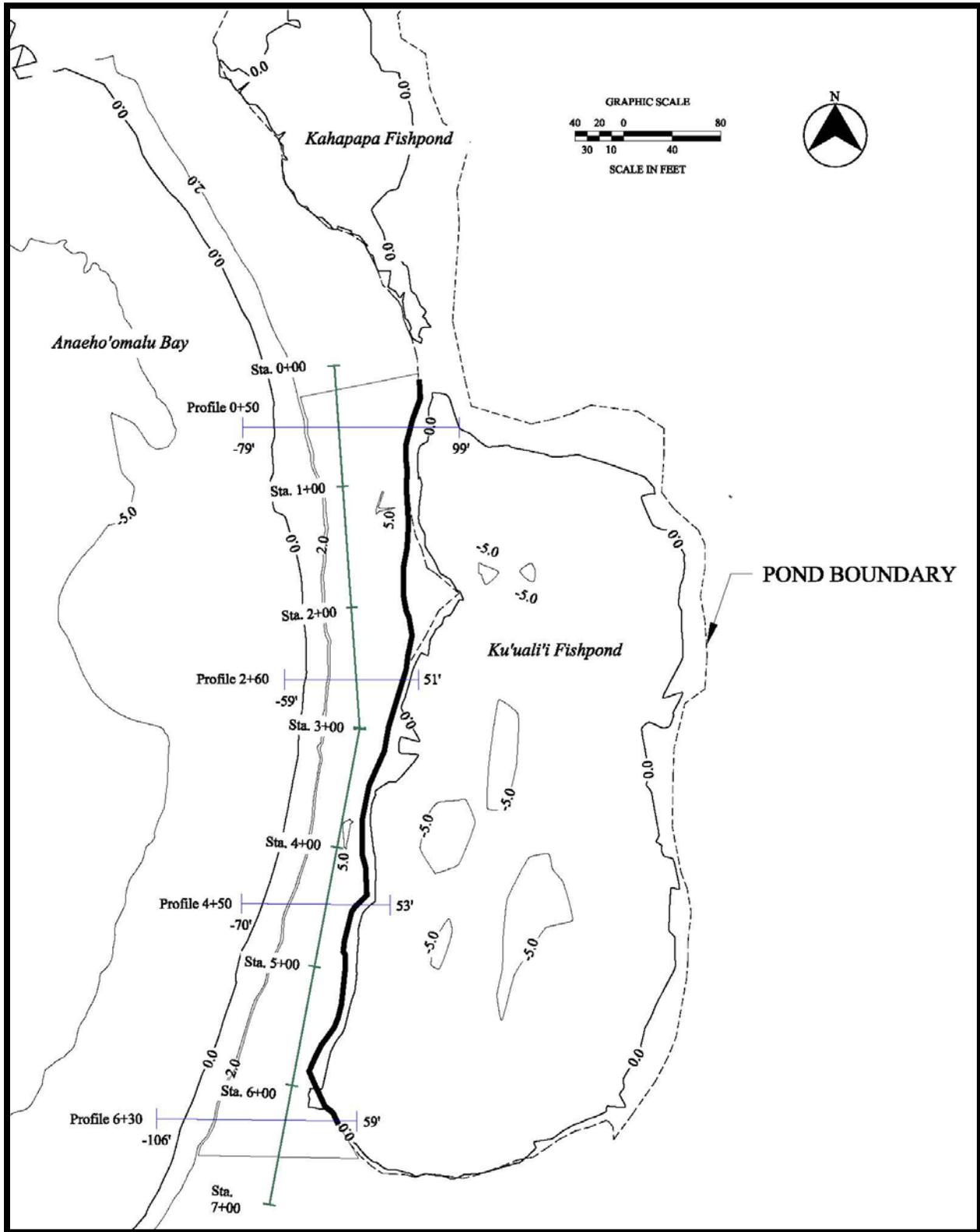


Figure 17 Project area map showing profile locations

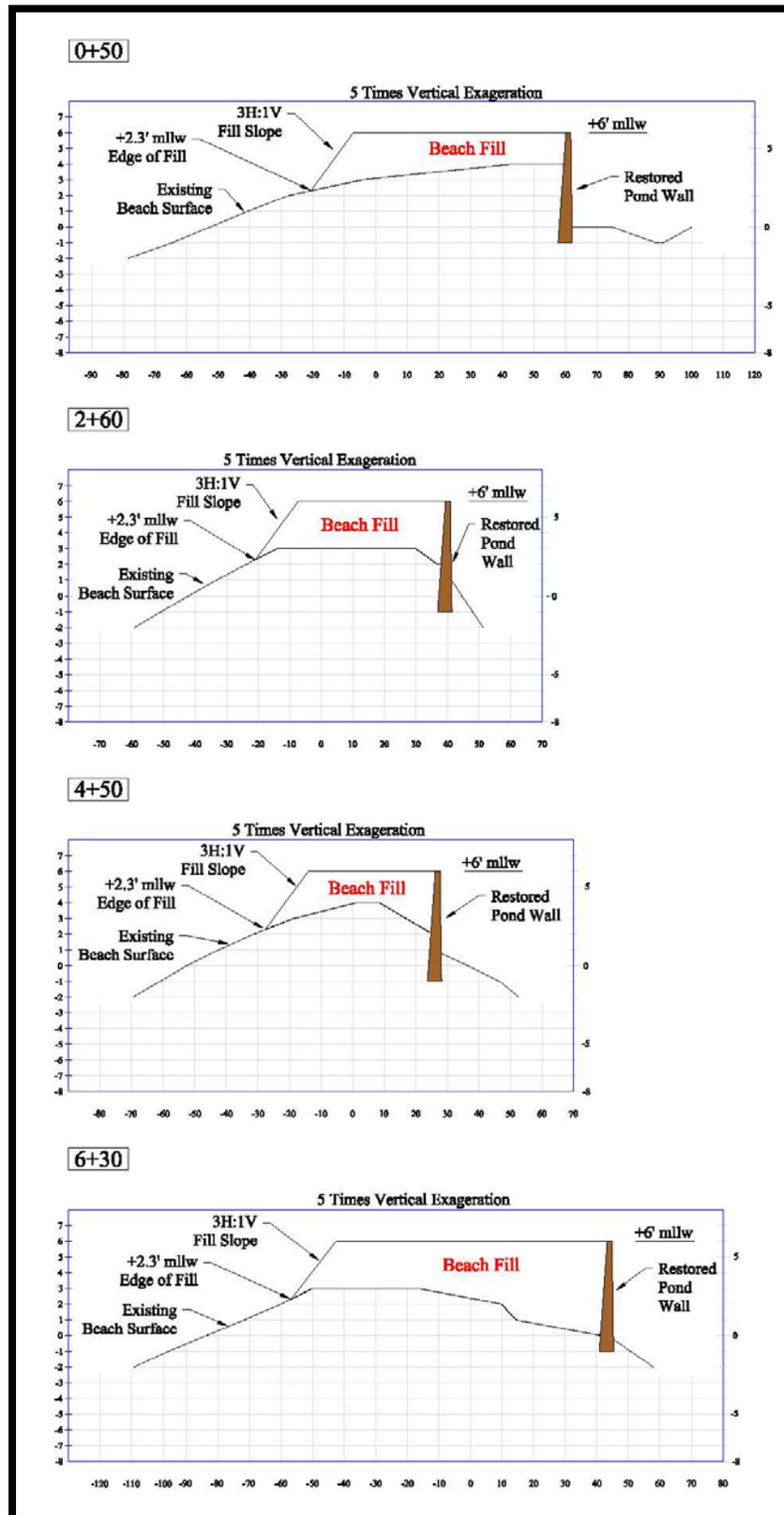


Figure 18 Profiles showing existing and finished ground elevations



Figure 19 Beach nourishment ingress route. Egress route is the same path. General project area shown within shaded box.

h. Provide photographs of the area to be excavated and filled before, during, and after the nourishment project.

The beach quality sand was recovered as part of the Haleiwa Small Boat Harbor dredge project. This sand is located at Hawaiian Cement’s storage yard on Oahu. No pictures of the permitted maintenance dredge activity are available for this submittal.

