



Revised
May, 2005

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

SSBN Cat II General Application

Before completing this form, read the Guidelines and Instructions for SSBN application.	DLNR USE ONLY Permit No.: _____ Planner: _____ Date Received: _____
Start date of proposed work: _____.	
PROJECT NAME: _____	Proposed Volume _____.
For Category II beach nourishment projects less than 10,000 yd³ total volume. Attach additional sheets as necessary.	

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

Is this a community association or partnership project? Yes ___ No X
Attach additional owner's information as needed.

Legal Name: County of Kaua'i (Owner by State Executive Order No. 1187)

Street Address: Mo'ikeha Building 4444 Rice Street, Suite 275

City, State and Zip+4 Code: Lihue, Kaua'i 96766

Mailing Address: 4444 Rice Street, Suite 275

City, State and Zip+4 Code: Lihue, Kaua'i 96766

Contact Person & Title: Douglas Haigh, Building Division Chief
County of Kaua'i, Department of Public Works

Phone No.: (808) 241-4849 Fax No.: (808) 241-6802

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: To be provided by County of Kaua'i, DPW to DLNR before project begins

Scope of Work: After completion of the repair of the existing rock seawall (authorized under Site Plan Approval KA-15-23), up to 3,000 cubic yards of sand will be placed at the north and south ends of the wall under this SSBN permit. The exact amount and timeframe of sand placement will depend on the erosion rates at both ends of the seawall. County DPW staff will monitor the erosion at these locations keep in contact with Pono Kai Resort General Manager and make determination of the need and amount for maintenance sand nourishment.

Street Address: To be provided

Contact Person & Position Title: To be provided

Phone No.: () To be provided Fax No.: () To be provided

Name: _____

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: County of Kaua`i Department of Public Works

Contact Person & Title: Douglas Haigh, Building Division Chief

Phone No.: (808) 241-4849 Cell Phone No.: (808) 635-1120

Company/Organization Name: County of Kaua`i Department of Public Works

Contact Person & Title: Lyle Tabata, Deputy County Engineer

Phone No.: (808) 241-4994 Cell Phone No.: (808) 651-4206

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

Project or community association name: The project site is located in Kapa`a Beach Park, north of the Waika`ea Canal outlet. Pono Kai Resort at 04-1250 Kuhio Highway and a multi-use path for bikers and pedestrians is located immediately inland of the seawall. The sand nourishment sites are at the north and south ends of the seawall.

Government Project/Job No. (as applicable): County of Kaua`i Bid document: Job No. not yet assigned, USACE File No. POH-2007-00261

State/County Zoning. (as applicable): State Land Use: Urban, County Zoning: Open

Street Address: Kapa`a, Kawaihau, Kaua`i TMK: (4) 4-5-007:001

City, State and Zip+4 Code: Kapa`a, Kaua`i 96746

Contact Person & Title: _____

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

Tax Map Key Number(s)							
Zone	Section	Plat	Parcel(s)	Ownership	Total Area (sq. ft)	Eroded Area (sq. ft)	Zoning
4	5	07	001	County of Kaua`i	10,890	10,890	Open

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: Figure 1 Location Map, Figure 2 Vicinity Map, Figure 3 Aerial View of Project

b. Photos submitted: Attachment 1 Site Photos - October 16, 2014

c. Shoreline Survey: (Date & Contractor)

Shoreline Delineation: Attachment 2 Planning Director's Shoreline Determination Report

State Certification Map (If Applicable): Attachment 2, pg. 9 Shoreline Certification Map

d. Other surveys (Specify): Figure 4 Topographic Survey Esaki Surveying and Mapping

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

a. Regional Name: Pacific Ocean

b. Classification: (check and explain appropriately)

1. Marine Waters: Class A X Type: _____

2. Marine Bottom Ecosystem: Class II _____ Type: _____

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

c. Explain any "other" classifications:

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: To be provided by County of Kaua`i DPW to DLNR OCCL before project begins.

Attached Documents (If Applicable): _____

a. Project Category (I or II): II

b. Extraction Site Street Address: Waikaea Canal, Sand is currently stockpiled at the Kauai County Kapa`a Base Yard

City, State and Zip+4 Code: Kaloloku Road, Kapa`a, Hawaii, 96746

Tax Map Key (TMK): (4) 4-5-06:001

Terrestrial extraction site is a permitted commercial quarry Company _____

Offshore Coordinates: Lat: _____ ° _____ ' _____ " Long: _____ ° _____ ' _____ "

UTM: North: _____ East: _____

c. *Nourishment* Site Street Address: Kapa`a Beach Park, makai of bike path & Pono Kai Resort, north and south ends of repaired seawall

City, State and Zip+4 Code: Kapa`a, Hawaii, 96746

Tax Map Key (TMK): (4) 4-5-07:001

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

A rock seawall fronting the Pono Kai Resort and a multi-use bike and pedestrian pathway was reconstructed in 1993 after Hurricane Iniki caused significant shoreline damage. The seawall is damaged. Sand is washing through the seawall threatening its stability and causing sink holes that are a safety hazard for path users. The County has obtained Site Plan Approval to repair the north and south ends of the seawall and placing up to 40 cubic yards of sand at the north end of the wall to soften the existing vertical drop. See Appendix D. This Category II SSBN permit is for more beach nourishment at the north and south ends of the repaired wall. The sand will come from a stockpile at the County Kapa`a Base Yard which came from the nearby Waika`ea Canal. All construction will be on County of Kaua`i and State of Hawai`i lands.

- 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 600-foot long seawall has holes through it and under the rocks, and sand is washed out by wave action. Sinkholes have developed along the top of the bank inside the wall. The sinkholes are hazardous to beach users and threaten the integrity of the wall. The Waika`ea drainage canal with a rock jetty is located south of the eroded seawall. Immediately offshore is an underwater sand channel. Because the sand channel is deeper than nearby reef areas, larger waves approach the beach at the project site and increase the potential for erosion. To the north of the project site, the shoreline is partially protected by a nearshore reef which reduces the erosion rates at these areas. The University of Hawaii School of Ocean and Earth Sciences and Technology (SOEST) estimates the shoreline at the project site is eroding at a rate of 1.5 feet / year. See Figure 5 Kapaa Erosion Map

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

The material to be used for the beach nourishment is the stockpiled beach sand from the Waika`ea Canal. The beach sand will be delivered to the nourishment site by truck from the County stockpile and placed on the beach at the north and south ends of the seawall by a front loader or excavator.

- 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.

Appendix A: Construction Plans (Final)

Areas to be excavated and filled: 7,840 ft², Area to be nourished: 2,530 ft²

The repaired seawall covers a length of about 593 feet. The excavation behind the existing wall will extend down to elevation (-) 2 mean sea level (msl) to a depth of about 13 feet below the existing ground surface. The excavated surface behind the existing wall will vary and be about 10 feet wide.

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

Attachment 1 Site Photos October 16, 2014 and Appendix A, Sheet 5

Dates of photos of area to be excavated and filled before beach nourishment submitted with this application: October 16, 2014. Photos of areas to be excavated and filled during and after beach nourishment will be provided.

Additional survey work scheduled: To be determined

- 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.

N/A

- 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).

- 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.

Soils specific to the project site are *Beaches* (BS) and *Mokulē`ia Fine Sandy Loam*. *Beaches* soils consist mainly of light-colored sand derived from coral and seashells. *Mokulē`ia* soils consist of well-drained soils found along the coastal plains. A botanical survey of the site was conducted in July 2002 for the bike/pedestrian path project by Kaua`i County. The survey did not find any state or federally listed threatened or endangered plant species in the area. Most plant species were alien with a few indigenous plants and one endemic vine.

The seawall is located at the shoreline. The area surrounding the seawall is flat with the shoreline sloping into the ocean. Elevations vary from the beach to the top of the embankment between 4 and 12 feet Mean Sea Level (MSL).

The beach fronting the seawall is not protected by nearshore reefs as is the adjacent shoreline to the north. The nearshore bottom consists of reef flats, aggregate reef, and sand channels. A large sand channel extends seaward from Waika`ea Canal and is contiguous with the beach at the seawall. During a biological assessment conducted by Oceanit in April 2008 the temperature of the water above the reef was about 25 degrees Celsius, with a mean pH of 8.6 and salinity of 36.2 ppt. Laboratory analysis of collected water samples showed total suspended solids in the surface water of 3.2 mg/L and 6.1 mg/L at a depth of three feet. During the biological assessment no organisms were observed on the sandy bottom except for sea cucumbers. There were very few coral colonies on the patch reef with the largest measuring 18 inches in diameter. The reef consisted of a basalt bench that showed signs of erosion from the surrounding sand. None of the aquatic resources found during the survey are considered threatened or endangered and no impacts on marine resources are expected as a result of the project. See Attachment 3 Terrestrial and Aquatic Assessment.

- l. Describe the existing bottom type of the extraction and nourishment site. Include percent coverage and type.

Waika`ea Canal is the extraction site for this SSBN project. The sand nourishment sites on the north and south ends of the existing seawall has tan, sandy bottom with small beach rocks.

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

Construction activities will likely result in temporary turbidity in the nearshore waters, but no long-term degradation is expected. The proposed wall repairs will decrease the amount of soil and sediment carried into the ocean.

- 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, etc.) Briefly identify the development style and land use of the project area, (undeveloped, urban, residential, condominium, agricultural, commercial, etc.)

The multi-use pathway is a popular pedestrian and biker destination that links parks and other Areas of interest on east. The State Land Use designation is *Urban District*, County Zoning designation is *Open* and the County General Plan designation is *Urban Center*.

- 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.

An Archaeological Inventory Survey and a Cultural Impact Assessment was conducted in September 2002 for the multi-use pathway adjacent to Pono Kai Seawall. Archaeological sites found near the project site include the Waika`ea Railroad Bridge over Waika`ea Canal, an old railroad foundation on the Pono Kai Resort property, and stairs to an old pavilion at Kapa`a Beach Park. The repaired seawall will not have any adverse impacts on these known sites. If any inadvertent finds are uncovered during the excavation phase of the project, the State Historic Preservation Division (SHPD) will be notified. In addition, the project specifications require the Contractor to have a qualified archaeologist prepare a monitoring plan and provide monitoring during any excavation of sand, soil, or rock during construction.

p. Check Yes or No for the following items. Provide a detailed explanation for any "yes" answers. (see Instructional Guidelines)	Yes	No	Contacted?
Is any proposed work within the shoreline setback area? ¹	<u> X </u>	<u> </u>	<u>Planning</u>
Is any portion of this project within a Special Management Area? ¹	<u> X </u>	<u> </u>	<u>Planning</u>
Is any portion of this project within an endangered species habitat? ^{2,3}	<u> </u>	<u> X </u>	<u> </u>
Is any portion of this project within a wetlands or estuary? ^{2,3}	<u> </u>	<u> X </u>	<u> </u>
Is any portion of this project within a Marine Life Conservation District? ⁴	<u> </u>	<u> X </u>	<u> </u>
Is any portion of this project within a historical or cultural site? ⁵	<u> </u>	<u> X </u>	<u> </u>
Letter of Public Notice of Proposed Action submitted to the Office of Environmental Quality Control (OEQC)? ⁶	<u> X </u>	<u> </u>	
Date OEQC Contacted: <u>4/19/2010</u> See Appendix C, FONSI	<u> X </u>	<u> </u>	

Explanation: Shoreline Setback Variance (SSV): Attachment 2 is the Planning Director's Shoreline Determination Report

Special Management Area (SMA): Attachment 4 is the County of Kaua`i Planning Department determination that the seawall repair project, including the beach nourishment does not require an SMA permit.

Agencies Contacted:

U.S. Army Corp of Engineers Regulatory Branch, State of Hawaii Department of Land and Natural Resources, Office of Conservation and Coastal Lands, State Historic Preservation Division, Department of Health Clean Water Branch, Coastal Zone Management, County of Kaua`i Planning Department

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.

Aecos, Inc. was contracted to perform grain size analyses of the existing beach along the Pono Kai Seawall. The color of the sand adjacent to the seawall is tan and contains less than 5% fines. Geloabs, Inc. also drilled three borings landside of the existing wall; one at each end and one at the center of the existing wall. The borings generally encountered a thin layer of fill about 1 foot thick consisting of medium, dense silty sand. Below the fill was medium dense coralline sand that extended to maximum depth explored. The sand from these borings were tan and light gray with white mott in color.

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

Aecos, Inc. was also contracted to perform grain size analyses of the proposed County stockpile site containing sand from the Waikaea Canal. Sand grain size from the stockpile sand from the canal and beach areas along the seawall are shown in Appendix B Best Management Practices and Monitoring and Assessment Plan, Figure 7. The sand grain size from the County stockpile contains more coarse sand than the beach sand adjacent to the seawall, which would be beneficial for beach nourishment.

- 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).

The sand in the County stockpile meets applicable DLNR grain size requirements; no more than 50% of this sand has grain size diameter less than 0.125 mm as measured by the #120 standard mesh sieve. The percentage of fine sediment was also less than 9%.

- 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):

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

Lab name, contact name and phone number. _____

AECOS Inc., Snookie Mello, (808) 234-7770 _____

Gelolabs, Inc. Clayton Mimura (808) 841-5064 _____

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

The project will start in the Spring of 2015 and end in the Fall of 2015. _____

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

Excavation will start in the Spring of 2015 and end in the Fall of 2015. Sand nourishment will be done at the end of the project. _____

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

See Appendix B

- a. Separate maps are attached ___Yes Using existing map _____(Indicate which)

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

Contact Person: _____

Title: _____

Contact number(s): _____

- c. Construction sequence and duration.

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

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

Source	Composition	Potential Pollutant	Quantity	Duration

12) Summary of Supporting Documents (see Guidelines - Note 12)

List and submit applicable maps, photos, plans, specifications, copies of associated permits or licenses, federal applications, Environmental Assessments or Environmental Impact Statements, as applicable, etc.

<u>Document Title</u>	<u>Page Referenced</u>	<u>Document Date</u>
a) <u>Figure 1 Location Map</u>	<u>4</u>	<u>Oct., 2014</u>
b) <u>Figure 2 Vicinity Map</u>	<u>4</u>	<u>Oct., 2014</u>
c) <u>Figure 3 Aerial View of Project</u>	<u>4</u>	<u>Oct., 2014</u>
d) <u>Figure 4 Topographic Survey</u>	<u>4</u>	<u>Aug. 26, 2013</u>
e) <u>Figure 5 Kapaa Erosion Map</u>	<u>6</u>	<u>1991</u>
f) <u>Attachment 1 Site Photos</u>	<u>4</u>	<u>Oct. 16, 2014</u>
g) <u>Attachment 2 Planning Director's Shoreline Determination Report</u>	<u>4, 10</u>	<u>Apr. 13, 2010</u>
h) <u>Attachment 3 Terrestrial and Aquatic Assessment</u>	<u>8</u>	<u>Jun. 2008</u>
i) <u>Appendix A Construction Plans (Final)</u>	<u>6</u>	<u>Nov. 2014</u>
<u>Attachment 4 Planning Department determination that SMA not required for this project</u>	<u>10</u>	<u>Jun. 10, 2010</u>
j) <u>Appendix B Best Management Practices and Monitoring and Assessment Plan</u>	<u>12, 13</u>	<u>Oct., 2014</u>
k) <u>Appendix C Finding of No Significant Impact (FONSI) Final Environmental Assessment (FEA) for Pono Kai Shore Protection</u>	<u>10</u>	<u>Apr., 2010</u>
l) <u>Appendix D Site Plan Approval KA-15-23 for Repairs to Pono Kai Seawall</u>	<u>5</u>	<u>Nov. 13, 2014</u>
m) _____	_____	_____
n) _____	_____	_____
o) _____	_____	_____
p) _____	_____	_____
q) _____	_____	_____
r) _____	_____	_____
s) _____	_____	_____
t) _____	_____	_____

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 No

1. Company/Organization Name: County of Kaua'i, Department of Public Works

Street Address: Mo'ikeha Building 4444 Rice Street, Suite 275

City, State and Zip Code+4: Lihue, Hawaii 96766

Authorized Person & Title: Douglas Haigh, P.E., Building Division Chief

Phone No.: (808) 241-4849 Fax No.: (808) 635-1120

Effective date(s): (m/d/y)

- b. A separate statement is attached. Yes No

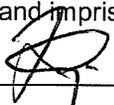
15) **Certification** (see Guidelines - Note 15)

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 statues 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: 11-7-14

Printed Name & Title: Larry Dill, P.E. County Engineer

Company/Organization Name: Kaua'i County Department of Public Works

Phone No.: (808) 241-4992 Fax No.: (808) 241-6604

- 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).

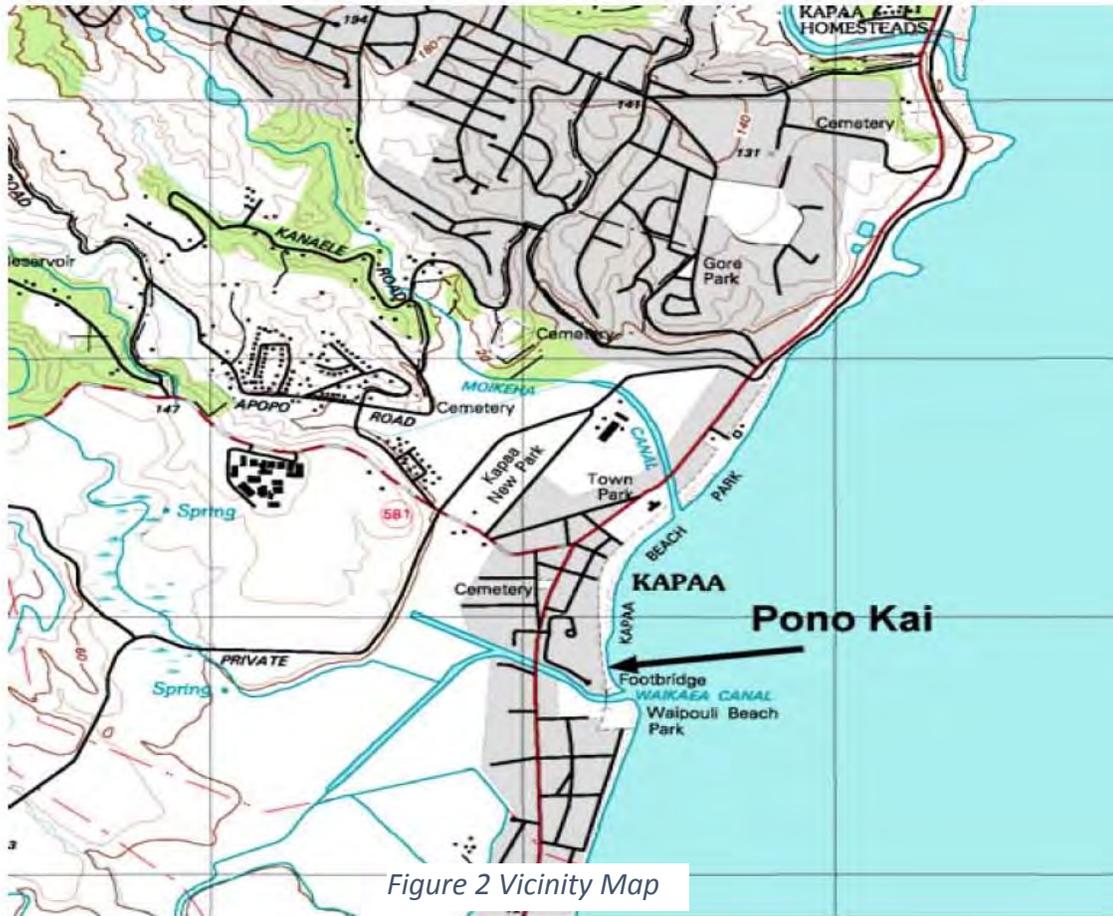
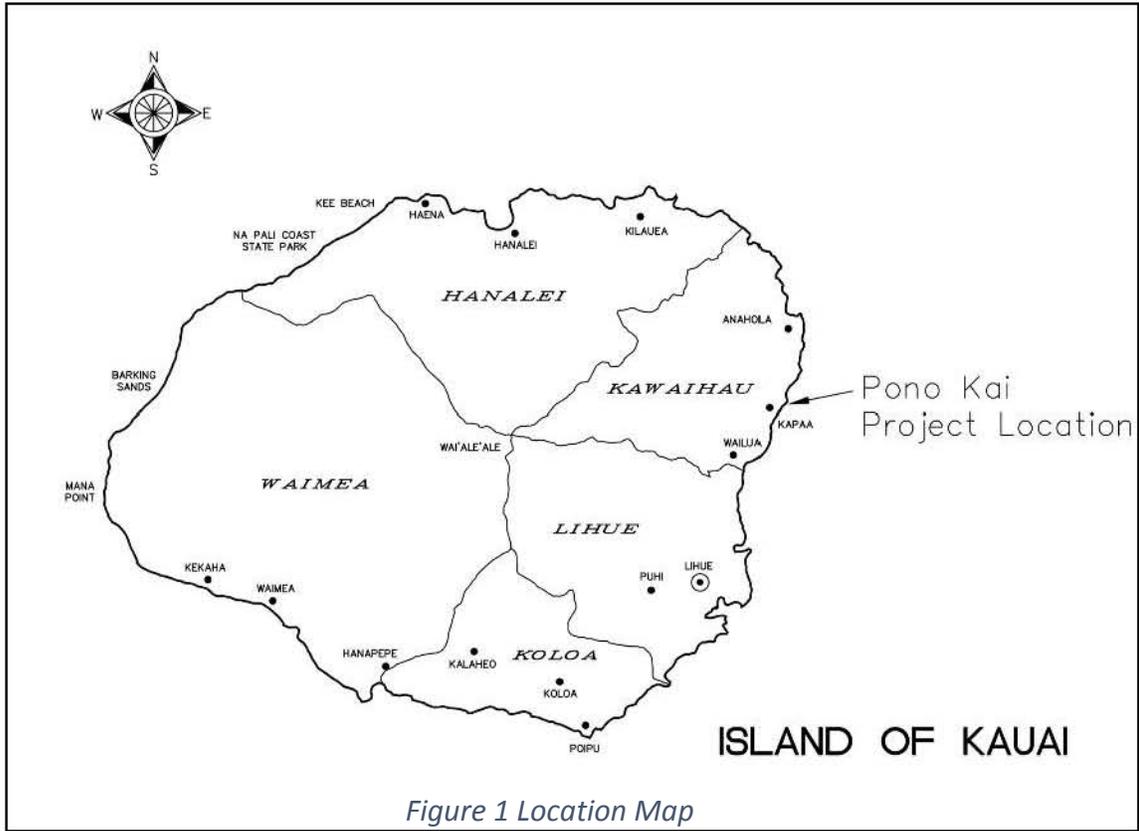
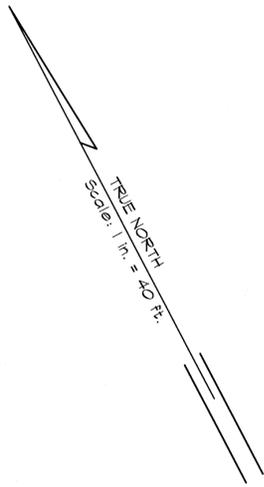




Figure 3 Aerial View of Project Area

O C E A N



Addition to Kapaa Park
Abandoned Railroad Right of Way
PARCEL 9
Exec. Ord. 2887
C.S.F. 18070

"FONO KAI RESORT"

LOT A-1

Portion of Grant 8248 to Hawaiian Canneries, Co. Ltd. C.S.F. 3816

- LEGEND**
-  ironwood pine
 -  naupaka hedges
 -  coconut

Note: Elevation Datum transferred from RM 81 (MSL)

TRV-C
1/2" pipe
BM=12.06 MSL
SPC
29,498.89 N
527,595.34 E

TRV-A
1/2" pipe
BM=12.38 MSL
SPC
29,226.96 N
527,628.99 E

TRV-B
1/2" pipe
BM=11.27 MSL
SPC
28,774.42 N
527,684.99 E

SPC
28,649.87 N
527,647.28 E



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION

Signature
ESAKI SURVEYING & MAPPING, INC.
EXPIRES: APRIL 30, 2014

TOPOGRAPHIC MAP SHOWING
 Portion of Kapaa Park, Executive Order 1187
 And Portion of Parcel 9
 Abandoned Railroad Right of Way
 Exec. Ord. 2887
 C.S.F. 18070
 Kapaa, Kawaihau, Kauai, Hawaii
 Tax Map Key: (4) 4-5-07:01
 Owner: State Of Hawaii
 Date of Survey: August 26, 2013

Figure 4

Kapaa, Kauai, Hawaii

HISTORICAL SHORELINES

- Feb 1927 T-sheet
- Jul 1927 T-sheet
- Nov 1950
- Mar 1972
- Apr 1975
- Jan 1982
- Feb 1983
- Jul 1987
- May 1988
- Sept 1992
- May 1992
- Sept 2000
- Feb 2002
- Oct 2007
- Jan 2008

Erosion rate measurement locations (shore-normal transects)

Historical beach positions, color coded by year, are determined using orthorectified and georeferenced aerial photographs and National Ocean Survey (NOS) topographic survey charts. The low water mark is used as the historical shoreline, or shoreline change reference feature (SCRF).

Movement of the SCRF along shore-normal transects (spaced every 66 ft) is used to calculate erosion rates.

SHORELINE CHANGE RATES

- Accretion Rate
- Erosion Rate

Historical shoreline positions are measured every 66 ft along the shoreline. These sites are denoted by yellow shore-perpendicular transects. Changes in the position of the shorelines through time are used to calculate shoreline change rates (ft/yr) at each transect location.

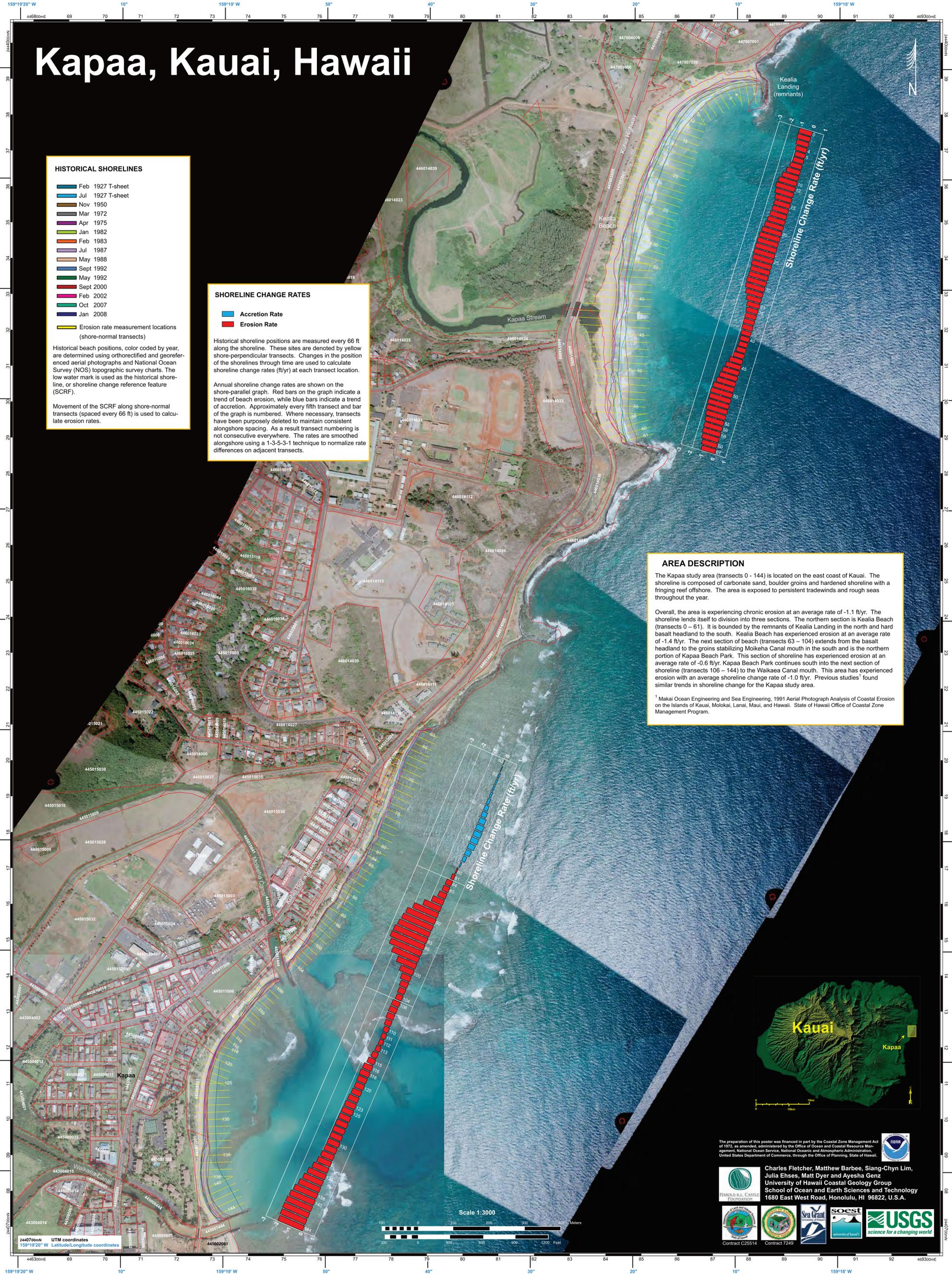
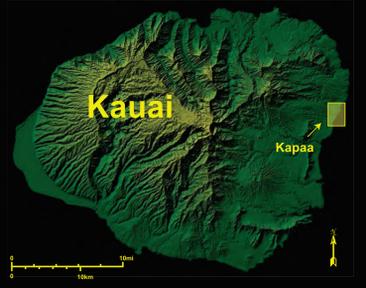
Annual shoreline change rates are shown on the shore-parallel graph. Red bars indicate a trend of beach erosion, while blue bars indicate a trend of accretion. Approximately every fifth transect and bar of the graph is numbered. Where necessary, transects have been purposely deleted to maintain consistent alongshore spacing. As a result transect numbering is not consecutive everywhere. The rates are smoothed alongshore using a 1-3-5-3-1 technique to normalize rate differences on adjacent transects.

AREA DESCRIPTION

The Kapaa study area (transects 0 - 144) is located on the east coast of Kauai. The shoreline is composed of carbonate sand, boulder groins and hardened shoreline with a fringing reef offshore. The area is exposed to persistent tradewinds and rough seas throughout the year.

Overall, the area is experiencing chronic erosion at an average rate of -1.1 ft/yr. The shoreline lends itself to division into three sections. The northern section is Kealia Beach (transects 0 - 61). It is bounded by the remnants of Kealia Landing in the north and hard basalt headland to the south. Kealia Beach has experienced erosion at an average rate of -1.4 ft/yr. The next section of beach (transects 63 - 104) extends from the basalt headland to the groins stabilizing Moikeha Canal mouth in the south and is the northern portion of Kapaa Beach Park. This section of shoreline has experienced erosion at an average rate of -0.6 ft/yr. Kapaa Beach Park continues south into the next section of shoreline (transects 106 - 144) to the Waikaa Canal mouth. This area has experienced erosion with an average shoreline change rate of -1.0 ft/yr. Previous studies¹ found similar trends in shoreline change for the Kapaa study area.

¹ Makai Ocean Engineering and Sea Engineering, 1991 Aerial Photograph Analysis of Coastal Erosion on the Islands of Kauai, Molokai, Lanai, Maui, and Hawaii. State of Hawaii Office of Coastal Zone Management Program.



Kapaa Erosion Map

Figure 5

The preparation of this poster was financed in part by the Coastal Zone Management Act of 1972, as amended, administered by the Office of Ocean and Coastal Resource Management, National Ocean Service, National Oceanic and Atmospheric Administration, United States Department of Commerce, through the Office of Planning, State of Hawaii.

Charles Fletcher, Matthew Barbee, Siang-Chyn Lim, Julia Ehse, Matt Dyer and Aysha Genz
 University of Hawaii Coastal Geology Group
 School of Ocean and Earth Sciences and Technology
 1680 East West Road, Honolulu, HI 96822, U.S.A.



Sand nourishment fill area - north end of wall looking north



Sand nourishment fill area – north end of wall looking south



Upper section of wall to be regouted



Upper section of wall to be regouted



Upper section of wall to be regrouted looking south



Sink hole adjacent to top of wall



Missing section top of wall



Missing section top of wall



Sink hole near south end



Sand nourishment fill area - south end of wall



Sand nourishment fill area - south end of wall looking north

**COUNTY OF KAUA'I
PLANNING DEPARTMENT
LIHU'E, KAUA'I**

**Planning Director's
Shoreline Determination Report**

Receipt of Completed Application: March 29, 2010
Planning Commission Receives Application and Determination: April 13, 2010
Deadline date for Planning Commission Acceptance: July 21, 2010

PROJECT: SSCR-2010-6
APPLICANT: County of Kaua'i, Department of Public Works

FINDINGS

LOCATION: Kapa'a, Kaua'i
The property is a shoreline parcel seaward of Pono Kai, just North of Waieka Canal. 5 miles southwest of Kaumuali'i Highway. The seawall runs parallel to the ocean from Nui Street to the Waieka Canal.

TAX MAP KEY: <u>4-5-007:001</u>	AREA: <u>2.502 acres</u>
ZONING: <u>Open</u>	SLUD: <u>Urban</u>
GEN. PLAN: <u>Urban Center</u>	EXIST. USE: <u>County Park</u>

ACTIONS REQUIRED/LEGAL REQUIREMENTS:

Shoreline Setback Determination is required as the property abuts the shoreline. Requirement was triggered by Applicant's proposal to repair an existing rock revetment.

This report is necessary to satisfy the requirements of CZO Section 8-27.9(b) that states: "The Director shall submit a written report, a copy of the application, and all other documents submitted on the application to the Commission prior to the matter appearing on an agenda of the Commission." The area between the shoreline setback line and the State certified shoreline is the "shoreline setback area." All structures and activities in this area are subject to conformation with the Shoreline Setback and Coastal Protection Ordinance, Chapter 8-27 of the Comprehensive Zoning Ordinances. The setback area remains the landowner/leaseholder's responsibility for management and maintenance. In reference to the attached Shoreline Setback Application SSD-2010-24 and in accordance with Section 8-27.8 (3) of the Comprehensive Zoning Ordinances (CZO), the Planning Director has deemed the application to be complete and confirms that a setback and activity determination is necessary on March 29, 2010.

A **Shoreline Setback Variance** is required based on the request for placement in the shoreline setback area to repair and replacement of an existing revetment.

STAFF FINDINGS:

Setback and Activity Determination

1. The site is on a 2.502 acre parcel located approximately 900 feet east of Kūhi‘ō Highway in Kapa‘a. The Applicant proposes to replace a damaged rock seawall with sheet pile wall and rock toe.
2. The average depth of the lot is approximately 83 feet.
3. The application included a certified shoreline survey that was approved by the Department of Land and Natural Resources on September 15, 2010. The DNLR certification ensures that there are no encroachments at the site, delineates the extent of the county and /or state’s jurisdiction and provides a baseline from which to measure the shoreline setback.
4. The parcel lies between Transect 135 to the north and Transect 144 to the south, as shown on the Kapa‘a erosion map of the County of Kauai Shoreline Study. The erosion rates are as follows:

Transect 134: -1.4 ft/year
Transect 135: -1.6 ft/year
Transect 136: -1.7 ft/year
Transect 137: -1.9 ft/year
Transect 138: -2.0 ft/year
Transect 140: -2.0 ft/year
Transect 141: -2.1 ft/year
Transect 142: -2.1 ft/year
Transect 143: -2.1 ft/year
Transect 144: -2.0 ft/year

The average erosion rate for this area of the parcel is -1.89 feet per year.

CONCLUSION

Setback and Activity Determination

According to Section 8-27.3, the lot is subject to a 40 foot setback from the Certified Shoreline and the activity is not permitted in the shoreline setback area without a Shoreline Setback Variance.

RECOMMENDATION

Setback and Activity Determination

Section 8-27.8 (c) (4) which states in its entirety:

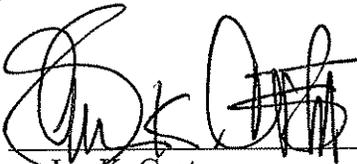
“Within one hundred twenty (120) days from the day the application is deemed complete by the Director, the Director shall make a determination in accordance with the criteria set forth in this Article that the proposed activity or structure is:

- (A) Permitted under Section 8-27.7;
- (B) Permitted under Section 8-27.7 and subject to conditions;
- (C) Not permitted under Section 8-27.7; or
- (D) Outside of the shoreline setback area.”

The Director finds that the subject lot is subject to a 40 foot setback and the activity is not permitted in the setback area without a Shoreline Setback Variance. It is recommended that the Commission accept the Director’s setback and activity determination.

By  _____
Lisa Ellen Smith
Planner

Approved & Recommended to Commission:

By  _____
Ian K. Costa
Planning Director

Date: 4/7/10



SHORELINE SETBACK APPLICATION

SSD-2009- 2010-24
 Receipt date 3/12/10
 Determination date _____
 Tech _____
 Planner JCS
 SSCR-2009 720-6

Instructions: File all information requested under Part A for processing the Determination of Applicability (§ 8-27.1), including signature page. Fill out Parts A and B if you know, due to proximity of the shore, that your parcel will require a Certified Shoreline Survey. If you are proposing a permitted activity or structure within the shoreline setback fill in Part C and/or Part D if you are applying for a variance.

Applicant Information	
Applicant Name: DPW County of Kauai, Donald Fujimoto	Contact phone: (808) 241-4993
Address: 4444 Rice Street, Suite 225	
Lihue, Hawaii 96766-1340	
Alternative Contact (if different): Douglas Haigh	Alternative contact phone: (808) 241-4849
Project Information (attach additional sheets)	
Site address: Kapa`a Park, Kapa`a, Kauai, HI	TMK: 4-5-007:001
County Zoning District: Open	General Plan designation: Urban Center
State Land Use: Urban	
Description of proposed activity: Replacement of damaged rock seawall with sheet pile wall and rock toe.	

Part A

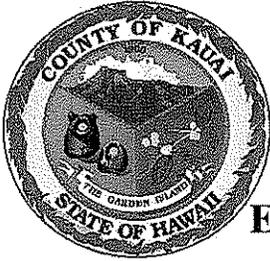
Shoreline Setback Determination of Applicability (§ 8-27.1)

Check all that apply, fill in applicable information. Any box checked must be accompanied by additional information, photos and/or documentation.

- (a) Abutting Shoreline or (b) Within 500 feet of Shoreline AND
- Distance of improvement from Shoreline is approximately 0-35 ft.
 - Average Lot Depth 83 ft.
 - Number of parcels and type of improvements (roads, buildings, structures) between Shoreline and this parcel:
No parcels or structures. Existing seawall is located at the shoreline.
 - Topography (undulating, flat, slope, etc.) and ground elevation of subject parcel (Lowest and Highest elevations)
Flat with shoreline slope into ocean.
Elevation varies from the beach to top of embankment, approximately 4-12 ft MSL
 - Shoreline type (e.g. beach, dune, rocky, sandy with rocky outcropping, etc.)
beach
 - Artificially armored Shoreline
 - If checked, what type of armoring (e.g. seawall, revetment, bulkhead) rock seawall
 - Is the armoring permitted/authorized? The wall was rebuilt after Hurricane Iniki. The 12/17/1992 Federal Emergency Management Agency Damage Survey Report Inspection identified the damaged wall and approved it for restoration.
 - Date of authorization (attach copy of authorization letter) 12/28/1992
 - Is property in coastal floodplain (if checked, what zone) VE-9
 - Has this property been subject to coastal hazards in the past? (If checked, please describe)
Wave damage and erosion by Hurricane Iniki 1992; wave erosion and wall damage to present date.
 - (c) Outside 500 feet - Not subject to Determination

Applicability (Planning Department fills out)	
<input type="checkbox"/> Not subject to Determination	This Determination is only applicable to this request for determination of applicability.
<input checked="" type="checkbox"/> Setback Determination necessary. Requirements of Ordinance 863 apply, submit full application.	
	<u>4/7/10</u> Date
Planning Director	

Shoreline Setback Determination



Establishment of the Shoreline Setback Line

If Part A has been deemed that a Determination will be necessary, the additional information will be required for submission of this application.

Part B

Shoreline Setback Determination (§ 8-27.3)

<input type="checkbox"/>	Date of Shoreline delineation inspection (by DLNR)	
<input checked="" type="checkbox"/>	Survey plan. The certified shoreline map is attached.	
<input checked="" type="checkbox"/>	Other: Average lot depth less than 100 feet; therefore the setback is 40 feet from Table 1.	
<input checked="" type="checkbox"/>	Date of Certified Shoreline approval (by DLNR)	Optional data requested for analytical purposes only
	September 15, 2009	

Section 8-27.3 Shoreline Setback Determination: Establishment of the Shoreline Setback Line.

- (a) No shoreline setback line shall be established for any lot subject to this Article unless the application for a shoreline setback line includes a shoreline survey certified not more than six (6) month prior to submission of the application.
- (b) For lots with an average depth of one hundred sixty (160) feet or less, the shoreline setback line shall be established based on the average depth of the lot as provided in Table 1, or at the option of the applicant, upon a coastal erosion study as provided in Table 2.

Table 1: The distance in feet of the shoreline setback line as measured from the certified shoreline based on the average lot depth in feet. See attached table and substitute for below:

If the average lot depth is:	100 feet or less	101 to 120 feet	121 to 140 feet	141 to 160 feet	161 to 180 feet	181 to 200 feet	More than 200 feet
Then the minimum setback distance	40 feet	50 feet	60 feet	70 feet	80 feet	90 feet	100 feet

The lot depth at the north end of the certified shoreline is 77 feet. The depth at the south end is 146 ft. The depth at the center is 25 ft. Adding these and dividing by 3 gives an average depth of 83 feet. From Table 1 the minimum setback distance is 40 feet.

Provide proposed setback from certified shoreline in feet: 40 feet

- (c) For lots with an average depth of more than one hundred sixty (160) feet, the shoreline setback line shall be established based on a coastal erosion study as provided in Table 2 and shall be no less than the setback distances set forth in Table 1 as applicable.

Table 2: The distance in feet of the shoreline as measured from the certified shoreline based on the footprint and a coastal erosion study.