Figure 10 through Figure 18 presents the existing conditions at the beach nourishment site. These photographs are dated March 14, 2012.

i. Temporary structures

No temporary structures will be emplaced during the beach nourishment project.

j. Provide a temporary construction plan.**WORK PLAN:****Ingress:**

Trucks will access the site through Kuualii Place, following a short construction road from the end of Kuualii Place to the beach berm, and cross the beach to deposit sand directly at the nourishment area. See Figure 23. Bulldozers will also access the site from Kuualii Place, where they will be delivered on trailers.

Mobilization and Staging:

The primary component of mobilization will be delivery of beach quality sand for nourishing the berm and dune. As the sand will be delivered by barge from Oahu, the project operations are designed to be contemporaneous with offloading of the barge. Rather than stockpile the sand on-site, the design is to drive the dump trucks onto the beach, and place the beach quality sand in the nourishment area for grading. The project site is approximately 11 miles from Kawaihae Harbor.

Bulldozers will be brought to the site by trailer, and will be staged in the parking area adjacent to the public beachside restroom and shower area. Dump trucks will be kept offsite.



Figure 20 Equipment staging will be adjacent to the work site (orange box), in the parking area adjacent to the public restroom and shower area



Fill Placement and Grading:

Bulldozers will grade the beach fill to predetermined lines and grades, as drawn from the finished surface and profiles shown in section 7)g. The project site will be staked with rebar, with finished grade elevations marked, at regular intervals along the beach, including the top of slope on the makai side of the new berm. The +2.3 contour will be staked and marked with a typical, 30" high, construction fence to ensure that neither sand fill nor equipment encroach upon the mhhw limit.

All work will be conducted above mhhw (+2.15 feet mllw at Kawaihae, Station 1617433). As an added buffer, the makai construction limit and fence will be placed at +2.3 feet mllw. No fill will be placed, nor work conducted, below mhhw.

The project area will be marked with orange traffic cones on the beach. Project personnel will engage the public as needed to provide information regarding access limitations due to construction work.

Quality Control:

A pre-construction survey, along identified transect lines, will be conducted prior to initiating beach repair activities. The initial survey will be the baseline for calculating placed fill volume. Post-grading surveys, along the same transects, will be completed before the end of the project to ensure that placement location and volume are accurate.

Egress:

Upon successful completion of the project, the beach and berm will be cleaned of all construction related material and debris. The bulldozers will backblade the berm surface upon departure, leaving the beach and berm surfaces relatively smooth and aesthetically pleasing.

Bulldozers will be loaded onto trailers in the parking lot, and removed from the site.

k. Describe existing physical, chemical and biological environment of the project site and any other pertinent characteristics of the site. Include a description of major topographic/hydrographic features such as slope, ledges, holes, and reefs. Provide a relevant hydrographic chart with site highlighted.

No work will be conducted, equipment operated, or fill placed below +2.3 feet mllw. The entire project is designed as a beach berm and dune restoration project to return subaerial sediment volume to the degraded littoral system.

The berm area is roughly horizontal with hummocks and depressions. Hummocks have peak elevations near +5 feet mllw, and depressions have minimum elevations around +3 feet mllw. The beach face has a slope that ranges from 9H:1V to 10H:1V. The beach face is denuded, as the coconut trees were removed due to tsunami related volume loss and shoreline recession. There is still a sparse coconut stand on the berm and dune, in the area not breached by the tsunami.

The mauka side of the beach is typified by a steep slope, held in place by the makai boundary wall of Kuualii Pond. The wall is a grouted basalt rock wall, constructed with man-size rocks

and a concrete cap.

Beach and berm sand are primarily carbonate, and tan in color. The bulk of the sand volume is in the coarse and medium grain size fractions, with limited fines and very little pebbles. There is a minor component of terrigenous material and very little organic detritus in the beach face, berm, and dune sand.

Kuualii pond has been continuously monitored for environmental conditions for decades. This project will not be conducted in pond waters or within the confines of the pond's boundary wall.

The nearshore waters are Class AA waters. No portion of the project will be conducted within the nearshore waters. All work will be conducted and fill placed above +2.3 feet mllw.

The nearshore environment is sandy substrate adjacent to the beach face, with a sand apron spreading out from the project area toward the reef crest. There are numerous, discrete coral colonies, in small mounds, between 50 to 150 meters from the project site, sitting within the broader sand apron. The reef structure consolidates to a fringing reef by 200 meters from the project site, and extends to the deep reef crest approximately 600 to 800 meters from the project site.

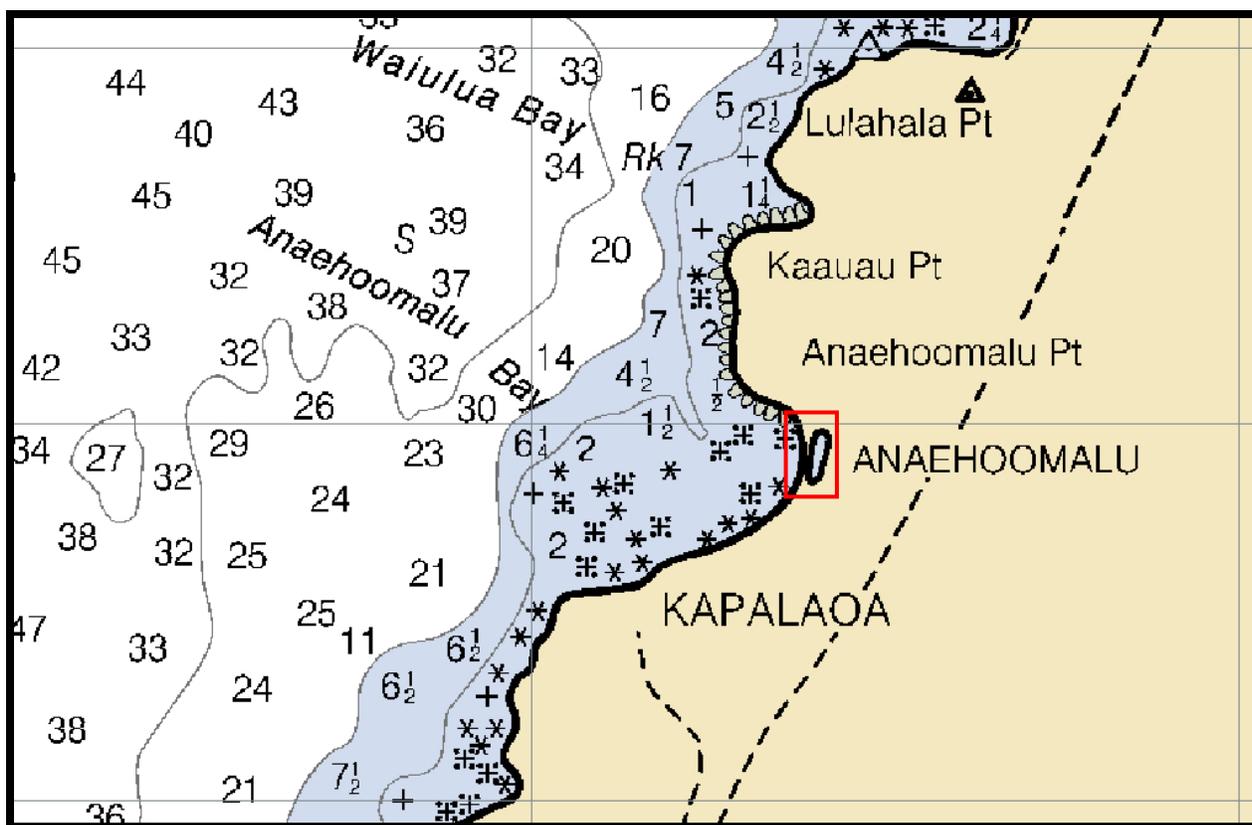


Figure 21 Nautical chart for the coastline around Anaeoomalu Bay, including the project vicinity (red box)



Figure 22 Satellite Image of Waikoloa Beach, 12 March, 2011

Though the beach was breached and heavily scoured as a result of the tsunami, the beach face has re-formed. There is currently no direct connection from the ocean to Kuuialii Pond through its attached beach.

There is limited wave action along the shoreline, as most wave energy is attenuated by the reef crest and shallow fringing reef offshore of the project site. The project site is sheltered from all tradewind waves and most North Pacific and South Pacific swell. Limited wave energy and currents at the project site are generally a result of the mid-day sea breeze that develops along the coastline.

l. Describe existing bottom type of the extraction and fill sites.

The extraction activity has already been completed. The sand will be purchased from the current owner, who has it stockpiled on Oahu.

The fill site is entirely above mhhw. No work will be conducted, equipment operated, or fill placed below +2.3 feet mllw. The entire project is designed as a beach berm and dune restoration project to return subaerial sediment volume to the degraded littoral system.

m. Describe potential adverse environmental effects of the proposed activity.

Minimization and mitigation efforts are described in detail in the attached Best Management Practices Plan.

Adverse impacts to the site will be limited, as the entire project is designed to remain higher in elevation than mhhw. No work will be conducted, equipment operated, or fill placed below +2.3 feet mllw. The entire project is designed as a beach berm and dune restoration project to return subaerial sediment volume to the degraded littoral system.

During the course of construction, there will be limited impacts to noise quality as noise from the construction equipment will exceed typical ambient noise levels. Ambient noise is generally limited to small boat engines, wind, waves, and light vehicles. In addition, there will be an impact to public access at the project site during construction. Access will be unobstructed on both sides of the operation, and the beach face will be open below +2.3 feet mllw.

No impacts are expected to the existing coconut tree stand or the beach environment, as this project will restore the beach's pre-existing volume. No impacts are expected to either the nearshore or the fishpond environments, as the project will not be located in either water body.

The proposed beach quality fill sand, as will be discussed in Section 8, has very low fine content at 0.5% or less. This sediment is not expected to have any associated run-off issues due to its medium to coarse grain size.

n. Describe the current recreational use of the project site and describe the potential impacts the proposed project might have. (ie. Impacts on swimming, surfing, canoe clubs, diving, fishing, tourism, ect.) Briefly identify the development style and land use of the project area, (undeveloped, urban, residential, condominium, agricultural, commercial, etc..)

Currently, recreation uses include: tourism, sunbathing, beach walking, swimming, snorkeling, kite boarding, outrigger canoe paddling, kayak paddling, surfing, stand up paddling and surfing, and boat charters.

The area is seaward of the Waikoloa resort development. However, the immediate vicinity of the project area is open beach and fishponds. There are a canoe hale, and a public restroom and shower facility south of the project site.

Beach access will be restricted during the construction phase of the project, at the project site. Access will be open to both the north and south of the project site, and will be open on the beach face below +2.3 feet mllw, as demarcated by the construction fence. Since the total project duration is not expected to exceed three weeks, and access will be available on both sides and makai of the project area, access impacts are considered minor.

o. Identify and describe any known historic properties within or near the proposed project area and any mitigation commitments made to protect, restore, or data recover any of the identified properties. This could include properties such as stone features, fishponds, burial sites, cultural deposits, and traditional places.

The project site is the beach berm and dune system that create the makai boundary for Kuualii Pond, a loko puuone fishpond or sand dune pond. Numerous archeological studies, surveys, and excavations of the region have been conducted over the years. The studies indicate a high concentration of archeological sites in the region. The fishpond was used for aquaculture.



The proposed beach berm and dune restoration project will not impact any of the identified cultural deposits in the region. There will be no excavation associated with this project, as all beach quality sand will be placed upon the existing surface and graded to design elevations.

See attached Best Management Practices Plan for additional information.

8. Description of the Existing Sedimentary Environment and Compatibility of Proposed Nourishment Sediment.

a. Describe the existing sediment type including size, composition and quality. Include grain size distribution, percent fines and color.

Grain size analysis was conducted by AECOS, Inc. on composite samples of the beach sand and the nearshore tsunami sand deposit. This analysis was completed under AECOS project number 766, log number 28038. Results of the grain size analysis are presented below. Existing sediment has 0.8%, by weight, content that is within the fine size fraction. The existing sand color is tan.

Table 1 Grain size distributions for Waikoloa beach and offshore sand deposit samples, Percent Finer by Weight

size (mm)	4.000	2.000	1.000	0.500	0.355	0.250	0.125	0.075	0.063	0.008
Waikoloa Offshore	99.500	98.000	89.400	46.000	21.600	8.100	1.000	0.800	0.800	0.000
Waikoloa Beach	100.00	99.800	98.600	67.200	31.800	13.900	0.500	0.200	0.200	0.000

Grain size analysis for the beach face composite sample show a dominant volume in the coarse to medium size range (approximately 86%). Just over 30% is in the coarse size fraction and slightly more than 50% is in the medium size fraction.

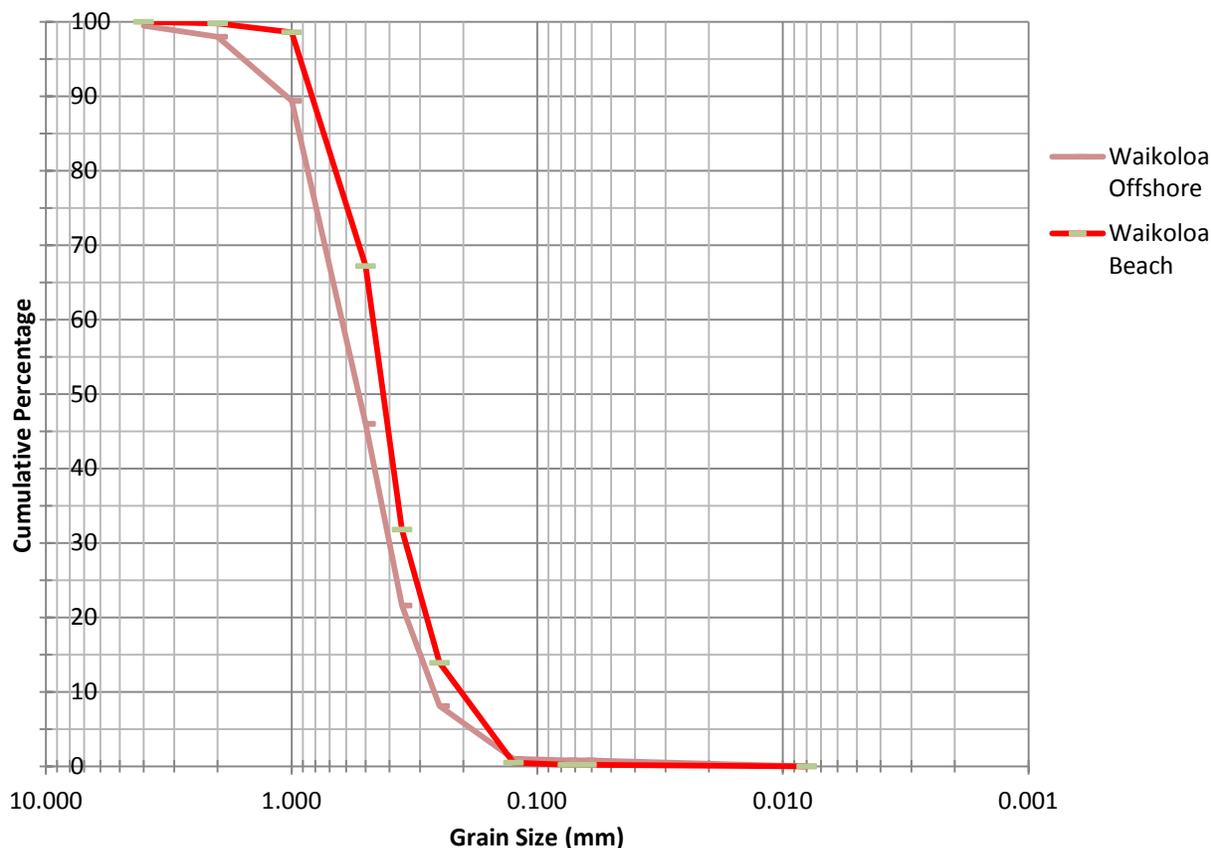


Figure 23 Grain size distributions for Waikoloa beach and offshore sand deposit samples

b. Describe the *proposed fill* sediment type including size, composition and quality. Include grain size distribution, percent fines and color.