For structures with a building footprint that is:	Less than or equal to 5,000 square feet	Greater than 5,000 square feet
Then the setback distance is:	40 feet plus 70 times the annual coastal erosion rate	40 feet plus 100 times the annual coastal erosion rate

Provide proposed setback from certified shoreline based on building footprint in feet: _____



SHORELINE SETBACK VARIANCE FORM

Part D Shoreline Setback Variance (§ 8-27.9)

This document is the request for a shoreline setback variance. In addition to the documentation and information requested in Parts A, B, and C, the Applicant applying for a variance is required to submit all required information, per § 8-27.9 listed in the checklist below.

- An administrative fee of \$300.00. The administrative fee shall be seventy-five hundred dollars (\$7,500) if the application is made after the structure is partially or fully built without the required approvals.
- Certification from the owner or lessee of the lot which authorizes the application for variance;
- An environmental assessment and or EIS, if required, prepared in accordance with HRS 343; The DEA was sent to the Planning Department under separate cover.
- The names, addresses, and the tax map key identification of owners of real property situated adjacent to and abutting the boundaries of the land on which the proposed use, activity, or operation is to occur (attach information);
- A site plan of the shoreline setback area, drawn to scale, showing:
 - Existing natural and man-made features and conditions within;
 - Existing natural and man-made features and conditions along property immediately adjacent to the shoreline setback area and proposed improvements;
 - The certified shoreline and the shoreline setback line (submitted under **Part B**);
 - Contours at a minimum interval of two (2) feet unless waived by the Director; and
 - Proposed development and improvements showing new conditions with a typical section (if a structure).
 - A copy of the certified shoreline survey map of the property (submitted under **Part B**);
- Detailed justification of the proposed project, which addresses the purpose and intent of these rules and the criteria for approval of a variance (attach written statement);
- Analysis and report of coastal erosion rates and coastal processes; and
- Any other information required by the director (please list).

Any structure approved within the shoreline setback area by variance shall not be eligible for protection by shoreline hardening during the life of the structure, and this limitation and the fact that the structure does not meet setback requirements under Section 8-27.3 and could be subject to coastal erosion and high wave action shall be written into a unilateral agreement that is recorded by the Bureau of Conveyances of Land Court, as the case may be. A copy of the unilateral agreement shall be submitted to the Planning Department prior to the issuance of the required zoning and/or shoreline setback variance. Failure of the grantor to record these deed restrictions shall constitute a violation of this section and the grantor shall be subject to the penalties set forth in this article.

For any structure approved within the shoreline setback area by variance, the applicant shall agree in writing that the applicant, its successors and permitted assigns shall defined, indemnify and hold the County of Kauai harmless from and against any and all loss, liability claim, or demand arising out of damages to said structure and this indemnification shall be included in the unilateral agreement required above.



SHORELINE SETBACK VARIANCE FORM

The Department of Public Works is requesting a variance so that the proposed sheet pile wall and rock toe can be placed to protect the existing county bike path as shown in the attached concept design plan. Section 8-27.10 of the Kauai County Code addresses the criteria for approval of a variance. Section 8-27.10(a)(10) states the following:

The commission may consider granting a variance for the protection of a dwelling unit or public infrastructure: provided that, the structure is at imminent risk of damage from coastal erosion, such damage poses a danger to the health, safety, and welfare of the public, and the proposed protection is the best shoreline management option in accordance with relevant state policy on shoreline hardening.

The proposed shore protection will be used to replace an existing rock seawall in a public beach park that has been undermined by wave erosion. Sink holes have developed behind the wall after sand has been pulled out through the rocks into the ocean. Parts of the wall are collapsing. Wave erosion has flanked the existing wall on both ends. That means that the erosion is working around behind the wall and that the wall will collapse. The damaged area and sink holes have been cordoned off with an orange safety fence. Pedestrians or bike riders entering the area could step into the sink holes or could dislodge a loose boulder and be injured. As the erosion progresses, the bike path itself will be undermined and could collapse. When damaged, the bike path would not be safe for users. The proposed new structure will be moved inland so that sections of it will be buried in the remaining area near the path and will not be exposed to wave action. The center section of the new wall will be exposed to wave action because there is much less un-eroded beach. The proposed rock toe will help dissipate wave energy. The Department of Public Works is considering adding sand to help rebuild the beach, which would increase shore protection of the bike path. Without shore protection, it is likely that this part of the beach park and the bike path will eventually be lost. At an erosion rate of 1.5 feet per year, which is shown on the attached erosion rate map, the path will be damaged in less than 10 years.

Section 8-27.10(e) states the following:

No variance shall be granted unless appropriate conditions are imposed:

(1) To maintain and require safe lateral access to and along the shoreline for public use or adequately compensate for its loss;

If erosion is not stopped, safe lateral access along the shoreline for public use may not be possible at this location without either walking in the water or on private property.

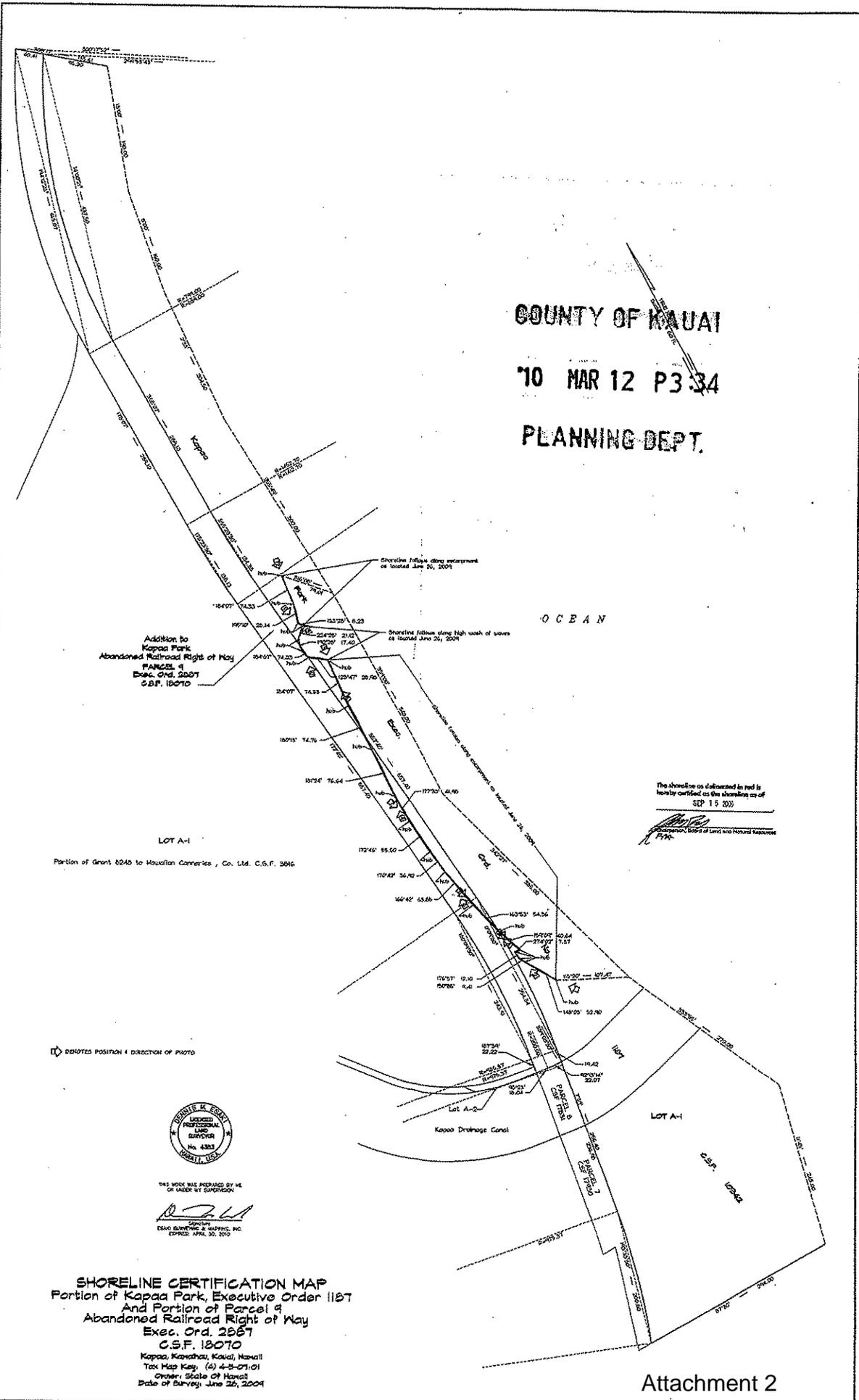
(3) To minimize and mitigate risk of structures failing and becoming loose rocks or rubble on public property;

The existing seawall will eventually collapse and the rocks will be scattered on the beach. Erosion will damage the bike path, which will become concrete rubble on the beach if it collapses.

COUNTY OF KAUAI

10 MAR 12 P3 34

PLANNING DEPT.



The shoreline as delineated by red is hereby certified as the shoreline as of
 SDP 15 2004

[Signature]
 Director, Board of Land and Natural Resources



THIS WORK WAS PREPARED BY ME
 OR UNDER MY SUPERVISION

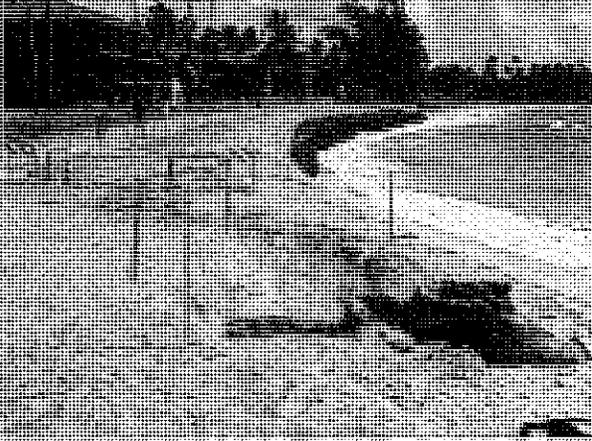
[Signature]
 DENNIS H. ESAKI
 ESASI SURVEYING & MAPPING, INC.
 LICENSE NO. 4383, STATE OF HAWAII

SHORELINE CERTIFICATION MAP
 Portion of Kapaa Park, Executive Order 1187
 And Portion of Parcel 9
 Abandoned Railroad Right of Way
 Exec. Ord. 2887
 C.S.F. 18070

Kapaa, Kaneohe, Kaula, Hawaii
 Tax Map Key: (A) 4-3-07.01
 Order, State of Hawaii
 Date of Survey: June 20, 2004

Attachment 2

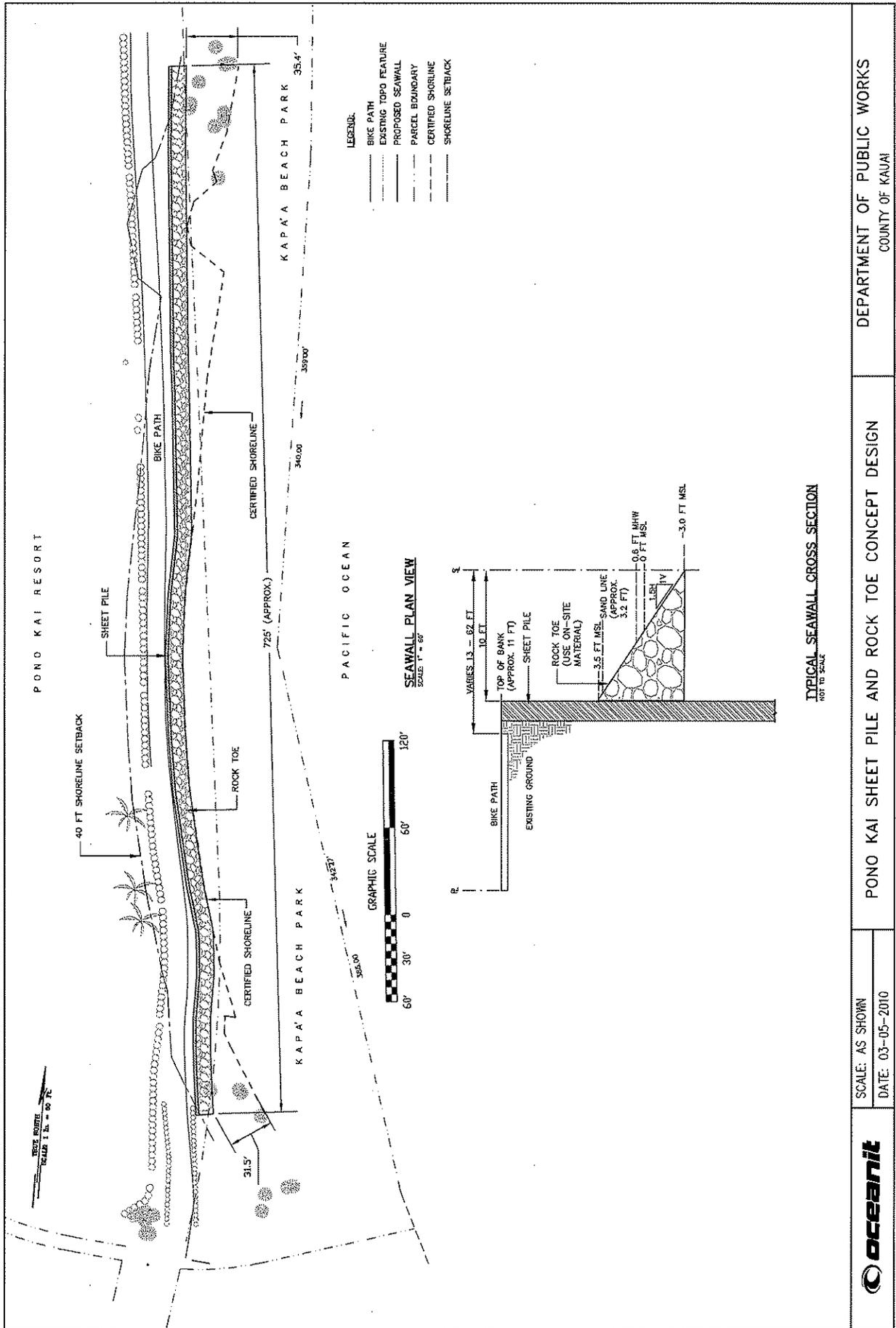
Pono Kai Seawall, Kapaa - proposed Certified Shoreline



June 18, 2009



Shoreline Survey Stakes

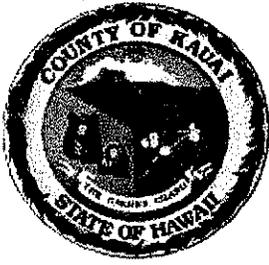


DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI

PONO KAI SHEET PILE AND ROCK TOE CONCEPT DESIGN

SCALE: AS SHOWN
DATE: 03-05-2010





Applicant's Signature

I, Donald M. Fujimoto, declare that I am the owner or owner's authorized agent of the property (see attached Letter of Authorization) involved in this application, and that the attached information and answers herein contained and the information herewith submitted are in all respects true and correct to the best of my knowledge and belief.

 _____
Signature 3/10/10
Date

Disclaimer

This assessment is based on information provided. Please be aware that there is always uncertainty in predicting the future shoreline changes. In addition, more than likely erosion rates will accelerate in the future due to climate change and associated relative sea level rise, and human activities, such as armoring beach sediment sources.

DATE: 03/12/2009
TIME: 02:22PM

FEDERAL EMERGENCY MANAGEMENT AGENCY
DAMAGE SURVEY REPORT
PART I - PROJECT DESCRIPTION

DSR NO: 89390
SUPP TO DSR: 89390

APPLICANT NAME - KAUAI COUNTY
PROJECT TITLE - BIKE PATH RESTORATION
DAMAGED FACILITY - DPW-RC, KAPAA BEACH PARK, PONO KAI BIKE PATH
LOCATION - NUI ST TO WAIAKEA CANAL SECTION, KAPAA

COUNTY - KAUAI
INSPECTION DATE: 12/17/1992
DISASTER NO: 0961
P.A.ID 007-00000
CATEGORY C
PROJECT NO: 399
% COMPLETE 0
WORK ACCOM BY: CONTRACT

DAMAGE DESCRIPTION AND SCOPE OF ELIGIBLE WORK:

RESTORE TO PRE-DISASTER CONDITIONS 600' LONG X 8' WIDE BIKE PATH AT KAPAA BEACH PARK, INCLUDING RESTORATION OF ROCK WALL/RETAINING WALL, BACKFILL, GRADING, AC PAVING AS REQUIRED.

RECOMMENDATION BY INSPECTOR	INSP NO.	AGENCY	ELIGIBLE	F.O
FEDERAL - AMAGLIO, SANDRO	9132	FEMA	Y	
STATE -				
LOCAL - RUDY RARALIO				

PART II - ESTIMATED COST OF PROPOSED WORK

ITEM	CODE	MATERIAL AND/OR DESCRIPTION	UNIT	QTY	UNIT PRICE	COST
1	9999	CONTRACT AMOUNT	LS	1.00	\$580,000.00	\$580,000
TOTAL:						\$580,000
AMOUNT ELIGIBLE:						\$580,000
100% FEDERAL SHARE:						\$580,000

PART III - FLOOD PLAIN MANAGEMENT/HAZARD MITIGATION REVIEW

IN OR AFFECTS FLOOD- PLAIN OR WETLAND: M	FLOODPLAIN LOCATION:	% DAMAGE	DISASTER HISTORY:	LAND USE U - D	FPM RECOMMEN- DATION:
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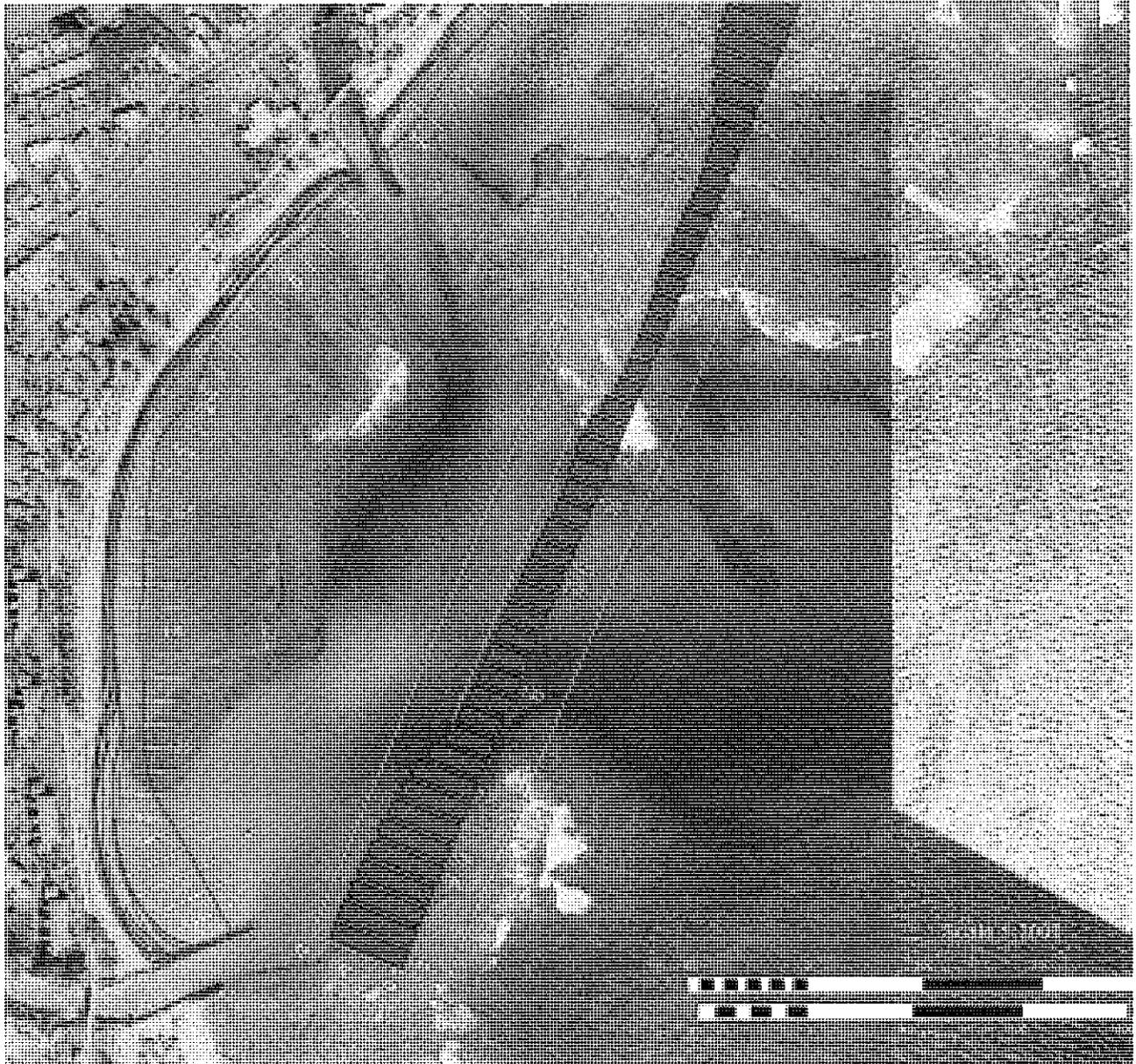
AMOUNT	ELIGIBLE	PART IV - FOR FEMA USE ONLY SPECIAL CONSIDERATIONS	FLOODPLAIN REV. NO.	WORKSITE
\$580,000	Y			89390

SUPP# 5 DATE PAPPED 12/28/1992

COMMENTS/CHANGES
SEE SUP DSR 92135 FOR DEOBLIGATION.

FEMA REVIEWER _____ DATE ____/____/____

DSR NO: 89390



University of Hawaii Erosion Rate Map for Pono Kai



Sea Level View with Rock Wall and Beach



Sink Holes and Wall Damage with Orange Safety Fence



Flanking Erosion at North End

Terrestrial and Aquatic Assessment For Pono Kai Sea Wall

Prepared for:

**Department of Public Works
County of Kauai**



Prepared by:

oceanit

Oceanit Center
828 Fort Street Mall, Suite 600
Honolulu, HI 96813

June 2008

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I INTRODUCTION

The proposed project is to rebuild a deteriorating rip-rap sea wall that protects a public walking/bike path. The bike path runs parallel to the shoreline and is bordered by the Pono Kai Condominiums on the landward side and the seawall and beach at Kapa'a, Kauai. Regular wave action causes soil erosion behind the wall's boulders, undermining it. This report discusses a survey of the marine community ecosystem undertaken for an environmental assessment and applicable permit applications in anticipation of reconstructing the sea wall mauka of the existing wall, closer to the bike path.

2 METHODS

The field reconnaissance survey took place on April 24, 2008 between 8 am and 2 pm by an Oceanit biologist and a field technician. A qualitative survey of the nearshore and intertidal marine environment was conducted using face mask and fins of the area fronting the sea wall and documented with an underwater camera. Terrestrial vegetation in and adjacent to the project site was also identified. A water quality probe was deployed during the day of the survey over the reef flat, suspended approximately three feet below the water surface. Water samples were collected at a location with a four foot depth at Transect 4. One water sample was collected from the top three inches of the surface and the other from three feet below the surface (Figure 1).

The marine survey was conducted during a rising tide. This coastline is typically exposed to northeasterly trade winds and associated wind-swell. A calm day was selected for the survey: wave action was minimal, and winds were out of the southeast, 0-5 mph in the morning, building to 10-15 mph in the afternoon. Skies were clear to partly cloudy, and water visibility ranged from 5-10 feet within 24 feet of the shore, increasing to 30 feet beyond this distance.

Marker flags were placed approximately every 75 feet along the face of the seawall, to establish eight transects perpendicular to shore. The northern face of the Waika'ea Canal breakwater was considered a ninth transect. A line formed between the outermost extent of the channel breakwater and another deteriorated sea wall 1/2 –mile north of the project site represented the terminus of the transects. To survey the area, the diver swam alternately in then out along each transect, recording information on an underwater tablet and taking photographs where appropriate. Figure 1 illustrates the area surveyed.

The original reconnaissance plan for this site investigation included additional surveys outside the project area. These areas included the faces of the breakwater in the Waika'ea Canal, as well as an area immediately south of the stream channel. Due to the arrival of a barge in preparation for dredging activities (unrelated to this project), a thorough survey of the breakwater walls in the channel was not possible. Redirected boat traffic (due to the barge in the main channel) also prevented a thorough survey of areas south of the channel.

3 RESULTS & DISCUSSION

The area seaward of the project site may be divided into four habitat types: Breakwater boulders, sand bottom, coral reef flat, and channel. These areas are delineated in Figure 1.

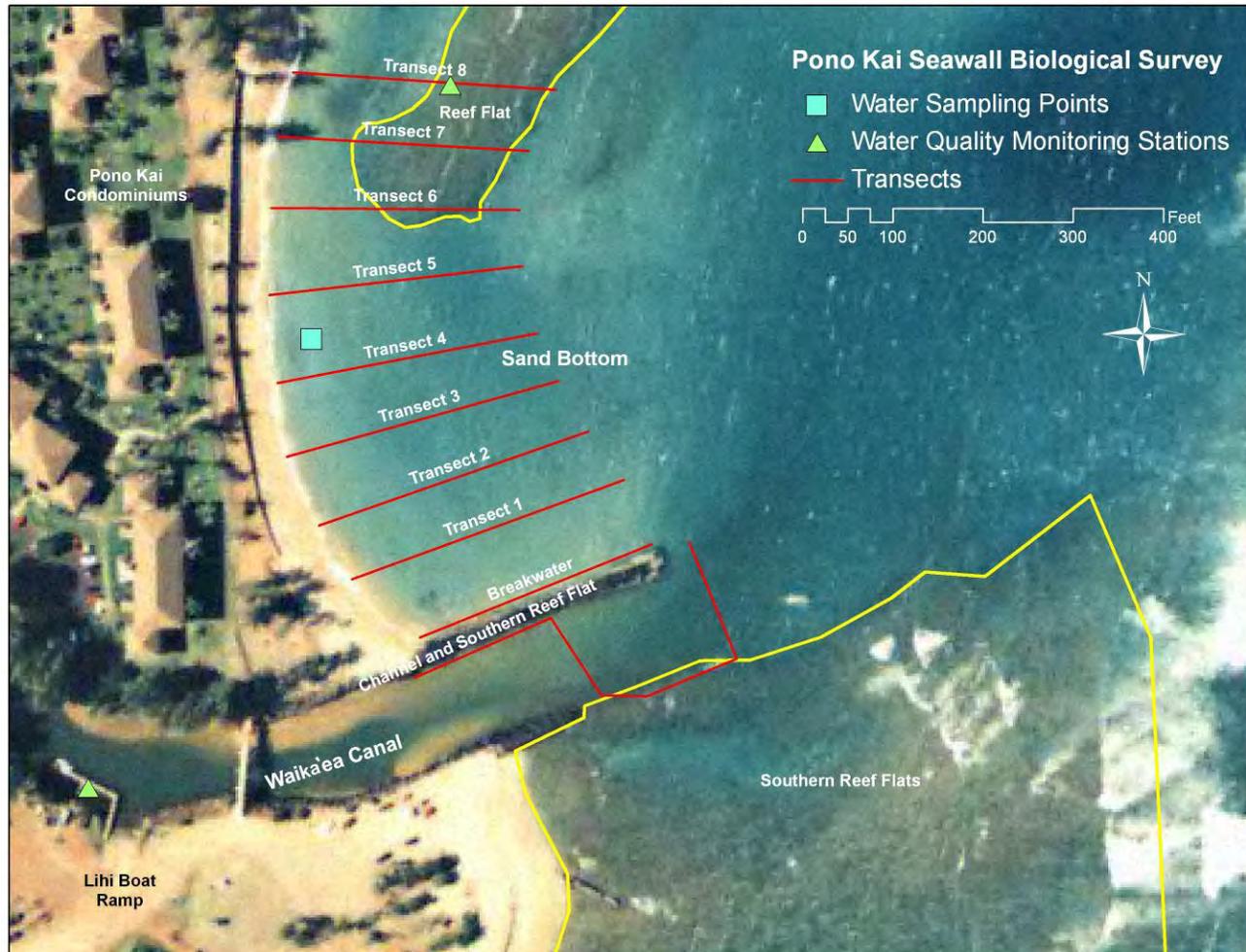


Figure 1. Site map illustrating water sampling locations, water quality monitoring stations and transects followed for the biological assessment. Reef flat areas extending from the north and to the south are noted.

3.1 Breakwater

The breakwater boulders provide substrate for establishment of sessile organisms. The vertical structure and crevices provide habitat and shelter for motile species including invertebrates and fish. Algae observed along the breakwater included *Dictyota sp.*, *Dictyosphaeria sp.*, *Wrangelia sp.*, and *Symploca hynoides*. Crustose coralline algae covered the boulders in the intertidal zone. At least three *Pocillopora damicornis* coral colonies were observed attached to the boulders, but none larger than six inches in diameter. The only fish species observed was *Abudefduf abdominalis*, (aka Sergeant Major, *mamo*), though others undoubtedly sought refuge in the crevices during our transit. *A'ama* crab (*Grapsus tenuicrustatus*) were observed foraging on the breakwater boulders. Sea cucumbers (*Holothuria atra*) were occasionally present at the base of the breakwater where it meets the sand.

One shorebird, a *Heteroscelus incanus* (Wandering tattler), was observed foraging on the breakwater boulders during the survey.

3.2 Transects 1 – 5

Sandy bottom was encountered along transects one through five. No organisms were observed on the sand or in the water column above. Sea cucumbers were observed clustered around a lone boulder approximately 5 yards from shore along transect four. Two patches that appeared slightly shaded on aerial imagery were investigated and determined to be areas where larger pebbles were accumulating.

3.3 Transects 6 – 8

Transects six – eight crossed over a patch reef. The extent of the patch reef is clearly visible in the aerial imagery. Depth ranged from six feet at the periphery to less than one foot (during low tide) at the reef crest. In general, there were very few hard coral colonies: approximately one per two square meters. Large coral heads were absent from the reef. The largest coral head encountered was approximately 18 inches in diameter (*Pocillopora meandrina*). The remainder of the reef consisted of a basalt bench showing signs of wave erosion from the surrounding sand. The assemblage of sand, corals and algae suggest a moderately high wave-energy environment. Algal species include *Pterocladia caerulea*, *Liagora sp.*, *Halimeda sp.*, *Symploca hydroides*, *Chaetomorpha sp.*, *Sargassum* (in shallower parts of the reef), and *Padina sp.* The smaller, more abundant coral species found included *Pocillopora damicornis*. *Palythoa cease*, a colonial anemone was also occasionally observed. Seven spiny lobsters were observed trapped in a net laid out across the reef flat. Numerous species of reef fish were observed on the transects crossing the reef, though abundance was low. All fish observed were in their juvenile phase and/or less than four inches in length, likely due to the absence of cracks, or other spaces large enough to offer shelter. Common fish species observed include: *Canthigaster jactator* (Hawaiian whitespotted toby), *Ostracion meleagris* (Spotted trunkfish), and *Thallosoma duperryi* (Saddle wrasse).

3.4 Channel and Reef flat to the south

Species diversity and abundance on either side of the breakwater extending makai did not differ significantly. Sand fills the inner reaches of the channel. Occasional Purse Shells colonies (*Isognomon californicum*) were observed on breakwater boulders. The dredged channel bottom closer to the

channel mouth consists of coral rubble with little or no colonization by algae or other organisms. The channel slopes beyond the southern breakwater rise up to a shallow reef flat that displays lower coral and algal diversity than the reef-flat fronting the project site. The crustose coralline alga *Lithophyllum kotschyannum* was the most common on the reef flat to the south.

3.5 Terrestrial Vegetation

Vegetation on the seaward side of the bike path consists of landscaped grass with an occasional *Ipomea sp.* (beach morning glory). There is a small grove of five *Casuarina equisetifolia* (Ironwood) trees at the southernmost point of the project area. At the base of the southernmost tree closest to the beach is a patch of the native 'Aki 'Aki grass (*Sporobolus virginicus*) and the introduced shrub *Tournefortia argentea*. These species are common coastal vegetation in the Main Hawaiian Islands. The Ironwood trees are a common introduced species.

3.6 Water Quality

Temperature of the waters above the reef averaged 25.2 degrees Celsius with a mean pH of 8.6. Salinity was 36.2 ppt. Laboratory analysis of the water samples collected showed total suspended solids in the surface water at 3.2 mg/L and 6.1 mg/L at the three foot depth.

4 CONCLUSIONS

A majority of the area seaward of the project site is sand bottom. The reef flat that extends from the north into the area fronting the project site comes within 10-15 yards of the beach. The reef flat makes up approximately 15% of the area surveyed, with depths on the reef ranging from six feet to less than one foot depending on tide and wave conditions. Live coral cover on the patch reef is less than 2%, the solid benthic substrate covered primarily by macroalgae. A majority of the reef supports various common species of macro-algae, with low densities of coral and fish also commonly found through the main Hawaiian Islands. The nearby breakwater boulders have a much lower diversity of algal species and one coral species.

Aside from the single Wandering Tattler, larger vertebrates were absent in the study area. While no threatened or endangered species were observed during this study, the endangered Hawaiian green sea turtle is known to forage on reef flats similar to the reef flat found off the project site. Furthermore, the possibility exists that a turtle or the endangered Hawaiian Monk Seal could haul out on the beach at or near the project site.

None of the marine and terrestrial species observed during the survey were considered threatened or endangered. Therefore construction of the new sea wall will not have an adverse impact on land and sea species.



Figure 2. The red alga, *Wrangelia* shown growing on a breakwater boulder.



Figure 3. The green alga *Dictyosphaeria cavernosa* observed growing on breakwater boulders.



Figure 4. *Abudefduf abdominalis* (Sergeant major) were frequently observed in breakwater boulder crevices and on the reef flat.



Figure 5. *Pocillopora damicornis* coral colony (three inch diameter) observed on breakwater boulder and on the reef flat.



Figure 6. *Holothuria atra* (black sea cucumber) observed foraging at the base of the breakwater where it meets the sand bottom.



Figure 7. Wandering Tattler (*Heteroscelus incanus*) observed foraging on exposed breakwater boulders



Figure 8. Example of sand bottom across much of the study area, with hand for scale.



Figure 9. Sea Cucumbers feeding along boulder at transect 4



Figure 10. The red alga *Liagora* established on the reef flat.



Figure 11. The green alga *Halimeda* species on an exposed ridge of the reef flat.



Figure 12. Typical view of the reef flat along transects 6-8.



Figure 13. *Palythoa caesia*, a common colonial anemone, observed on the reef flat.



Figure 14. A domino fish (*Dascyllus trimaculatus*) in the largest coral head encountered (*Pocillopora meandrina*).



Figure 15. Typical view of the reef flat viewed from above.



Figure 16. Auger shell encountered along the transect.



Figure 17. Purse Shells (*Isognomon californicum*) found on the break water boulders facing the channel.



Figure 18. The most common crustose coralline alga found to the south of the channel (*Lithophyllum kotschy anum*), outside the project area.



Figure 19. View of the area south of the channel, beyond the project area.



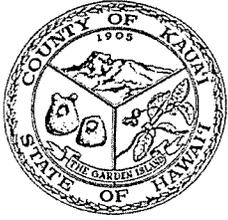
Figure 20. Aki 'Aki grass (*Sporobolus virginicus*, common, native) at the southernmost end of the project site, at the foot of the ironwood trees (common, introduced).



Figure 21. The introduced shrub, *Tournefortia argentea*, at the foot of an ironwood tree.



Figure 22. Panoramic view of the study area facing north. The seawall to be repaired lies in the distance left of center, lined with orange construction fencing.



COUNTY OF KAUA'I
PLANNING DEPARTMENT
4444 Rice Street, Suite A473
Līhu'e, Kaua'i, Hawai'i 96766-1326

MEMORANDUM

DATE: June 10, 2014

TO: Larry Dill, P.E., County Engineer
COK Department of Public Works

FROM:  Michael A. Dahilig, Director of Planning

SUBJECT: Pono Kai Seawall Project
Tax Map Key: (4) 4-5-007:001
Kapa'a, Kaua'i

The project referenced above was initially approved by the Planning Commission on June 22, 2010 through SMA Use Permit SMA(U)-2010-4 and Shoreline Setback Variance SSV-2010-2 that allowed for replacement and an extension to the existing seawall fronting the Pono Kai property.

We have been informed that your department is no longer pursuing the project as represented in the permits referenced above. Rather, the improvements will just now be limited to repair work to portions of the existing seawall.

Based on the foregoing, we have determined that the proposal does not require an SMA Permit since it is not considered "Development", as defined in Section 1.4 F. of the County of Kaua'i Special Management Area Rules and Regulations.

Should you have further questions regarding this matter, please don't hesitate to contact Dale Cua of my staff at ext. 4053.

Appendix A

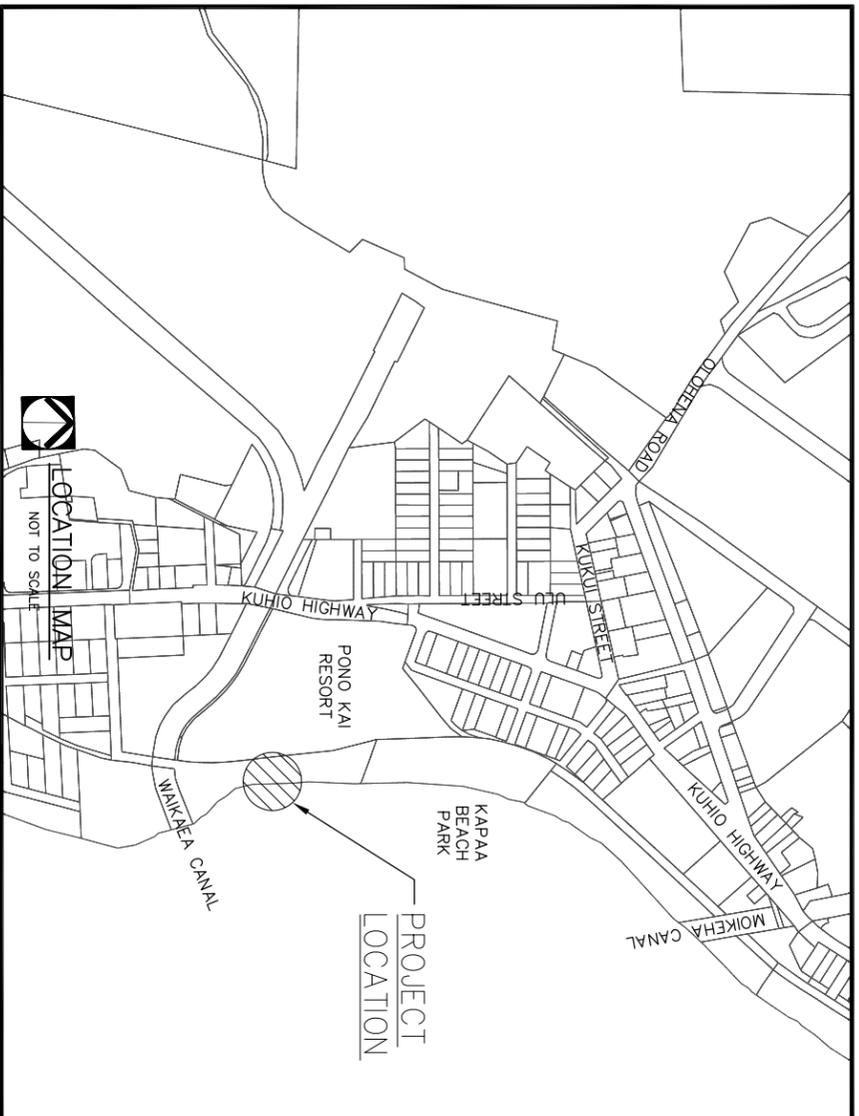
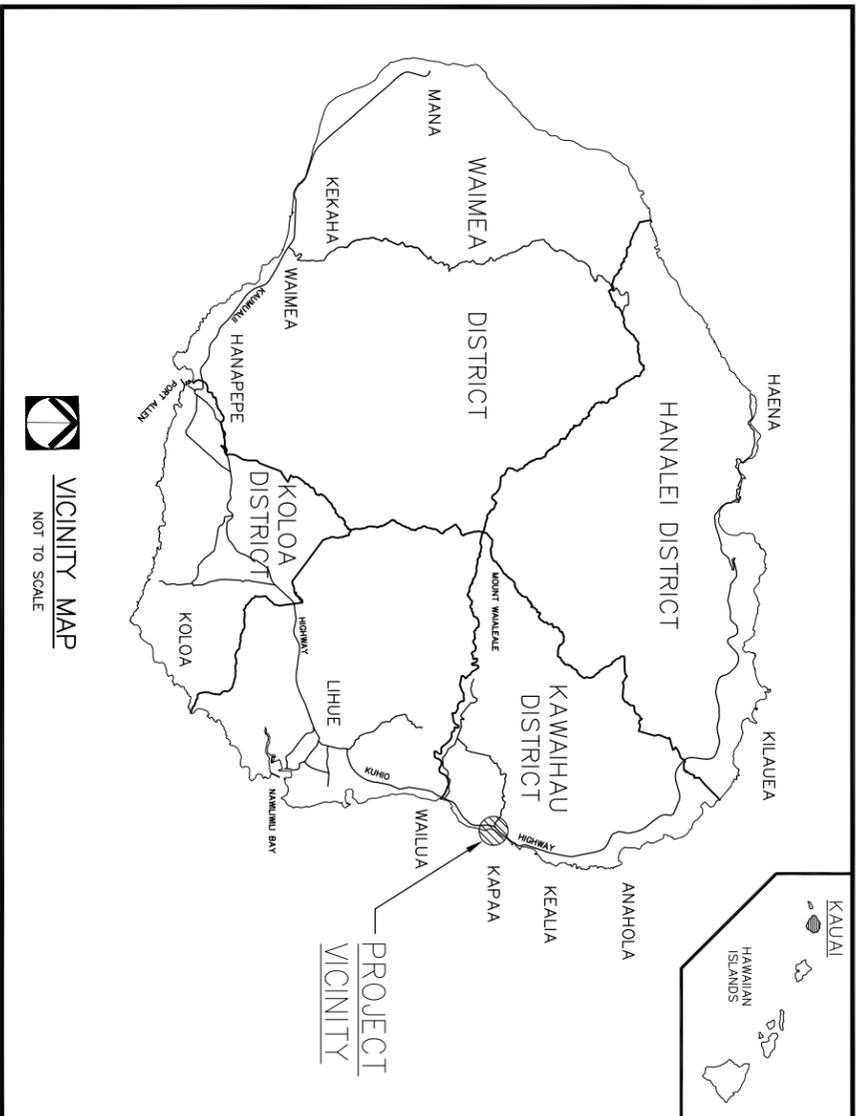
Construction Plans

**COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS**

PONO KAI SEAWALL REPAIR

KAPAA, KAUAI, HAWAII

PREPARED BY:



I N D E X O F D R A W I N G S

DRAWING NUMBER	SHEET NUMBER	DESCRIPTION OF DRAWINGS
T-1	1	TITLE SHEET
T-2	2	NOTES
T-3	3	LIST OF ABBREVIATIONS
C-1	4	EXISTING CONDITIONS
C-2	5	EROSION CONTROL PLAN
C-3	6	TYPICAL SEAWALL SECTIONS
C-4	7	SITE PLAN
C-5	8	CROSS SECTIONS 1
C-6	9	CROSS SECTIONS 2
C-7	10	CROSS SECTIONS 3
C-8	11	CROSS SECTIONS 4

APPROVED:

COUNTY ENGINEER, DEPT. OF PUBLIC WORKS
COUNTY OF KAUAI

DATE

MAYOR
COUNTY OF KAUAI

DATE

GENERAL NOTES

1. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY, AND ENVIRONMENTAL QUALITY.
2. PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS," AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL," AS WELL AS CHAPTER 14 OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED, BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.
4. THE CONTRACTOR SHALL CONDUCT ALL TESTS SPECIFIED AND BE RESPONSIBLE FOR EXPENSES INCURRED IN CONDUCTING THESE TESTS.
5. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO THE START OF CONSTRUCTION. IF DIMENSIONAL ERRORS OR CONFLICTS OCCUR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND SHALL WAIT FOR CLARIFICATION BEFORE RESUMING OR COMMENCING WORK ON THE DISCREPANCY ITEM.
6. DIMENSIONS TAKE PRECEDENCE OVER SCALE.
7. THE DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES INCLUDE, BUT ARE NOT LIMITED TO, BRACING, SHOPPING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, WIND, SEISMIC, ETC. OBSERVATION VISITS TO THE SITE BY THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
8. ALL MATERIALS SHALL CONFORM TO THE DRAWING AND SPECIFICATIONS.
9. THE CONTRACTOR SHALL COORDINATE THE STORAGE OF HIS MATERIAL WITH THE ENGINEER.
10. THE CONTRACTOR SHALL MAINTAIN ONE TRAFFIC LANE FOR LOCAL TRAFFIC. MULTI-USE PATH SHALL NOT BE CLOSED WITHOUT PERMISSION FROM THE ENGINEER. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AND TO THE SATISFACTION OF THE ENGINEER.
11. RESTRICT ALL VEHICLES, MATERIAL STOCKPILES AND EQUIPMENT TO WITHIN THE CONTRACT LIMIT LINES. ANY TOOLS, MATERIALS, EQUIPMENT, FENCING, ETC. THAT THE CONTRACTOR KEEPS IN THIS AREA ARE STORED AT THE CONTRACTOR'S RISK. IF OTHER SHORT TERM STORAGE AREAS ARE NEEDED, THEY MAY BE ARRANGED THROUGH THE ENGINEER.
12. NO CONSTRUCTION EQUIPMENT SHALL BE PARKED WITHIN THE FACILITY ROADWAYS IN SUCH A MANNER THAT THE EQUIPMENT WILL OBSTRUCT THE NORMAL MOVEMENT AND SIGHT DISTANCE OF THE DRIVING MOTORIST, EXCEPT DURING ACTUAL WORKING HOURS.
13. DAMAGE OUTSIDE THE CONTRACT ZONE LIMITS AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL CONDITION, OR BETTER. SUCH RESTORATION SHALL BE TO THE SATISFACTION OF THE ENGINEER.
14. ALL WORK CALLED FOR ON THE PLANS AND NOT ITEMIZED IN THE PROPOSAL AND ALL WORK NOT CALLED FOR BUT REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT, SHALL BE CONSIDERED INCIDENTAL.
15. CONDITIONS OF THE WORK: ALL WORK SHALL BE PERFORMED IN A PROFESSIONAL AND WORKMANSHIP-LIKE MANNER. CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER SHOULD CONDITIONS EXIST WHICH WILL PREVENT SUCH PERFORMANCE AND/OR ANY ADDITIONAL WORK TO BE PERFORMED BEFORE STARTING WORK.

CONSTRUCTION NOTES

1. WORK ON A PUBLIC RIGHT-OF-WAY AREA MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:00 A.M. AND 3:30 P.M. MONDAY THROUGH FRIDAY, EXCEPT ON HOLIDAYS RECOGNIZED BY THE COUNTY OF KAUAI, AND COUNTY FURLOUGH DAYS UNLESS OTHERWISE PERMITTED IN WRITING BY THE COUNTY ENGINEER.
2. NO GRADING BETWEEN 7 P.M. TO 7 A.M. ON ANY GIVEN DAY OR ON SATURDAYS, SUNDAYS AND HOLIDAYS WITHOUT WRITTEN PERMISSION FROM THE COUNTY ENGINEER AND THE STATE DEPARTMENT OF HEALTH.
3. CONTRACTOR SHALL NOTIFY PUBLIC WORKS DEPARTMENT FIVE (5) BUSINESS DAYS PRIOR TO COMMENCING ANY GRADING WORK. WHEN COMPLETED AND READY FOR FINAL INSPECTION, NOTIFY PUBLIC WORKS DEPARTMENT, INSPECTION SECTION.
4. CONSTRUCTION PLANS ARE VALID FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF APPROVAL. IF CONSTRUCTION DOES NOT COMMENCE WITHIN THIS ONE-YEAR TIME FROM THE DATE OF APPROVAL, THE CONSTRUCTION PLANS WILL NEED TO BE RESUBMITTED TO ALL APPROVING AGENCIES FOR REVIEW, APPROVAL, AND RECERTIFICATION OF THE PLAN.
5. ALL GRADING, GRUBBING AND STOCKPIPING WORK SHALL BE PERFORMED IN ACCORDANCE WITH COUNTY OF KAUAI ORDINANCE NO. 808.
6. DURING CLEANING OPERATIONS, THE CONTRACTOR SHALL SUPPLY A WATER TRUCK FOR DUST CONTROL PURPOSES UNTIL VEGETATION HAS REESTABLISHED ITSELF. EXCESS WATER, INCLUDING SILT AND DIRT SHALL NOT BE ALLOWED TO RUN-OFF THE SITE.
7. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS, AND OTHER AREAS, THE COST INCURRED FOR ANY REMEDIAL ACTION BY THE COUNTY ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.

CONSTRUCTION NOTES (CONT'D)

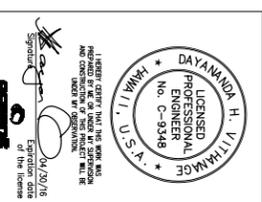
8. BEST MANAGEMENT PRACTICES (BMPs) SHALL BE EMPLOYED AT ALL TIMES TO THE MAXIMUM EXTENT PRACTICABLE TO PREVENT DAMAGE BY SEDIMENTATION, EROSION OR DUST TO STREAMS, WATERCOURSES, NATURAL AREAS AND THE PROPERTY OF OTHERS.
- NOTES FOR CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY**
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COUNTY OF KAUAI DEPARTMENT OF PUBLIC WORKS "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION" DATED SEPT. 1984, AS AMENDED OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, AND THE COUNTIES OF KAUAI, MAUI AND HAWAII, AND THE "HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2005" AND ITS AMENDMENTS. IF THERE IS ANY CONFLICT BETWEEN THE DOCUMENTS, THE MORE BENEFICIAL RESULT SHALL BE USED. THE COUNTY ENGINEER WILL DETERMINE WHICH IS THE MOST BENEFICIAL.
 2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES WHETHER SHOWN ON THE PLANS OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF SAME IN THE EVENT OF DAMAGES DUE TO HIS CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE RESPECTIVE UTILITY COMPANIES.
 3. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION AND FOR THE CONVENIENCE AND SAFETY OF THE PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE UNDERTAKEN SHALL CONFORM WITH RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS ADOPTED BY THE HIGHWAY SAFETY COORDINATOR AND U.S. FEDERAL HIGHWAY ADMINISTRATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS DATED 2003 AND ITS AMENDMENTS.
 4. THE CONTRACTOR SHALL NOTIFY THE DEPT. OF PUBLIC WORKS AND THE STATE D.O.T. 48 HOURS BEFORE THE COMMENCEMENT OF ANY UTILITY WORK TO SCHEDULE A FIELD REVIEW AND SECURE APPROVAL OF THE PROPOSED UTILITY LINE LOCATION WITHIN THE COUNTY RIGHT-OF-WAY.
 5. FIELD ADJUSTMENTS THAT ARE ACCEPTED BY THE STATE D.O.T. SHALL BE MADE AS DIRECTED BY THE DEPT. OF PUBLIC WORKS PRIOR TO THE COMMENCEMENT OF ANY UTILITY LINE WORK.
 6. THE CONTRACTOR SHALL APPLY AND PAY FOR ANY NECESSARY CONSTRUCTION PERMITS PRIOR TO THE START OF CONSTRUCTION. A ROAD PERMIT SHALL BE OBTAINED FROM THE DEPT. OF PUBLIC WORKS.
 7. WHERE APPLICABLE, THE CONTRACTOR SHALL PROVIDE AT LEAST ONE (1) CLEAR LANE FOR TRAFFIC MOVEMENT AT ALL TIMES.
 8. ANY PAVEMENT OUTSIDE THE CONTRACT ZONE LIMITS DAMAGED AS A RESULT OF CONSTRUCTION OPERATION SHALL BE RESTORED TO ITS ORIGINAL OR BETTER CONDITION AS DIRECTED BY THE COUNTY ENGINEER AND ACCEPTED BY THE STATE D.O.T.
 9. NO MATERIAL, AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN COUNTY RIGHT-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE COUNTY ENGINEER.
 10. NO CONSTRUCTION EQUIPMENT SHALL BE PARKED WITHIN THE ROAD RIGHT-OF-WAY IN SUCH A MANNER THAT THE EQUIPMENT WILL OBSTRUCT THE NORMAL MOVEMENT AND SIGHT DISTANCE OF THE DRIVING MOTORIST, EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE COUNTY ENGINEER.
 11. DURING NON-WORKING HOURS, ALL SIGNS WHICH ARE NOT APPLICABLE TO CONSTRUCTION ACTIVITY, SUCH AS "MEN WORKING" OR "FLAGMAN AHEAD" SHALL BE COVERED OR LAID DOWN. HOWEVER, ALL SIGNS NECESSARY FOR THE SAFETY OF THE PUBLIC SHALL BE MAINTAINED.
 12. ANY PAVEMENT MARKINGS, STRUCTURES, AND APPURTENANCES DAMAGED BY THE CONTRACTOR SHALL BE REPLACED OR REPAIRED TO THE SATISFACTION OF THE DEPT. OF PUBLIC WORKS AND THE STATE D.O.T.
 13. DURING NON-WORKING HOURS, ALL TRENCHES SHALL BE COVERED WITH A SAFE AND NON-SLIP BRIDGING MATERIAL AND ALL LANES SHALL BE OPEN TO PUBLIC VEHICULAR AND PEDESTRIAN TRAFFIC.
 14. THE PERMITTEE SHALL MAINTAIN, TO THE SATISFACTION OF THE DEPT. OF PUBLIC WORKS AND THE STATE D.O.T. THE AREA WORKED WITHIN THE COUNTY RIGHT-OF-WAY, INCLUDING ANY REPAIRS TO PAVEMENT AND SHOULDER DAMAGED AS A RESULT OF THE INSTALLATION WORK, FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL INSPECTION AS NOTED BY THE DEPT. OF PUBLIC WORKS AND THE STATE D.O.T. THE PERMITTEE SHALL UNDERTAKE REPAIRS EXPEDITIOUSLY WHENEVER DIRECTED BY THE CHIEF ENGINEER AND THE STATE D.O.T. DURING THE MAINTENANCE PERIOD.
 15. ALL WORK, INCLUDING REPAIR OF DAMAGED PAVEMENT AND SHOULDER SHALL BE INSPECTED AND APPROVED BY THE DEPT. OF PUBLIC WORKS AND ACCEPTED BY THE STATE D.O.T. ALL UNAPPROVED WORK SHALL BE CONSIDERED UNACCEPTABLE AND SHALL BE REWORKED AND CORRECTED AS DIRECTED BY THE DEPT. OF PUBLIC WORKS, AT THE CONTRACTOR'S EXPENSE.
 16. DAMAGED SHOULDERS SHALL BE RESTORED TO A CONDITION EQUAL TO OR BETTER THAN EXISTING CONDITION.

NOTES FOR CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY

17. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS TO OPEN THE LEAST POSSIBLE OBSTRUCTION AND INCONVENIENCE TO THE PUBLIC AND HE SHALL HAVE UNDER CONSTRUCTION NO GREATER LENGTH OR AMOUNT OF WORK THAT HE CAN PROSECUTE PROPERLY WITH DUE REGARD TO THE RIGHTS OF THE PUBLIC.
 18. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A GEOTECHNICAL ENGINEER, LICENSED IN THE STATE OF HAWAII, FOR QUALITY CONTROL. CERTIFICATION FROM THE GEOTECHNICAL ENGINEER SHALL BE SUBMITTED TO THE DEPT. OF PUBLIC WORKS AT THE COMPLETION OF THE PROJECT. GEOTECHNICAL ENGINEER SHALL CERTIFY THAT THE COMPLETED CONSTRUCTION WORK MEETS THE REQUIREMENTS OF THE "STANDARD SPECIFICATIONS" GEOTECHNICAL ENGINEER SHALL ALSO SUBMIT TEST RESULTS AS REQUESTED BY THE DEPT. OF PUBLIC WORKS.
 19. ALL EXISTING DRAINAGE FLOW CONDITIONS SHALL BE MAINTAINED.
 20. THE CONTRACTOR SHALL HOLD A PRECONSTRUCTION MEETING WITH THE CONSTRUCTION-DESIGN SECTIONS OF THE DEPARTMENT OF PUBLIC WORKS BEFORE COMMENCING ANY WORK.
 21. CONTRACTOR SHALL EXERCISE EXTREME CAUTION TO PRESERVE BENCHMARKS (SURVEY MONUMENTS) WHENEVER THE CENTER OF A SURVEY MONUMENT IS LESS THAN THREE (3) FEET FROM THE EDGE OF CONSTRUCTION. THE CONTRACTOR SHALL RETAIN A LICENSED SURVEYOR TO REFERENCE THE LOCATION OF SAID SURVEY MONUMENT.
 22. BENCHMARKS THAT ARE DISTURBED OR DESTROYED SHALL BE RESTORED UNDER A LICENSED SURVEYOR'S DIRECTION. COPIES OF FIELD NOTES, DESCRIPTIONS AND NEW VALUES OF THE NEW BENCHMARK SHALL BE SENT TO THE DEPARTMENT OF PUBLIC WORKS SURVEY SECTION FOR REVIEW AND APPROVAL PRIOR TO RESTORATION.
 23. DRIVEWAYS SHALL BE KEPT OPEN UNLESS OWNERS OF THE LOTS USING THESE RIGHTS OF WAYS ARE OTHERWISE PROVIDED FOR SATISFACTORILY.
- PUBLIC HEALTH SAFETY AND CONVENIENCE NOTES**
1. CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY AND ENVIRONMENTAL QUALITY.
 2. THE CONTRACTOR AT HIS/HER EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM RUBBISH, DUST, NOISE, EROSION, ETC. THE WORK SHALL BE DONE IN CONFORMANCE WITH THE AIR AND WATER POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
 3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SILT OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATION OCCUR, THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS AS NECESSARY AND THE COSTS INCURRED FOR ANY REMEDIAL ACTION SHALL BE PAYABLE BY THE CONTRACTOR.
 4. THE CONTRACTOR'S ATTENTION IS DIRECTED TO CHAPTER 46, PUBLIC HEALTH REGULATIONS, DEPARTMENT OF HEALTH, STATE OF HAWAII, "COMMUNITY NOISE CONTROL," IN WHICH MAXIMUM PERMISSIBLE NOISE LEVELS HAVE BEEN SET. IF THE CONSTRUCTION WORK REQUIRES A PERMIT FROM THE DIRECTOR OF HEALTH, THE CONTRACTOR SHALL OBTAIN A COPY OF CHAPTER 46 AND BECOME FAMILIAR WITH THE NOISE LEVEL RESTRICTIONS AND THE PROCEDURES FOR OBTAINING A PERMIT FOR THE CONSTRUCTION ACTIVITIES. APPLICATION AND INFORMATION ON VARIANCES ARE AVAILABLE FROM THE ENVIRONMENTAL HEALTH SERVICES DIVISION, 1250 PUNCHBOWL ST., HONOLULU, HI 96813 OR BY TELEPHONE (586-4700).
 5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL, OF TITLE 11, ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH. THE CONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF THE BEST MANAGEMENT PRACTICES PLAN (BMP) FOR THE PROJECT.
- WATER QUALITY CERTIFICATION NOTES**
1. THE CONTRACTOR SHALL COMPLY WITH ALL ASPECTS OF THE WATER QUALITY CERTIFICATION ASSOCIATED WITH THIS PROJECT. WQ00799, WQ00799 SPECIFICS DISCLOSE, PRACTICES, AND TESTING PROTOCOLS THAT MUST BE PERFORMED ON A TIMELY BASIS.

HISTORIC PRESERVATION NOTES

1. SHOULD HISTORIC REMAINS SUCH AS ARTIFACTS, BURIALS, CONCENTRATIONS OF SHELL OR CHARCOAL BE ENCOUNTERED DURING CONSTRUCTION ACTIVITIES, WORK SHALL CEASE IMMEDIATELY IN THE IMMEDIATE VICINITY OF THE FIND, AND THE FIND SHALL BE PROTECTED FROM FURTHER DAMAGE. THE CONTRACTOR SHALL CONDON OFF THE AREA AND IMMEDIATELY NOTIFY THE PLANNING DEPARTMENT AT (808) 241-4050 AND THE STATE HISTORIC PRESERVATION DIVISION AT (808) 692-8015, WHO WILL ASSESS THE SIGNIFICANCE OF THE FIND AND RECOMMEND THE APPROPRIATE MITIGATION MEASURES, IF NECESSARY.
 2. THE CONTRACTOR SHALL COMPLY WITH ALL ASPECTS OF THE ARCHAEOLOGICAL MONITORING PLAN ASSOCIATED WITH THIS PROJECT.
- TEMPORARY DUST CONTROL MEASURES FOR GRADING**
1. THE GRADED OR PROJECT SITE THAT IS CLEARED OF VEGETATION SHALL BE KEPT DAMP WITH WATER CONTINUOUSLY FOR SEVEN (7) DAYS A WEEK. AT THE END OF EACH DAY, THE SITE SHALL BE SUFFICIENTLY DAMPENED WITH WATER ON A CONTINUUAL BASIS SO THAT THE SITE WILL REMAIN MOISTENED DURING THE NIGHT.
 2. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO THAT EXCAVATION, EMBANKMENT, AND IMPORTED MATERIAL SHALL BE DAMPENED WITH WATER ON A CONTINUUAL BASIS TO PREVENT DUST PROBLEMS.
 3. IN APPLYING FOR A GRADING PERMIT, THE CONTRACTOR SHALL SUBMIT PLANS, SCHEDULES AND/OR WRITTEN MEASURES WHICH PROVIDES FOR DUST CONTROL. THE DUST CONTROL MEASURES SHALL CONTAIN POSITIVE STATEMENTS WHICH REQUIRE ACTIONS OR WORK THAT PREVENT DUST PROBLEMS. NO PERMITS WILL BE ISSUED UNLESS THE COUNTY IS ASSURED THAT DUST AND EROSION PROBLEMS WILL BE MINIMIZED.
- TEMPORARY EROSION CONTROL NOTES**
1. TEMPORARY VEGETATIVE COVER SHALL BE PLANTED WITHIN A PERIOD OF 30 CALENDAR DAYS AFTER THE SITE HAS BEEN GRADED OR BARED OF VEGETATION OR IF THE SITE WILL BE SUSPENDED FOR MORE THAN 30 CALENDAR DAYS.
 2. TEMPORARY VEGETATIVE COVER SHALL CONSIST OF SEASHORE PASPALUM SEED OR SPRIGS. TEMPORARY SPRINKLER SYSTEM IS TO BE INSTALLED CONCURRENTLY WITH ALL PLANTINGS.
- PERMANENT EROSION CONTROL MEASURES**
1. THE CONTRACTOR SHALL GRASS THE ENTIRE PROJECT SITE, EXCEPT PAVED AREAS WITH SEASHORE PASPALUM GRASS SEED OR SPRIGS.
 2. THE CONTRACTOR SHALL GRASS ALL EXPOSED AREAS THAT HAVE BEEN CONSTRUCTED TO FINAL GRADES WITHIN A PERIOD OF 30 CALENDAR DAYS.



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI

PONO KAI SEAWALL REPAIR
KAAPA, KAUAI, HAWAII

GENERAL NOTES

DESIGNED BY: MW	DRAWN BY: MW	CHECKED BY: DV
FINAL		

ABBREVIATIONS:

AC	ASPHALT CONCRETE
AP	ASBESTOS CONCRETE PIPE
AD	AMERICANS WITH DISABILITIES ACT
AL	ALUMINUM
&	AND
APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
@	AT
AWWA	AMERICAN WATERWORKS ASSOCIATION
BC	AGGREGATE BASE COURSE
BE	BASELINE
BB	BOTTOM BANK
BDDG	BUILDING
BLK	BLOCK
BM	BENCH MARK
BMP	BEST MANAGEMENT PRACTICES
BOT	BOTTOM
BV	BOTTOM VERTICAL
BVC	BEGIN VERTICAL CURVE
BW	BOTTOM WALL
CH	CHORD
CD	CHORD DIRECTION
CE	CENTERLINE
CA	CENTRAL ANGLE
CB	CATCH BASIN
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CH	CHORD LENGTH (CURVE)
CHP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CNO	*CANNOT OPEN*
CONC	CONCRETE
CONN	CONNECT
CONSTR	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
CONT'D	CONTINUED
CP	CONTROL POINT
CRM	CONCRETE RUBBLE MASONRY
CSP	CORRUGATED STEEL PIPE
CJ	COPPER
CY	CUBIC YARD
D=	APPROXIMATE DIAMETER
Δ	CHANGE OF ANGLE (CURVE)
Δ/2	HALF CHANGE OF ANGLE (CURVE)
φ, DIA	DIAMETER
DET	DETAIL
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DL	DRAINLINE
DMH	DRAIN MANHOLE
DPW	DEPARTMENT OF PUBLIC WORKS
DWG(S)	DRAWING(S)
D/W	DRIVEWAY
E	EAST, EASTING
EA	EACH
EC	END CURVE
EOP	EDGE OF CONCRETE PAVEMENT
EF	EACH FACE
EG	EXISTING GROUND
ELEC	ELECTRIC, ELECTRICAL
ELEV, EL	ELEVATION
EMB	EMBANKMENT
EMH	ELECTRIC MANHOLE
EDW	EDGE OF WATER
EP	EDGE OF PAVEMENT, ELECTRIC POLE
ERB	ELECTRIC PULLEBOX
ER	EDGE OF ROAD
EVC	END VERTICAL CURVE
EW	EACH WAY
EXC	EXCAVATION
EXST, EX	EXISTING
EXP, JT	EXPANSION JOINT
EQ	EQUAL
FB	FIELD BOOK
FE	FLANGE END
FG	FINISH GROUND
FH	FIRE HYDRANT
FIN	FINISH
FL	FLOW LINE
FS	FINISHED SURFACE
FT	FEET
G, GR, GRD	GRADE, GROUND
GI	GALVANIZED IRON
GALV	GALVANIZED
GB	GRADE BREAK
GMH	GAS MANHOLE
GP	GATE POST
GRND	GROUND
GRP	GROUTED RUBBLE PAVING

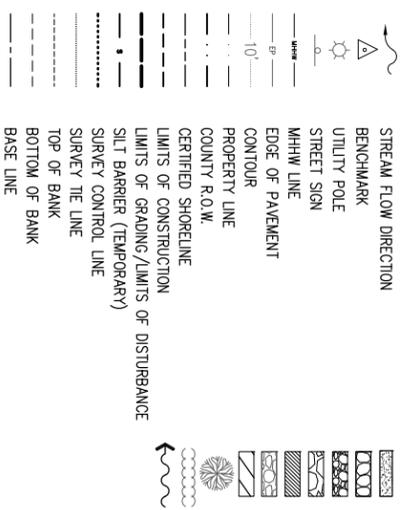
ABBREVIATIONS (CONT'D)

GRVL	GRAVEL
CS	GALVANIZED STEEL
GUY	GUY WIRE ANCHOR
H	HEIGHT, HIGH, HORIZONTAL
H=	APPROXIMATE HEIGHT
HBV	HORIZONTAL BOTTOM VERTICAL
HDWL	HEADWALL
HOPE	HIGH DENSITY POLYETHYLENE
HOR, HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HOURL
HTV	HORIZONTAL TOP VERTICAL
ID	INSIDE DIAMETER
IE	THAT IS
IN	INCH (ES)
INV	INVERT
IP	IRON PIPE
K	RATE OF CURVATURE
KV	KILO-VOLT
L	LEFT, LENGTH
LB	POUND
LC	LENGTH OF CURVE (CURVE LENGTH)
LF	LINEAR FEET
LP	LOW POINT
LT	LEFT
M&O	MAINTENANCE AND OPERATION
MAX	MAXIMUM
MHHW	MEAN HIGHER HIGH WATER
MIN	MINIMUM
MJ	MECHANICAL JOINT
MLLW	MEAN LOWER LOW WATER
MN	MONUMENT
MPP	MORTARED RUBBLE PAVING
MSEL	MEAN SEA LEVEL
N	NORTHING
NTS	NOT IN CONTRACT
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH, O/S	OVERHEAD
OS, O/S	OFFSET
PAVT	PAVEMENT
PC, POC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE, PORTLAND CEMENT CONCRETE
PPC	POUNDS PER CUBIC FOOT
PH	PERCENT
PI	POINT OF INTERSECTION
PK	PARKER-KALON FASTENER
PL	PLATE
PM	POST MERIDIAN
PNE	PINE
PURS	PROJECT NOTIFICATION & REVIEW SYSTEM
POR	PORTION
PP	POWER POLE
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PT	POINT OF TANGENCY, POINT
PM	POINT OF VERTICAL INTERSECTION
PVC	POLYVINYL CHLORIDE, POINT ON VERTICAL CURVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
R	RADIUS
RC	REINFORCED CONCRETE
RCJ	REINFORCED CONCRETE JACKET
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REINF	REINFORCEMENT
REF	REFERENCE
REQD	REQUIRED
RP	ROYAL PALM
RPM	RAISED PAVEMENT MARKER
RT	RIGHT
ROW	RIGHT-OF-WAY
S=	APPROXIMATE SIZE, SLOPE
SCHD	SCHEDULE
SF	SQUARE FEET (FOOT)
SHLDR	SHOULDER
SHT(S)	SHEET(S)
SIP, S	SLOPE
SIM	SIMILAR
SMH	SEWER MANHOLE
STD	STANDARD
STA	STATION

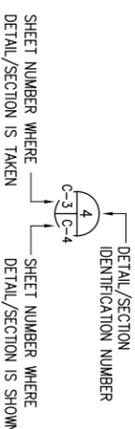
ABBREVIATIONS (CONT'D)

SW	SWALE
SDWALK	SIDEWALK
SY	SQUARE YARD
SYM	SYMMETRICAL
T	TANGENT, TELEPHONE
TB	TOP BANK
TC	TOP CONCRETE
TOP	TRAFFIC CONTROL PLAN
TEL	TELEPHONE
THK	THICK
THRD, THD	THREAD
TMH	TELEPHONE MANHOLE
TP	TOP PAVEMENT
TR	TOP RIPRAP
TS=	TOP STEM=
TV=	TOP VALVE=
TV	TOP VERTICAL
TW	TOP WALL
TYP	TYPICAL
UN	UNLESS OTHERWISE NOTED
US	UNITED STATES
VAR.	VARIABLE, VARIOUS
VIF	VERIFY IN FIELD
VYER, VERT	VERTICAL
VC	VERTICAL CURVE
VP, CV, IPT	VERTICAL POINT OF CURVATURE, INTERSECTION, TANGENCY
W	WIDTH
W/	WITH
WL	WATERLINE
WMH	WATER MANHOLE
WP	WORK POINT
WV	WATER VALVE
W/W	WALKWAY

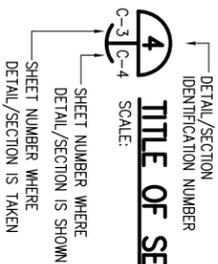
LEGEND



DETAIL/SECTION TITLE



TITLE OF SECTION OR DETAIL



CLEAN SAND BACKFILL
 ARMOR STONE
 FILTER MATERIAL
 UNDERLAYER
 REBAR
 EXISTING SEAWALL
 SLIDING WORK ZONE
 TREE
 NAUPAKA SHRUBS
 DIRECTION OF SURFACE DRAINAGE

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF PUBLIC WORKS
 COUNTY OF KAUAI

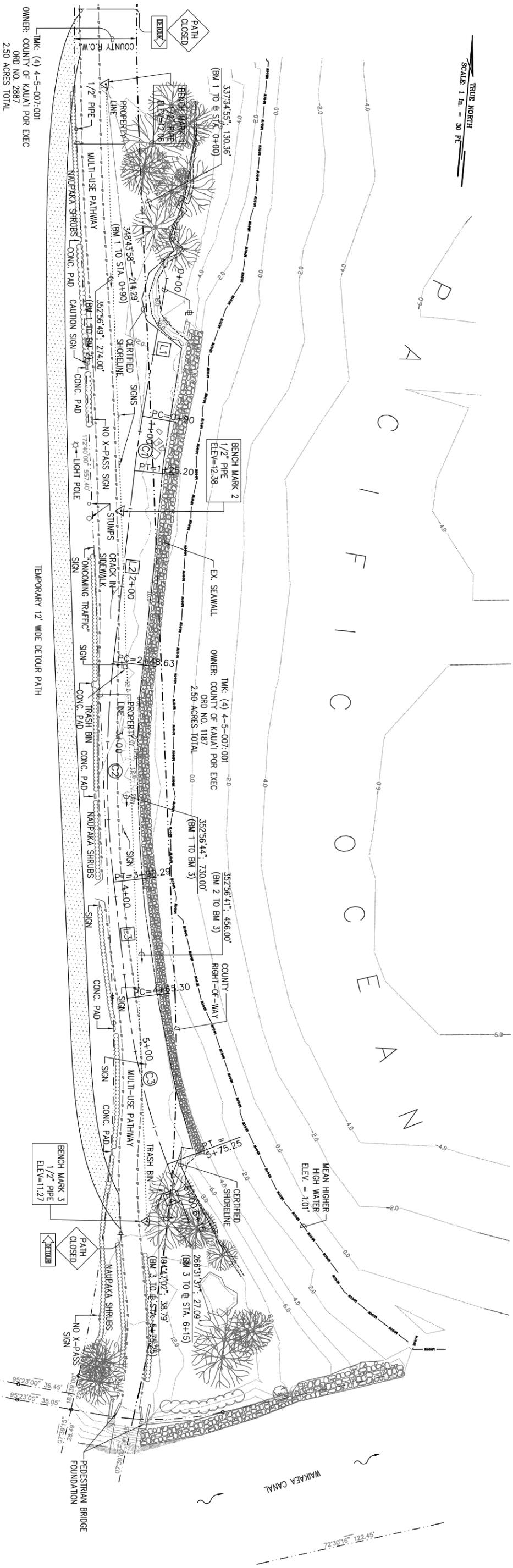
PONO KAI SEAWALL REPAIR
 KAPAA, KAUAI, HAWAII

LIST OF ABBREVIATIONS

DESIGNED BY:	MM	DRAWN BY:	MM	CHECKED BY:	DV
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FINAL

DWG. NO. **T-3**
 SHEET NO. 3 OF 11



NOTES:

1. CERTIFIED SHORELINE BY ESAKI SURVEYING AND MAPPING. DATE OF SURVEY: JUNE 26, 2009.
2. TOPOGRAPHIC SURVEY CONDUCTED BY ESAKI SURVEYING AND MAPPING. DATE OF SURVEY: AN. 25, 2008. P.O.R. REVISED: AUGUST 26, 2013
3. UTILITIES ARE LOCATED AS INDICATED ON DRAWING.
4. THE COUNTY OF KAUAI, DEPT. OF PUBLIC WORKS (DPW) WILL OBTAIN A TEMPORARY EASEMENT FROM THE OWNERS OF TMK: (4) 4-5-007:002 FOR THE MULTI-USE PATHWAY DETOUR.
5. THE CONTRACTOR SHALL ERCT TEMPORARY BARRICADES AROUND THE WORK AREA TO PREVENT PEOPLE FROM ENTERING THE PROJECT AREA, TO THE EXTENT APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL OBTAIN DPW APPROVAL TO DEVIATE FROM THE PROPOSED TEMPORARY DETOUR.
6. THE CONTRACTOR SHALL RESTORE THE MULTI-USE PATHWAY, LANDSCAPING, GRASSING OR IRRIGATION SYSTEMS TO PRE-CONSTRUCTION CONDITIONS UPON COMPLETION OF WORK.

± CURVE TABLE

CURVE	R	Lc	Δ	Δ/2	T	Cd	Ch
①	550.00'	35.20'	3°40'00"	1°50'00"	17.60'	0.3710'00"	35.19'
②	630.00'	141.66'	12°53'00"	6°26'30"	71.13'	354°53'30"	141.36'
③	450.00'	109.96'	14°00'00"	7°00'00"	55.25'	341°27'00"	109.68'

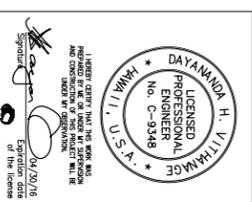
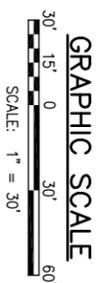
± LINE TABLE

LINE	LENGTH	AZIMUTH
L1	90.00'	05°00'00"
L2	123.43'	01°20'00"
L3	75.00'	348°27'00"
L4	39.75'	334°27'00"

EXISTING CONDITION / TEMPORARY DETOUR

SCALE: 1" = 30'

TMK: (4) 4-5-007:002
OWNER: 300 WEST 23RD ST CO
12.03 ACRES

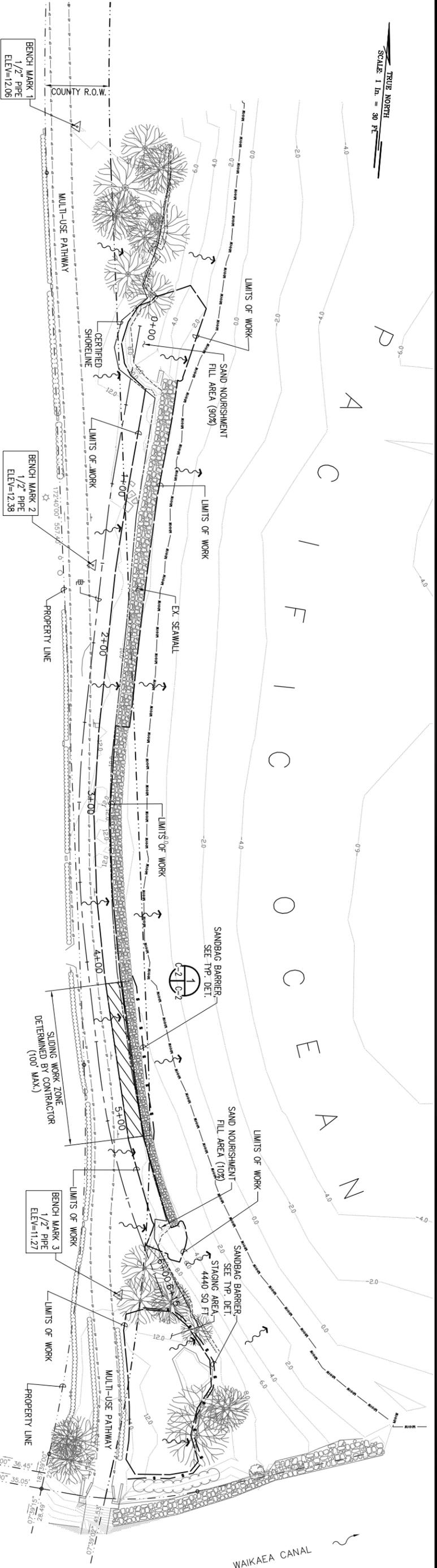


DESIGNED BY: MM, AK	DRAWN BY: MM	CHECKED BY: DV
DEPARTMENT OF PUBLIC WORKS COUNTY OF KAUAI		
PONO KAI SEAWALL REPAIR KAPAA, KAUAI, HAWAII		
EXISTING CONDITION / TEMPORARY DETOUR		

DWG. NO. **C-1**
SHEET NO. 4 OF 11

FINAL

TRUE NORTH
SCALE 1 in. = 30 FT.



**TYPICAL SLIDING WORK AREA
EROSION CONTROL PLAN**
SCALE: 1" = 30'

SILT BARRIER NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN TEMPORARY SILT BARRIER AS INDICATED. SEE DETAIL THIS SHEET. SILT BARRIER ALIGNMENT AND LENGTH SHOWN ARE APPROXIMATE. CONTRACTOR SHALL ADJUST ACTUAL LOCATIONS TO ACCOMMODATE HIS/HER CONSTRUCTION METHODS OR STAGING AND RETAIN SILT ON-SITE.
2. SILT BARRIER SHALL CONSIST OF A SAND BAG BERM WRAPPED WITH FILTER FABRIC. THE HEIGHT OF THE BARRIER SHALL BE LESS THAN 24 INCHES.
3. THE FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPICED TOGETHER WITH A MINIMUM 6-INCH OVERLAP, AND SECURELY SEALED.
4. FILTER FABRIC SHALL BE SECURED BENEATH THE SANDBAG BERM AND WRAPPED OVER THE SANDBAG BERM WITH 18 INCHES OF THE FABRIC EXTENDED UNDER THE UPSTREAM ROW OF BAGS. UPPER ROW OF BAGS SHALL BE USED TO SECURE THE DOWNSTREAM END OF THE FABRIC WITH AT LEAST 6 INCHES OF OVERLAP ON THE DOWNSTREAM SIDE. THE FABRIC SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
5. SILT BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREA HAS BEEN PERMANENTLY STABILIZED.
6. EACH SANDBAG SHALL BE FILLED WITH MINIMUM 700-800 POUNDS OF APPROVED SAND. THE BAGS MAY BE FILLED AT THE SAND SOURCE IF APPROVED BY THE COUNTY ENGINEER AND LAND OWNER.
7. BMP PROVIDED HEREIN ARE MINIMUM REQUIREMENTS. DURING BIDDING AND CONSTRUCTION, THE CONTRACTOR SHALL RETAIN A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (PESCC) TO ESTABLISH THE BMPs NECESSARY TO MEET FEDERAL AND LOCAL LAWS AND REGULATIONS REGARDING WATER QUALITY AND WATER POLLUTION CONTROL.

SAND NOURISHMENT NOTES:

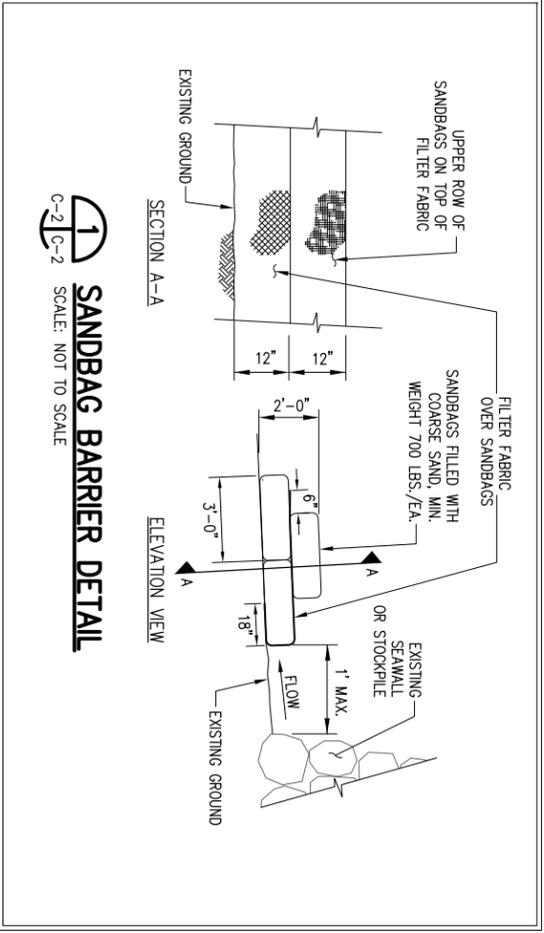
1. SAND NOURISHMENT FILL AREAS NORTH AND SOUTH OF THE SEAWALL RESERVED BY THE COUNTY OF KAUAI SHALL BE PLACED ONTO THE SITE IN THE PROPORTIONS SHOWN ON PLAN.
2. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS SET FORTH IN THE APPROVAL DOCUMENT FOR THE CATEGORY II SMALL SCALE BEACH NOURISHMENT (SSBN) PERMIT.
3. FOR THE SEAWALL REPAIRS AT THE NORTH AND SOUTH ENDS AND PLACEMENT OF UP TO 40 CU. YD. OF SAND AT THE NORTH END OF THE SEAWALL, THE CONTRACTOR SHALL COMPLY WITH THE SITE PLAN APPROVAL KA-15-23 DOCUMENT DATED NOV. 13, 2014.