Fill sediment characteristics and laboratory results were provided by the commercial owner of the material, Hawaiian Cement. The beach quality fill material is primarily coarse grain sand (77%). The beach quality fill contains 0.5% content, by weight, that is within the fine size fraction. The sediment is light brown in color.

Table 2 Grain size distributions for Haleiwa sand sample provided by Hawaiian Cement, Percent Finer by Weight

size (mm)	4.000	2.000	1.000	0.500	0.250	0.149	0.075	0.008
Hawaiian Cement	100.000	97.900	82.700	5.700	1.900	1.200	0.500	0.000

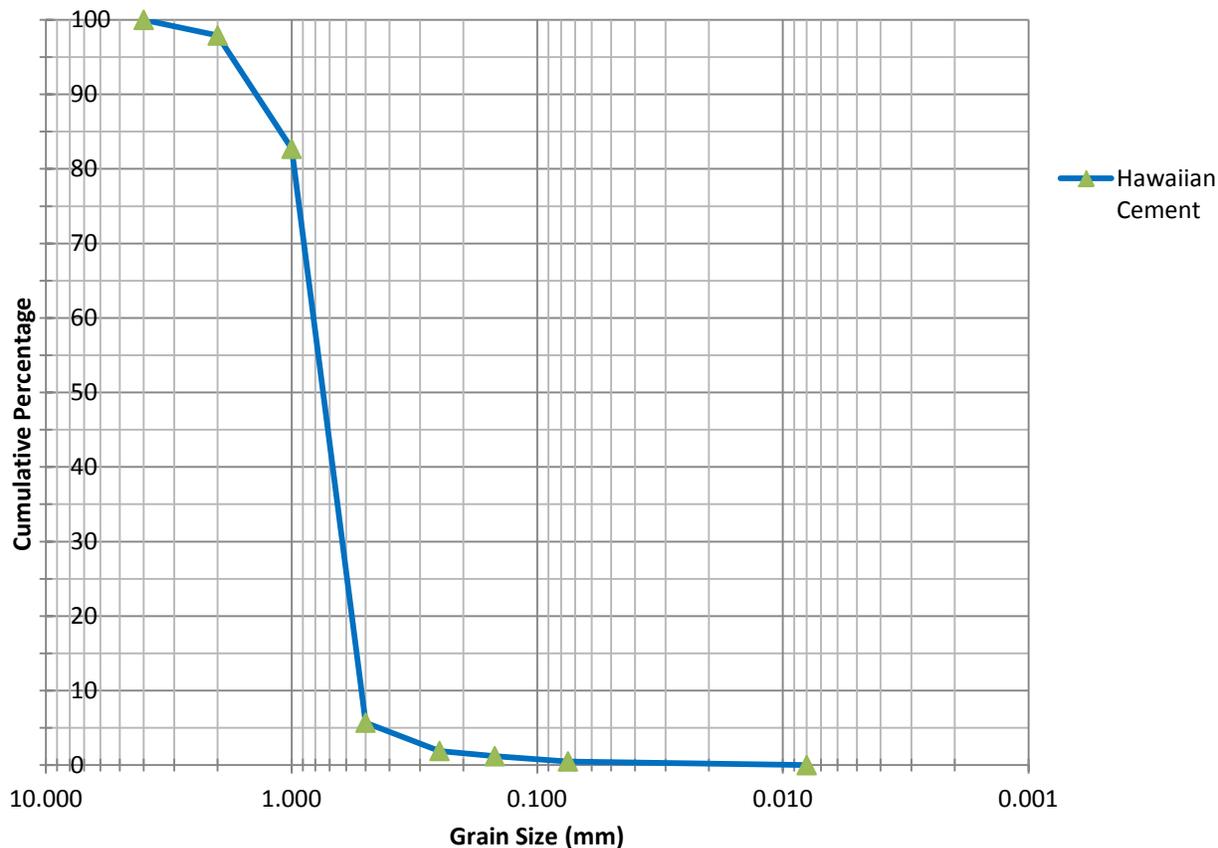


Figure 24 Grain size distributions for Haleiwa sand (Hawaiian Cement) sample

c. Give an estimate of compatibility to fill site and evidence that proposed fill sediment meets the requirements for grain size ranges as specified in the Guidelines Section 8c. Indicate an overfill ratio and method of calculation (if applicable).

Results of the individual grain size analyses are presented in the table below for comparison. In addition, both samples are plotted in the figure below, which includes the +/- 20% window for the existing beach face sample.

Table 3 Grain size distributions for Waikoloa beach and Haleiwa sand (Hawaiian Cement) deposit samples, Percent Finer by Weight

size (mm)	4.000	2.000	1.000	0.500	0.355	0.250	0.149	0.125	0.075	0.063	0.008
Waikoloa Beach	100.000	99.800	98.600	67.200	31.800	13.900		0.500	0.200	0.200	0.000
Hawaiian Cement	100.000	97.900	82.700	5.700		1.900	1.200		0.500		0.000

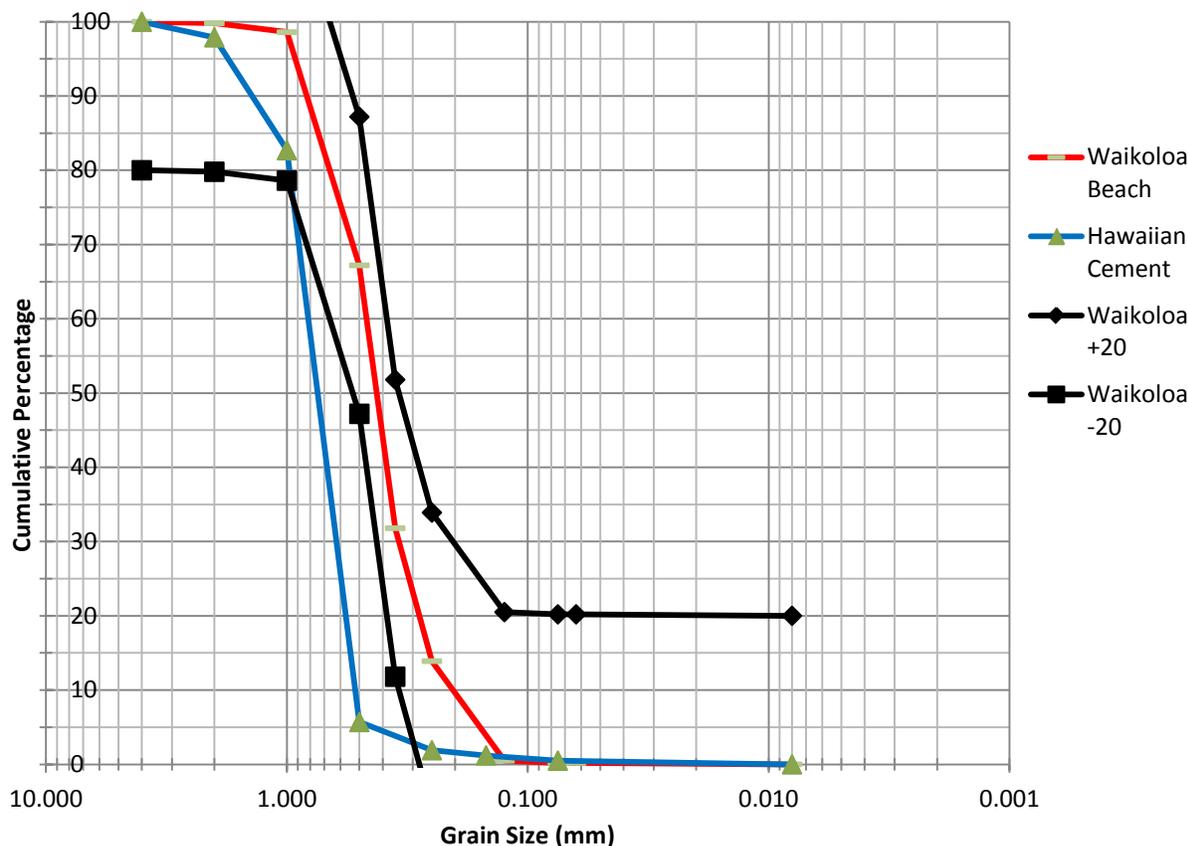


Figure 25 Grain size distributions for Waikoloa beach and Haleiwa sand (Hawaiian Cement) samples