**EROSION CONTROL NOTES AND
BEST MANAGEMENT PRACTICES (BMPs):**

1. THE CONTRACTOR SHALL PREPARE AND SUBMIT TEMPORARY EROSION AND SEDIMENT CONTROL PROCEDURES TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF GRADING.
2. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING WORK IS INITIATED. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
3. CONSTRUCTION SHALL BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF CLEARED SURFACE AREA. SILT BARRIER PROTECTION SHALL COMPLY WITH CONSTRUCTION SEQUENCING.
4. INSPECT SANDBAG BARRIER DAILY AND IMMEDIATELY AFTER RAINFALL. REPAIR AS NECESSARY. SEDIMENT MUST BE REMOVED WHEN IT REACHES APPROXIMATELY ONE-THIRD THE HEIGHT OF THE SILT BARRIER.
5. PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN TWENTY (20) CALENDAR DAYS PRIOR TO SITE DISTURBANCE.
6. TEMPORARY SOIL STABILIZATION WITH APPROPRIATE VEGETATION SHALL BE APPLIED ON AREAS THAT WILL REMAIN UNFINISHED FOR MORE THAN THIRTY (30) CALENDAR DAYS.
7. PERMANENT SOIL STABILIZATION WITH PERENNIAL VEGETATION SHALL BE APPLIED AS SOON AS PRACTICAL AFTER FINAL GRADING.
8. STORM WATER FLOWING TOWARD THE CONSTRUCTION AREA SHALL BE DIVERTED BY USING APPROPRIATE CONTROL MEASURES AS PRACTICAL.
9. REMOVE ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS WITHIN 24 HOURS.
10. THE CONTRACTOR SHALL COMPLY WITH ALL ASPECTS OF THE WATER QUALITY CERTIFICATION ASSOCIATED WITH THIS PROJECT, WQ00799. THIS DOCUMENT SPECIFICS DISCUSSURE, PRACTICES, AND TESTING PROTOCOLS THAT MUST BE PERFORMED ON A TIMELY BASIS.

MAINTENANCE:

1. SILT BARRIER SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AFTER SIGNIFICANT WAVE EVENTS WHERE RUNUP OVERTOPS THE SANDBAGS. INSPECTIONS SHALL OCCUR AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC ON A SILT BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC/SAND BAGS SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT. SEDIMENT SHALL BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-THIRD THE HEIGHT OF THE BARRIER.
4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT BARRIER IS NO LONGER REQUIRED SHALL BE REMOVED BY THE CONTRACTOR.



SANDBAG BARRIER DETAIL
SCALE: NOT TO SCALE

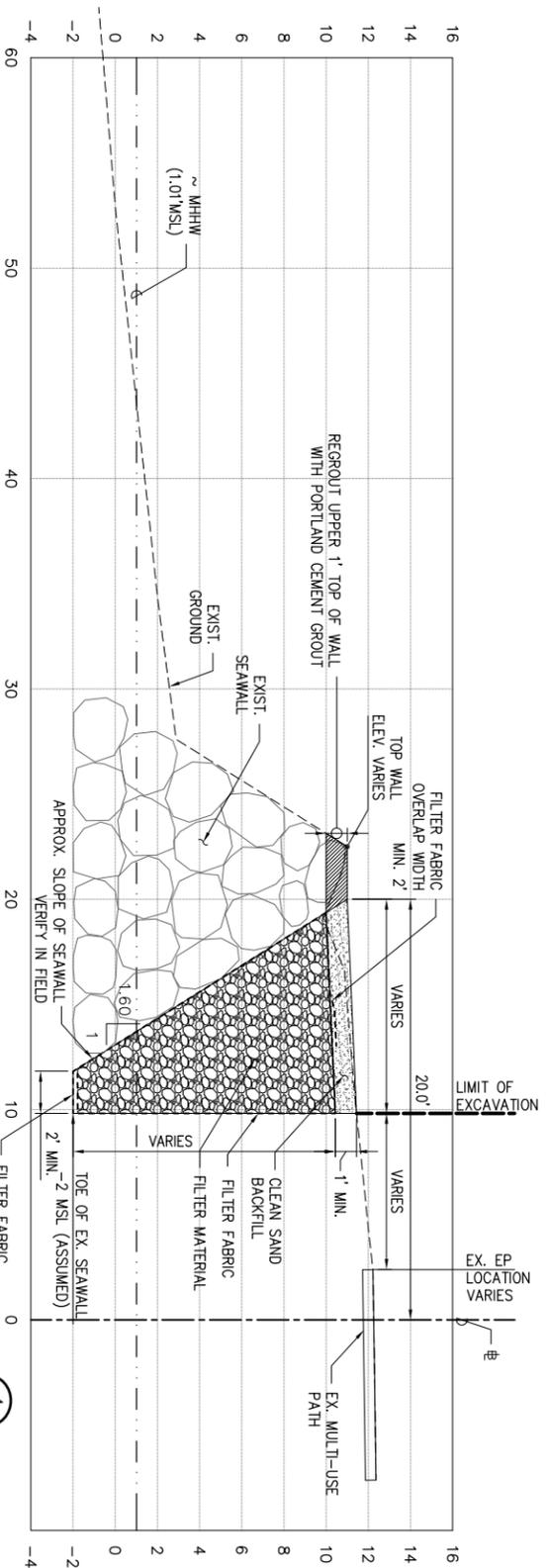
GRAPHIC SCALE:



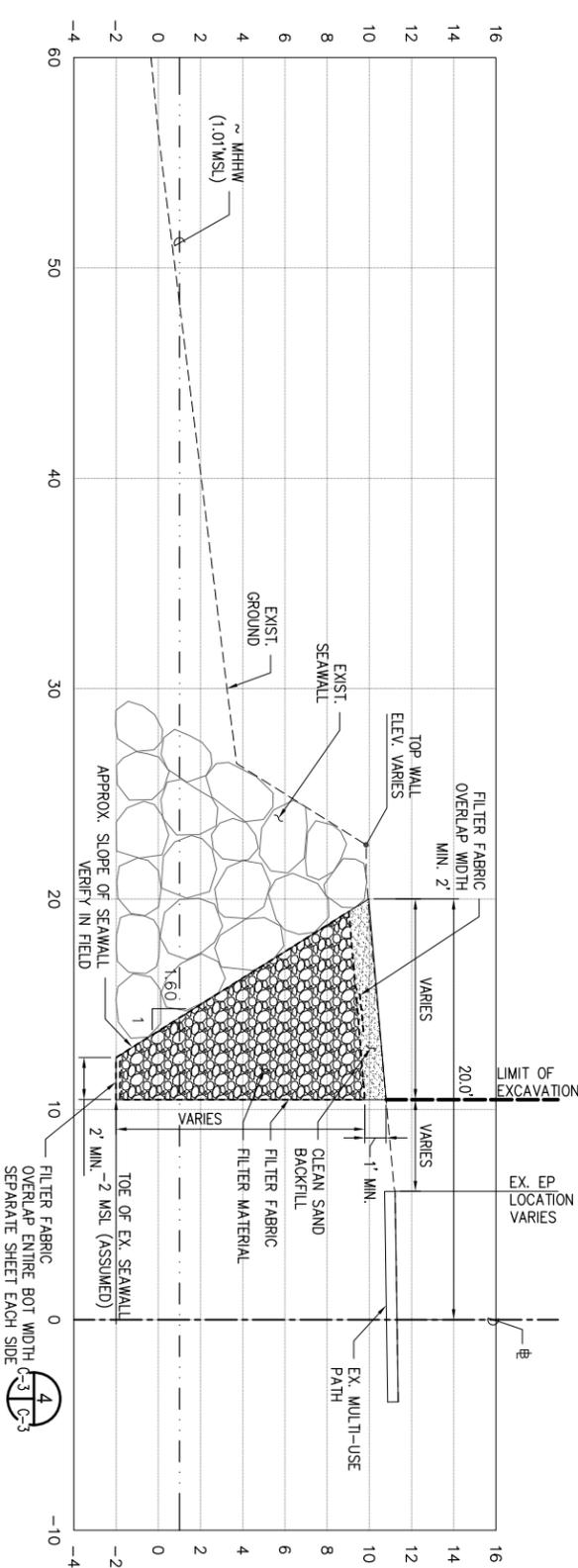
DWG. NO. **C-2**
SHEET NO. 5 OF 11



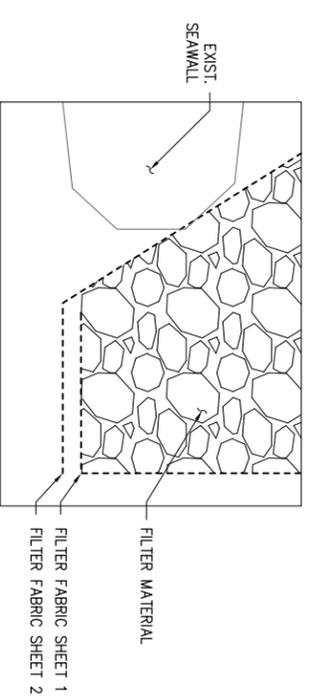
REVISION	DATE	BRIEF	MADE BY	APPROVED	
DEPARTMENT OF PUBLIC WORKS COUNTY OF KAUAI PONO KAI SEAWALL REPAIR KAPAA, KAUAI, HAWAII					
EROSION CONTROL PLAN					
DESIGNED BY:	DV/MJM	DRAWN BY:	MJM	CHECKED BY:	DV
FINAL					



2 TYPICAL SEAWALL SECTION STA 0+29.22 TO 2+50
SCALE: 1" = 4'



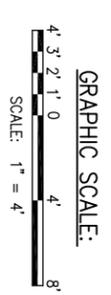
3 TYPICAL SEAWALL SECTION STA 2+50 TO 5+76.37
SCALE: 1" = 4'



4 FILTER FABRIC DETAIL
SCALE: 1" = 4'

NOTES:

1. THE CONTRACTOR SHALL HIRE A STRUCTURAL ENGINEER LICENSED IN THE STATE OF HAWAII TO DESIGN THE EXCAVATION SUPPORT SYSTEM. THE RETAINED STRUCTURAL ENGINEER SHALL OVERSEE THE INSTALLATION AND USAGE OF THE SHORING SUPPORT SYSTEM.
2. EXCAVATIONS AND SHORING SUPPORT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL SAFETY REGULATION, INCLUDING BUT NOT LIMITED TO THE CURRENT OSHA AND HIOSH EXCAVATION SAFETY STANDARDS.
3. SEAWALL TOE DEPTH AND LOCATION OF THE TOE IS ASSUMED FOR CIVIL DESIGN PURPOSES. CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND ADJUST MATERIAL PLACEMENT AS NECESSARY.



REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI

PONO KAI SEAWALL REPAIR
KAPAA, KAUAI, HAWAII

TYPICAL SECTIONS

DMG. NO. **C-3**
SHEET NO. 6 OF 11

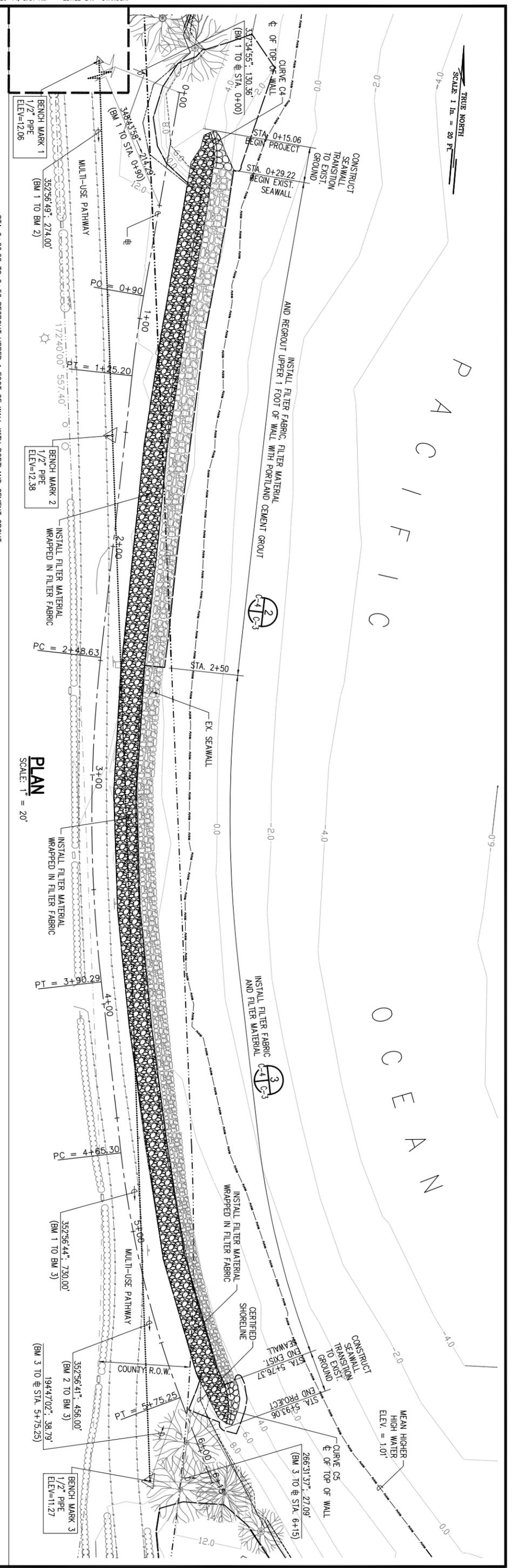
DAYANANDA H. VITHANAGE
LICENSED PROFESSIONAL ENGINEER
NO. C-3548
HAWAII, U.S.A.

I HEREBY CERTIFY THAT THE WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND I AM A duly Licensed Professional Engineer and am duly Licensed in the State of Hawaii.

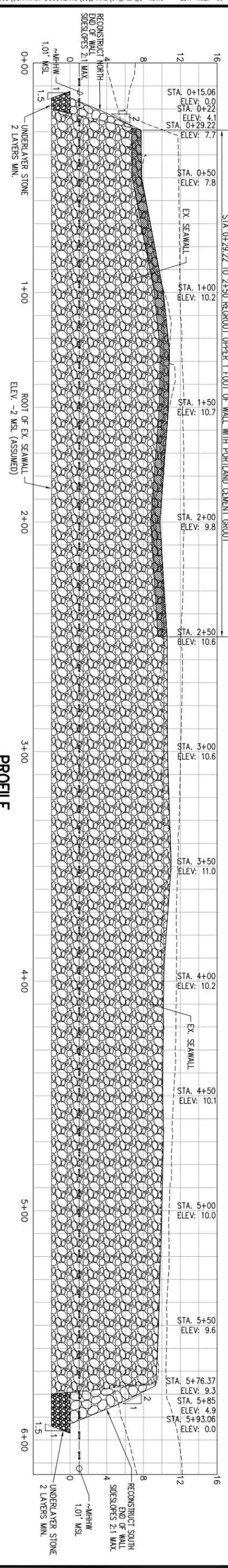
Signature: *[Signature]* Date: 01/20/16
Expiration date: 01/20/18

DESIGNED BY: MM	DRAWN BY: MM	CHECKED BY: DV
FINAL		

TRUE NORTH
SCALE: 1 in. = 20 FT



PLAN
SCALE: 1" = 20'

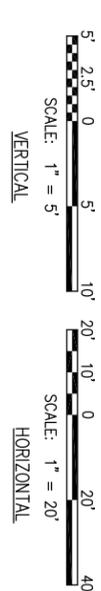


PROFILE
SCALE: HOR: 1" = 20'-0"
VER: 1" = 5'-0"

∅ CURVE TABLE

CURVE	R	Lg	Δ	Δ/2	T	Cd	Ch
(4)	30.00'	15.71'	30°00'00"	15°00'00"	8.04'	17°00'00"	15.53'
(5)	30.00'	18.33'	35°00'00"	17°30'00"	9.46'	17°57'00"	18.04'

GRAPHIC SCALE:



EARTHWORK SUMMARY:
(FOR PERMIT PURPOSES ONLY)

TOTAL AREA TO BE DISTURBED: 0.18 ACRES

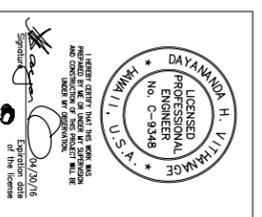
SEAWALL QUANTITIES

ESTIMATED EXCAVATION:
 FILTER MATERIAL: 1717 CY
 SAND BACKFILL: 1381 CY
 FILTER FABRIC: 256 CY
 BEDDING STONE: 2576 SF
 ARMOR STONE: 19 CY
 9 CY

THE CONTRACTOR SHALL CONDUCT HIS OWN QUANTITY SUMMARY

- NOTES:**
- ELEVATIONS ON PLANS REFERENCED TO MEAN SEA LEVEL.
 - FOR TYPICAL SEAWALL REPAIR SECTIONS REFER TO SHEET C-3.
 - SEE SHEETS C-5 THROUGH C-8 FOR SECTIONS ALONG BASELINE.

DWG. NO. **C-4**
SHEET NO. 7 OF 11



DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI

PONO KAI SEAWALL REPAIR
KAPAA, KAUAI, HAWAII

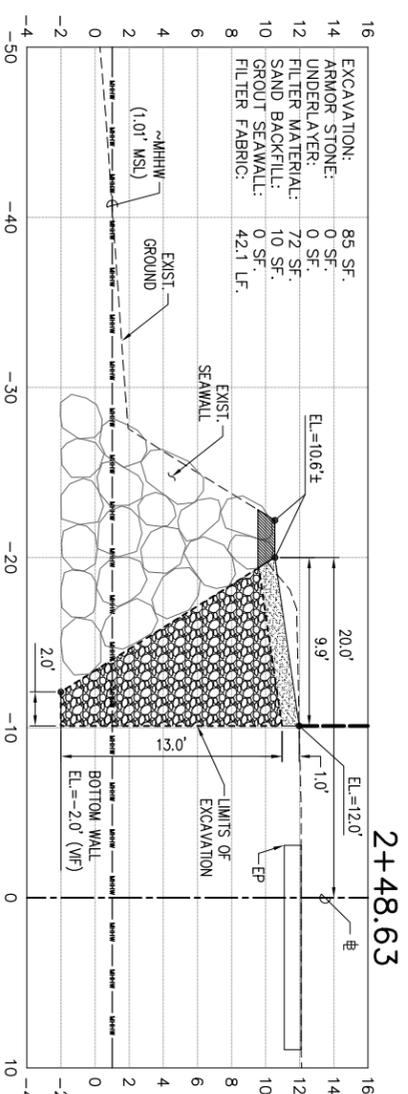
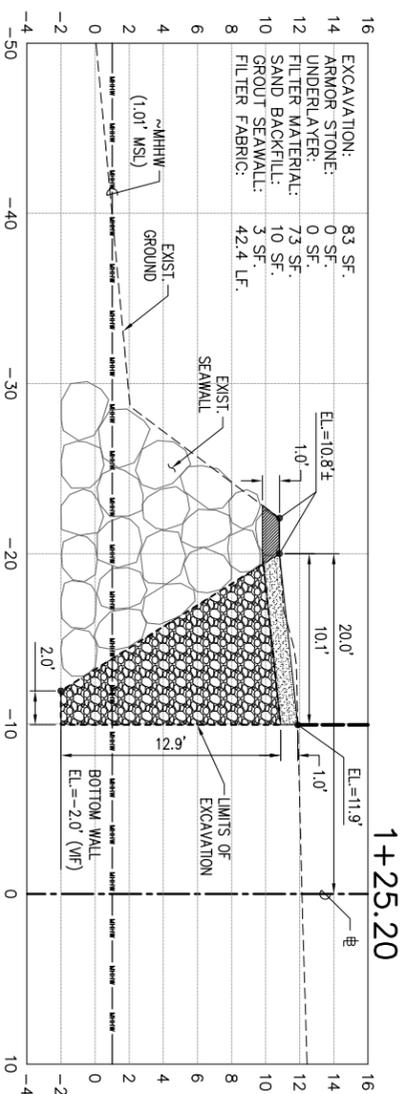
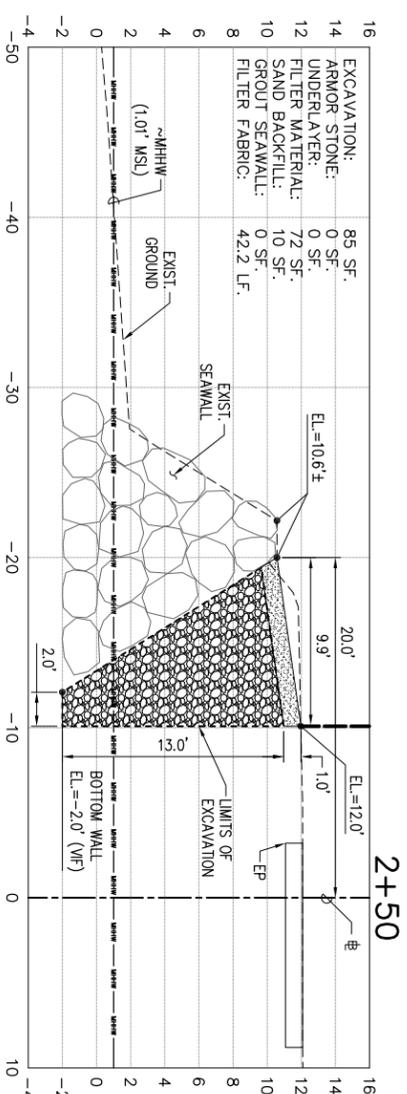
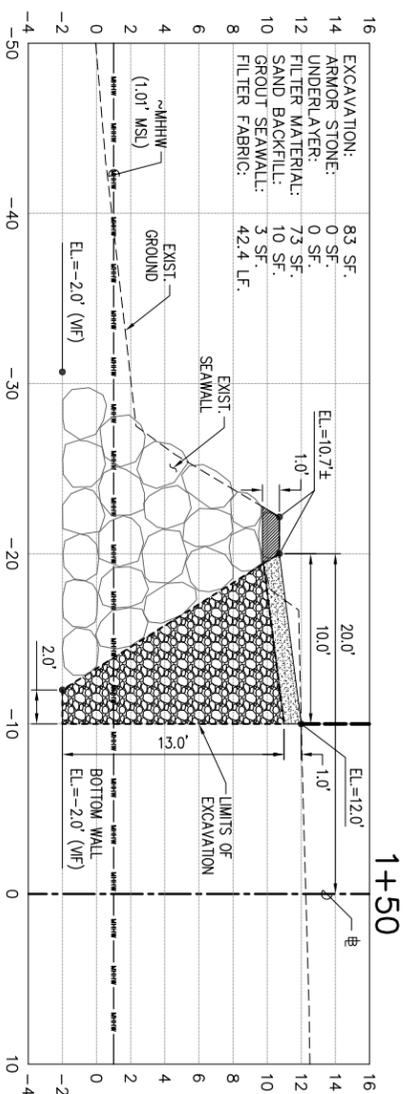
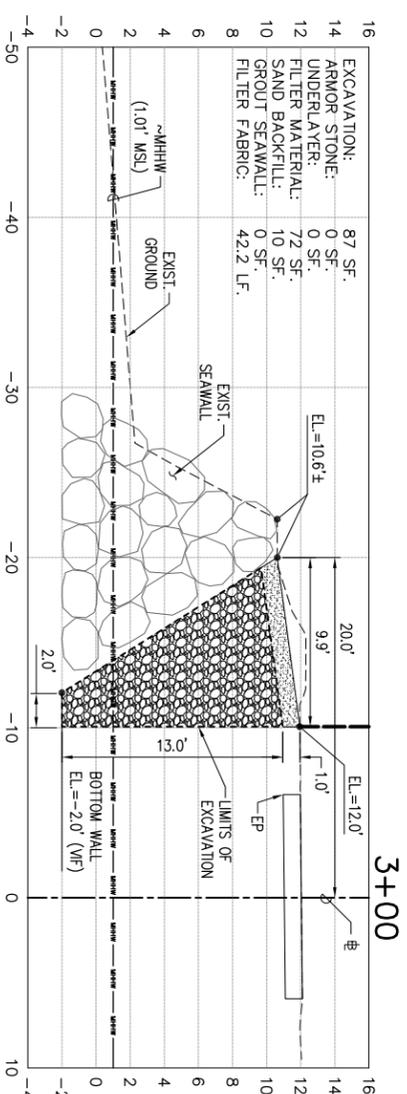
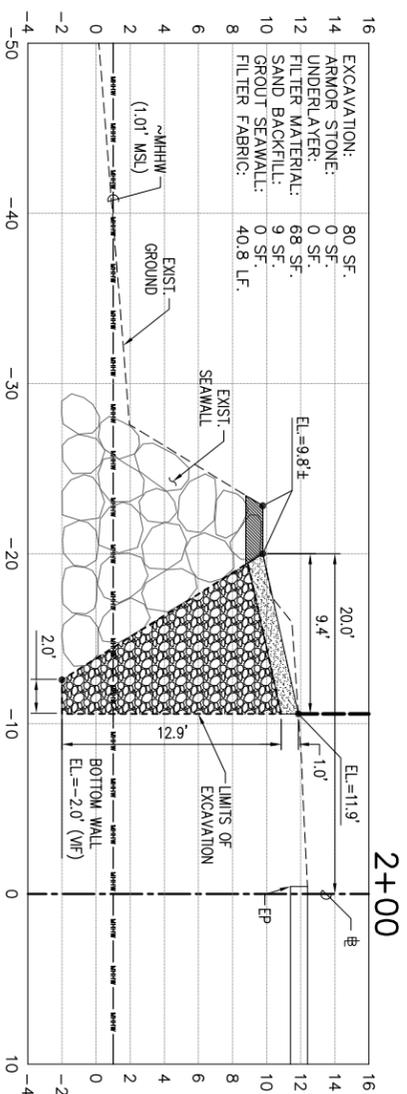
SITE PLAN

DESIGNED BY: MM
CHECKED BY: DV

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DATE: _____

BRIEF: _____
MADE BY: _____
APPROVED: _____

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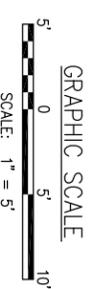


CROSS SECTION - 2
STA 1+25.2 TO 3+00

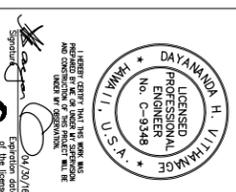
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VER: 1" = 5'-0"

NOTES:

- EXISTING SEAWALL TO BE DEPTH IS ASSUMED FOR CIVIL DESIGN PURPOSES. CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND ADJUST MATERIAL PLACEMENT AS NECESSARY.



DWG. NO. **C-6**
SHEET NO. 9 OF 11

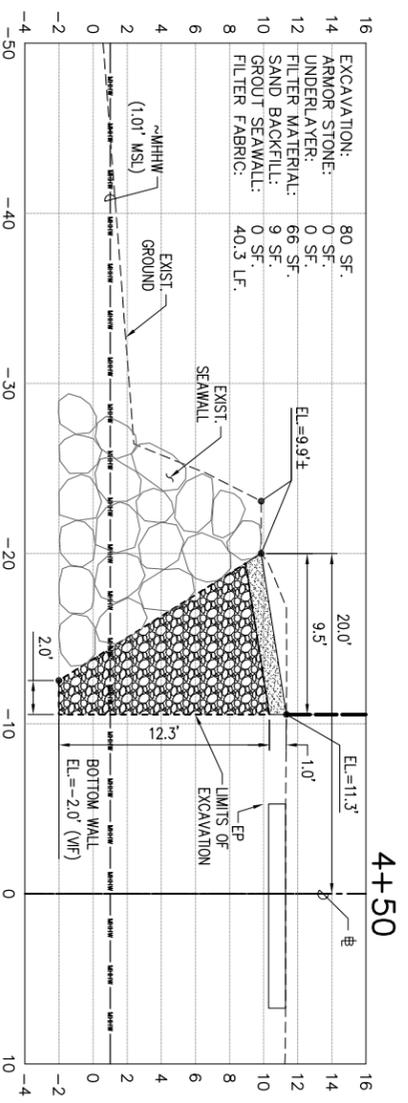
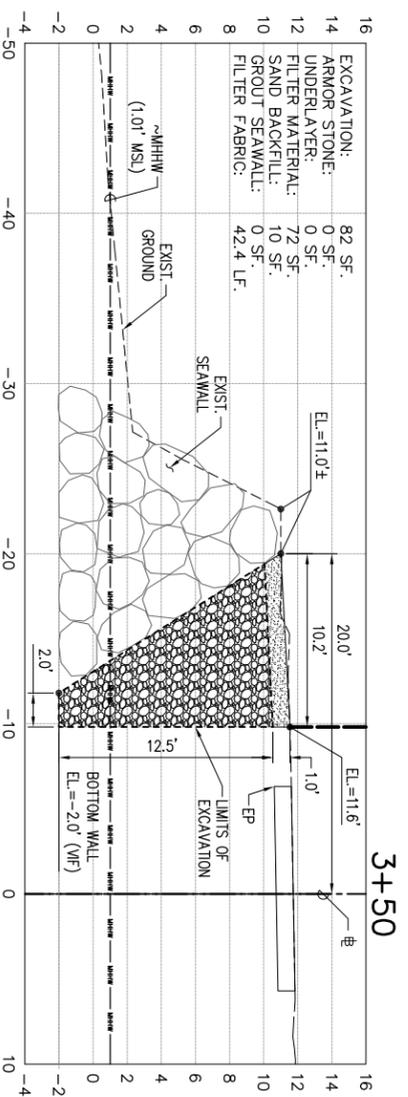
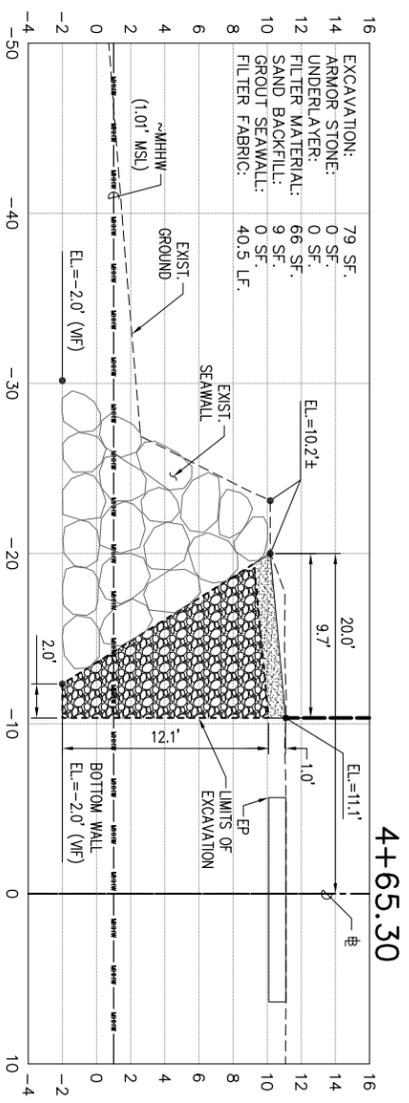
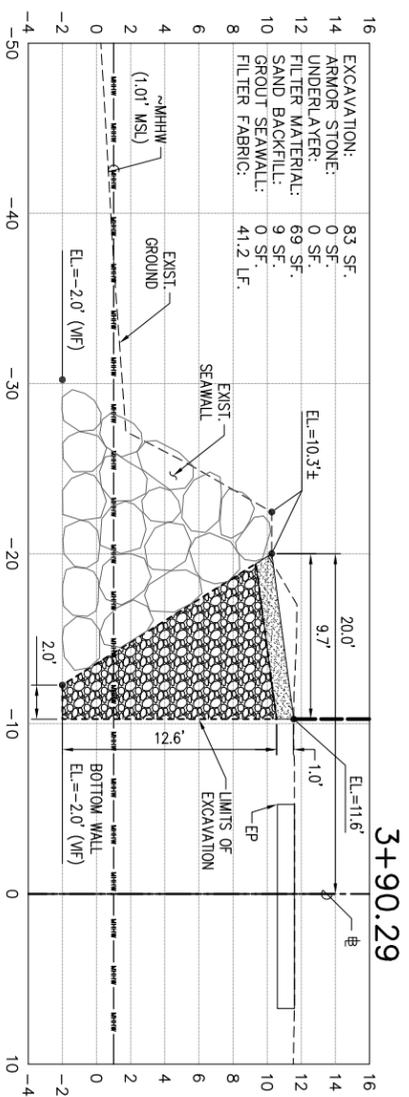
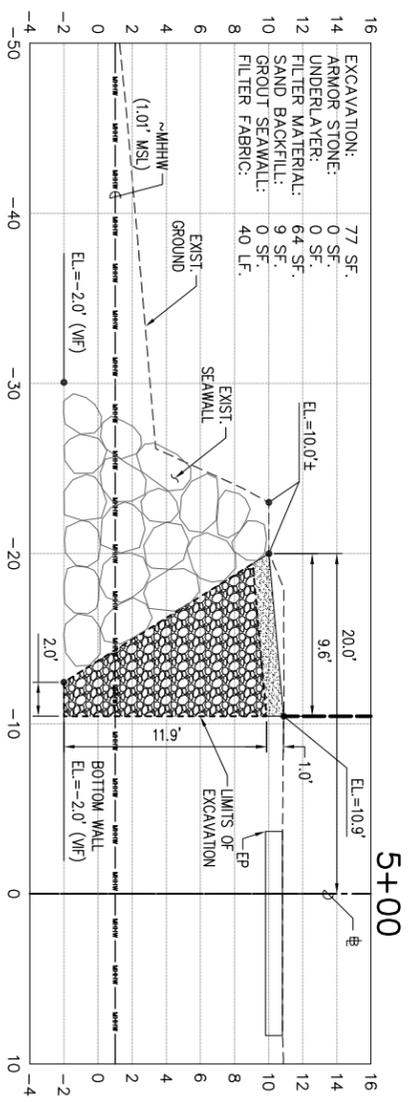
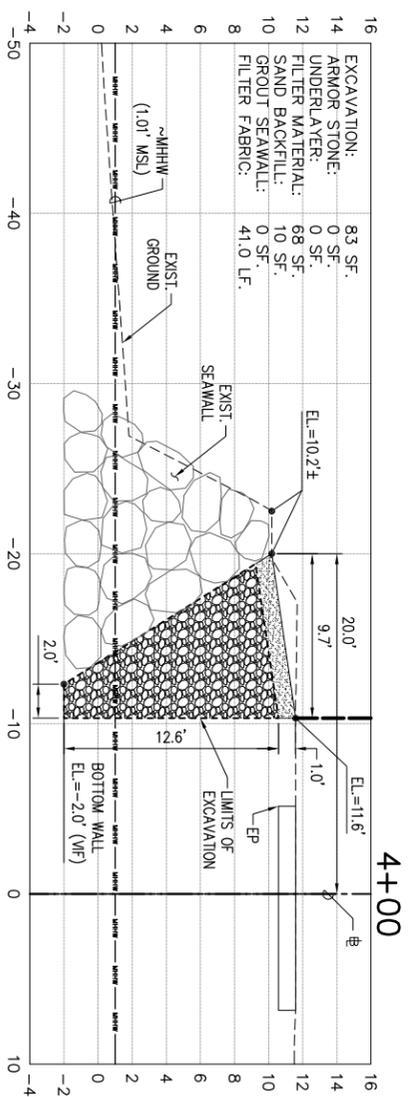


REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI
PONO KAI SEAWALL REPAIR
KAPAA, KAUAI, HAWAII

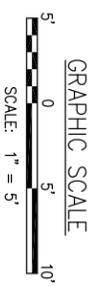
CROSS SECTIONS 2
STA 1+25.20 TO 3+00

DESIGNED BY: **MM** DRAWN BY: **MM** CHECKED BY: **DV**
FINAL



CROSS SECTION - 3
STA 3+50 TO 5+00

SCALE: HOR.: 1" = 5'-0"
VER.: 1" = 5'-0"



NOTES:

- EXISTING SEAWALL TOE DEPTH IS ASSUMED FOR CIVIL DESIGN PURPOSES. CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND ADJUST MATERIAL PLACEMENT AS NECESSARY.

REVISION	DATE	BRIEF	MADE BY	APPROVED

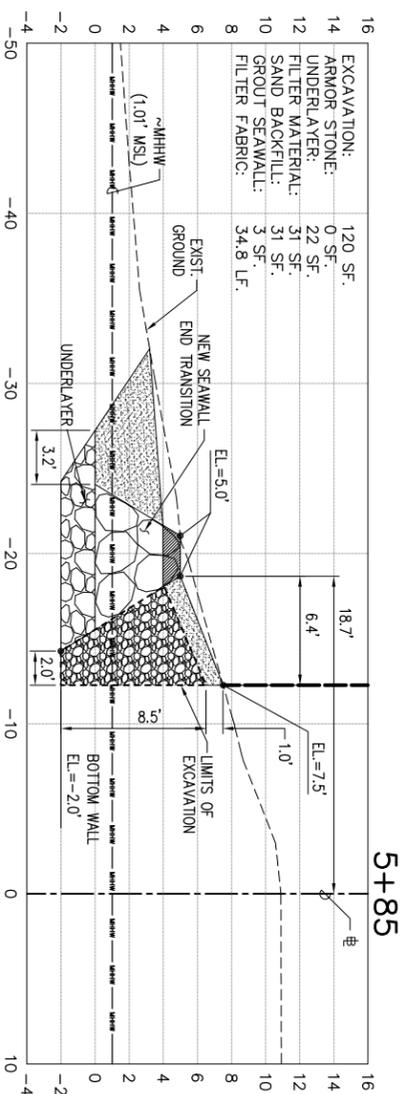
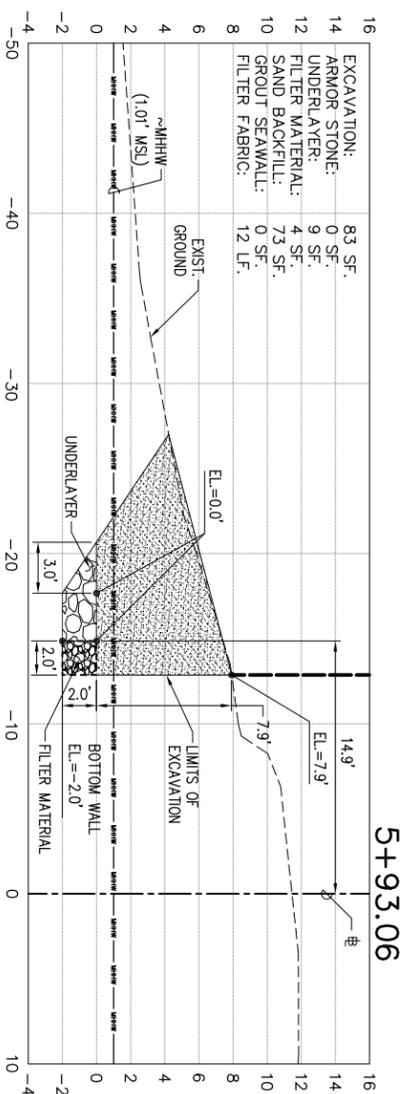
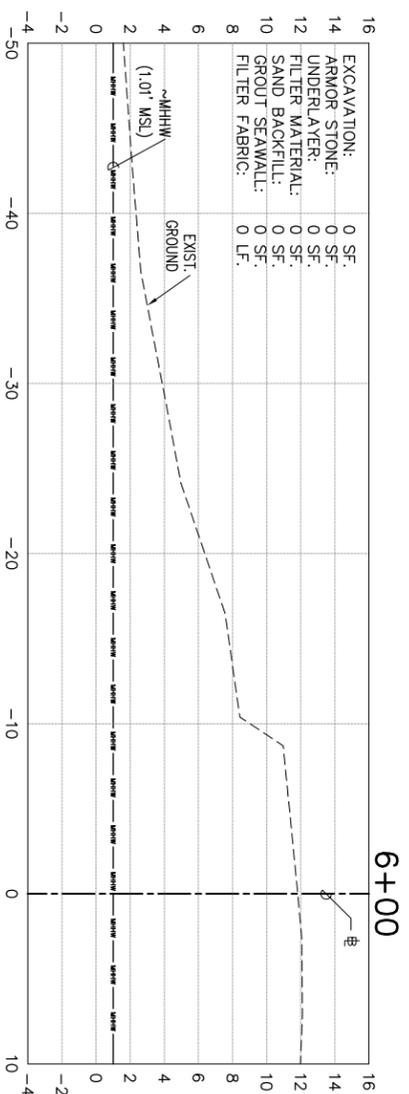
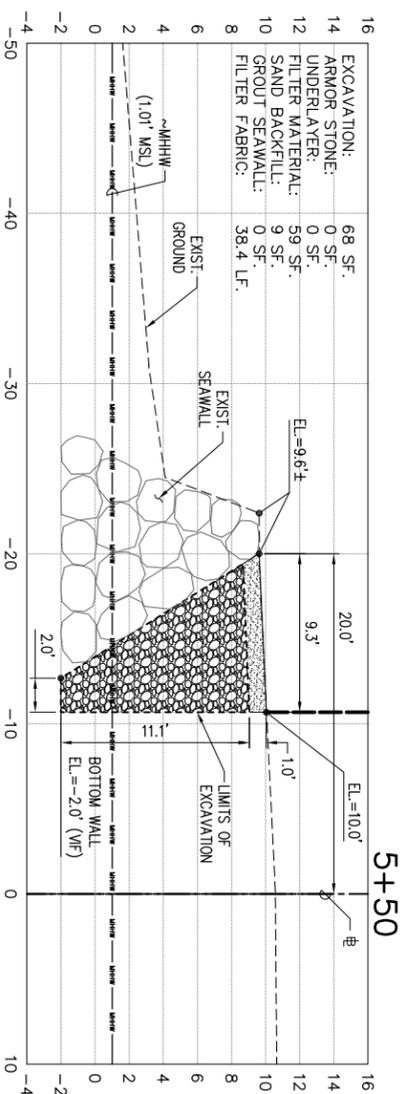
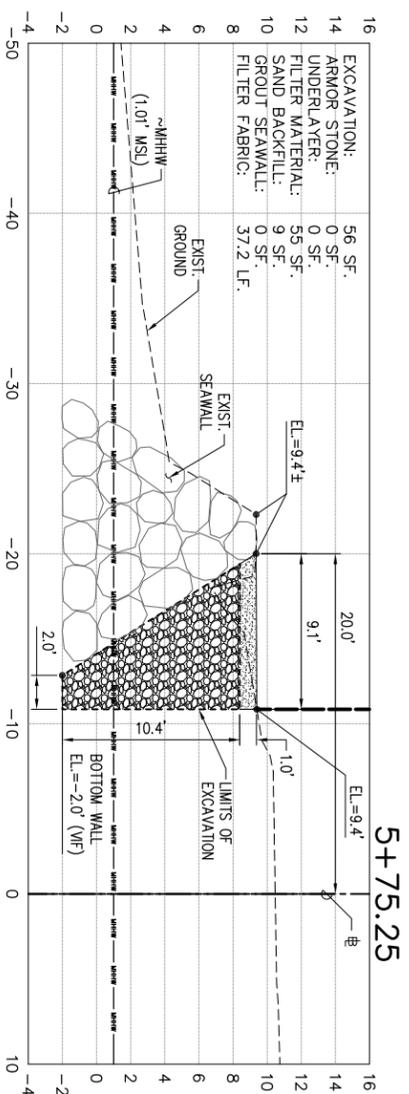
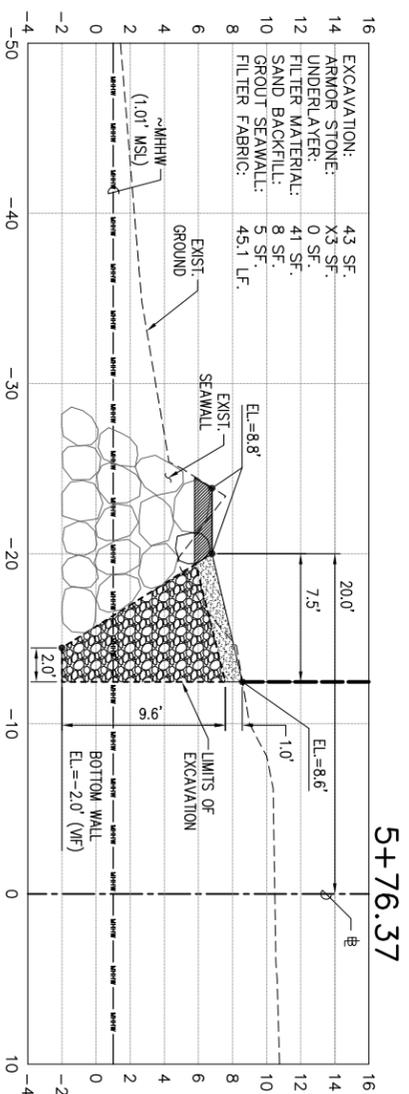
DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI

PONO KAI SEAWALL REPAIR
KAPAA, KAUAI, HAWAII

CROSS SECTIONS 3
STA 3+50 TO 5+00

DESIGNED BY: MW DRAWN BY: MW CHECKED BY: DV

FINAL



CROSS SECTION - 4
STA 5+50 TO 6+00

SCALE: HOR.: 1" = 5'-0"
VER.: 1" = 5'-0"

GRAPHIC SCALE



NOTES:

- EXISTING SEAWALL TOE DEPTH IS ASSUMED FOR CIVIL DESIGN PURPOSES. CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND ADJUST MATERIAL PLACEMENT AS NECESSARY.