- i) Fill sand does **not** exceed 6% fine sediment. It only contains **0.5%** fine sediment by weight.
- ii) Fill sand does **not** exceed 50% sediment that is in the very fine sand fraction and smaller. Fill sand has less than **1.2%** very fine sand and smaller. Fill sand does **not** exceed 10% coarse sediment. Fill sand has **no sediment** that is larger than 4.00mm.
- iii) Waikoloa Beach sample is a composite from the beach face and berm. See previous discussion.
- iv) The grain size distribution, by weight, comparison shows that the existing beach sand is finer than the proposed beach fill sand. The difference is greater than 20% in the coarse to medium grain sizes. Though this sediment will be placed higher on the beach profile, in the subaerial region, the purpose of the beach restoration project is to stabilize the dune and provide overwash protection to the fishpond. The slightly larger grain size of the fill sand (predominantly coarse grain size), compared to the mostly medium grain sized existing sand, will provide this additional stability without sacrificing either beach performance or aesthetics.
- v) No overfill is needed.



- vi) The proposed beach fill sand is carbonate material of marine origin. The sediment was recovered as part of a harbor channel dredge project at Haleiwa Harbor. The material is believed to be overwash deposit from Alii Beach.

d. Bagged and labeled sediment samples.

e. List name and contact numbers for laboratory to be used for sediment analysis:

Lab name, contact name and phone number.

AECOS, Inc.
45-939 Kamehameha Hwy, Suite 104
Kaneohe, HI 96744
808.234.7770

For fill sediment, contact:

Nate Lopez
Hawaiian Cement
99-1300 Halawa Valley Street
Aiea, HI 96701
808.673.4213



Revised
May, 2005

**SSBN Cat II
General Application**

**Category II General Application
Small-Scale Beach Nourishment Projects
(SSBN)**

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809



PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

<p>Before completing this form, read the Guidelines and Instructions for SSBN application.</p> <p>Start date of proposed work: _____.</p> <p>PROJECT NAME: <u>Waikoloa Beach Tsunami Restoration</u> Proposed Volume: <u>5,600 cubic yards</u></p>	<p>DLNR USE ONLY</p>
	<p>Permit No.: _____ Planner: _____</p> <p>Date Received: _____</p>
<p>For Category II beach nourishment projects less than 10,000 yd³ total volume. Attach additional sheets as necessary.</p>	

1) **Property Owner(s) Information** (see Guidelines for SSBN Application - Note 1)

Is this a community association or partnership project? Yes X No
Attach additional owners information as needed.

Legal Name: Waikoloa Beach Association

Street Address: 69-152 Waikoloa Beach Drive

City, State and Zip+4 Code: Waikoloa, Hawaii 96738

Mailing Address: Same

City, State and Zip+4 Code: _____

Contact Person & Title: Scott Head, President

Phone No.: (808) 886-1000 Fax No.: (808) 886-4810

Legal Name: _____

Street Address: _____

City, State and Zip+4 Code: _____

Mailing Address: _____

City, State and Zip+4 Code: _____

Contact Person & Title: _____

2) **Primary Contractor Information** (see Guidelines - Note 2)

Name: Sea Engineering, Inc.

Scope of Work: Project Design and Construction Management

Street Address: 41-305 Kalaniana'ole Hwy

Contact Person & Position Title: Scott Sullivan, Vice President

Phone No.: (808) 259-7966 ext.22 Fax No.: (808) 259-8143

Name: Construction Contractor information to be provided within seven (7) days prior to start of construction

Scope of Work: _____

Street Address: _____

Contact Person & Position Title: _____

Phone No.: (_____) _____ Fax No.: (_____) _____

Name: _____

Scope of Work: _____

Street Address: _____

Contact Person & Position Title: _____

Phone No.: (_____) _____ Fax No.: (_____) _____

Name: _____

Scope of Work: _____

Street Address: _____

City, State and Zip+4 Code: _____

Phone No.: (_____) _____ Fax No.: (_____) _____

3) **Emergency Contact Information** (see Guidelines - Note 3)

Company/Organization Name: Sea Engineering, Inc.

Contact Person & Title: Scott Sullivan, Vice President

Phone No.: (808) 259-7966 ext. 22 Phone No.: (808) 294-8409

Company/Organization Name: Waikoloa Beach Association

Contact Person & Title: Scott Head, President

Phone No.: (808) 886-1000 Phone No.: (808) 896-2920 Cell

4) **Project Site Information** (see Guidelines - Note 4)

Project or community association name: Waikoloa Beach Tsunami Restoration

Government Project/Job No. (as applicable): _____

State/County Zoning. (as applicable): Conservation District Resource Subzone

Street Address: TMK (3) 6-9-007:011

City, State and Zip+4 Code: Anaehoomalu Bay, Waikoloa, South Kohala, Hawaii

Contact Person & Title: Scott Head

Phone No.: (808) 886-1000 Fax No.: (808) 886-4810

Tax Map Key Number(s)							
Zone	Section	Plat	Parcel(s)	Ownership	Total Area (sq. ft)	Eroded Area (sq. ft)	Zoning
6	9	007	011	Waikoloa Beach Resort	16.300 ac		Conservation District Resource Subzone – at project location

5) **Location Map and Shoreline Survey** (see Guidelines - Note 5)

Provide and attach a regional, vicinity and parcel map of project area and include recent photograph(s) of relevant coast and shoreline:

a. Maps submitted: See Supplemental

b. Photos submitted: See Supplemental

c. Shoreline Survey: (Date & Contractor)

Shoreline Delineation: Waves wash the beach berm and drain into Kuualii Fishpond on an annual basis. Both Kuualii and Kahapapa Fishponds are connected to the ocean through an auwai at the north end of Kahapapa pond. It is assumed that the entire beach qualifies as submerged lands within the Conservation District Resource Subzone. Both fishponds are identified as Resource Subzone.

State Certification Map (If Applicable): _____

d. Other surveys (Specify): See Supplemental

6) **Receiving State Water Information** (see Guidelines - Note 6)

a. Regional Name: Anaehoomalu Bay, Pacific Ocean

b. Classification: (check and explain appropriately)

1. Marine Waters: Class A _____ Type: AA

2. Marine Bottom Ecosystem: Class II X Type: Sand Beach

3. Water-Quality-Limited Segment:: Yes _____ No X

c. Explain any "other" classifications:

This project is designed to limit placement of sand to the berm area above the mean higher high water (+2.15 feet mllw) with no fill material to be placed in, or equipment to be operated in, the surrounding coastal waters. As such, it will not impact any State Marine Waters or Marine Bottom Ecosystems.

7) **Project Description** (see Guidelines - Note 7)

Project Classification (Category I or II)

*Note: Category II projects may require a seal from a certified civil engineer.
(Attach separate sheets as needed):*

Primary Contractor and Type: Sea Engineering, Inc.

Attached Documents (If Applicable): _____

a. Project Category (I or II): Category II

b. *Extraction* Site Street Address: Haleiwa Small Boat Harbor (previously extracted and stockpiled sand)

City, State and Zip+4 Code: Haleiwa, Hawaii, 96712

Tax Map Key (TMK): _____

Marine extraction site is a permitted commercial quarry Company Hawaiian Cement

Offshore Coordinates: Lat: 21° 35' 41.10" Lon: 158° 06' 22.15"

UTM: North: _____ East: _____

c. *Nourishment* Site Street Address: Waikoloa Beach, Anaehoomalu Bay

City, State and Zip+4 Code: Waikoloa, Hawaii 96738

Tax Map Key (TMK): (3) 6-9-007:011

d. Describe the overall project scope and purpose and evidence of need for proposed activities.
(Attach separate sheets as needed)

See Supplemental

- g. Provide scale drawings or photographs (with scale bar) of area to be excavated and filled. Include an estimate of the area (ft²) to be nourished. Delineate property boundaries, certified shoreline (if available), location and cross-section of beach profiles, existing and proposed temporary structures with cross-sectional views of any proposed temporary structures. Provide an estimate of the elevations and dimensions of the project area and a range of water depths of proposed activities.

Reference Diagram: _____

See Supplemental _____

- h. Provide photographs of area to be excavated and filled before, during and after the nourishment project.

Dates of photos submitted with this application: _____

See Supplemental _____

Additional survey work scheduled: _____

Additional survey work will completed upon completion of the beach nourishment project. _____

Final volume calculations will be prepared based on the post-construction survey. _____

- i. Provide a description and engineering design of any proposed temporary structures including all retention or offshore structures. Include a design analysis of any offshore sand extraction.

There will be no temporary structures emplaced during this beach nourishment project. _____

There will be no offshore sand extraction as part of the beach nourishment project. _____

j. Provide a temporary construction plan. If temporary retention structures are proposed provide the following:

1. Describe the potential effects to the marine substrate and local littoral processes.
2. Location, type and dimensions of proposed structure(s) (noted on drawings in section 7g).
3. Length of time retention structures will remain in place including a timeline of installation and removal efforts.
4. Proof of general liability insurance (\$1,000,000 minimum).

See Supplemental for Work Plan

See Best Management Practices Plan

No temporary structures will be emplaced during this beach nourishment project

k. Describe existing physical, chemical and biological environment of project site and any other pertinent characteristics of site. Include a description of major topographic/hydrographic features such as slope, ledges, holes, reefs. Provide a relevant hydrographic chart with site highlighted.

Chart Provided:

See Supplemental

- n. Describe the current recreational use of the project site and describe the potential impacts the proposed project might have. (ie. Impacts on swimming, surfing, canoe clubs, diving, fishing, tourism, ect.) Briefly identify the development style and land use of the project area, (undeveloped, urban, residential, condominium, agricultural, commercial, etc..)

See Supplemental

- o. Identify and describe any known historic properties within or near the proposed project area and any mitigation commitments made to protect, restore, or data recover any of the identified properties. This could include properties such as stone features, fishponds, burial sites, cultural deposits, and traditional places.

See Supplemental

See Best Management Practices Plan

	<u>Yes</u>	<u>No</u>	<u>Contacted?</u>
p. Check Yes or No for the following items. Provide a detailed explanation for any "yes" answers. <small>(see Instructional Guidelines)</small>			
Is any proposed work within the shoreline setback area? ¹	___	X	___
Is any portion of this project within a Special Management Area? ¹	___	X	___
Is any portion of this project within an endangered species habitat? ^{2,3}	___	X	___
Is any portion of this project within a wetlands or estuary? ^{2,3}	___	X	___
Is any portion of this project within a Marine Life Conservation District? ⁴	___	X	___
Is any portion of this project within a historical or cultural site? ⁵	___	X	___
Letter of Public Notice of Proposed Action submitted to the Office of Environmental Quality Control (OEQC)? ⁶	___	X	___
Date OEQC Contacted: _____ Authorizations attached:	___	___	___

Explanation: _____

Agencies Contacted: _____

Contacted Hawaii County Planning Department through phone and email correspondence.

8) **Description of the Existing Sedimentary Environment and Compatibility of Proposed Nourishment Sediment.** (see Guidelines - Note 8)

- a. Describe the **existing** sediment type including size, composition and quality. Include grain size distribution, percent fines and color.

See Supplemental

- b. Describe the **proposed fill** sediment type including size, composition and quality. Include grain size distribution, percent fines and color.

See Supplemental

- c. Give an estimate of compatibility to fill site and evidence that proposed fill sediment meets the requirements for grain size ranges as specified in the Guidelines Section 8c. Indicate an overfill ratio and method of calculation (if applicable).

See Supplemental

- d. Provide one separate, bagged and labeled (~0.5 lb) sediment sample of both the extraction site and nourishment site to the DLNR Lands Division. (see Guidelines Note 8)

Sample sent or delivered (Date): Nourishment site samples delivered to Office of
Conservation and Coastal Lands with the application.

- e. List name and contact numbers for laboratory to be used for sediment analysis:

Lab name, contact name and phone number.

See Supplemental

9) **Project Schedule** (see Guidelines - Note 9)

- a. Provide the estimated date or dates on which the activity will begin and end:¹

¹ See Article V.22 TERMS of the Guidelines

Proposed project start date – September 1, 2013

Proposed project end date – December 31, 2013

- b. Provide the date or dates that the excavation and or nourishment(s) will take place:

The fill has already been recovered. The nourishment dates are the same as above.

10) **Site-Specific Best Management Practices (BMP) Plan** (see Guidelines - Note 10)

- a. Separate maps are attached ___Yes___ Using existing map Section 7 maps (Indicate which)

- b. Project monitoring and oversight responsibility (If different than Section 3 Emergency Contact).

Contact Person: Same as Section 3

Title:

Contact number(s):

c. Construction sequence and duration.

See Section 7.f – Construction Methods and Schedule, Section 7.g – Drawings, and

Section 7.j – Work Plan

No work will be conducted nor fill placed at or below mhhw

d. Construction or nourishment materials and equipment to be used and the anticipated dates of installation/mobilization and removal.

See Section 7.f – Construction Methods and Schedule, and Section 7.j – Work Plan

See Best Management Practices Plan

e. Characteristics of potential pollutants associated with the proposed nourishment or construction activity.

Source	Composition	Potential Pollutant	Quantity	Duration
N/A	N/A	N/A	N/A	N/A

14) **Authorization of Representative** (see Guidelines - Note 14)

Check one and complete the appropriate space(s). Alteration of this item will result in the invalidation of the authorization statement(s).

- a. This statement authorizes the named individual (s) or any individual occupying the named position of the company/organization listed below to act as our representative to process the following General Application for Small-Scale Beach Nourishment for the subject project. The Owner hereby agrees to comply with and be responsible for all permit terms and conditions.

Said representative is further authorized to fulfill all terms and conditions of this application:
Yes X No _____

1. Company/Organization Name: Sea Engineering, Inc.

Street Address : Makai Research Pier, 41-305 Kalaniana'ole Hwy

City, State and Zip Code+4: Waimanalo, HI 96795

Authorized Person & Title: Scott Sullivan, Project Manager

Phone No.: (808) 259-7966 ext. 22 Fax No.: (808) 259-8143

Effective date(s): (m/d/y) April 01, 2013 – December 31, 2013

- b. A separate statement is attached. Yes _____ No X

15) **Certification** (see Guidelines - Note 15)

Alteration of this item will result in the invalidation of this application.

I certify that for a municipal agency, I am a principal executive officer or ranking elected official.

I certify that for a state agency, I am a principal executive officer or ranking elected official.

I certify that for a federal or other non-federal public agency, I am a principal executive officer or ranking elected official.

I certify that for a federal agency, I am the chief executive officer of the agency, or I am the senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.

I certify that I am a general partner for a partnership or association.

I certify that I am the proprietor for a sole proprietorship.

I certify that I am the legal owner of a private residence or property.

I certify that for a corporation or association, I am the President, Vice President, Secretary, or Treasurer of the corporation or association and in charge of a principal business function, or I perform similar policy or decision-making functions for the corporation or association:

I certify that for a corporation, I am the Manager of one or more operating facilities and have the authority to sign documents has been assigned or delegated to me in accordance with corporate procedures.

I certify that for a trust, I am a trustee.