REVISION	DATE	BRIEF	MADE BY	APPROVED

DEPARTMENT OF PUBLIC WORKS
COUNTY OF KAUAI

PONO KAI SEAWALL REPAIR
KAPAA, KAUAI, HAWAII

CROSS SECTIONS 4
STA 5+50 TO 6+00

DESIGNED BY: MW DRAWN BY: MW CHECKED BY: DV

FINAL

Appendix B

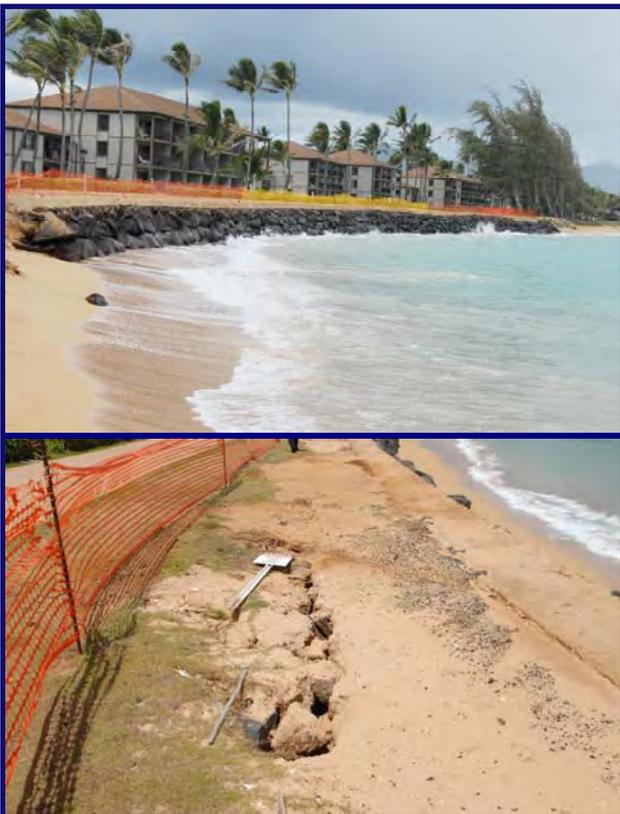
Best Management Practices Plan & Monitoring and Assessment Plan

POH-2007-00261

Pono Kai Seawall Repair Best Management Practices Plan & Monitoring and Assessment Plan POH-2007-00261

Prepared for:

Department of Public Works
County of Kaua'i



Prepared by:

oceanit[®]

Suite 600
828 Fort Street Mall
Honolulu, HI 96813

Rev. October 2014

BEST MANAGEMENT PRACTICES (BMP) PLAN

a. Maps

Site maps and aerial photos are shown in Figures 1-9.

b. Site Characterization

The beach in Kapa`a Beach Park fronting the Pono Kai Resort was badly eroded by Hurricane Iniki in 1992. A 600-foot rock seawall was constructed to protect the eroding shoreline. A concrete bike and pedestrian path runs along the shoreline mauka from the seawall. The Waika`ea Canal enters the ocean south of the site. A rock jetty separates the beach from the canal. Offshore from the canal and beach is a sand channel probably caused by fresh water flowing from the canal. To the north, a nearshore reef is close to the shoreline and provides some protection from wave action. Sand tends to drift south along the beach and drop into the canal. (See Figures 1 and 2.) Kapa`a is considered a “wet” area in terms of freshwater discharge, i.e., the ocean receives more than three million gallons per day of freshwater discharge. Therefore, “wet” water quality standards apply year round (Figure 3). The Project Site Tax Map is shown in Figure 4.

c. Construction Sequence

Excavate behind the existing seawall and install geotextile fabric to prevent sand loss through the gaps in the existing rock wall. After placement of geotextile fabric, the excavated space will be filled with appropriately sized rocks and backfilled. The top portion of the northern section of the seawall, covering a length of about 221 feet will be regouted. The north and south ends of the seawall damaged by flanking will be reconstructed and up to 3,000 cubic yards of sand will be placed on the beach at the damaged ends.

The contractor or Kauai County DPW will notify DOH and the COE at least 7 days before starting work and within 14 days after project completion. The contractor will place a construction warning sign at the work site.

Work duration – Approximately three months including mobilization and construction.

d. Construction Methods

The material required to repair the wall includes rocks from the existing seawall for backfill and reconstruction of the ends, stockpiled beach sand from the Waika`ea Canal, sand and earth excavated from the space behind the existing seawall. Rock from the existing seawall will be moved by an excavator or other construction equipment to backfill the excavated area behind the seawall. Beach nourishment sand will come from the County stockpile of sand removed from the

Waika`ea Canal and will be delivered to the nourishment site by truck and placed on the beach at the north and south ends of the seawall by a front loader or excavator. Material excavated from behind the seawall can be used as backfill behind the repaired wall.

Figure 5 is a Site Plan and Profile showing proposed improvements. Figure 6 contains the Contractor's typical sliding work area and Erosion Control Plan with erosion control and BMP notes and details. This figure also shows the sand nourishment areas north and south of the seawall.

- e. Characteristics of the discharge and potential pollutants associated with the proposed construction activity

The primary discharge is 3,000 cubic yards of beach nourishment sand. The sand was removed from the boat ramp near the outlet of the Waika`ea Canal adjacent to the project site. Figure 7 shows the sand grain size distribution. The sand grain size from the stockpile is larger than the existing sand grain size adjacent to the seawall and should work well for beach nourishment.

- f. Characteristics of the Dredged/Excavated Material

No dredging is proposed.

- g. Proposed Control Measures and/or Treatment

Equipment Maintenance

Since heavy construction equipment such as an excavator, front loader, and truck will be used, the contractor will be required to use materials to contain and clean up spills of fuel or lubricants. Equipment operators will inspect their machines daily to make sure there are no problems that could result in contamination from fuels, lubricants, hydraulic fluid, or other pollutants. Any required maintenance will be done off-site using methods that will not result in pollution of the water or land area. Any waste oils or lubricants will be removed from the site and disposed of according to applicable federal or state regulations.

Pollution Response

Oil absorbent pads and a spills kit will be on site to immediately clean up any small petroleum product spillage that may occur. In the unlikely event of a bigger spill, oil absorbent pads will be used to contain the spill while an environmental emergency response crew is called in. Pacific Environmental Corporation (PENCO) can be called (808-545-5195). PENCO is a highly trained environmental emergency response company available 24 hours a day.

Should any release of pollutants including fuel, fluids, etc. into the ocean occur;

the contractor will notify the Department of Public Works County of Kauai and the Department of Health (DOH) immediately. The contractor shall brief all personnel working on the site on best management practices and pollution control and provide a list of personnel briefed to DPW.

Staging Area BMPs

Construction materials and equipment will be stored in the staging area shown in Figure 8. Any other materials and equipment will be kept in the staging area until used. Oil absorbent pads, 10 mil plastic sheets, and a spills kit will be available for cleanup. If material stockpiles are used, they will be enclosed by earth berms or silt fences to minimize pollutants carried by rainfall runoff. All trash and construction debris will be disposed of at an approved facility.

Sediment and Turbidity Control

The contractor shall employ systems such as silt curtains or other containment to prevent spread of turbidity during seawall repair and beach nourishment. Proposed systems shall be included in the construction plans and designs provided to the Engineer prior to start of construction.

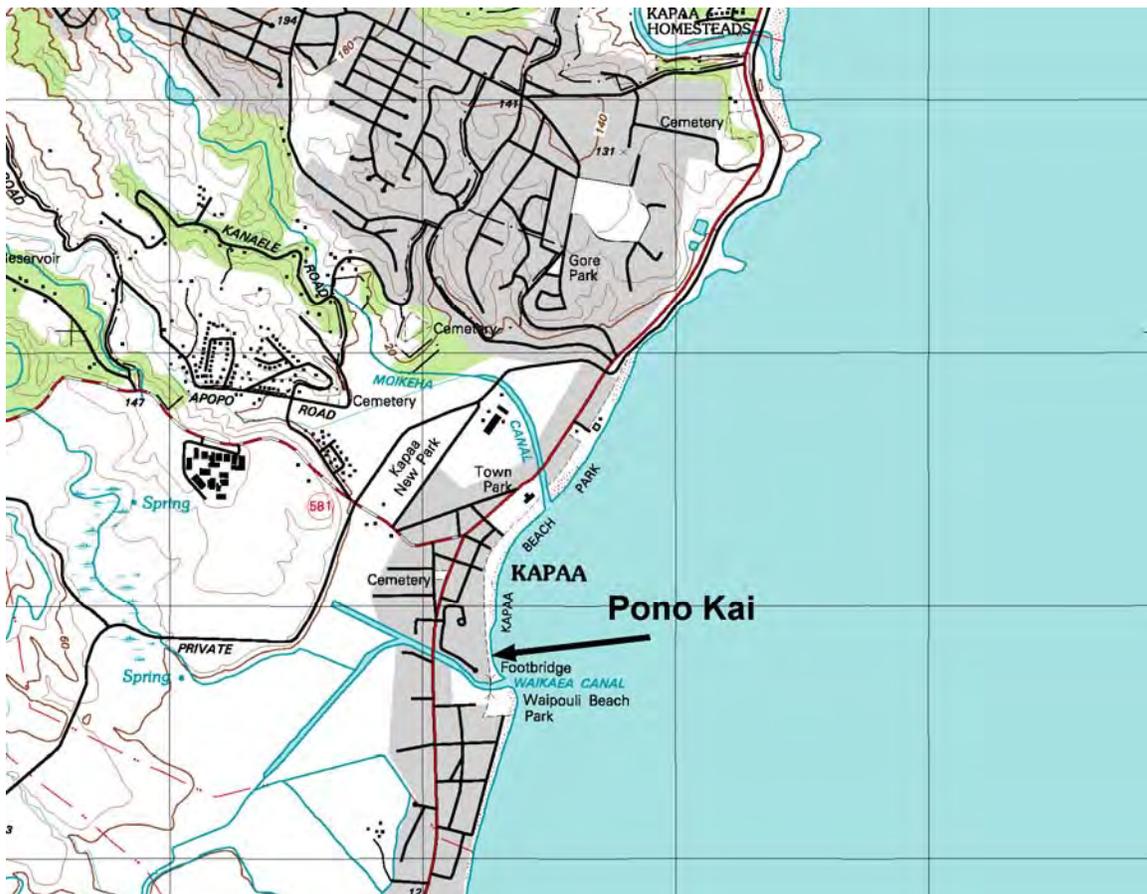


Figure 1. Project Location Map



Figure 2. Aerial Photo of Project Site and Vicinity

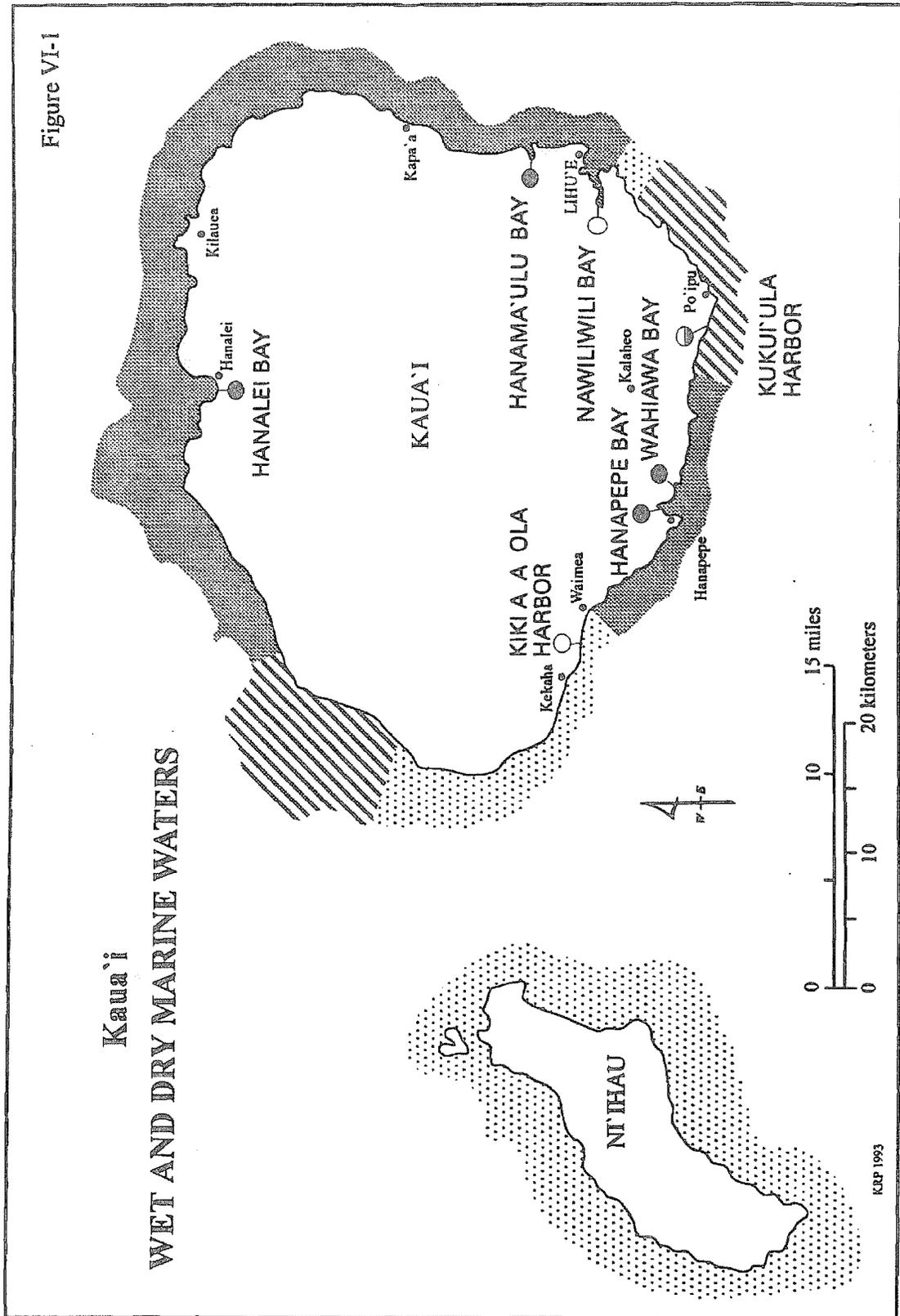


Figure 3. Kauai Wet and Dry Marine Waters

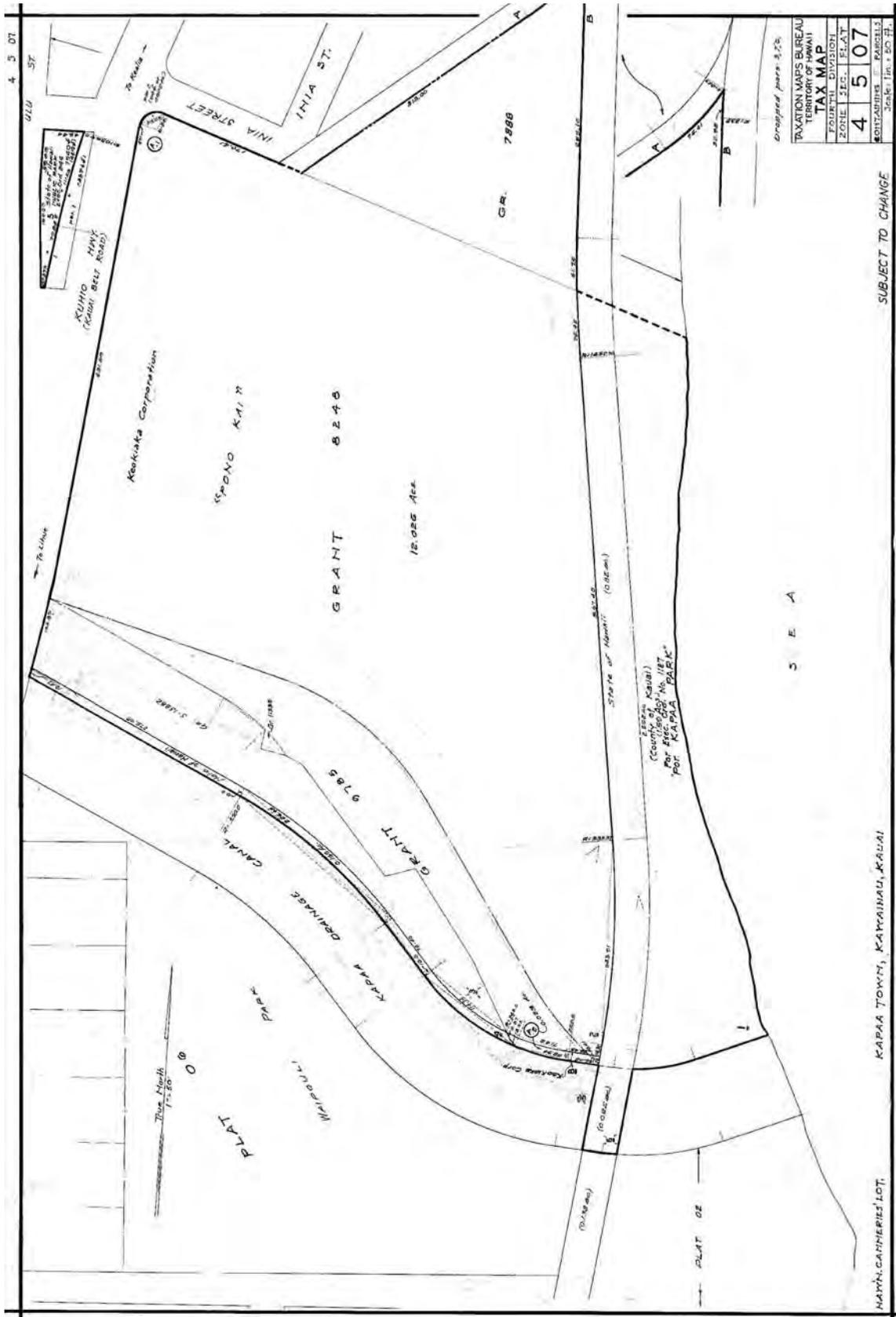
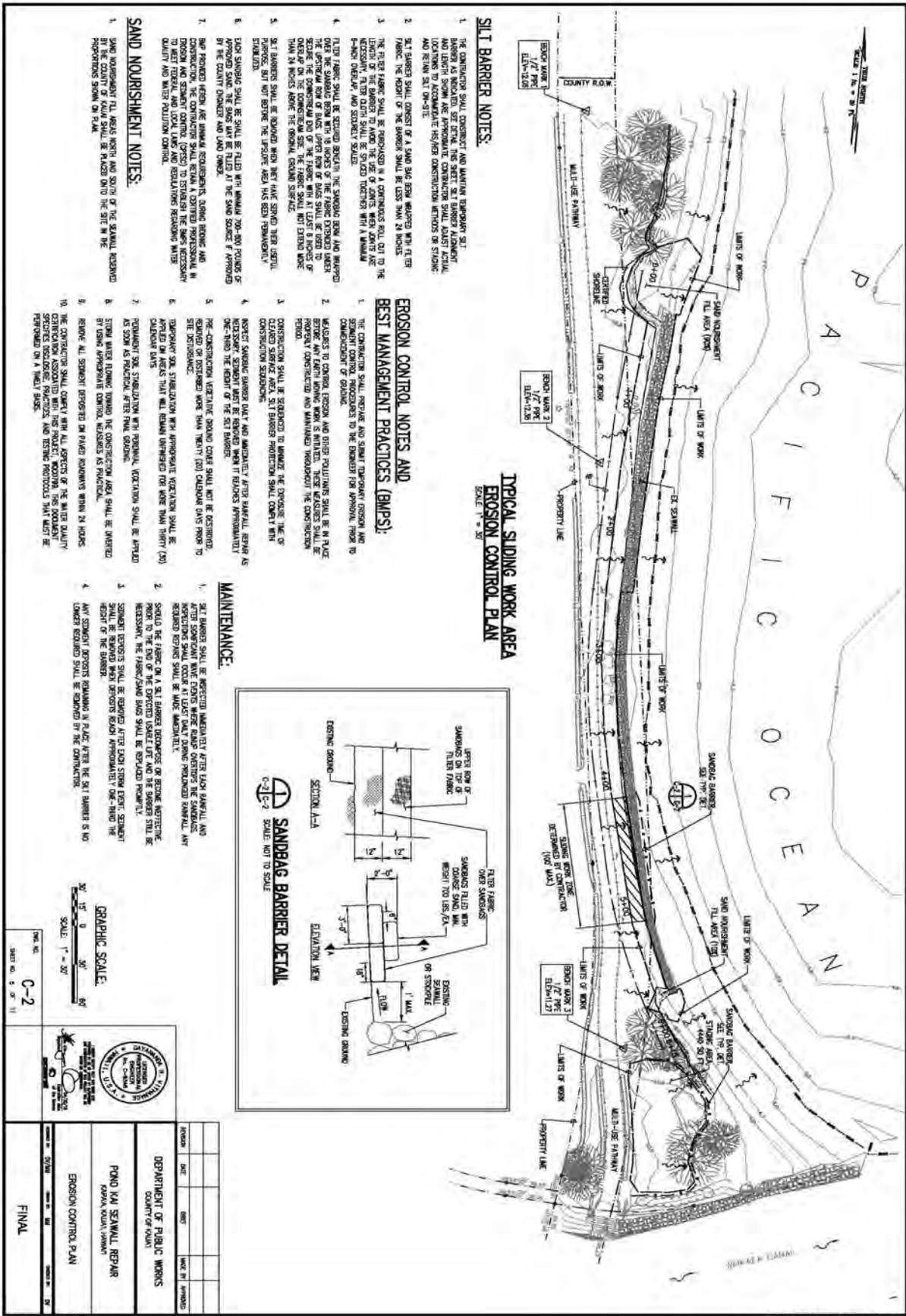


Figure 4. Project Site Tax Map



SILT BARRIER NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN TEMPORARY SILT BARRIERS AS INDICATED. SEE DETAIL THIS SHEET. SILT BARRIERS ALONGSIDE AND LENGTHS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL ADJUST ACTUAL LOCATIONS TO ACCOMMODATE EXISTING CONSTRUCTION METHODS OR STAGING AND RETURN SET 04-21E.
2. SILT BARRIERS SHALL CONSIST OF A SAND BAG BEING MANIPULATED WITH FLAT FABRIC. THE HEIGHT OF THE BARRIER SHALL BE LESS THAN 24 INCHES.
3. THE FLAT FABRIC SHALL BE REINFORCED IN A CONTINUOUS ROLL OUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, FLAT FABRIC SHALL BE SPICED TOGETHER WITH A MINIMUM 4" OVERLAP. FLAT FABRIC SHALL BE SPICED BEHIND THE SANDWAG BEAM AND MANIPULATED FROM THE SANDWAG BEAM WITH 12 INCHES OF THE FABRIC EXTENDING UNDER THE SANDWAG BEAM. THE FABRIC SHALL BE SPICED TOGETHER WITH A MINIMUM 4" OVERLAP ON THE CONCRETE SIDE. THE FABRIC SHALL NOT EXTEND MORE THAN 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
4. SILT BARRIERS SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USUAL PURPOSE, BUT NOT BEFORE THE INSPECTOR HAS BEEN PERMANENTLY SATISFIED.
5. EACH SANDWAG SHALL BE FILLED WITH MINIMUM 70%-80% FILLERS OF APPROVED SAND. THE SANDS MAY BE FILLED AT THE SAND SOURCE IF APPROVED BY THE COUNTY ENGINEER AND LAND OWNER.
6. AND PROVIDED HEREON ARE MINIMUM REQUIREMENTS. DURING BIDDING AND CONSTRUCTION, THE CONTRACTOR SHALL CONSULT WITH THE COUNTY ENGINEER AND LAND OWNER FOR ANY CHANGES TO THE BIDDING REQUIREMENTS. THESE REQUIREMENTS ARE MINIMUM AND THE CONTRACTOR SHALL MAINTAIN THE QUALITY AND WATER POLLUTION CONTROL.

SAND NOURISHMENT NOTES:

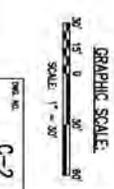
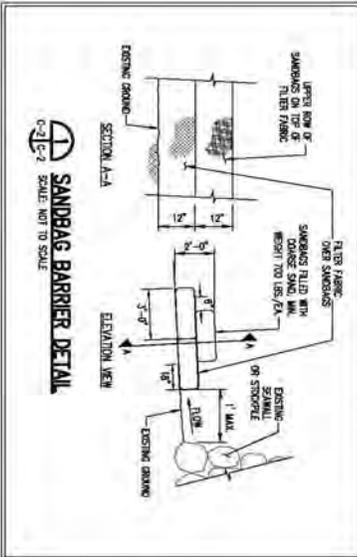
1. SAND NOURISHMENT TO TAKE NORTH AND SOUTH OF THE SEAWALL REPOSED BY THE COUNTY OF KAUAI SHALL BE PLACED ONTO THE SITE IN THE PROPORTIONS SHOWN ON PLAN.

EROSION CONTROL NOTES AND BEST MANAGEMENT PRACTICES (BMPs):

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES TO THE EXTENT NECESSARY TO PREVENT EROSION AND SEDIMENTATION FROM OCCURRING.
2. MEASURES TO CONTROL EROSION AND OTHER POLLUTIONS SHALL BE IN PLACE BEFORE ANY CONSTRUCTION ACTIVITIES BEGIN. THESE MEASURES SHALL BE PROPERLY CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.
3. CONSTRUCTION SHALL BE STOPPED TO MINIMIZE THE EXPOSURE OF THE EXPOSED SURFACE AREA. SILT BARRIER PROTECTION SHALL CONCENTRATE WITH NEAREST SANDWAGS DAILY AND IMMEDIATELY AFTER RAINFALL. SEDIMENT NECESSARY TO MAINTAIN THE BARRIER SHALL BE REPLACED IMMEDIATELY. THE CONSTRUCTION OPERATING SCHEDULE SHALL NOT BE DESTROYED, REPAIRED OR DISAPPEARED MORE THAN TWENTY (20) CALENDAR DAYS FROM TO THE DATE OF OCCURRENCE.
4. TEMPORARY SOIL STABILIZATION WITH APPROPRIATE VEGETATION SHALL BE APPLIED ON AREAS THAT WILL REMAIN UNIMPROVED FOR MORE THAN THIRTY (30) CALENDAR DAYS.
5. TEMPORARY SOIL STABILIZATION WITH PERMANENT VEGETATION SHALL BE APPLIED AS SOON AS PRACTICAL AFTER FINAL GRADING.
6. STEEP SLOPES FORMING TOWARD THE CONSTRUCTION AREA SHALL BE STABILIZED BY OTHER APPROPRIATE EROSION CONTROL MEASURES AS NECESSARY.
7. REMOVE ALL SEDIMENT DEPOSITED ON PAVED ROADSWAYS WITHIN 24 HOURS OF DEPOSITION.
8. THE CONTRACTOR SHALL NOTIFY THE COUNTY ENGINEER OF THE WATER QUALITY CONTROL MEASURES ASSOCIATED WITH THIS PROJECT. INCLUDING THE DOCUMENTED EROSION CONTROL PRACTICES AND TESTING PROCEDURES THAT MUST BE PERFORMED ON A DAILY BASIS.

MAINTENANCE:

1. SILT BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AFTER DOWNY RAIN EVENTS WHEN EROSION OCCURS. THE SANDWAGS SHALL BE REPAIRED IMMEDIATELY AND REPLACED AS NECESSARY. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.
2. SHOULD THE FABRIC ON A SILT BARRIER BECOME DAMAGED BEHIND THE SANDWAG BEAM, THE FABRIC SHALL BE REPAIRED IMMEDIATELY AND THE SANDWAGS SHALL BE REPLACED IMMEDIATELY. THE FABRIC/SAND BAGS SHALL BE REPLACED IMMEDIATELY.
3. SANDWAGS SHALL BE REMOVED AFTER DOWNY RAIN EVENTS. SANDWAGS SHALL BE REPLACED IMMEDIATELY AND THE SANDWAGS SHALL BE REPLACED IMMEDIATELY.
4. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT BARRIERS IS NO LONGER REQUIRED SHALL BE REMOVED BY THE CONTRACTOR.



DATE:	NOV 21 2014
DESIGNED BY:	DAVID M. WILLIAMS
CHECKED BY:	DAVID M. WILLIAMS
APPROVED BY:	DAVID M. WILLIAMS
DEPARTMENT OF PUBLIC WORKS COUNTY OF KAUAI PONO KAI SEAWALL REPAIR KAPAA, KAUAI, HAWAII	
EROSION CONTROL PLAN	
SCALE:	1" = 20'
SHEET NO. 5 OF 11	
FINAL	

Figure 6. Typical Sliding Work Area / Erosion Control Plan

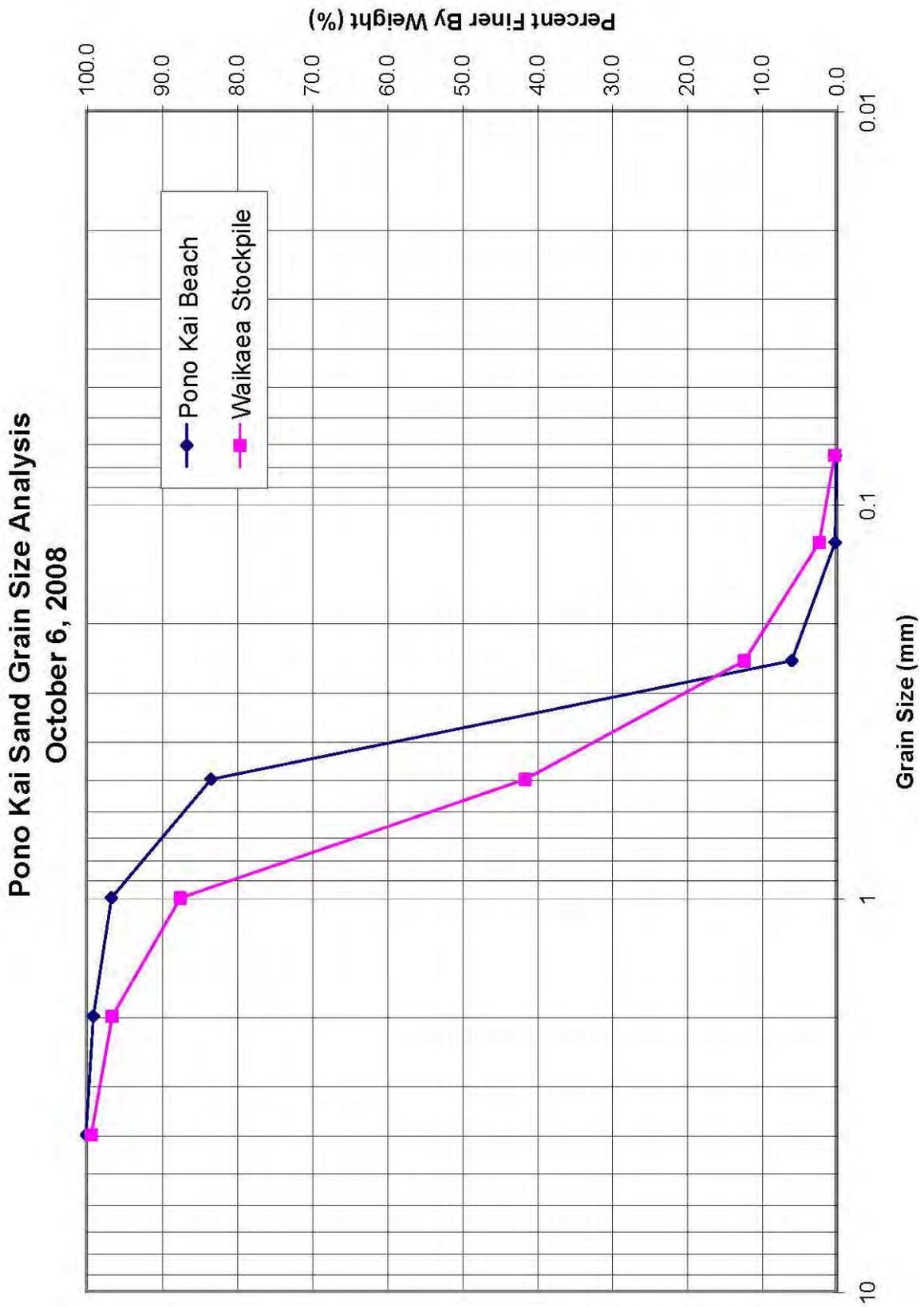


Figure 7. Pono Kai Sand Grain Size Analysis



Figure 8. Project and Staging Area Limits

BEST MANAGEMENT PRACTICES
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
PACIFIC ISLANDS REGIONAL OFFICE
PROTECTED RESOURCES DIVISION

The National Marine Fisheries Service, Pacific Islands Regional Office recommends that the following measures, as appropriate and germane to specific projects, be incorporated into projects to minimize impacts on protected resources. These supplement but do not supersede the BMPs above.

1. Turbidity and siltation from project-related work should be minimized and contained to within the vicinity of the site through the appropriate use of effective silt containment devices and curtailment of work during adverse tidal and weather conditions.
2. 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.
3. All project-related materials and equipment placed in the water should be free of pollutants.
4. No project-related materials (fill, revetment rock, pipe, etc.) should be stockpiled in the water (intertidal zones, reef flats, stream channels, etc.)
5. No contamination (trash or debris disposal, alien species introductions, etc.) of marine (reef flats, lagoons, open ocean, etc.) environments adjacent to the project site should result from project-related activities.
6. Fueling of project-related vehicles and equipment should take place away from the water. A contingency plan to control the accidental spills of petroleum products at the construction site should be developed. Absorbent pads, containment booms and skimmers will be stored on-site to facilitate the cleanup of petroleum spills.
7. Underlayer fills will be protected from erosion with core-loc units (or stones) as soon after placement as practical.
8. Attempts must be made to prevent discharge of dredged material into the marine environment during transporting and off-loading of dredged material.
9. Return flow of or run-off from dredged material stored at inland dewatering or storage sites must be prevented.

MITIGATION MEASURES TO REDUCE IMPACTS TO PROTECTED SPECIES

A visual survey must be performed by state personnel of the project area just prior to commencement or resumption of construction activity to ensure that no protected species are in the project area. If protected species are detected, construction activities must be postponed until the animal(s) voluntarily leave the area.

If any listed species enters the area during the conduct of construction activities, all activities must cease until the animal(s) voluntarily depart the area.

All on-site project personnel must be apprised of the status of any 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 listed species in Hawaii, American Samoa, and Guam may be downloaded from http://www.nmfs.noaa.gov/prot_res/mmwatch/hawaii.htm

Any incidental take of marine mammals must be reported immediately to NOAA Fisheries' 24-hour hotline at 1-888-256-9840. Hawaii only: any injuries to sea turtles must be reported immediately to NOAA Fisheries at 1-808-983-5370. Information reported must include the name and phone number of a point of contact, location of the incident, and nature of the take and/or injury.

MONITORING AND ASSESSMENT PLAN

Water Quality Monitoring

1. Monitoring Parameters

The waters of Kapa`a Kauai are designated Class A by the State of Hawaii Chapter 11-54 Water Quality Standards for open coastal waters. Any change in water quality caused by constructing the seawall is expected to be temporary. The purpose of this monitoring program is to assess changes to the receiving waters caused by construction. DPW proposes to monitor turbidity pre-, during, and post-construction. Turbidity can be observed as well as measured and is a good indicator of BMP effectiveness.

WATER QUALITY PARAMETER	PRE-CONSTRUCTION	DURING CONSTRUCTION	POST-CONSTRUCTION
Turbidity, NTU	X	X	X

Monitoring locations are shown in Figure 9. Turbidity will be measured with in situ probes that can be anchored in place on the nearshore bottom or hand-carried to specified locations along the work site. The probe sensors will be cleaned and calibrated before each use. The turbidity sensor is calibrated using standard NTU solutions (0 or 100 NTU). The accuracy of turbidity measurements depends on several factors including calibration and local conditions in the water. Log-normal statistics discussed in the Assessment section below will be used to evaluate data.

Anchored measurements will be at three locations approximately 100 feet offshore from the north, center, and south sections of the work area and at one location farther offshore that will be used as a control. Actual locations will depend on where the probes can be anchored. The probes will be anchored where water depth is about 2 feet or more below sea level so that the instruments remain submerged (see Figure 8). The GPS position of each probe will be recorded. The anchored probes will be protected inside a PVC pipe to prevent damage.

The anchored probes will measure continuously 24 hours per day providing far more data than could be obtained by grab samples. Grab samples would have to be shipped on ice to Oahu for laboratory analysis, and results would not be received for several days or weeks. Sampling with probes is less expensive and more efficient.

The turbidity probes will be anchored at locations 1 through 4 for pre-construction monitoring over ten days during a two-week period and downloaded weekly (see Figure 8 for probe locations). During the construction, probes will be anchored at locations 1-4

and downloaded weekly. Location 1 will be the control. Probes will be placed at the same locations for a minimum of one day for post-construction measurements.

The contractor will be requested to keep a daily weather log during construction. Rainfall can wash sediment from the eroding embankment into the ocean and can increase flow from Waika`ea Canal. In either case turbidity measurements may increase during construction.

2. Assessment

Monitoring probe data will be analyzed by comparing measurements with State of Hawaii Water Quality standards and the baseline pre-construction data to assess whether receiving water quality has been degraded. If turbidity fluctuates, Oceanit will use other probe data, construction activity, or weather events to explain the change. If water quality results are consistently worse than pre-construction measurements or standards, Oceanit will notify DPW, DOH and the contractor, who must take action to identify and correct any problem and report the problem and correction to the DPW and DOH.

The waters off Pono Kai are Class A. Standards for Class A waters are as follows:

Parameter	Geometric Mean not to exceed the given value	Not to exceed the given value more than ten percent of the time	Not to exceed the given value more than two percent of the time
Turbidity (NTU)(wet)	0.50	1.35	2.0
(dry)	0.20	0.5	1.0

Wet criteria apply when the open coastal waters receive more than three million gallons per day of fresh water discharge per shoreline mile.

Dry criteria apply when the open coastal waters receive less than three million gallons per day of fresh water discharge per shoreline mile.

The open coastal waters at Pono Kai are considered a “Generally Wet,” and “Wet” criteria apply when the open coastal waters receive more than three million gallons per day of freshwater discharge per shoreline mile. Therefore, the wet criteria for turbidity shown in the table above will be used for assessment. Natural turbidity above the standards is very probable along the shoreline of Kapa`a.

Statistical methods will be used to analyze measurements and trends. The not-to-exceed percent of a series of turbidity measurements will be evaluated with log-normal statistics and compared with the State wet and dry standards shown in the above table. Log-normal statistics will help normalize instrument accuracy errors. The evaluation

method is described in the Data Quality Objectives document that accompanies the project's 401 Water Quality Certification application.

3. Water Quality Reporting Requirements

Water quality monitoring reports will be submitted to the DPW and to the DOH Clean Water Branch within one week of the data retrieval. Tide, waves, weather conditions (wind, rainfall, recent storms, etc.), construction activity, and visual observations will be included in each report. Reports will be transmitted by email or fax as soon as the data results are available. The DOH/CWB certification statement given below shall be included with each report.

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.