In accordance with all applicable State of Hawaii and federal statutes there is reasonable assurance that the proposed activity will be conducted in such a manner which will not violate basic water quality criteria applicable to all waters and in a manner consistent with the DLNR, COE, DOH and CZM programs where the proposed nourishment would take place.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Authorized Signature:  Date: 3/15/13

Printed Name & Title: Scott Head, President

Company/Organization Name: Waikoloa Beach Association

Phone No.: (808) 886-1000 Fax No.: (808) 886-4810

- 16). **Filing Fee** (see Guidelines - Note 18)
Check one and complete the appropriate space(s). Non-refundable filing fee.

Check # _____

_____ Category I Project (\$50)
 X Category II Project (\$250)
_____ Attached to application

Payable to: *State of Hawaii*

Inquiries and Submittals:

Contact Information

SSBN inquiries and submittals shall be directed to the street or mailing address listed below:

(1) Street Address

State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
1151 Punchbowl Street
Honolulu, Hawaii 96809
(808) 587-0377
(808) 587-0322 Fax
<http://www.hawaii.gov/dlnr/occl/index.php>

(2) Mailing Address

State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Coastal Lands
P.O. Box 621
Honolulu, Hawaii 96809

Questions should be directed to the DLNR OCCL.

Note: The length of time required to process this permit will be directly related to the complexity of the project and the adequacy and completeness of the information submitted by the applicant (see Section V.4 of the Guidelines manual).

SSBN Application Checklist

If any item is listed as "no," attach a sheet with the reason for its exclusion from the application.
 Sections 10g, 12, 14 and 15 may be omitted (with a "N/A" answer) if applicable.

Item Number	Description	Item addressed? (yes/no)
1.	Owner Information	Yes
2.	General Contractor Information	TBD
3.	Emergency Contact Information	Yes
4.	Project Site Information	Yes
5.	Location Map and Survey Information	Yes
6.	Receiving State Water Information.....	Yes
7.	Project Description.....	Yes
	Proof of \$1,000,000 Liability Insurance (attached)	TBD
8.	Description of the Existing Sedimentary Environment and Compatibility of Proposed Nourishment Sediment.....	Yes
9.	Project Schedule.....	Yes
10.	Site-Specific BMP Plan.....	Yes
	10.g Letter to Environmental Notice (Draft attached)	Yes
11.	Applicable Monitoring and Assessment Plan.....	
12.	Supporting Documents	Yes
13.	Additional Information	
14.	Authorization of Representative.....	Yes
15.	Certification.....	Yes
16.	Filing Fee (\$50 Category I; \$250 Category II) is attached	Yes
17.	Number of copies with supporting documents submitted	
	b) One (1) copy for projects on Oahu with owner's original signature	
	c) Two (2) copies for projects on islands other than Oahu (one with owner's original signature)	Yes



Sea Engineering, Inc.

Makai Research Pier • 41-305 Kalaniana'ole Hwy • Waimanalo, Hawaii 96795-1820
Phone: (808) 259-7966 • FAX (808) 259-8143 • E-mail: sei@seaengineering.com • Website: www.seaengineering.com

Best Management Practices Plan

Anaehoomalu Bay Tsunami Damage Beach Restoration
Waikoloa, South Kohala, Hawaii

Prepared by

Sea Engineering, Inc.
Makai Research Pier
40-305 Kalaniana'ole Hwy
Waimanalo, Hawaii 96795-1820

April 2013



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I. Purpose

The purpose of this Best Management Practices Plan (BMPP) is to ensure that adequate protective measures are in place during the Waikoloa Beach restoration project, to repair damages to the beach resulting from the March 11, 2011 tsunami, which impacted Anaehoomalu Beach, Waikoloa, Island of Hawaii. This plan is designed to prevent, if possible, or minimize adverse impacts to the environment. The project specifications will require the Construction Contractor to adhere to environmental protection measures, including, but not limited to, those included in this plan.

II. Best Management Practices Plan

1. All permits and clearances shall be obtained prior to the start of any construction activities. The Contractor and his sub-contractors shall ensure that all construction work complies with all permit conditions and commitments made with environmental agencies.
2. The Contractor shall perform the work in a manner that minimizes environmental pollution and damage as a result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of the construction period.
3. The construction Contractor shall be required to comply with all the BMPP requirements including daily inspection of equipment for conditions that could cause spills or leaks; cleaning of equipment prior to operation near the water; proper location of storage, refueling, and servicing sites; and implementation of adequate spill response procedures, stormy weather preparation plans, and the use of full depth silt curtains and other containment devices.
4. The Contractor shall confine all construction activities to areas defined by the drawings and specifications. No construction materials shall be stockpiled in the marine environment outside of the immediate area of construction.
5. Construction work shall be conducted between the hours of 7:00 am to 6:00 pm.
6. No construction equipment shall be parked within any road right-of-way in such a manner that the equipment will obstruct the normal movement and sight distance of driving motorist, except during actual working hours.
7. The Contractor, for the duration of the contract, shall maintain all excavations, embankments, haul roads, permanent access roads, plant sites, waste disposal areas, borrow areas, and all other work areas within or without the project limits



free from dust which would cause a hazard to the work or the operations of the other contractors, or to person or property.

8. The project shall be completed in accordance with all applicable State and County health and safety regulations.
9. Public safety best practices shall be implemented, possibly including posted signs, areas cordoned off, and on-site safety personnel.
10. Public access along the shoreline during construction shall be maintained so far as practicable and within the limitations necessary to ensure safety.
11. When construction operations are completed, the Contractor shall restore the area to its original state.
12. Should any unanticipated archaeological site(s), such as walls, platforms, pavements and mounds, or remains such as artifacts, burials, concentrations of charcoal or shells be uncovered by the work activity, all work shall cease in the immediate area and the Contractor shall notify the Hawaii Island State Historic Preservation Office at 808.692.8015. No work shall resume until the owner/contractor obtains clearance from the Historic Preservation Office.

III. Noise

- Best management practices shall be utilized to minimize adverse effects to air quality and noise levels, including the use of emission control devices and noise attenuating devices.
- Noise shall be kept within acceptable levels at all times in conformance with HAR Title 11 § 46 Community Noise Control, State Department of Health, Public Health Regulations.
- The Contractor shall obtain and pay for a Community Noise Permit from the State Department of Health when the construction equipment or other devices emit noise at levels exceeding the allowable limits.
- All internal combustion engine-powered equipment shall be equipped with mufflers to minimize noise and shall be kept properly maintained to reduce noise to acceptable levels.
- Starting up construction equipment meeting allowable noise limits shall not be done prior to 7:00 am without prior approval of the Waikoloa Resort. Equipment exceeding allowable noise levels shall not be started up prior to 7:30 am.



IV. Dust

- The Contractor, at his own expense, shall keep the project and surrounding areas free from dust nuisances. The work shall be in conformance with the Air Pollution Control Rules of the State Department of Health, HAR Title 11 § 60.1 Fugitive Dust.
- A dust control program shall be implemented and windblown sand and dust shall be prevented from blowing offsite by watering when necessary.

V. Oil and Spill Containment

- The Contractor shall ensure that an Oil Spill Response Plan is in place which shall detail procedures for managing the accidental release of petroleum products to the aquatic environment during construction. Fueling of project related vehicles and equipment should take place away from the water. Absorbent pads, containment booms and skimmers will be stored on site to facilitate the cleanup of petroleum spills.
- Any spills or other contaminations shall be immediately reported to the DOH Clean Water Branch (808-586-4309).

VI. Monitoring/Measures for Visually Detected Containment

- All work operations shall be performed in conformance with the applicable provisions of the Hawaii Administrative Rules (HAR), Title 11 § 55 Water Pollution Control and Title 11 § 54 Water Quality Standards, and to the Erosion and Sedimentation Control Standards and Guidelines of the Department of Public Works, County of Hawaii.
- The Contractor shall keep construction activities under surveillance, management and control to avoid pollution of surface or marine waters. Daily visual inspection of the construction site and its environs will be conducted by a designated individual, or his representative, to verify that the permitted activities do not result in uncontrolled adverse environmental impacts. Visual inspections will be documented with photographs and written descriptions, if necessary.
 - a. Daily Inspection: The project site will be inspected daily to ensure BMPP's are maintained to confine and isolate potential pollutants from being discharged into surrounding areas. The site will be inspected to ensure:
 - i. All silt fences are functioning properly; and
 - ii. Materials are properly stored, rubbish is being collected and disposed of properly, etc.
 - b. Deficiencies identified by daily inspections shall be corrected immediately. Work activities will stop and remain stopped until the deficiencies have been corrected.



- Erosion control measures shall be in place before any work is started. Erosion control measure shall include silt fencing, as needed, around active work areas.
- The Contractor shall maintain and clear blockage and debris from the erosion control measures as necessary everyday and after heavy rain events.
- All construction material including sand shall be free of contaminants of any kind including: excessive silt, sludge, anoxic or decaying organic matter, turbidity, temperature or abnormal water chemistry, clay, dirt, organic material, oil, floating debris, grease or foam or any other pollutant that would produce an undesirable condition to the beach or water quality.
- No contamination of the marine environment shall result from the permitted activities. Particular care must be taken to ensure that no petroleum products, trash or other debris enter near-shore and open ocean waters. When such material is found within the project area, the Contractor, or his designated construction agent, shall collect and dispose of this material at an approved upland disposal site.
- Waste materials and waste waters directly derived from construction activities shall not be allowed to leak, leach or otherwise enter marine waters.
- The Contractor shall construct temporary berms, dikes, dams, sediment basins and silt fences, and use temporary mulches, mats and gravel blankets as necessary to control erosion.

VII. Endangered Species Act Compliance

- The project manager shall designate a competent observer to survey the marine areas adjacent to the proposed action for ESA-listed marine species. A safety zone shall be established extending 150 feet beyond the limits of the active work area that will be visually monitored for protected marine species.
- Visual surveys for ESA-listed marine species shall be made 30 minutes prior to, at 30 minute intervals during, and 30 minutes after any project activity, and prior to resumption of work following any break of more than one half hour.
- All in-water work shall be postponed or halted When ESA-listed marine species are within 150 feet of the active work area, and shall only begin/resume after the animals have voluntarily departed the area (which may be considered to have occurred 30 minutes following the last sighting). If ESA-listed marine species are noticed after work has already begun, that work may continue only if there is no way for the activity to adversely affect the animal(s). For example, divers performing surveys or underwater work (excluding the use of toxic chemicals) is



likely safe. The use of heavy machinery is not safe until the creature has departed the area.

- Any construction related debris that may pose an entanglement hazard to marine protected species must be removed from the project site if not actively being used and/or at the conclusion of the construction work.
- Do not attempt to feed, touch, ride, or otherwise intentionally interact with any ESA-listed marine species.
- All on-site project personnel must be apprised of the status of any ESA-listed species potentially present in the project area and the protections afforded to those species under federal laws. A brochure explaining the laws and guidelines for ESA-listed species in Hawaii, American Samoa, and Guam may be downloaded from: http://www.nmfs.noaa.gov/prot_res/MMWatch/Hawaii.htm
- The Contractor shall keep a record of all turtle sightings, incidents of disturbance, or injury.
- The Contractor shall immediately report any incidental take of marine mammals must be reported immediately to NOAA Fisheries' 24-hour hotline at 1-888-256-9840. In Hawaii, any injuries incidents of disturbance or injury to sea turtles must be immediately reported, and must include the name and phone number of a point of contact, location of the incident, and nature of the take and/or injury. If the incident involves an ESA-listed marine species, it should be immediately reported to NMFS, the Corps of Engineers, and the Pacific Island Protected Species Program Manager, Southwest Region (Tel: 808-973-2987, fax: 808-973-2941).

VIII. Materials and Waste

- All fill sand shall be free from any objectionable sludge, oil, grease, scum, excessive silt, organic material or other floating material.
- The Contractor shall not dispose any concrete, steel, wood, and any other debris into marine waters. Any debris that falls into the marine water shall be removed at the Contractor's own expense.
- No contamination (trash or debris disposal, alien species introductions, etc.) of the marine environment adjacent to the project site shall result from project related activities.
- The Contractor is responsible for the proper handling, storage and/or disposal of the all waste generated by this construction.



IX. Operational Controls

- a. This plan will be reviewed with the project field staff prior to the start of work.
- b. All activities significantly impacting the environment will not begin until appropriate BMPP's are properly installed.
- c. Construction will be immediately stopped, reduced or modified; and/or new or revised BMPP's will be immediately implemented as needed to stop or prevent polluted discharges to receiving waters.

X. Structure, Authority, and Responsibility

The Project Manager/Superintendent/Project Engineer will ensure compliance with this plan.

The Project Manager/Superintendent/Project Engineer will appoint and train one (1) additional individual to properly install all BMPP's and to comply with all aspects of this plan.

XI. Training

- a. Employees will be instructed in proper installation of the BMPP materials.
- b. BMPP's will be covered in the weekly toolbox safety meeting.
- c. BMPP's will be discussed, as applicable, for each new phase of work.

XII. Inspection and Monitoring

- a. The Project Manager/Superintendent/Project Engineer or the assigned trained individual will conduct a visual inspection of all BMPP's daily.
- b. All minor repairs and maintenance of the BMPP's will be completed within 24 hours of detection. Major repairs of BMPP's shall be completed as soon as practical but in no case later than seven (7) days after inspection.
- c. If any BMPP is damaged, work will immediately be stopped and shall not resume until repairs to the BMPP have been completed.

XIII. Record Keeping/Documentation

- a. A copy of this plan will be kept on site.
- b. All BMP inspection reports will be kept on site.
- c. Records of inspection and repair of control measures will be retained in the project files for a minimum of five years.

XIV. Site-Specific Management Practices

- a. Material Management
 - i. Only a minimum quantity of materials necessary for the work will be stored on site.



- ii. All flammable and reactive liquids will be kept in sealed and clearly labeled original or compatible containers and stored under cover more than fifty (50) feet from the edge of the property and away from the nearest drain and receiving waters.
- iii. Repair materials will be stored in storage containers or covered with polyethylene sheeting to avoid contact with storm waters.
- iv. Storage area will be kept clean and well organized.
- v. Stored materials will be inspected weekly. The contents of any damaged or rusted containers will be transferred into a suitable container or in secondary containment.
- vi. Materials will be used in strict accordance with the manufacturer's instructions.

b. Waste Management

- i. All repair debris will be collected and placed daily in the container located in the Contractor's staging area.
- ii. The Contractor will arrange for pick up and disposal of filled container as necessary.
- iii. Portable toilets will not be placed near the shoreline.
- iv. Portable toilets will be cleaned weekly or more frequently as necessary.
- v. Cleanup of waste will be conducted through sweeping, shoveling, or vacuuming operations only.

c. Hazardous Waste Management

Note: No hazardous wastes are anticipated for this project. The following will apply should hazardous waste be encountered:

- i. Non-hazardous or less hazardous materials should be used whenever possible.
- ii. Hazardous waste shall be placed in secondary containment.
- iii. Hazardous waste shall not be mixed with other waste and repair debris placed in the dumpster.
- iv. Flammable or reactive waste will be placed in a separate area more than 50 feet from the edge of the property, nearest drain inlet and the shoreline.

d. Vehicle and Equipment Management

- i. Fueling operations will be monitored to prevent spills, leaks and overflows. Equipment will be fueled away from any drain or edge of the harbor. A spill pan will be used to catch spill/leaks. Equipment will not be "topped off." Spill cleanup materials will be readily accessible.
- ii. Vehicles and construction equipment (except small tools, generators, welders, etc.) shall be maintained off-site. If emergency



repairs or maintenance on large equipment (i.e. crane) must be performed, drip pans or drop cloth will be placed under the vehicle or equipment to catch any spills/leaks.

e. Erosion and Sediment Control Measures

- i. Removed materials will be placed in a storage bin or stockpiled in a berm; the stockpiled materials shall be disposed of at the earliest date.
- ii. Care shall be exercised in the removal and transporting of debris and rubbish for disposal.
- iii. Any spillage on pavement and concrete surfaces will be cleaned up immediately.
- iv. Loads will be covered when transported.