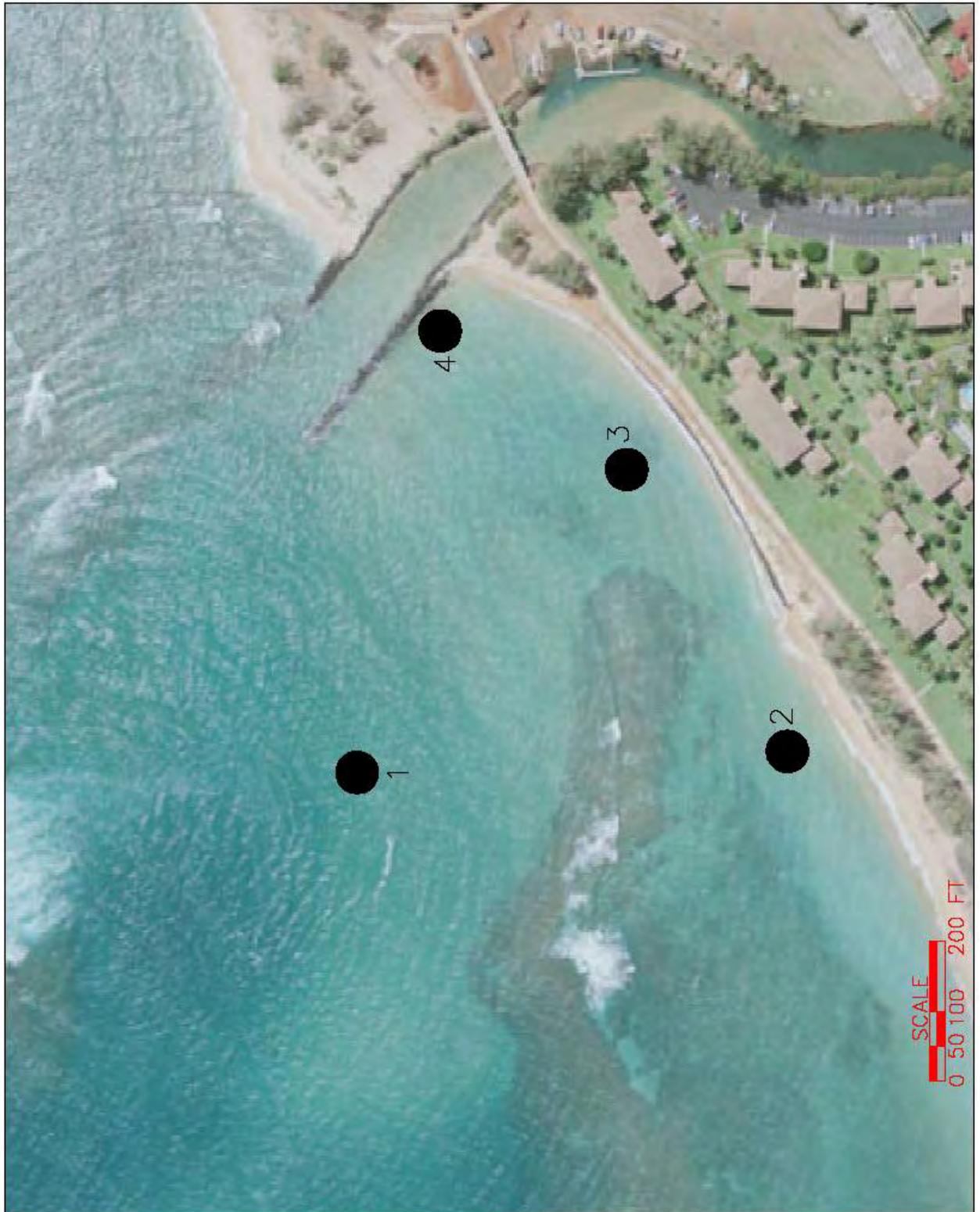


Figure 9. Pono Kai Seawall Repair Water Quality Sample Locations

Appendix C

Finding of No Significant Impact (FONSI) and

Final Environmental Assessment (FEA)

Pono Kai Shore Protection

Kapa'a, Kaua'i

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**AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUAI**

DEPARTMENT OF PUBLIC WORKS
BUILDING DIVISION
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 175
LIHU'E, KAUAI, HAWAII 96766-1340

April 19, 2010

Ms. Katherine Puana Kealoha, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

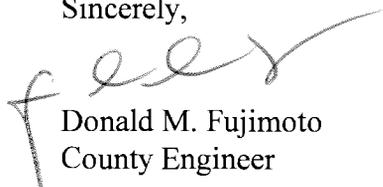
Dear Ms. Kealoha:

SUBJECT: Finding of No Significant Impact (FONSI) and
Final Environmental Assessment (FEA) for
Pono Kai Shore Protection
TMK: (4) 4-5-007:001, 009, Kapaa, Kauai

The County of Kauai, Department of Public Works, has reviewed the comments received during the 30-day public comment period, which began on March 8, 2010 and ended April 7, 2010. We have determined that this project will have no significant environmental effects and have issued a FONSI. Please publish this FONSI and the Final Environmental Assessment in your next OEQC Bulletin.

We enclose a completed OEQC Bulletin Publication Form, two copies of the Final Environmental Assessment. We have also submitted via email the publication form and a pdf file to your office. Please contact Joanne Hiramatsu of Oceanit at (808) 531-3017 if you have any questions regarding this submittal.

Sincerely,


Donald M. Fujimoto
County Engineer

cc: Oceanit
Parks & Recreation

Final Environmental Assessment For Pono Kai Shore Protection Kapa'a, Kaua'i

Prepared for:

Department of Public Works
County of Kauai



Prepared by:

oceanit

Oceanit Center
828 Fort Street Mall, Suite 600
Honolulu, HI 96813

April 2010

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- Appendix B Comments received during consultation process
- Appendix C Comments and Responses on the Draft Environmental Assessment

General Information Summary

Applicant:	County of Kauaʻi, Department of Public Works Moʻikeha Building 4444 Rice Street, Suite 255 Lihue, Kauaʻi, Hawaiʻi 96766
Owner:	County of Kauaʻi
Consultant/Preparer:	Oceanit Suite 600 828 Fort Street Mall Honolulu, HI 96813
Approving Agency:	County of Kauaʻi, Department of Public Works Moʻikeha Building 4444 Rice Street, Suite 255 Lihue, Kauaʻi, Hawaiʻi 96766
Project Description:	A rock seawall fronting the time-share resort of Pono Kai Resort was reconstructed in 1993 after Hurricane Iniki caused significant shoreline damage. The seawall is damaged and collapsing. Sand is washing through the seawall threatening its stability and causing sink holes that are a safety hazard for bike path users. A new shore protection system is proposed to replace the damaged wall. The land mauka from the wall is owned by the County of Kauaʻi and construction will be on County land. The existing seawall will be demolished, and a new sheet pile wall will be built inside the certified shoreline. Excavated sand and sand that was dredged from Waikaʻea Canal will be used for beach nourishment fronting the wall.
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Agencies Consulted:	Corps of Engineers State Department of Land and Natural Resources, Office of Conservation and Coastal Lands State Department of Health, Clean Water Branch State Coastal Zone Management State Historic Preservation Office County of Kauaʻi, Planning Department
Community Groups Consulted:	Pono Kai Resort
Tax Map Key:	(4) 4-5-007:001, 009
State Land Use:	Urban District
County General Plan:	Urban Center
County Zoning:	Open
Special Designations:	Special Management Area and Shoreline Setback



1 Introduction

This environmental assessment (EA) is being prepared by Department of Public Works (DPW) of the County of Kaua`i, to replace an existing seawall approximately 600 feet long fronting the Kapa`a-Keālia Bike and Pedestrian Path and the Pono Kai Resort. The existing wall was rebuilt in 1993 to stabilize the shoreline that was damaged by Hurricane Iniki. The wall was built of rock with the top portion grouted in place. Waves have washed sand from under and behind the wall. Parts of the wall, especially on the north end, are collapsing inland and sink holes are developing along the mauka side of the wall, causing dangerous conditions. This project will use County of Kaua`i funding to remove the seawall and build a new coastal structure landward from the existing seawall. The project will be constructed within lands owned by the County adjacent to a 12-foot-wide bike and pedestrian pathway that extends for 4.3 miles from Kapa`a to Keālia. The pathway was constructed in 2007. Environmental studies used for this bike/pedestrian pathway will be referenced in this EA.

The proposed shore protection structure is a sheet pile wall with a rock toe. The sheet pile will be built entirely within county property. Construction will require a shoreline setback variance (SSV), a special management area (SMA) use permit, a beach nourishment permit, and a water quality certification. The sheet pile wall will be located mauka of the existing seawall, and the rock toe will help prevent scour and undermining. Rock from the existing wall will be used for the toe.

The project location is shown in Figures 1-1 and 1-2. Photos showing the deteriorating seawall and sinkholes are shown in Figures 1-3 and 1-4.

The tax map key number for this project is (4) 4-5-007:001 (Figure 1-5). The County of Kaua`i is the owner of this parcel.

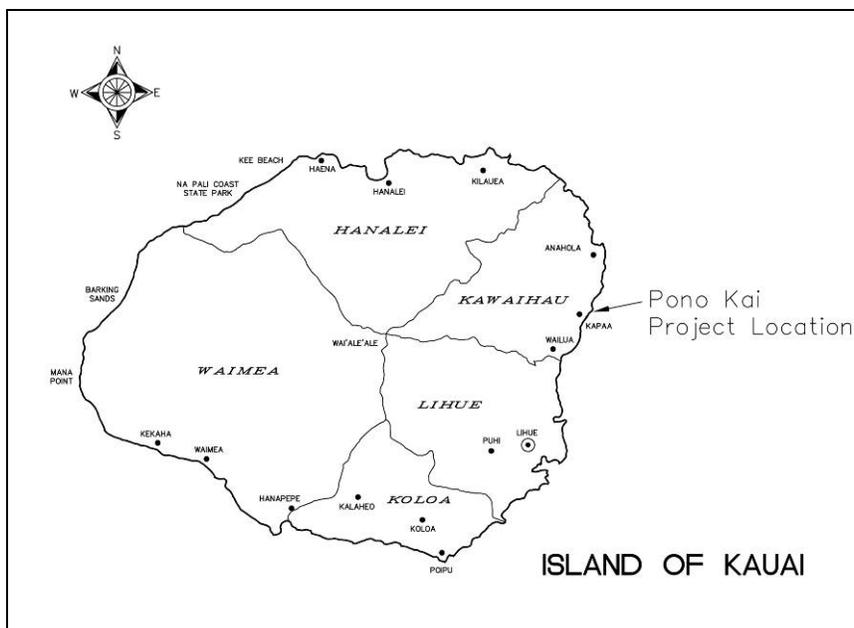


Figure 1-1. Location of Pono Kai Project

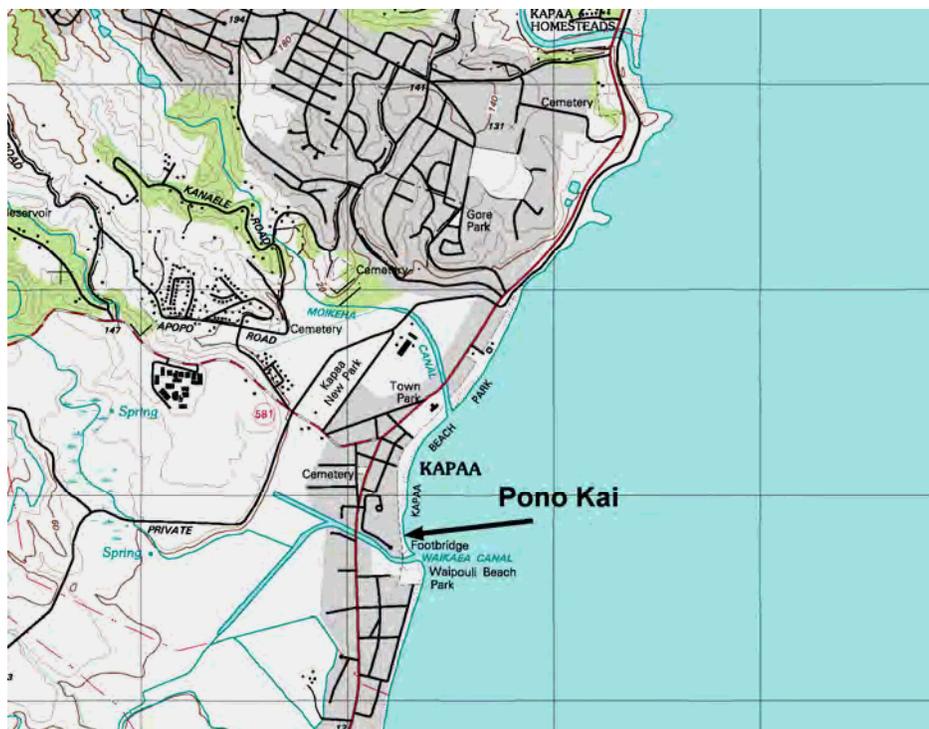


Figure 1-2. Vicinity Map of Pono Kai Project



Figure 1-3. Damaged seawall



Figure 1-4. Sinkholes mauka of Seawall



2 Project Description

2.1 Location of Project and Description

The Pono Kai Shore Protection Project is located on the eastern coastline of the island of Kauaʻi fronting the Pono Kai Resort in the town of Kapaʻa. The existing seawall will be demolished as the new coastal structure of a sheet pile with rock toe is constructed to protect the shoreline. The new sheet pile with rock toe will be built adjacent to the pathway within the Urban district on lands owned by the County of Kauaʻi. It will extend from the Waikaʻea Canal jetty northward for a distance of approximately 820 linear feet.

Construction of the new sheet pile wall will begin adjacent to and landward of the existing seawall and certified shoreline and extend to the existing pedestrian/bike path. The certified shoreline is mauka of the existing seawall. The rock toe will extend approximately three feet below mean sea level (MSL) to reduce the energy of impinging waves and minimize scour.

Sand was recently excavated from the adjacent Waikaʻea Canal. The sand will be used for beach nourishment as well as excess excavated sand from the construction of the new sheet pile wall. Project permits will probably be required from the State Department of Health (DOH), the State Department of Business, Economic Development, and Tourism Office of Planning, the State Office of Conservation and Coastal Lands, and the County of Kauai Planning Department.

For ongoing maintenance of the beach front, dredged material from the adjacent Waikaʻea Canal can be used if the dredged material is suitable for this purpose. Offshore sand sources could also be used by pumping the sand onto the beach.

2.2 Existing Land Use Classifications

The project is located within the urbanized areas of Kapaʻa town. The State Land Use designation is “U” (Urban) and the County General Plan designation is “Urban Center” with a narrow strip of park space along the shoreline. The County of Kauaʻi zoning designation is “Open” Pono Kai Resort is a timeshare resort that is located inland of the seawall and bike/pedestrian pathway. This bikeway, as shown in Figure 2-1, was built in 2007 and spans 4.3 miles along the coastline from Kapaʻa to Āhihi Point. The seawall is on the seaward side of the pathway.



Figure 2-1. 12-Foot Wide Bike/Pedestrian Pathway

The project site is within the Special Management Area as shown in Figure 2-2. Therefore a Special Management Area Permit will be required. A shoreline setback variance will also be needed for this project.

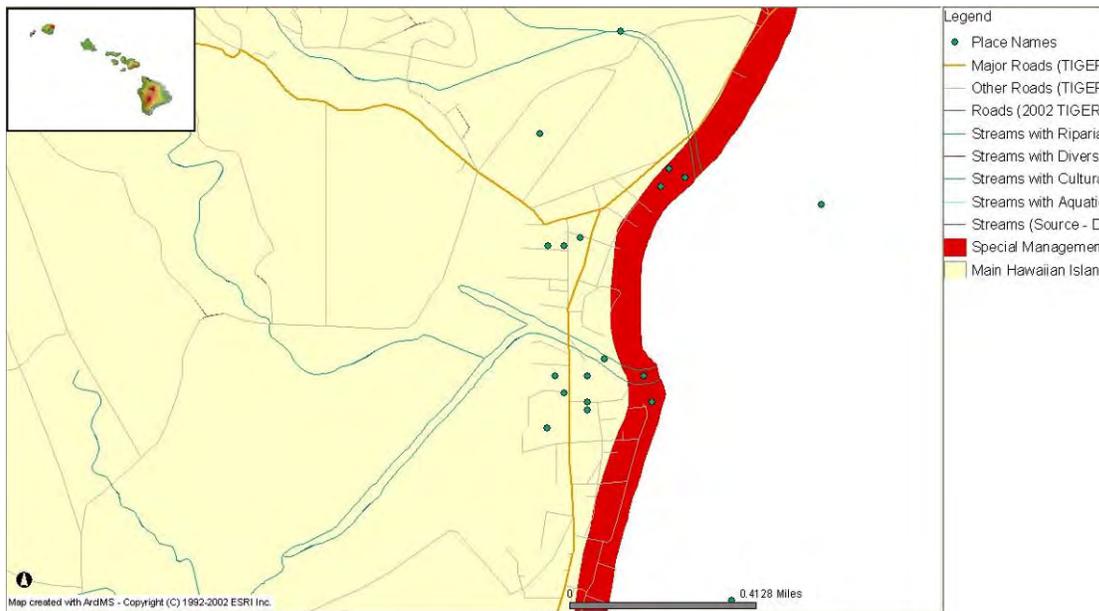


Figure 2-2. Special Management Area Map



3 Alternatives Considered

3.1 No Action Alternative

The no action alternative would mean that the seawall will continue to be undermined by waves and ultimately collapse. Erosion will continue to move inland and ultimately jeopardize the recently constructed bike/pedestrian pathway and existing timeshare development of Pono Kai Resort. Based on estimates conducted by the University of Hawaii, the shoreline is eroding at approximately 1.5 feet per year. If this erosion continues, the bike path would begin to be eroded within 14 years. The nearest building on the Pono Kai property to the seaward edge of the bike path is approximately 49 feet and would take an additional 33 years to reach the nearest building.

3.2 Proposed Project Alternative

The proposed alternative is to construct a new sheet pile wall with rock toe landward of the existing seawall and certified shoreline within lands owned by the County of Kauai. This new rock toe will be buried at a depth of about -3 feet mean sea level (MSL) as shown in Figure 3-1. The rock toe will slope landward at 1.5H:1V until it reaches the sheet pile. Rocks from the existing wall will be placed at the toe to reduce wave reflection and protect against scour.

The stockpiled sand taken from Waika`ea Canal will be used as beach nourishment fronting the wall. Excavated sand from the project will also be placed back on the beach fronting the wall. Beach nourishment is proposed as a supplemental protection system to be used in conjunction with the new sheet pile structure. Future maintenance of the beach could use the dredged material from the adjacent Waika`ea Canal if the material is suitable for this purpose. Offshore sand source is another possibility by pumping sand onto the beach.

Coastal structures such as groins might be required in the future to maintain a nourished beach. A detailed study of ocean conditions and sand transport along this coastline is needed to identify a long term solution to coastal erosion.

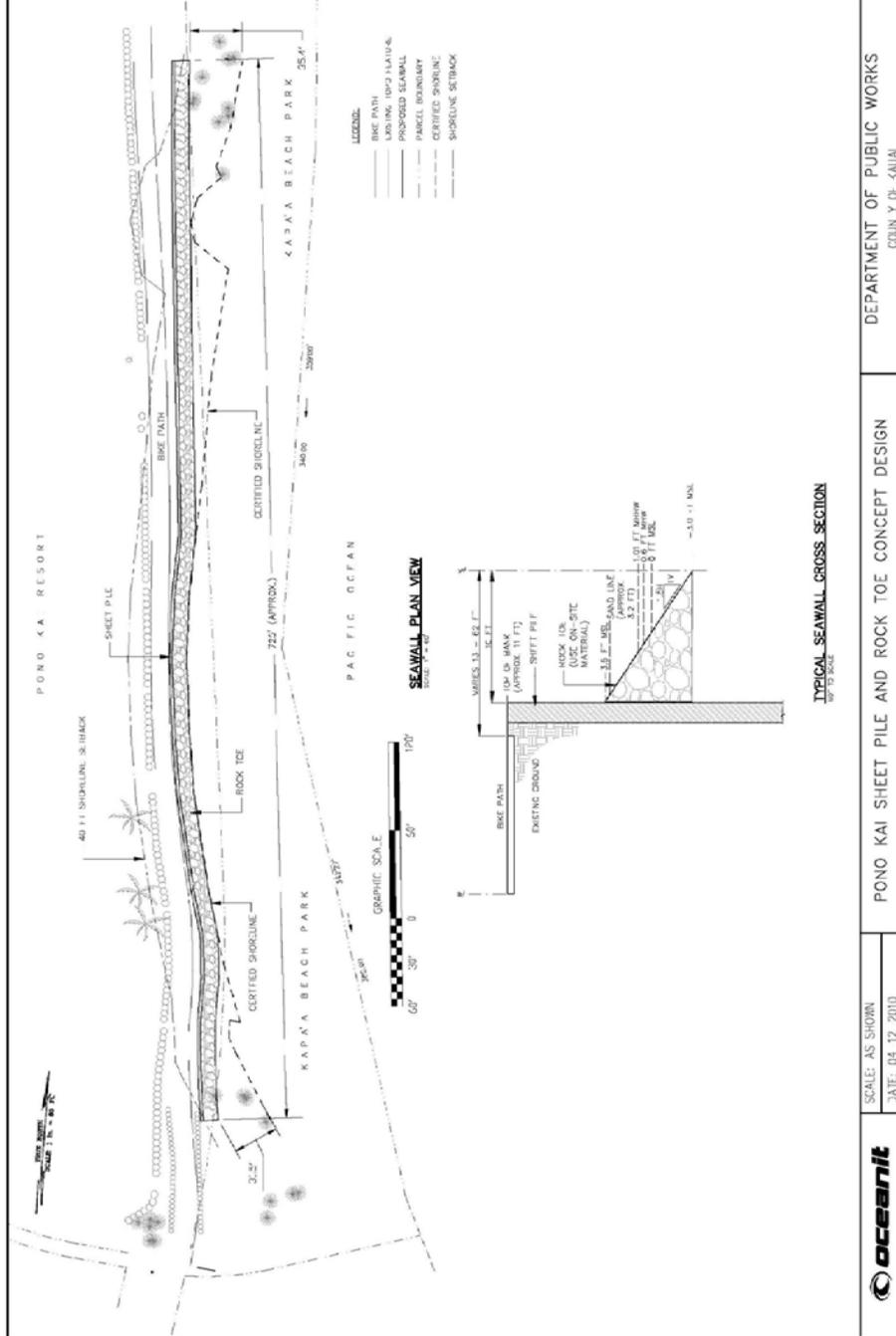


Figure 3-1. Proposed Sheet Pile with Rock Toe





3.3 Other Alternatives Considered

3.3.1 Repair of Existing Wall

Repair of the existing wall was considered as an alternative; however, repair was not selected because the existing seawall foundation is not deep enough to prevent undermining and a filter fabric was not installed on the inland side of the seawall to prevent sand transport through the wall. Portions of the existing wall are located within the Conservation District on the State Land Use Maps. The new sheet pile wall will be constructed further inland on lands owned by the County.

3.3.2 Drilled Shaft Retaining Wall

This alternative consists of a series of 30 inch diameter concrete piles that are cast in pre-drilled shafts (see Figure 3-2). Thirty-inch diameter holes are drilled into the substrate to a depth of 25 to 30 feet and a casing is introduced to prevent collapse. The shaft is filled with concrete while the casing is removed. Alternate piles are placed at 24 inches apart and allowed to set. Intermediate piles are then drilled and cast to create a 3 inch overlap that prevents loss of soil from between each pile. As in the earlier alternatives the seaward slope of the seawall will be protected by a rock toe to dissipate wave action and reduce scour at the footing. However, in this option, it is very unlikely that scour will reach the bottom of the piles, and thus there is no possibility of scour failure or sink holes. This alternative was not selected because of the high cost to construct this type of wall.

3.3.3 Reinforced Concrete Wall with a Cutoff

This alternative consists of a concrete seawall with a vertical seaward face (see Figure 3-3). The seaward portion of the wall will extend to 6 feet below MSL forming a barrier against soil loss. However, if the beach erosion exposes the bottom of the cutoff wall, soil loss from under the wall will occur resulting in damage to the bike/pedestrian path. This alternative was not selected because of possible functional failure and construction work below water level, which would require dewatering. There is no nearby area where dewatering activities could occur.

3.3.4 Reinforced Concrete Seawall Supported by Micro-piles

This alternative consists of a seawall supported on micro-piles driven into the substrate (see Figure 3-4). The piles will be a few feet apart and will be driven to 15 feet below MSL. A pile cap will be placed at 2 to 3 feet below MSL, and the seawall is constructed on the cap. The seaward slope of the seawall will be protected by riprap to dissipate wave action and reduce scour at the footing. This alternative was not selected because of construction below water level and possible scour below the pile cap that will expose the piles that are spaced apart. This might ultimately result in soil loss under the bike/ pedestrian path causing damage.

3.3.5 Cement Rubble Masonry Wall

This alternative is a trapezoidal wall built with rocks that are grouted in place and buried to a depth of four to six feet below sea level (see Figure 3-5). The seaward side of the wall would slope 1H:12V and the inner slope would be at 5H:12V. Again this alternative would require dewatering so that the



bottom layers of the wall can be grouted. If erosion continues, the bottom of the wall could become exposed and scour below the wall. Therefore this alternative was not selected.

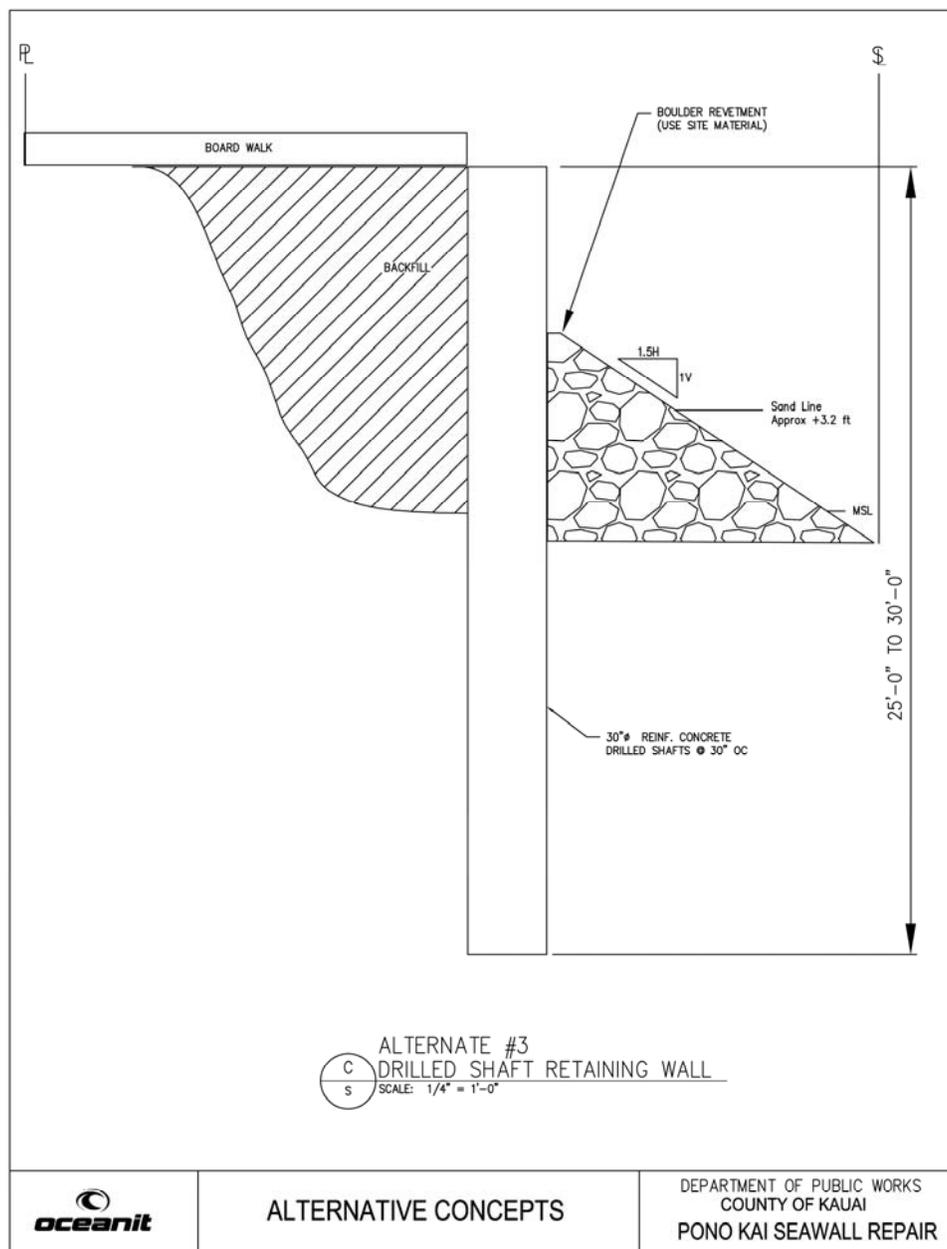


Figure 3-2. Drilled Shaft Retaining Wall

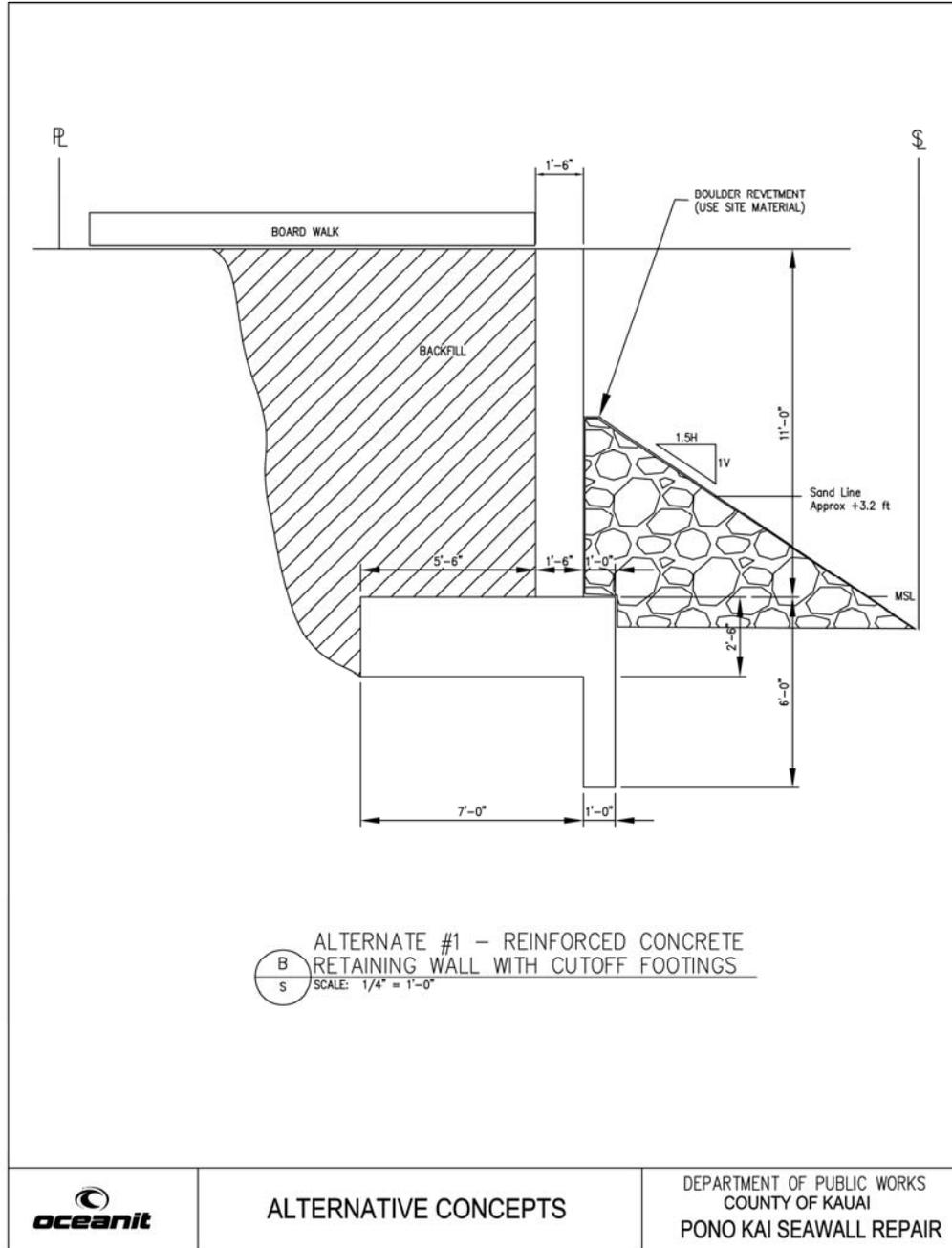


Figure 3-3. Reinforced Concrete Retaining Wall with Cutoff Footings

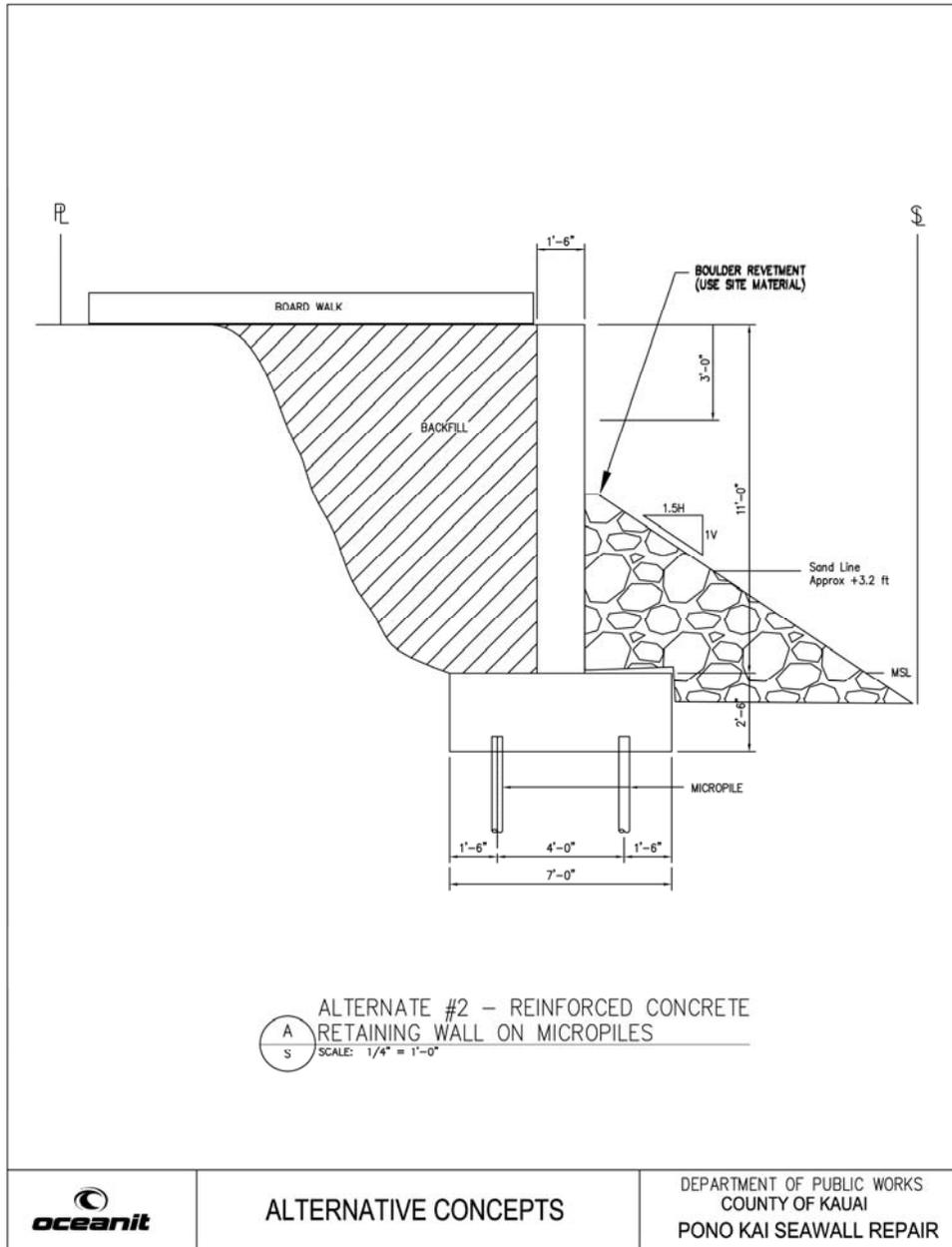


Figure 3-4. Reinforced Concrete Retaining Wall on Micropiles

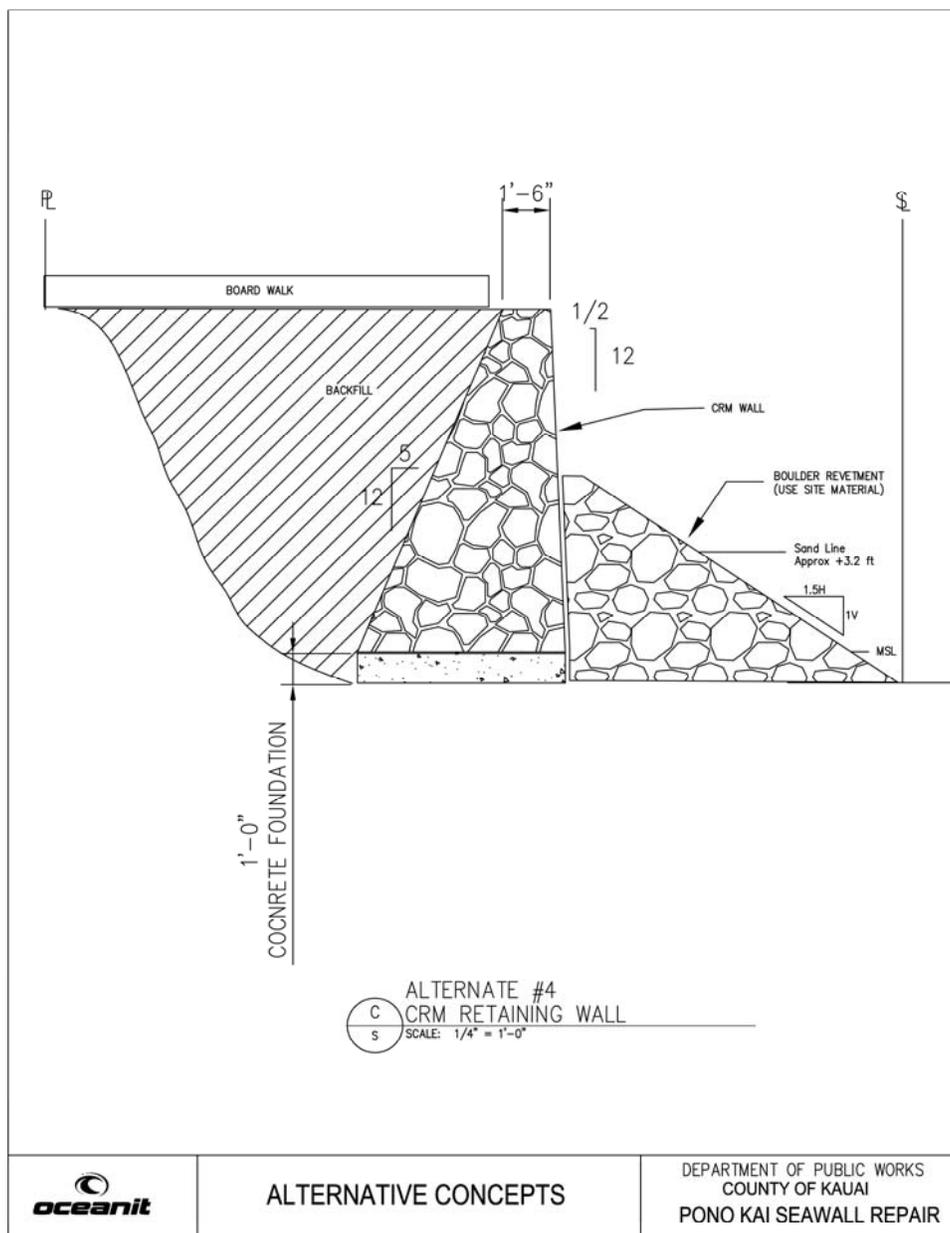


Figure 3-5. Cement Rubble Masonry Wall



3.3.6 Rock Revetment

A rock revetment could be constructed along the eroding shoreline (see Figure 3-6). The revetment would consist of a double layer of bedding stones and a double layer of armor stones placed on a slope of 1V:1.5H. The toe stones would be buried 3-4 feet below sea level to prevent damage from scouring. However, a rock revetment covers more space than is available between the shoreline and the Pono Kai Resort property. There would be insufficient space for the bike path on county property. Because of space limitations, this alternative was not selected.

3.3.7 Beach Nourishment With or Without a Structure

If the existing damaged seawall was removed and beach nourishment was planned, the erosion rates of this area may actually begin to increase and maintenance of the beach would be high. Beach nourishment without a wall may also cause Waika`ea Canal to require dredging more often to keep the canal at the required depth. With a seawall structure and beach nourishment, maintenance of the beach front could coincide with the dredging of Waika`ea Canal and could also be supplemented by offshore resources by pumping sand to the beach.

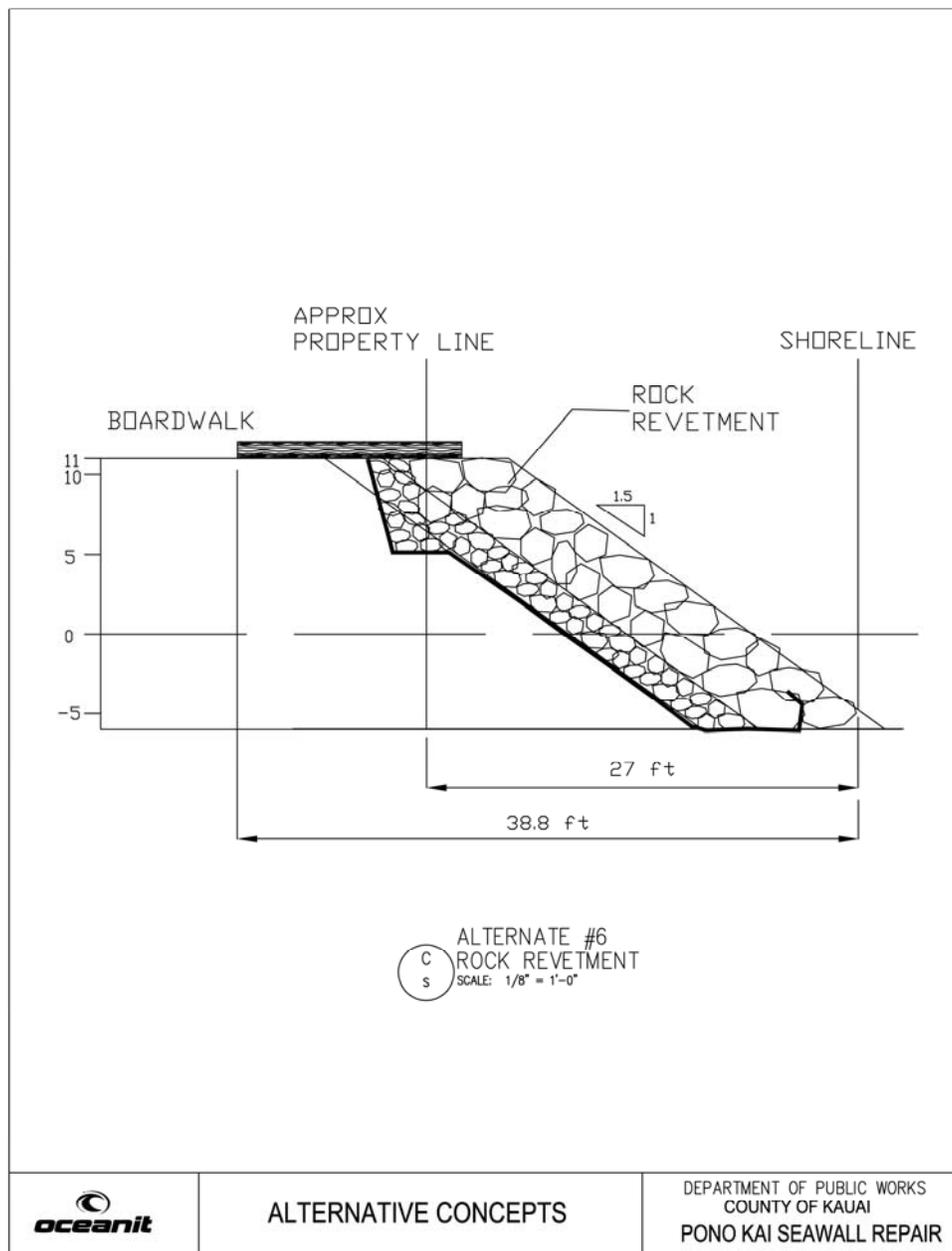


Figure 3-6. Rock Revetment



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4 Physical, Biological and Cultural Environment

4.1 Climate, Topography, and Soils

The island of Kaua`i has a land area of about 555 square miles, is the fourth largest island in the Hawaiian island chain, and is the northernmost and geologically the oldest of the major islands within the State (SCS, 1972). Kaua`i is a shield volcano classified in the Waimea Canyon volcanic series.

Kaua`i, like the other Hawaiian Islands, has a mild semi-tropical climate. The northeast trade winds blow approximately 80 percent of the time. During winter months, the trade winds are interrupted by cyclonic disturbances known as “Kona” storms where the wind direction is from the southeast.

The elevation of the island rises from sea level to an elevation of 5,170 feet at Kawaikini Peak near the center of the island. The topography at the seawall site rises from sea level to about 12 feet above mean sea level (MSL).

The island of Kaua`i is made up of 10 soil associations. Soil associations in the vicinity of the project site consist of the Jaucas-Mokulē`ia, Hanalei-Kolokolo-Pākalā and Lihue-Puhi soils (SCS, 1972). The Jaucas-Mokulē`ia soils are found along the coastline and are well-drained soils with a coarse texture. Hanalei-Kolokolo-Pākalā soils are found on bottom lands of the island and are nearly level. The soils could either be poorly drained or well-drained. The Lihue-Puhi soils are well-drained soils with fine to moderately fine textured subsoil. Soils specific to the project site are Beaches (BS) and Mokulē`ia fine sandy loam (Mr). Beaches consist mainly of light-colored sand derived from coral and seashells. The Mokulē`ia soils consist of well-drained soils found along the coastal plains.

4.1.1 Impacts

The seawall’s purpose is to prevent erosion along the coastline fronting a portion of the bike path and the Pono Kai Resort. Over time, the wall will maintain the existing topography in the area and will have no adverse effects. By reducing erosion, the wall will assist in maintaining nearshore water quality.

4.1.2 Mitigation

The seawall is not expected to adversely affect the climate, topography, or soils. Therefore, no mitigation measures are proposed.

4.2 Natural Hazards

Natural hazards consist mainly of tsunamis, hurricanes, high wave events, flooding, and earthquakes. A coastal evaluation of the site was conducted for the bike/pedestrian path situated a few feet inland from the proposed seawall. The proposed seawall lies within the tsunami evacuation zone. Wave heights from the 1946 and 1960 tsunami were 18 and 6 feet, respectively. These wave heights would overtop the wall.



According to the Flood Insurance Rate Map (FIRM), the southern side of the seawall near Waika`ea Canal may be in the 100-year flood zone (VE and AE) as shown in Figure 4-1. Nearby areas are also in the 500-year flood zone (X500). The seawall and bike path will drain naturally into the ocean.

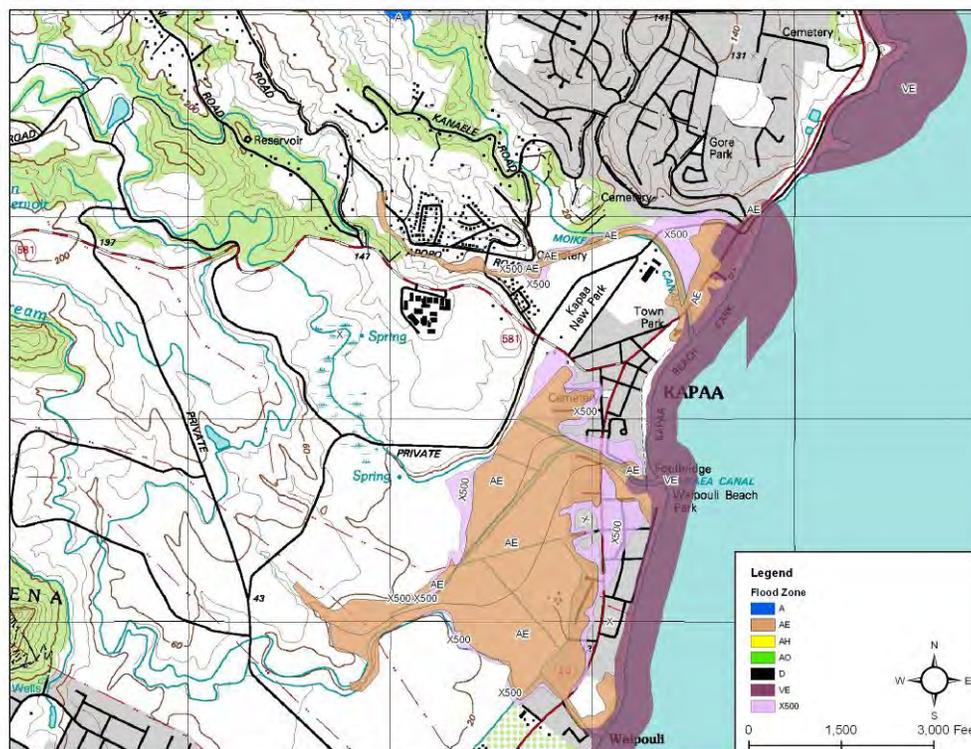


Figure 4-1. FEMA Flood Map

The island of Kaua`i has a low rating of Zone 1 for seismic activity from earthquakes. Therefore, no special construction methods for seismic activity will be required.

The existing seawall was constructed in response to damages that occurred as a result of Hurricane Iniki that passed directly over the island of Kaua`i in 1992. Damage caused by this hurricane was estimated at \$2.4 billion (Juvik, 1998). Hurricanes cause damage with heavy rains, strong winds, and storm surge. Damage to the new seawall from future hurricane storm surge is possible.

4.2.1 Impacts

The new wall is not expected to change future damage from hurricane waves or tsunamis. It should not affect flooding from Waika`ea Canal. The seawall will offer some protection to property from high wind waves or swell but could be overtopped under severe conditions. The sheet piles will be deep enough to stop undermining and loss of sand from behind the wall, which will eliminate dangerous sink holes. The ends of the sheet pile wall will be moved inland away from the certified shoreline and near the bike path, which will result in less interaction with waves.



4.2.2 Mitigation

Moving parts of the wall inland and placing beach nourishment will help mitigate sand loss from natural hazards including wave interaction with the wall.

4.3 Ocean and Coastal Environment

The Pono Kai seawall is located on the east coast of Kauai in Kapa`a. The site is adjacent to the Waikae`ea Canal, which drains areas inland from Kapa`a (See Figure 4-2). The shoreline is subject to waves from the northeast to the south that include trade wind waves, North Pacific swell, southern swell, and Kona storm waves. Trade winds blow year round varying predominantly from the north to the east. A sand beach fronts the shoreline at the seawall and continues north along Kapa`a Beach Park. Average beach erosion rate as determined by the University of Hawaii Coastal Geology Group from historical aerial photographs is about 1.5 ft/year at the project site. The beach fronting the seawall is not protected by nearshore reefs as is the adjacent shoreline to the north. The nearshore bottom consists of reef flats, aggregate reef, and sand channels. A large sand channel extends seaward from Waikae`ea Channel and is contiguous with the beach at the seawall.

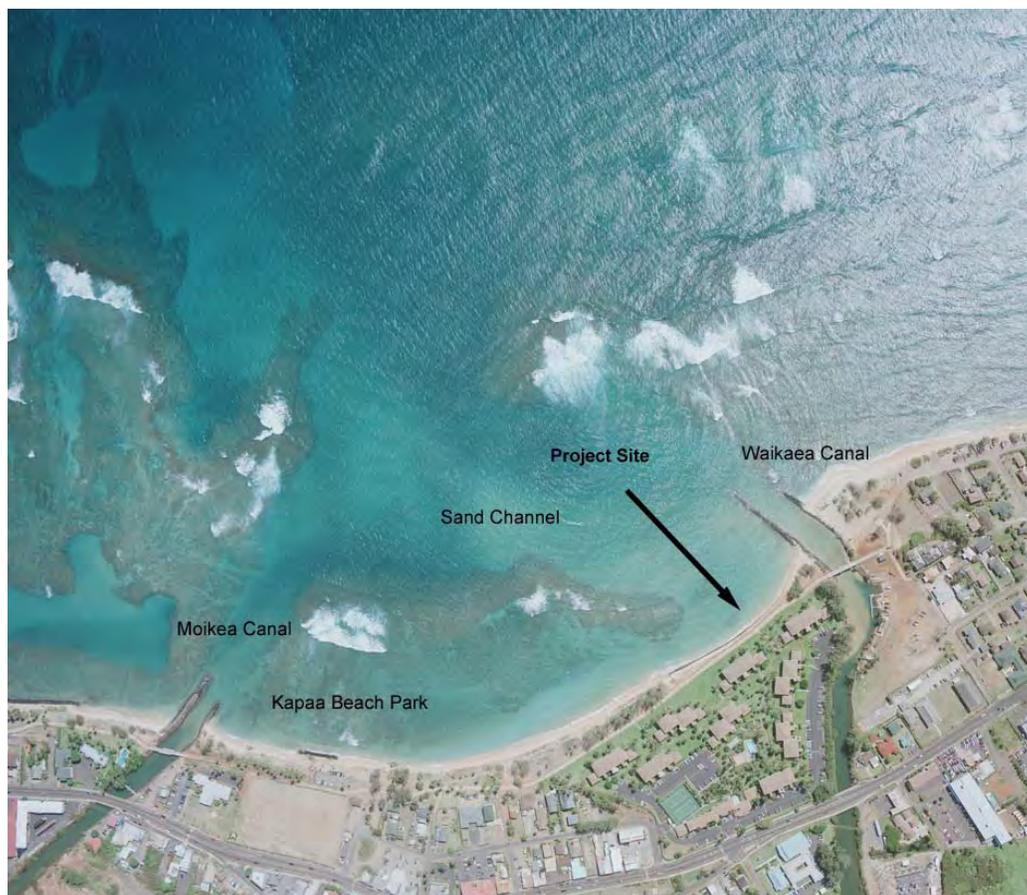


Figure 4-2. Aerial of Coastline Features



4.3.1 Impacts

The new sheet pile wall will reduce sand loss from the mauka side of the wall. There should be little change in erosion or sand transport rate on the ocean side of the wall, since the new rock toe will be similar to the existing rock seawall.

4.3.2 Mitigation

Beach nourishment will mitigate sand loss. Sand from dredging of Waika`ea Canal will initially be used. Sand for future nourishment could come from dredging the canal, or the large sand channel offshore from the beach may be a good source. The offshore source should be studied to determine sand quality and available volume.

4.4 Aquatic Resources and Water Quality

A survey of the marine ecosystem was conducted on April 24, 2008 to determine whether or not there were any significant aquatic resources fronting the proposed new seawall (see Appendix A). Eight transects perpendicular to the shore were performed. At transects one through five, no organisms were observed on the sandy bottom except for sea cucumbers that were clustered near a single boulder five yards from the shoreline.

Transects six through eight crossed over a patch reef. There were very few coral colonies on the reef with the largest measuring 18 inches in diameter. The reef consisted of a basalt bench that showed signs of erosion from the surrounding sand.

Numerous species of juvenile fish were observed over the patch reef, although the abundance was low. Fish species observed include: *Canthigaster jactator* (Hawaiian whitespotted toby), *Ostracion meleagris* (Spotted trunkfish), and *Thallosoma duperrey* (Saddle wrasse).

Temperature of the water above the reef averaged 25.2 degrees Celsius with a mean pH of 8.6. Salinity was 36.2 ppt. Laboratory analysis of collected water samples showed total suspended solids in the surface water of 3.2 mg/L and 6.1 mg/L at a depth of three feet.

None of the species observed are on the threatened or endangered list. The Hawaiian green sea turtle is known to forage on reef flats, but none were observed during the survey. The endangered Hawaiian monk seal could also use the beach, but none were observed during the survey.

4.4.1 Impacts

None of the aquatic resources found during the survey are considered threatened or endangered. Thus no impacts on marine resources are expected. The endangered green sea turtle and the monk seal may occasionally visit this area.

4.4.2 Mitigation

During construction, if a monk seal is seen resting on the beach, the Kaua`i representative for the Department of Land and Natural Resources and the National Oceanic and Atmospheric Association



will be contacted and all construction activities will cease operations. If turtles are observed in the construction area, work will also stop until they leave.

4.5 Botanical Resources

A botanical survey of the site was conducted in July 2002 for the bike/pedestrian path project by the County. The survey did not find any state or federally listed threatened or endangered plant species in the area. Most plant species were alien with a few indigenous plants and one endemic vine, *Jacquemontia ovalifolia sandwicensis*.

4.5.1 Impacts

Since there were no state or federally listed threatened or endangered plant species in the vicinity of the new seawall, no adverse impacts are expected.

4.5.2 Mitigation

There will be no impacts on threatened or endangered plant species, so no mitigation is required. A visual observation of the site also verified that plants within the vicinity of the new seawall are mainly landscaping within the Pono Kai Resort property. The area between the existing seawall and bike/pedestrian path consists mainly of grasses.

4.6 Avifaunal and Feral Mammals

A survey of the avian and terrestrial mammalian species was conducted in August 2002 for the construction of the bike/pedestrian path just mauka of the existing seawall (David, 2002). The avian survey results observed 17 species of birds. Two of the bird species observed are listed as endangered, endemic sub-species: the Dark-Rumped Petrel and the Common Moorhen. One threatened, endemic sub-species, Newell's Shearwater, was also observed. Two indigenous species, Wedge-tailed Shearwater and White-tailed Tropicbird were observed during the survey. The remaining 12 species of birds were alien to Hawai'i.

The results of the survey indicated that there were no nesting colonies nor were there any appropriate habitat for these endangered, threatened or indigenous birds. However, it was recommended that construction activities should not be allowed within the streams, canals or nearshore waters. Best management practices to prevent runoff from construction activities into nearby receiving waters should be implemented.

The endangered Hawaiian Hoary Bat was seen on both nights of the survey. A total of five individuals were observed. This species is regularly seen in the lowland areas of Kapa'a and the detection of these mammals was expected. Mammalian surveys conducted in the past have also observed this endangered mammal.

Other mammals included domestic dogs, cats, and horses. Although no rodents were observed, the study indicated that it is likely that these mammals are present in the vicinity of the project site.



4.6.1 Impacts

Since there is no habitat available for the endangered or threatened bird species observed at the site, no adverse impacts are anticipated. The Hawaiian Hoary Bat is commonly seen in this area and tends to forage at dawn and dusk during non-construction hours. Therefore, construction operations are not expected to impact the endangered mammal. Once the seawall is constructed, no adverse impacts are expected on endangered or threatened birds or mammals in the area.

4.6.2 Mitigation

Because there is no appropriate habitat for the endangered birds observed in the area, no impact is expected. To minimize impacts on the Hawaiian Hoary Bat during construction, work hours will be established to avoid the typical foraging periods at dawn and dusk.

4.7 Historic, Archaeological, and Cultural Resources

An archaeological inventory survey was conducted for the bike/pedestrian path adjacent to the project site and is documented in a report dated September 2002 by Cultural Surveys Hawai'i. This inventory survey covered the area from the coastline to just mauka of the bike/pedestrian path. Thirteen backhoe trenching was conducted at Lihi Park and Keālia Beach Park, but none fronting the Pono Kai Resort.

Archaeological sites found near the project site include the Waika`ea Railroad Bridge over Waika`ea Canal, an old railroad foundation on the Pono Kai Resort property, and stairs to an old pavilion at Kapa`a Beach Park. The new seawall will not have an adverse impact on these known sites.

A cultural impact assessment was also conducted and documented in a report dated September 2002 for the bike/pedestrian path. There were two major concerns expressed by those interviewed: 1) impacts on burials; and 2) impacts on marine and stream resources.

If any inadvertent finds are uncovered during the excavation phase of the project, the State Historic Preservation Division (SHPD) will be consulted. In consultation with the SHPD, it was recommended that an archaeologist be present at the site during excavation in the event there are any inadvertent finds.

For impacts on marine and stream resources, the main concerns were overfishing and trash. Trash can be handled through adequate maintenance of the area. This issue was a concern since the bike/pedestrian path would increase the number of people accessing the shoreline area. In the case of the replacement of the existing seawall, the new sheet pile wall is not expected to attract additional visitors to the area.

The issue of overfishing was also in response to the bike/pedestrian path. The new sheet pile wall is not expected to attract additional fishermen to the area. Any actions regarding overfishing would probably require legislative action to limit fishing during certain seasons or limit the quantity or size of fish caught. This type of action could meet with opposition because of traditional cultural practices.



4.7.1 Impacts

None of the archaeological sites were discovered in the vicinity of the proposed seawall. Therefore, no adverse impacts on archaeological resources are expected. The construction of the wall is also not expected to increase visitors to the area. Therefore no adverse impacts from additional trash and overfishing are expected from this project.

4.7.2 Mitigation

The State Historic Preservation Division (SHPD) recommends that the site be monitored by an archaeologist during construction for any subsurface work. An archaeological monitoring plan will be submitted in accordance with HAR13-279 for review and approval by SHPD. A burial treatment plan shall be prepared for any burial discoveries encountered during the project. In addition, consultation with the appropriate ethnic groups as outlined in Chapter 6E-43 shall be followed. Prior to preparing the treatment plan there will be consultations with native Hawaiians, such as the Kaua'i Island Burial Council and the Office of Hawaiian Affairs.

Replacement of the seawall is not expected to have any adverse impact on cultural practices in the area.

4.8 Visual Resources

The Kapa`a-Wailua Development Plan dated December 1973 identifies one location at Kapa`a Beach Park makai of the parking lot as a view line for ocean scenic views. The proposed seawall is located south of the viewing area and will not impact scenic resources. The seawall is not expected to block views from residents at the Pono Kai Resort since the highest point of the seawall will be at the same elevation as the bike path. The existing seawall is being replaced mainly to prevent erosion along the coastline and protect the bike path and Pono Kai Resort.

4.8.1 Impacts

No adverse impacts are expected from the replacement of the seawall.

4.8.2 Mitigation

Since no adverse impacts from the sheet pile wall are expected, no mitigation is planned. However, landscaping using native plants like naupaka could be used for additional soil stabilization and as a visual amenity.

4.9 Air Quality and Noise

The State Department of Health, Clean Air Branch, monitors ambient air in the State of Hawai'i via 16 air monitoring stations on four islands. Oahu has nine monitoring stations, Big Island has five and there are one each on Maui and Kaua'i. The Environmental Protection Agency has set standards for six pollutants: 1) carbon monoxide; 2) nitrogen dioxide; 3) sulfur dioxide; 4) lead; 5) ozone; and 6) particulate matter (PM_{2.5} and PM₁₀). Particulate matter is measured in microns. The subscript 2.5 and 10 represents microns in aerodynamic diameter. Because of volcanic activity, the State has also set



standards for hydrogen sulfide, which is monitored on the Big Island. Only particulates (PM₁₀) are measured on Kaua'i.

The State has set more stringent standards for nitrogen dioxide and carbon monoxide. The Federal standard for nitrogen dioxide is 100 µg/m³ (micrograms per cubic meter of air) whereas the State standard is 70 µg/m³. For Carbon Monoxide, the 1-hour Federal standard is 40,000 µg/m³ and the State standard is 10,000 µg/m³.

According to the 2006 annual summary none of these pollutants exceeded State or Federal standards in the last 5 years from 2002 to 2006. Ambient air quality in the State of Hawai'i continues to be the one of the best in the nation.

Noise pollution is regulated by the State Department of Health which has set specific decibel levels into three classes based on land use. Hawai'i Administrative Rules Title 11, Chapter 46, Community Noise Control contains the specific sound levels in dBA and is shown in Table 1.

Table 4.1: Maximum Permissible Sound Levels in dBA

Zoning District	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Class A	55	45
Class B	60	50
Class C	70	70

Class A zoning district are lands zoned residential, conservation, preservation, public space, open space, or similar type. Class B lands are zoned for multi-family dwellings, apartment, business, commercial, hotel, resort, or similar. Class C includes lands zoned agriculture, country, industrial, or similar types. Since the seawall is located alongside the bike/pedestrian path, Class A has been identified as the standard to use for this assessment.

Noise levels cannot exceed the dBA identified above for more than 10 percent of the time within any twenty minute period, except by permit or variance. Impulsive noise shall be ten dBA above the maximum permissible sound levels. Impulsive noise includes activities such as hammering, pile driving, and explosion. Construction equipment with a motor and/or exhaust system shall operate with a muffler, except for pile hammers or pneumatic hand tools weighing less than fifteen pounds.

4.9.1 Impacts

In the immediate vicinity of the construction activities, short term impacts on air quality are anticipated from the movement and excavation of sand to build the seawall. Release of particulate matter is not expected to be excessive since most of the sand that will be removed will probably be wet. However, if the sand is stockpiled and dries before it is backfilled, particulate matter from the dried sand could become airborne.



Short term noise impacts are also associated with construction activity. Heavy equipment will be used to build the sheet pile wall. Sheet piles could be driven by a vibrating or hammer pile driver, which can generate high noise volume. Depending on the method of installation, a noise permit may be required.

4.9.2 Mitigation

The construction site will be watered down periodically to prevent particulate matter from becoming airborne during construction. Dust screens may also be used to protect the construction site from exposure to wind and to also minimize airborne particulate matter. Once the project is completed, the air quality in the area will not be different from the existing conditions.

Noise impacts will also be generated from construction equipment. Curfew times for construction will be established and mufflers will be used on equipment to minimize noise from construction equipment. Again these impacts are short term and will occur during construction. After construction is completed, no noise impacts will be generated by the project.



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5 Social and Economic Factors

This section describes the social and economic environment of the Kapa`a area where the new seawall will be built. Factors such as demographic characteristics and economic context are described below.

5.1 Social Factors

Population of the County of Kaua`i was 58,463 people according to the 2000 census data. This represents only 5 percent of the total population of the State of Hawai`i. Kawaihau district had a population of 18,525 people with Kapa`a town accounting for 9,472 people.

The average number of people per household on the island of Kaua`i in 2000 was 2.86 people. This average household size is lower than a decade earlier when the number of people per household was 3.09.

The largest ethnic population of Kaua`i is Asian with 21,042 people, followed by White with 17,255 people. Native Hawaiians are the third largest ethnic population with 5,334 people. These numbers represent people that declared one race on the census survey.

Housing units on Kaua`i in year 2000 totaled 25,331 compared to 460,542 units in the State. Owner occupied units totaled 12,384 units and renter occupied units totaled 7,799 unit. Vacant units totaled 5,148. Homeowner vacancy rate was 1.2 percent while the rental vacancy rate was 6.1 percent. The median value of housing units on Kaua`i in 2000 was \$216,100.

5.1.1 Impacts and Mitigation

Construction of the seawall is not expected to have adverse impacts on the social environment on Kaua`i. Thus no mitigation is planned.

5.2 Economic and Fiscal Factors

Civilian labor force for the island of Kaua`i in 2006 is estimated at 32,550 people. The labor force is comprised of persons 16 years of age and over. Kaua`i has the smallest labor force compared to the other three counties. Oahu has the highest with a labor force of 439,850 people. On Kaua`i 31,800 people in the labor force are employed. The unemployment rate is 2.3 percent. The average annual income is \$31,390 on Kaua`i compared to \$37,656 on Oahu.

Leisure and hospitality industry has the highest number of jobs at 8,550. These jobs include arts, entertainment, recreation, accommodation, food services, drinking places and full-service restaurants. The second highest job count was the Trade, Transportation, and Utilities industry with 6,150 jobs. These jobs include wholesale and retail trade, transportation, warehousing, air transportation and utilities. Government (Federal, State, and Local) accounted for the third highest job count of 4,250. The job count in the agricultural industry was in the bottom three lowest with 700 jobs.



There were 565 farms on Kaua'i in 2002 covering 151,828 acres. The average farm size was 269 acres. Farms between 1 to 9 acres were the most abundant with 352 farms followed by 127 farms between 10 to 49 acres. Crop lands totaled 474 acres with the remaining in livestock and poultry. Crop lands include sugarcane, pineapple, fruits, vegetables, coffee, flowers, seed crops, nursery products, and macadamia nuts. Livestock include cattle and calves, hogs and pigs, and chickens.

5.2.1 Impacts

Long-term adverse impacts on the economy are not expected from the construction of the new seawall. Short term positive impacts are expected from direct and indirect employment and supplies needed to construct the wall.

5.2.2 Mitigation

No mitigation is needed on the economic environment of the project since the project is relatively small and will have a short term positive impact on the economy.



6 Infrastructure, Public Facilities, and Utilities

This section describes the existing infrastructure, public facilities, and utilities in the vicinity of the project site and any adverse impacts that the project will have. Water, wastewater, drainage, solid waste, transportation, electric, telephone, cable, medical, schools, police, and fire will be addressed in this section.

6.1 Water, Wastewater, Drainage, and Solid Waste

Services provided by the County of Kauai include water, wastewater, drainage, and solid waste. Water is managed by the Department of Water. In the Kapa`a area, the main water supply mains are installed along Kūhiō Highway. Construction of the new seawall will not impact the water supply or distribution systems in the area.

Wastewater facilities are handled by the Department of Public Works. Sewer lines have been installed in Kapa`a town. The project will not have an impact on the wastewater facilities.

Nearby drainage consists mainly of surface runoff sheet-flowing into the ocean or into the two nearby canals, Waika`ea and Moikeha, which flow into the ocean. No increase in runoff is expected from the project. Storm water runoff near the project currently sheet-flows over the existing wall into the ocean.

The County maintains an island-wide system of solid waste collection and disposal. Kekaha Landfill is the primary disposal site for solid waste with refuse transfer stations located throughout the island. The nearest transfer station is the Kapa`a station. The new seawall is not expected to have an adverse impact on solid waste facilities. Rocks from the existing seawall will be reused to build the new sheet pile toe.

6.1.1 Impacts and Mitigation

The new sheet pile wall is not expected to have an adverse impact on water, wastewater, drainage, or solid waste facilities. Therefore, no mitigation is planned.

6.2 Transportation

Kūhiō Highway is the main vehicular access to this area and is under the jurisdiction of the State Department of Transportation. The construction of the sheet pile wall is not expected to have an impact on existing roadways since the construction site is located on the coastline. However, bike and pedestrian traffic along the bike/pedestrian path will need to be temporarily routed around the construction site. After construction, full use of the path will be restored. It is estimated that construction will take approximately two months to complete.



6.2.1 Impacts

Short term impact to bikers and pedestrians will occur during construction of the new seawall. Construction equipment will block this section of the path and bikers and pedestrians will have to be routed around the construction area on the mauka side of the site.

6.2.2 Mitigation

A temporary path located mauka of the construction site will be provided to allow continuous movement along the existing path. Once construction is completed, the path will be restored to the existing condition.

6.3 Power and Communications

Electricity is provided by Kaua`i Island Utility Cooperative, and Hawaiian Telephone and Sandwich Isles Communications provide telephone service. Oceanic Time Warner Cable provides cable TV service. The new seawall will not require electricity, telephones or cable service.

6.3.1 Impacts and Mitigation

Since the project will not require electricity, telephone, or cable services, no impacts on these systems are expected and no mitigation is required.

6.4 Medical, Schools, Police, and Fire

Medical facilities in the area include Kaua`i Medical Clinic and Samuel Mahelona Memorial Hospital. Public schools include Kapa`a Elementary, Kapa`a Middle School, and Kapa`a High School. A police substation is located along Niu Street and the nearest fire station is located on Kūhiō Highway near Pouli Road. No effects on these facilities are expected from the project.

6.4.1 Impacts and Mitigation

No impacts on medical, schools, police, and fire are expected. Thus no mitigation is required.



7 Conformance with Plans and Policies

This section will describe the relationship of the project to applicable State and County policies. Only those policies related to the proposed sheet pile seawall will be described.

7.1 Hawai'i State Plan and Functional Plans

The Hawai'i State Plan was developed to serve as a guide for future development of the State of Hawai'i in areas of population growth, economic benefits, enhancement and preservation of the physical environment, facility systems maintenance and development, and socio-cultural advancement. The Plan identifies, in general, the goals, objectives, policies and priorities for the development and growth of the State.

Twelve Functional Plans were also developed to further define the goals and objectives of the Hawai'i State Plan. The twelve functional plans include: 1) Agriculture; 2) Conservation Lands; 3) Employment; 4) Energy; 5) Health; 6) Higher Education; 7) Historic Preservation; 8) Housing; 9) Recreation; 10) Tourism; 11) Transportation; and 12) Water Resources Development.

Functional plans that have a positive or adverse impact from the proposed sheet pile with rock toe are Employment and Historic Preservation.

7.1.1 Employment Functional Plan

The major issues of concern for the Employment Functional Plan are:

- 1) Improve the qualifications of entry-level workers and their transition to employment;
- 2) Develop and deliver education, training and related services to ensure and maintain a quality and competitive workforce;
- 3) Improve labor exchange;
- 4) Improve the quality of life for workers and families; and
- 5) Improve planning of economic development, employment and training activities.

Construction of the project will have a short-term positive impact on employment by providing direct and indirect jobs. After construction is completed, no new jobs will be created.

7.1.2 Historic Preservation Functional Plan

The issues of concern in the Historic Preservation Function Plan are:

- 1) Preservation of historic properties;
- 2) Collection and preservation of historic records, artifacts and oral histories and perpetuation of traditional skills; and



- 3) Public information and education on the ethnic and cultural heritages and history of Hawai'i.

Construction of the existing seawall and the adjacent bike/pedestrian path did not uncover any historic or cultural resources of significance. However, if any inadvertent finds are uncovered during construction, work will cease and the SHPD will be consulted. An archaeologist should monitor the site during excavation activities.

7.2 Kaua'i General Plan

The Kaua'i General Plan is the guiding document for Ordinance No. 753, Bill No. 1957, Chapter 7, and HRS Chapter 46. It provides the framework for land use regulations, the location and character of new development and facilities, and planning for County and State facilities and services.

The island of Kaua'i was divided up into five planning districts: 1) North Shore; 2) Kawaihau; 3) Lihue; 4) Kōloa-Po'ipū-Kalāheo; and 5) West Side. The project site is located in the Kawaihau planning district. One of the major components of the plan was the development of Heritage Resources Map and the Land Use Map for each district. The heritage resources map identifies known historic, scenic, and other unique qualities of the district. The land use map identifies the future land use vision for development in the district.

The heritage map shows several historic buildings in the vicinity of the project site. These historic buildings will not be affected by the construction of the sheet pile with rock toe. The land use map shows "Park" designation immediately along the coastline with "Urban Center" mauka of the "Park" lands. Construction of the sheet pile seawall will not change the land use designations in Kapa`a town.

7.3 Kapa`a-Wailua Development Plan

To further guide how each district should grow, the Development Plans were developed to provide more detailed guidance for development in each of the five districts. These plans are an expression of community values and provide form and substance to the goals and aspirations of those who live, work, and play in an area. The development plan map identifies the project site as "Beach Park" makai of the bike-pedestrian path. Construction of the sheet pile seawall will not affect the land use designation for this area.



8 Significance Criteria

To determine whether a proposed action may significantly affect the environment, it needs to consider every phase of the action, the expected primary and secondary consequences, and the cumulative as well as the short and long-term effect of the action. Therefore, evaluation of the significance criteria determines if there are any significant impacts on the environment. The following criteria are used to determine significance of project activities, if any.

(1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;

The project will not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. However, if inadvertent finds are uncovered during construction, work will cease and the SHPD will be contacted.

(2) Curtails the range of beneficial uses of the environment;

The new sheet pile seawall will preserve the beneficial uses of the environment by preventing the coastline from eroding into the ocean from waves and currents. The project will also allow continued recreational use of the pedestrian and bike path.

(3) Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;

The project will not conflict with the State's long-term environmental policies or goals and guidelines as expressed in chapter 344, HRS. Evaluation of the construction activity described in this EA shows that the project will not have long-term negative impacts. Short-term negative impacts will occur during construction from noise, dust and turbidity in the water. However, these impacts can be mitigated by the use of best management practices such as mufflers on equipment, frequent watering to keep dust down, and control of construction material including rock and sand.

(4) Substantially affects the economic or social welfare of the community or state;

The project will have a short-term positive effect on the economy from jobs and increased revenue during construction. However, after construction the seawall will not directly affect the economy. The project also will not affect the social welfare of the community or the state.

(5) Substantially affects public health;

Construction of the sheet pile with rock toe will protect the bike path that is used for recreation and exercise. The result should be a positive effect on public health.

(6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

The new sheet pile with rock toe will have no impact on population, but will make the public bike path safer.



(7) Involves a substantial degradation of environmental quality;

The sheet pile seawall will not substantially degrade environmental quality. The wall will actually reduce loss of topsoil into the ocean.

(8) Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;

The project is not part of a larger action and will not contribute to cumulative adverse environmental effects on the environment. The wall does not trigger any commitment for larger actions.

(9) Substantially affects a rare, threatened, or endangered species, or its habitat;

Neither the construction nor the wall itself should negatively affect any endangered species or their habitat. The endangered Hawaiian Hoary Bat is known to forage in the area. These mammals forage at dawn and dusk, which is before and after the construction operations. After construction completion, the sheet pile with rock toe will have no effects on the endangered bat.

No lighting is planned for the new sheet pile wall that would affect the flight of the Dark-rump Petrels and Newell's Shearwater birds. Thus no impact on these nocturnally flying birds is expected.

Should a monk seal haul itself out on the beach near the construction site, construction will cease until the Kauai representative of the Department of Land and Natural Resources makes a determination on whether the construction activities are disturbing the monk seal. If so, work will commence after the monk seal has left the area.

There were no threatened, rare or endangered botanical resources seen in the vicinity of the project. Therefore, no negative impacts on plants are expected during or after construction.

(10) Detrimentially affects air or water quality or ambient noise levels;

Short-term impacts on air quality and noise levels will occur during construction. However, when the construction is completed, no long-term effects on air quality and noise level are expected.

Construction of the sheet pile and rock toe may temporarily increase turbidity in nearshore waters. Best management practices will be implemented to minimize the effects of turbidity or other pollutants.

(11) Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

The planned new sheet pile with rock toe and adjoining beach are within the tsunami inundation area and within the coastal flood zone where storm wave action can be a hazard. The beach occurs naturally at this location. The threat from erosion and coastal flooding is no different from that facing the existing seawall. By replacing the existing damaged wall with a sheet pile with rock toe, the potential for damage to the structure and protected bike path is reduced.



(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies;

The sheet pile wall is not within an identified view plane. Residents and visitors to the Pono Kai Resort will continue to have a view of the ocean. Bikers and pedestrians along the adjacent walkway will also continue to have views of the ocean.

(13) Requires substantial energy consumption.

The new sheet pile with rock toe is not dependent on electricity and will not have an impact on energy consumption. Construction equipment will use fuel to work. When construction is completed, no other energy will be needed.

8.1 Anticipated Determination

A Finding of No Significant Impact (FONSI) determination is anticipated for the project based upon the information provided in this EA document. The results of the assessments conducted have determined that there will be no significant negative impact from the installation of the new sheet pile with rock toe.



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9 Permits and Approvals

This section lists the anticipated permits and approvals that will be required to construct the new sheet pile with rock toe. Although the project is along the coastline, the new sheet pile with rock toe will not be within the conservation district; therefore a Conservation District Use Permit will not be required.

9.1 Permits Required

Table 9.1 lists the two County permits that will be required to replace the existing seawall with a sheet pile with rock toe. Other Federal and State permits that may be required are also shown below.

Table 9.1 Permits Required

Permit	Agency Approval
Special Management Area Use Permit	County of Kaua`i Planning Department
Shoreline Setback Variance	County of Kaua`i Planning Department
Beach Nourishment Permit	State Department of Land and Natural Resources, Office of Conservation and Coastal Lands
401 Water Quality Certification	State of Hawaii Department of Health
Coastal Zone Management Federal Consistency	Office of Planning, DBEDT
Department of Army Permit	Corps of Engineers



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Appendix A
Terrestrial and Aquatic Assessment

Terrestrial and Aquatic Assessment For Pono Kai Sea Wall

Prepared for:

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June 2008

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I INTRODUCTION

The proposed project is to rebuild a deteriorating rip-rap sea wall that protects a public walking/bike path. The bike path runs parallel to the shoreline and is bordered by the Pono Kai Condominiums on the landward side and the seawall and beach at Kapa'a, Kauai. Regular wave action causes soil erosion behind the wall's boulders, undermining it. This report discusses a survey of the marine community ecosystem undertaken for an environmental assessment and applicable permit applications in anticipation of reconstructing the sea wall mauka of the existing wall, closer to the bike path.

2 METHODS

The field reconnaissance survey took place on April 24, 2008 between 8 am and 2 pm by an Oceanit biologist and a field technician. A qualitative survey of the nearshore and intertidal marine environment was conducted using face mask and fins of the area fronting the sea wall and documented with an underwater camera. Terrestrial vegetation in and adjacent to the project site was also identified. A water quality probe was deployed during the day of the survey over the reef flat, suspended approximately three feet below the water surface. Water samples were collected at a location with a four foot depth at Transect 4. One water sample was collected from the top three inches of the surface and the other from three feet below the surface (Figure 1).

The marine survey was conducted during a rising tide. This coastline is typically exposed to northeasterly trade winds and associated wind-swell. A calm day was selected for the survey: wave action was minimal, and winds were out of the southeast, 0-5 mph in the morning, building to 10-15 mph in the afternoon. Skies were clear to partly cloudy, and water visibility ranged from 5-10 feet within 24 feet of the shore, increasing to 30 feet beyond this distance.

Marker flags were placed approximately every 75 feet along the face of the seawall, to establish eight transects perpendicular to shore. The northern face of the Waika'ea Canal breakwater was considered a ninth transect. A line formed between the outermost extent of the channel breakwater and another deteriorated sea wall 1/2 –mile north of the project site represented the terminus of the transects. To survey the area, the diver swam alternately in then out along each transect, recording information on an underwater tablet and taking photographs where appropriate. Figure 1 illustrates the area surveyed.

The original reconnaissance plan for this site investigation included additional surveys outside the project area. These areas included the faces of the breakwater in the Waika'ea Canal, as well as an area immediately south of the stream channel. Due to the arrival of a barge in preparation for dredging activities (unrelated to this project), a thorough survey of the breakwater walls in the channel was not possible. Redirected boat traffic (due to the barge in the main channel) also prevented a thorough survey of areas south of the channel.

3 RESULTS & DISCUSSION

The area seaward of the project site may be divided into four habitat types: Breakwater boulders, sand bottom, coral reef flat, and channel. These areas are delineated in Figure 1.

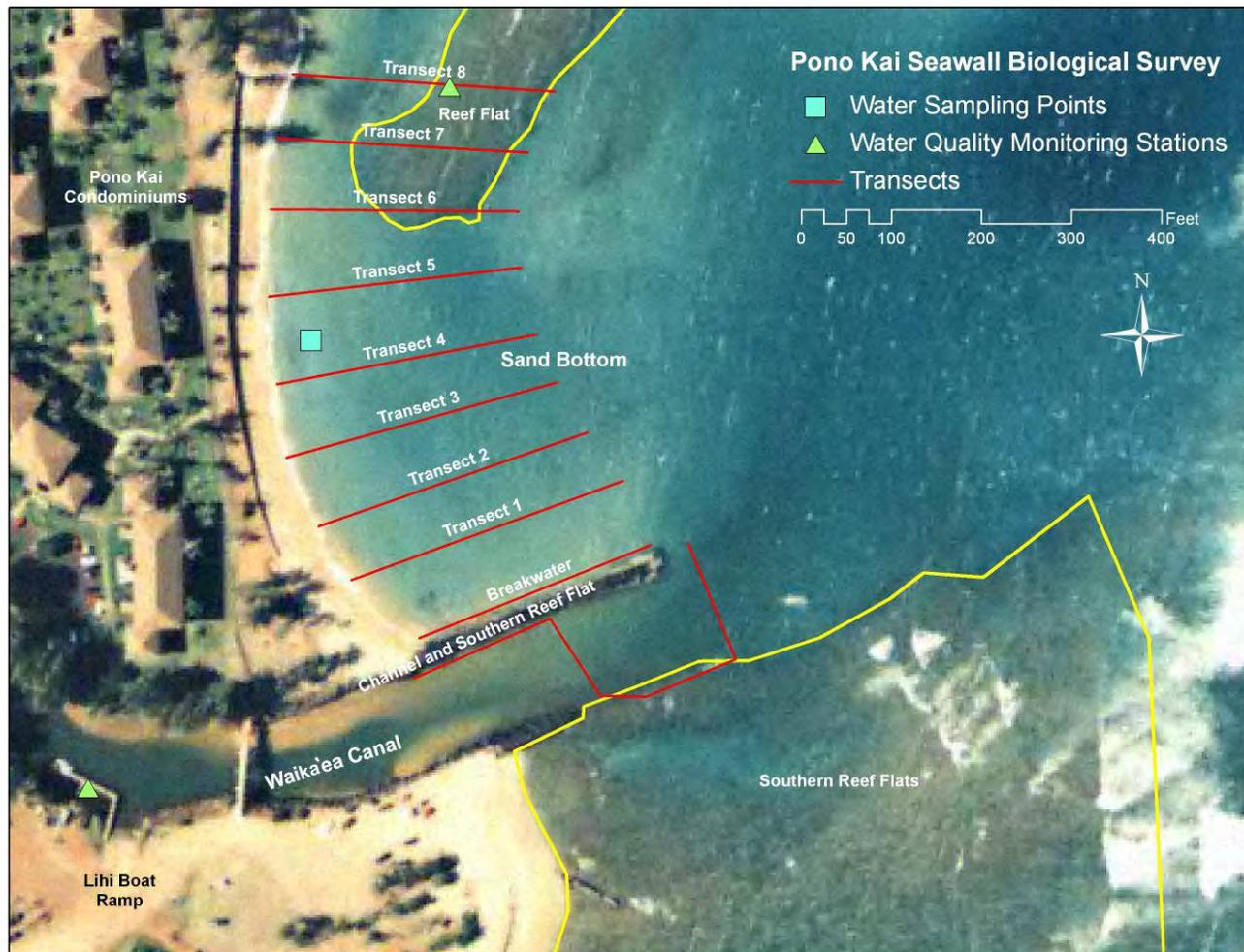


Figure 1. Site map illustrating water sampling locations, water quality monitoring stations and transects followed for the biological assessment. Reef flat areas extending from the north and to the south are noted.

3.1 Breakwater

The breakwater boulders provide substrate for establishment of sessile organisms. The vertical structure and crevices provide habitat and shelter for motile species including invertebrates and fish. Algae observed along the breakwater included *Dictyota sp.*, *Dictyosphaeria sp.*, *Wrangelia sp.*, and *Symploca hynoides*. Crustose coralline algae covered the boulders in the intertidal zone. At least three *Pocillopora damicornis* coral colonies were observed attached to the boulders, but none larger than six inches in diameter. The only fish species observed was *Abudefduf abdominalis*, (aka Sergeant Major, *mamo*), though others undoubtedly sought refuge in the crevices during our transit. *A'ama* crab (*Grapsus tenuicrustatus*) were observed foraging on the breakwater boulders. Sea cucumbers (*Holothuria atra*) were occasionally present at the base of the breakwater where it meets the sand.

One shorebird, a *Heteroscelus incanus* (Wandering tattler), was observed foraging on the breakwater boulders during the survey.

3.2 Transects 1 – 5

Sandy bottom was encountered along transects one through five. No organisms were observed on the sand or in the water column above. Sea cucumbers were observed clustered around a lone boulder approximately 5 yards from shore along transect four. Two patches that appeared slightly shaded on aerial imagery were investigated and determined to be areas where larger pebbles were accumulating.

3.3 Transects 6 – 8

Transects six – eight crossed over a patch reef. The extent of the patch reef is clearly visible in the aerial imagery. Depth ranged from six feet at the periphery to less than one foot (during low tide) at the reef crest. In general, there were very few hard coral colonies: approximately one per two square meters. Large coral heads were absent from the reef. The largest coral head encountered was approximately 18 inches in diameter (*Pocillopora meandrina*). The remainder of the reef consisted of a basalt bench showing signs of wave erosion from the surrounding sand. The assemblage of sand, corals and algae suggest a moderately high wave-energy environment. Algal species include *Pterocladia caerulea*, *Liagora sp.*, *Halimeda sp.*, *Symploca hydroides*, *Chaetomorpha sp.*, *Sargassum* (in shallower parts of the reef), and *Padina sp.* The smaller, more abundant coral species found included *Pocillopora damicornis*. *Palythoa cesa*, a colonial anemone was also occasionally observed. Seven spiny lobsters were observed trapped in a net laid out across the reef flat. Numerous species of reef fish were observed on the transects crossing the reef, though abundance was low. All fish observed were in their juvenile phase and/or less than four inches in length, likely due to the absence of cracks, or other spaces large enough to offer shelter. Common fish species observed include: *Canthigaster jactator* (Hawaiian whitespotted toby), *Ostracion meleagris* (Spotted trunkfish), and *Thallosoma duperryi* (Saddle wrasse).

3.4 Channel and Reef flat to the south

Species diversity and abundance on either side of the breakwater extending makai did not differ significantly. Sand fills the inner reaches of the channel. Occasional Purse Shells colonies (*Isognomon californicum*) were observed on breakwater boulders. The dredged channel bottom closer to the

channel mouth consists of coral rubble with little or no colonization by algae or other organisms. The channel slopes beyond the southern breakwater rise up to a shallow reef flat that displays lower coral and algal diversity than the reef-flat fronting the project site. The crustose coralline alga *Lithophyllum kotschyannum* was the most common on the reef flat to the south.

3.5 Terrestrial Vegetation

Vegetation on the seaward side of the bike path consists of landscaped grass with an occasional *Ipomea sp.* (beach morning glory). There is a small grove of five *Casuarina equisetifolia* (Ironwood) trees at the southernmost point of the project area. At the base of the southernmost tree closest to the beach is a patch of the native 'Aki 'Aki grass (*Sporobolus virginicus*) and the introduced shrub *Tournefortia argentea*. These species are common coastal vegetation in the Main Hawaiian Islands. The Ironwood trees are a common introduced species.

3.6 Water Quality

Temperature of the waters above the reef averaged 25.2 degrees Celsius with a mean pH of 8.6. Salinity was 36.2 ppt. Laboratory analysis of the water samples collected showed total suspended solids in the surface water at 3.2 mg/L and 6.1 mg/L at the three foot depth.

4 CONCLUSIONS

A majority of the area seaward of the project site is sand bottom. The reef flat that extends from the north into the area fronting the project site comes within 10-15 yards of the beach. The reef flat makes up approximately 15% of the area surveyed, with depths on the reef ranging from six feet to less than one foot depending on tide and wave conditions. Live coral cover on the patch reef is less than 2%, the solid benthic substrate covered primarily by macroalgae. A majority of the reef supports various common species of macro-algae, with low densities of coral and fish also commonly found through the main Hawaiian Islands. The nearby breakwater boulders have a much lower diversity of algal species and one coral species.

Aside from the single Wandering Tattler, larger vertebrates were absent in the study area. While no threatened or endangered species were observed during this study, the endangered Hawaiian green sea turtle is known to forage on reef flats similar to the reef flat found off the project site. Furthermore, the possibility exists that a turtle or the endangered Hawaiian Monk Seal could haul out on the beach at or near the project site.

None of the marine and terrestrial species observed during the survey were considered threatened or endangered. Therefore construction of the new sea wall will not have an adverse impact on land and sea species.



Figure 2. The red alga, *Wrangelia* shown growing on a breakwater boulder.



Figure 3. The green alga *Dictyosphaeria cavernosa* observed growing on breakwater boulders.



Figure 4. *Abudefduf abdominalis* (Sergeant major) were frequently observed in breakwater boulder crevices and on the reef flat.



Figure 5. *Pocillopora damicornis* coral colony (three inch diameter) observed on breakwater boulder and on the reef flat.



Figure 6. *Holothuria atra* (black sea cucumber) observed foraging at the base of the breakwater where it meets the sand bottom.



Figure 7. Wandering Tattler (*Heteroscelus incanus*) observed foraging on exposed breakwater boulders



Figure 8. Example of sand bottom across much of the study area, with hand for scale.



Figure 9. Sea Cucumbers feeding along boulder at transect 4



Figure 10. The red alga *Liagora* established on the reef flat.



Figure 11. The green alga *Halimeda* species on an exposed ridge of the reef flat.



Figure 12. Typical view of the reef flat along transects 6-8.



Figure 13. *Palythoa caesia*, a common colonial anemone, observed on the reef flat.



Figure 14. A domino fish (*Dascyllus trimaculatus*) in the largest coral head encountered (*Pocillopora meandrina*).



Figure 15. Typical view of the reef flat viewed from above.



Figure 16. Auger shell encountered along the transect.



Figure 17. Purse Shells (*Isognomon californicum*) found on the break water boulders facing the channel.



Figure 18. The most common crustose coralline alga found to the south of the channel (*Lithophyllum kotschy anum*), outside the project area.



Figure 19. View of the area south of the channel, beyond the project area.



Figure 20. Aki 'Aki grass (*Sporobolus virginicus*, common, native) at the southernmost end of the project site, at the foot of the ironwood trees (common, introduced).



Figure 21. The introduced shrub, *Tournefortia argentea*, at the foot of an ironwood tree.



Figure 22. Panoramic view of the study area facing north. The seawall to be repaired lies in the distance left of center, lined with orange construction fencing.

Appendix B

Comments received during consultation process



CZM will provide response to Draft EA

December 11, 2008

Mr. John Nakagawa
Coastal Zone Management
Department of Business Development & Tourism
Office of Planning
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Nakamura:

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Pedestrian/Bike Path, Kapaa, Kauai, TMK: (4) 4-5-007:001
Consultation for Environmental Assessment (EA)

The County of Kauai, Department of Public Works, is planning on constructing a revetment landward of an existing seawall that was constructed in response to damage caused by hurricane Iniki in 1992. The 15-year-old seawall is currently being undermined by wave action and sinkholes are beginning to form landward of the existing seawall. Photos of the site are attached as Appendix A.

To prevent further erosion, a new revetment is planned landward of the existing seawall, which is approximately where the certified shoreline has been preliminarily identified, and up to the pedestrian/bike path on lands owned by the County of Kauai. A filter fabric will be placed under the rock revetment to prevent future undermining from wave action. The rock revetment will not be grouted. Armor stone will be placed on the slope to attenuate waves and protect the embankment. The slope of the revetment is expected to be 1V:1-1/2H or 1V:2H. The length of the revetment is approximately 600 feet. Alternative designs for the revetment are currently being prepared. Sand recently dredged from Waika'e Canal may be used for beach nourishment after the revetment has been constructed.

The Environmental Assessment will be prepared using the Final Environmental Assessment (FEA) that was prepared for the Pedestrian/Bike Path in August 2003. The title of the FEA is "*Kapaa-Kealia Bike & Pedestrian Path*" and can be found at the Office of Environmental Quality Control (OEQC) Online Library website at: <http://hawaii.gov/health/environmental/oeqc/index.html/>.

We would appreciate any comments or concerns you may have regarding the EA for this project and identify any permits you may require should this project be approved. Please submit your comments to us no later than January 25, 2009.

Sincerely,

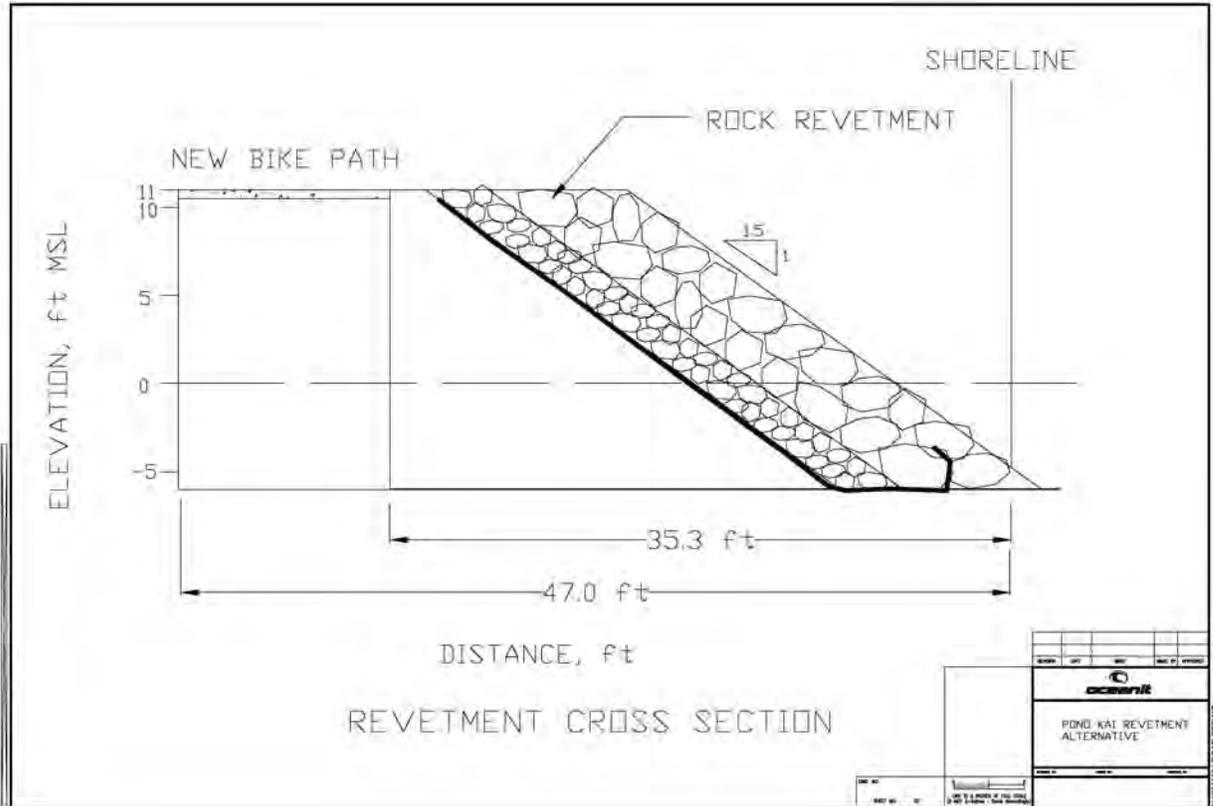

Joanne Hiramatsu
Senior Planner/Project Manager



Photo 1. Rock seawall fronting Pono Kai Resort



Photo 2. Sinkholes landward of the wall.



Possible Design Alternative for Rock Revetment



December 11, 2008

Ms. Nancy McMahan
State Historic Preservation Division - Kauai Office
5532 Tapa St.
Koloa, HI 96756

Dear Ms. McMahan:

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Pedestrian/Bike Path, Kapaa, Kauai, TMK: (4) 4-5-007:001
Consultation for Environmental Assessment (EA)

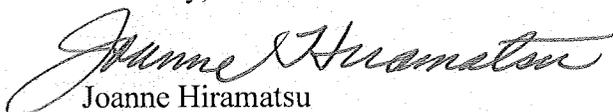
The County of Kauai, Department of Public Works, is planning on constructing a revetment landward of an existing seawall that was constructed in response to damage caused by hurricane Iniki in 1992. The 15-year-old seawall is currently being undermined by wave action and sinkholes are beginning to form landward of the existing seawall. Photos of the site are attached as Appendix A.

To prevent further erosion, a new revetment is planned landward of the existing seawall, which is approximately where the certified shoreline has been preliminarily identified, and up to the pedestrian/bike path on lands owned by the County of Kauai. A filter fabric will be placed under the rock revetment to prevent future undermining from wave action. The rock revetment will not be grouted. Armor stone will be placed on the slope to attenuate waves and protect the embankment. The slope of the revetment is expected to be 1V:1-1/2H or 1V:2H. The length of the revetment is approximately 600 feet. Alternative designs for the revetment are currently being prepared. Sand recently dredged from Waika'ea Canal may be used for beach nourishment after the revetment has been constructed.

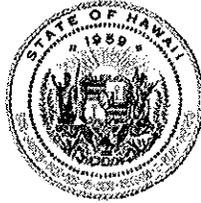
The Environmental Assessment will be prepared using the Final Environmental Assessment (FEA) that was prepared for the Pedestrian/Bike Path in August 2003. The title of the FEA is "*Kapaa-Kealia Bike & Pedestrian Path*" and can be found at the Office of Environmental Quality Control (OEQC) Online Library website at: <http://hawaii.gov/health/environmental/oeqc/index.html/>.

We would appreciate any comments or concerns you may have regarding the EA for this project and identify any permits you may require should this project be approved. Please submit your comments to us no later than January 25, 2009.

Sincerely,


Joanne Hiramatsu
Senior Planner/Project Manager

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Laura H. Thielen
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

December 24, 2008

Ms. Joanne Hiramatsu
Oceanit
828 Fort Street Mall, Suite 600
Honolulu, Hawai'i 96813

LOG NO: 2008.5778
DOC NO: 0812WT91
Archaeology

Dear Ms. Hiramatsu:

**SUBJECT: Chapter 6E-8 Historic Preservation Review--
Consultation for Environmental Assessment--
Replacement of a Revetment Fronting Pono Kai Resort and the County of Kaua'i
Pedestrian/Bike Path, Kapa'a, Kaua'i, Island of Kaua'i, Hawai'i
TMK (4) 24-5-007: 001**

Thank you for providing the opportunity to consult on this project, which we received December 15, 2008. This project will be conducted upon the preparation of a Draft Environmental Assessment (DEA) which will depend heavily on the Final Environmental Assessment (FEA) prepared for the Pedestrian/Bike Path in August 2003.

The proposed project is to replace a 600 foot revetment constructed along the beach in response to damage by Hurricane Iniki. In the past 15 years the revetment has been undermined by wave action and sinkholes are beginning to form landward of the revetment.

According to an Archaeological Inventory Survey conducted for the Bike Path FEA and reviewed by this office (Log 31775/Doc 0302NM20), several sites were identified and a determination of significance offered. We recommended that several procedures be performed in order to mitigate adverse effects on the historic properties recorded during that project. They included drafting an MOA (Memorandum of Agreement), producing a Preservation Plan (PA), an Archaeological Monitoring Plan (AMP), and a Burial Treatment Plan.

As this revetment falls within the Area of Potential Effect (APE) for the Bike Path, the possibility of previously identified historic sites may extend into, and be impacted by this project exists. Examples of such sites include buried cultural layers, human burials, plantation era infrastructure, including the Kapa'a Railroad foundation, and other historic site.

Therefore, we are requiring that archaeological monitoring be conducted by a qualified archaeologist during all construction activities and ground disturbance.

In the event that historic resources, including human skeletal remains, are identified during the activities, all work needs to cease in the immediate vicinity of the find, the find needs to be protected from additional disturbance, and the State Historic Preservation Division, notified immediately at (808) 692-8015.

Ms. Joanne Hiramatsu
Page 2

Aloha,

A handwritten signature in cursive script that reads "Nancy A. McMahon". The signature is written in black ink and is positioned above the typed name.

Nancy A. McMahon (Deputy SHPO)
State Historic Preservation Officer



December 11, 2008

Mr. George Young, P.E.
Department of the Army
U.S. Army Engineer District, Honolulu
Building 252, CEPOH-EC-R
Fort Shafter, HI 96858-5440

Dear Mr. Young:

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Pedestrian/Bike Path, Kapaa, Kauai
Consultation for Environmental Assessment (EA)

The County of Kauai, Department of Public Works, is planning on constructing a revetment landward of an existing seawall that was constructed in response to damage caused by hurricane Iniki in 1992. The 15-year-old seawall is currently being undermined by wave action and sinkholes are beginning to form landward of the existing seawall. Photos of the site are attached as Appendix A.

To prevent further erosion, a new revetment is planned landward of the existing seawall, which is approximately where the certified shoreline has been preliminarily identified, and up to the pedestrian/bike path on lands owned by the County of Kauai. A filter fabric will be placed under the rock revetment to prevent future undermining from wave action. The rock revetment will not be grouted. Armor stone will be placed on the slope to attenuate waves and protect the embankment. The slope of the revetment is expected to be 1V:1-1/2H or 1V:2H. The length of the revetment is approximately 600 feet. Alternative designs for the revetment are currently being prepared. Sand recently dredged from Waika`ea Canal may be used for beach nourishment after the revetment has been constructed.

The Environmental Assessment will be prepared using the Final Environmental Assessment (FEA) that was prepared for the Pedestrian/Bike Path in August 2003. The title of the FEA is "*Kapaa-Kealia Bike & Pedestrian Path*" and can be found at the Office of Environmental Quality Control (OEQC) Online Library website at: <http://hawaii.gov/health/environmental/oeqc/index.html/>.

We would appreciate any comments or concerns you may have regarding the EA for this project and identify any permits you may require should this project be approved. Please submit your comments to us no later than January 25, 2009.

Sincerely,

Joanne Hiramatsu
Senior Planner/Project Manager



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF:

January 23, 2009

Regulatory Branch
Engineering and Construction Division

Corps File No.: POH-2007-261

Ms. Joanne Hiramatsu
Senior Planner/Project Manager
Oceanit
828 Fort Street Mall, Suite 600
Honolulu, Hawaii 96813

Dear Ms. Hiramatsu:

This letter responds to your request for our comments on the preparation of the Draft Environmental Assessment (DEA) for the *New Revetment Fronting Pono Kai Resort Pedestrian/Bike Path* project located in Kapaa, Hawaii. According to your letter, the DEA will be prepared using the August 2003 Final EA (FEA) entitled *Kapaa-Kealia Bike & Pedestrian Path, Basis of Design Project*, which was jointly prepared by the U.S. Department of Transportation, Federal Highway Administration; State of Hawaii, Department of Transportation, Highways Division; and the County of Kauai, Department of Public Works (County). According to your letter, the County plans to construct a revetment landward of the existing seawall, which was constructed following Hurricane Iniki in 1992. The structural integrity of the now 15-year-old seawall is being undermined by wave action and developing sinkholes.

Based on information furnished to our office, we understand the new revetment would be approximately 600 linear feet and maintain a 1:1.5 or 1:2 slope, although alternative designs are currently being prepared. In addition, your letter indicates the County may perform beach nourishment following the construction of the revetment utilizing dredged materials (sand) from nearby Waika`ea Canal.

The DEA should include site-specific information pertaining to the occurrence of water resources and features within the project area, such as USGS designated blue-line streams and wetlands. For non-tidal waters occurring within the project area, the ordinary high water mark must be determined as described at 33 C.F.R. 328.3(e). The boundaries of wetlands that may exist on-site or adjacent to the project site should be delineated based on the procedures set forth in the Corps' 1987 *Wetlands Delineation Manual*. Similarly, for coastal areas and tidally influenced waters within the project area, the environmental document should clearly demarcate or otherwise identify the mean high water line and high tide line [as described at 33 C.F.R. 328.3(d)].

In addition, we suggest the DEA include the following information, as applicable:

- The source and volume of dredged or fill material;
- The method and timing for any discharge (placement) of dredged or fill material;

- The siting of the proposed revetment and any associated construction features, including the demolition of the existing seawall. Specifically, the document should illustrate and describe the footprint of disturbance (temporary and permanent), expressed in acres, relative to the boundaries of the Corps' jurisdiction in tidal and non-tidal waters of the U.S.;
- The location of disposal sites for excavated material or demolition materials not reused in the construction of the new revetment. If such sites are other than existing landfill operations, the DEA should also identify impacts associated with the disposal of such materials at those sites.
- An assessment of the functions, values and services of the waters of the U.S.;
- An estimate of the total construction period; and
- A detailed description of the short- and long-term maintenance activities associated with the revetment.

At this time, we are unable to determine whether the proposed construction activities would result in the discharge (placement) of dredged and/or fill material into waters of the U.S. pursuant to our authorities under Section 404 of the Clean Water Act (33 U.S.C. 1344) or would require structures or work in navigable waters of the U.S. as regulated under Section 10 of the Rivers and Harbor Act of 1899. Your DEA should consider that in general, Department of the Army (DA) authorization is required for:

a) Structures or work in or affecting navigable waters of the U.S. pursuant to Section 10 of the Rivers and Harbors Act (RHA) of 1899. Examples include, but are not limited to: 1) constructing a pier, revetment, bulkhead, jetty, aid to navigation, artificial reef or island, and any structures to be placed under or over a navigable water; 2) dredging, dredge disposal, filling and excavation;

b) The discharge of dredged or fill material into, including any redeposit of dredged material within, jurisdictional waters of the U.S. and adjacent wetlands pursuant to Section 404 of the Clean Water Act (CWA) of 1972. Examples include, but are not limited to: 1) creating fills for residential or commercial development, placing bank protection, temporary or permanent stockpiling of excavated material, building road crossings and driveways, backfilling for utility line crossings and constructing outfall structures, dams, levees, groins, weirs, or other structures; 2) mechanized land clearing, grading which involves filling low areas or land leveling, ditching, channelizing and other excavation activities that would have the effect of destroying or degrading waters of the U.S.; 3) allowing runoff or overflow from a contained land or water disposal area to re-enter a water of the U.S.; 4) placing pilings when such placement has or would have the effect of a discharge of fill material; and

c) Any combination of the above.

We appreciate the opportunity to provide input into the preparation of your DEA. Should you have questions, you may contact Ms. Susan A. Meyer of my Regulatory staff at (808) 438-2137 or by email at susan.a.meyer@usace.army.mil. Please be advised you can provide comments on your experience with the Honolulu District Regulatory Branch by

accessing our web-based customer survey form at <http://www.poh.usace.army.mil/EC-R/forms/ecr-CustomerSurvey.pdf>. Thank you for your cooperation with our regulatory program. Please reference Corps file number POH-2007-261 in any future correspondence with our office regarding this project.

Sincerely,

A handwritten signature in black ink, appearing to read "George P. Young". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

George P. Young, P.E.
Chief, Regulatory Branch



December 11, 2008

Mr. Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Lemmo

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Pedestrian/Bike Path, Kapaa, Kauai, TMK: (4) 4-5-007:001
Consultation for Environmental Assessment (EA)

The County of Kauai, Department of Public Works, is planning on constructing a revetment landward of an existing seawall that was constructed in response to damage caused by hurricane Iniki in 1992. The 15-year-old seawall is currently being undermined by wave action and sinkholes are beginning to form landward of the existing seawall. Photos of the site are attached as Appendix A.

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We would appreciate any comments or concerns you may have regarding the EA for this project and identify any permits you may require should this project be approved. Please submit your comments to us no later than January 25, 2009.

Sincerely,


Joanne Hiramatsu
Senior Planner/Project Manager

LINDA LINGLE
GOVERNOR OF HAWAII



LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAIHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

December 18, 2008

Corr: KA-09-113

Joanne Hiramatsu
Project Manager, Oceanit
Oceanit Center
828 Ft. Street Mall Suite 600
Honolulu Hi 96813

Dear Mrs. Hiramatsu:

SUBJECT: Pre-Consultation for Draft Environmental Assessment. Revetment Fronting Pono Kai Resort, Kapaa, Kauai (TMK: (4) 4-5-07:001).

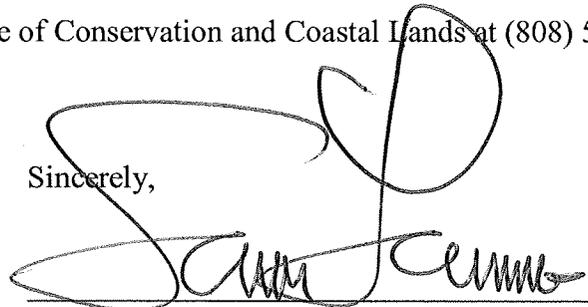
The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) is in receipt of your December 11, 2008 letter requesting consultation on the subject draft environmental assessment (DEA) for a new sloping rock revetment along the shoreline fronting the Pono Kai Resort in Kapaa, Kauai. Based on existing project information and previous personal communication with Oceanit and Kauai County staff the OCCL has the following comments regarding the proposed activities.

1. It is our understanding the County of Kauai is in the process of obtaining a certified shoreline from the DLNR. This is critical in order to accurately determine the jurisdictional boundary between the DLNR and County of Kauai for permitting and design purposes. Based on current information portions of the shoreline survey indicate the shoreline is mauka of the existing seawall.
2. We understand the County of Kauai will be seeking a Shoreline Setback Variance (SSV) to construct a new replacement structure that will be situated entirely landward of the certified shoreline.
3. Since the proposed activities will be located outside of the state Conservation District (defined by the certified shoreline) there is no trigger for any land use permits from the OCCL at this time.
4. The OCCL suggests considering sand restoration as a measure to mitigate potential negative impacts of the proposed structure on the existing beach resource. Sand placed seaward of the revetment may help maintain a sandy beach fronting the structure and may

- also lessen the impact the structure may pose to sediment transport characteristics by providing a “soft” buffer from wave action on the structure.
5. The DEA should address alternative strategies to the proposed action including,
 - a. Relocating the threatened structures landward (retreat).
 - b. Beach restoration (with and without structures).
 - c. Various shore protection designs (revetment vs. seawall vs. breakwater, etc..).
 - d. The justification section discussion might center on the rational that alternative routes for the existing pathway are far more costly and less viable than retaining the existing route along the coast as was discussed in our past meetings.
 6. The DEA should also address potential sand sources for ongoing beach restoration. This may include offshore marine sources, terrestrial and the periodic Waika’ea Canal dredging source. If Waika’ea canal sand is identified as potential ongoing sand source for beach replenishment, we suggest you contact the Division of Boating and Ocean Recreation (DOBOR) of the DLNR to ascertain future dredging schedules and estimated volumes.

Please contact Dolan Eversole of the Office of Conservation and Coastal Lands at (808) 587-0377 if you have any questions.

Sincerely,



Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

cc: Chairperson’s Office
Kauai Board Member
Kauai Land Agent
Kauai County Planning Department (Ian Costa)
Kauai County Council
Kauai DPW



December 11, 2008

State of Hawaii Department of Health
Environmental Management Division
Clean Water Branch
P.O. Box 3378
Honolulu, HI 96801-3378

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Pedestrian/Bike Path, Kapaa, Kauai, TMK: (4) 4-5-007:001
Consultation for Environmental Assessment (EA)

The County of Kauai, Department of Public Works, is planning on constructing a revetment landward of an existing seawall that was constructed in response to damage caused by hurricane Iniki in 1992. The 15-year-old seawall is currently being undermined by wave action and sinkholes are beginning to form landward of the existing seawall. Photos of the site are attached as Appendix A.

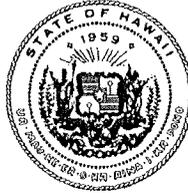
To prevent further erosion, a new revetment is planned landward of the existing seawall, which is approximately where the certified shoreline has been preliminarily identified, and up to the pedestrian/bike path on lands owned by the County of Kauai. A filter fabric will be placed under the rock revetment to prevent future undermining from wave action. The rock revetment will not be grouted. Armor stone will be placed on the slope to attenuate waves and protect the embankment. The slope of the revetment is expected to be 1V:1-1/2H or 1V:2H. The length of the revetment is approximately 600 feet. Alternative designs for the revetment are currently being prepared. Sand recently dredged from Waika`ea Canal may be used for beach nourishment after the revetment has been constructed.

The Environmental Assessment will be prepared using the Final Environmental Assessment (FEA) that was prepared for the Pedestrian/Bike Path in August 2003. The title of the FEA is "*Kapaa-Kealia Bike & Pedestrian Path*" and can be found at the Office of Environmental Quality Control (OEQC) Online Library website at: <http://hawaii.gov/health/environmental/oeqc/index.html/>.

We would appreciate any comments or concerns you may have regarding the EA for this project and identify any permits you may require should this project be approved. Please submit your comments to us no later than January 25, 2009.

Sincerely,

Joanne Hiramatsu
Senior Planner/Project Manager



STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD / CWB

02092PJF.09

February 24, 2009

Ms. Joanne Hiramatsu
Senior Planner/Project Manager
Oceanit
828 Fort Street Mall, Suite 600
Honolulu, Hawaii 96813

Dear Ms. Hiramatsu:

**Subject: Environmental Assessment (EA) for
New Revetment Fronting Pono Kai Resort and
the County of Kauai Pedestrian/Bike Path
Kapaa, Island of Kauai, Hawaii
TMK: (4) 4-5-007:001**

The Department of Health (DOH), Clean Water Branch (CWB), has reviewed the subject plan and offers these comments on your project. Please note that our review is based solely on the information provided in the subject plan and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at

<http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf>.

- I. Any project and its potential impacts to State waters must meet the following criteria:
 - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
 - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
 - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

- a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.
- b. Hydrotesting water.
- c. Construction dewatering effluent.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html>.

3. For types of wastewater not listed in Item No. 2 above or wastewater discharging into Class 1 or Class AA waters, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html>.

4. The CWB acknowledges that consultation with the Department of Land and Natural Resources, State Historic Preservation Division (SHPD) has been initiated (Section 4.8). Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

5. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

6. The EA should specify if any impacted State waters are listed in the Clean Water Act, Section 303(d) list of impaired water bodies in Chapter IV of the *2006 State of Hawaii Water Quality Monitoring and Assessment Report*.

Any NPDES permit(s) for discharges into these water bodies will incorporate the requirement for the Permittee to develop and implement a facility/project-specific Waste Load Allocation (WLA) implementation and monitoring plan when a Total Maximum Daily Load (TMDL) which specifies WLAs applicable to the Permittee's project is approved by the U.S. Environmental Protection Agency. The Permittee shall incorporate and implement the facility/project-specific WLA implementation and monitoring plan as part of the project's Storm Water Pollution Control Plan or Site-Specific Best Management Practices Plan, as appropriate. The facility/project-specific WLA implementation and monitoring plan shall include Data Quality Objectives (DQO) and Quality Assurance and Quality Control methods. The purpose and goal of DQO process can be found at <http://www.hanford.gov/dqo>. Information on the DOH WLA Implementation and TMDLs are available on the DOH Environmental Planning Office website at <http://hawaii.gov/health/environmental/env-planning/wqm/wqm.html> (see *TMDL Technical Reports and Implementation Plans for approved TMDLs are available here for download in pdf format*).

If you have any questions, please visit our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>, or contact the Engineering Section, CWB, at 586-4309.

Sincerely,


ALEC WONG, P.E., CHIEF
Clean Water Branch

JF:np



December 11, 2008

Mr. Ian Costa
County of Kauai
Planning Department
4444 Rice Street, Suite A473
Lihue, Kauai 96766

Dear Mr. Costa:

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Pedestrian/Bike Path, Kapaa, Kauai, TMK: (4) 4-5-007:001
Consultation for Environmental Assessment (EA)

The County of Kauai, Department of Public Works, is planning on constructing a revetment landward of an existing seawall that was constructed in response to damage caused by hurricane Iniki in 1992. The 15-year-old seawall is currently being undermined by wave action and sinkholes are beginning to form landward of the existing seawall. Photos of the site are attached as Appendix A.

To prevent further erosion, a new revetment is planned landward of the existing seawall, which is approximately where the certified shoreline has been preliminarily identified, and up to the pedestrian/bike path on lands owned by the County of Kauai. A filter fabric will be placed under the rock revetment to prevent future undermining from wave action. The rock revetment will not be grouted. Armor stone will be placed on the slope to attenuate waves and protect the embankment. The slope of the revetment is expected to be 1V:1-1/2H or 1V:2H. The length of the revetment is approximately 600 feet. Alternative designs for the revetment are currently being prepared. Sand recently dredged from Waika`ea Canal may be used for beach nourishment after the revetment has been constructed.

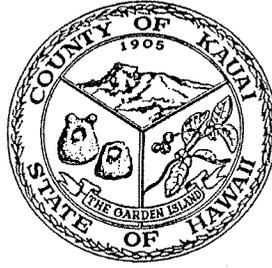
The Environmental Assessment will be prepared using the Final Environmental Assessment (FEA) that was prepared for the Pedestrian/Bike Path in August 2003. The title of the FEA is "*Kapaa-Kealia Bike & Pedestrian Path*" and can be found at the Office of Environmental Quality Control (OEQC) Online Library website at: <http://hawaii.gov/health/environmental/oeqc/index.html/>.

We would appreciate any comments or concerns you may have regarding the EA for this project and identify any permits you may require should this project be approved. Please submit your comments to us no later than January 25, 2009.

Sincerely,

Joanne Hiramatsu
Senior Planner/Project Manager

BERNARD P. CARVALHO, JR.
MAYOR



IAN K. COSTA
DIRECTOR OF PLANNING

GARY K. HEU
ADMINISTRATIVE ASSISTANT

IMAICALANI P. AIU
DEPUTY DIRECTOR OF PLANNING

**COUNTY OF KAUA'I
PLANNING DEPARTMENT**

4444 RICE STREET
KAPULE BUILDING, SUITE A473
LIHU'E, KAUA'I, HAWAII 96766-1326

TEL (808) 241-6677 FAX (808) 241-6699

January 23, 2009

Joanne Hiramatsu
Oceanit
828 Fort Street Mall
Suite 600
Honolulu, HI 96813

Subject: New Revetment Fronting Pono Kai Resort and the County of Kauai
Tax Map Key (4) 4-5-007:001, Kapa'a, Kaua'i
County of Kauai, Department of Public Works, Applicant

This is to acknowledge receipt of your letter dated December 11, 2008 regarding the identification of permits that would be required for construction of a new revetment on the above referenced parcel. Based on the information provided, we find that the proposed action would require a Shoreline Setback Determination and a Special Management Area Permit pursuant to H.R.S. 205(A) and the County of Kauai Comprehensive Zoning Ordinance, Special Management Area Rules and Regulations.

Please call Lisa Ellen Smith to schedule a pre-application meeting to discuss the submittal of the required application and subsequent process for the public hearing.


IAN K. COSTA
Planning Director

Appendix C
Comment Letters and Responses

LINDA LINGLE
GOVERNOR OF HAWAII



LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 6, 2010

Corr: KA-10-176

Mr. Douglas Haigh
County of Kauai
Department of Public Works
4444 Rice St. Suite 255
Lihue, HI 96766

APR - 7 2010

Dear Mr. Haigh:

SUBJECT: Comments on Draft Environmental Assessment. Seawall Fronting Pono Kai Resort, Kapaa, Kauai (TMK: (4) 4-5-07:001).

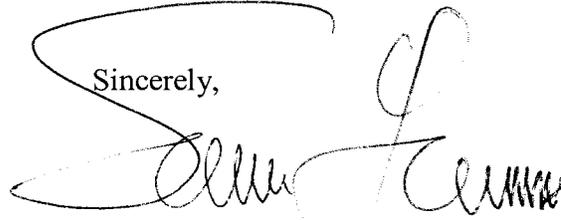
The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) is in receipt of your February 26, 2010 letter requesting comments on the subject draft environmental assessment (DEA) for a new sheet pile seawall with a rock toe along the shoreline fronting the Pono Kai Resort in Kapaa, Kauai. Based on existing project information and previous personal communication with Oceanit and Kauai County staff the OCCL has the following comments regarding the proposed activities.

1. The OCCL understands the County of Kauai is seeking a Shoreline Setback Variance (SSV) to construct a new replacement shoreline structure that will be situated entirely landward of the certified shoreline.
2. The proposed beach restoration sand source is from an completed channel and harbor maintenance dredging project. This sediment has been previously reviewed by OCCL staff and appeared to be acceptable quality for beach restoration. Additional permits are not required by the OCCL for the placement of the material as beach fill however placement of the proposed sediment is subject to final review and approval from the OCCL.
3. Similarly, the excavated beach sand does not require additional authorization for placement back on the beach since it is essentially replacing the material where it originated. The DEA should describe the anticipated volumes of both of the sand sources in more detail.

4. The placement of the beach fill may trigger other regulatory permits such as the State of Hawaii, Department of Health and the Army Corps of Engineers among others. Please revise Table 9.1 *Permits* required accordingly.
5. The OCCL supports the proposed sand restoration as a measure to mitigate potential negative impacts of the proposed structure on the existing beach resource. Sand placed seaward of the revetment may help maintain a sandy beach fronting the structure and may also lessen the impact the structure may pose to sediment transport characteristics by providing a “soft” buffer from wave action on the structure.
6. The DEA should address alternative strategies to the proposed action in more detail including,
 - a. The no action alternative should describe the time frames for the anticipated collapse and loss of the pathway and ultimately the threat to the Pono Kai Resort.
 - b. Relocating the threatened structures landward (retreat) is not discussed as an alternative. The justification section discussion might center on the rationale that alternative routes for the existing pathway are far more costly and less viable than retaining the existing route along the coast as was discussed in our past meetings.
 - c. Beach restoration (with and without structures).
 - d. The alternatives section mentions several alternative designs were eliminated due to the need to dewater. Explain why this is a significant factor to eliminate the option.
 - e. Conceptual illustrations of each of the alternative designs might be helpful for the layperson.
7. Section 4.2.2/4.3.1 Mitigation and other *Impacts* sections should provide more detail. All shoreline structures that interact with the ocean have *some* impact on the environment, in fact that is the intent to affect the erosion occurring. Please describe the actual (direct placement loss of beach space) and potential impacts (increased beach loss, altered sediment transport, wave reflection, etc...) of the proposed actions. Mitigation for these is already proposed through the beach restoration although the long-term beach restoration could be described in more detail (see comment 9 below).
8. 6.2.1 Transportation Impacts. Describe the length of construction and construction schedule in the context of interference with public access and transportation.
9. The DEA should also address potential sand sources for ongoing beach restoration. This may include offshore marine sources, terrestrial and the periodic Waika’ea Canal dredging source. If Waika’ea canal sand is identified as potential ongoing sand source for beach replenishment, we suggest you contact the Division of Boating and Ocean Recreation (DOBOR) of the DLNR to ascertain future dredging schedules and estimated volumes.

Please contact Dolan Eversole of the Office of Conservation and Coastal Lands at (808) 587-0377 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Sam Lemmo". The signature is fluid and cursive, with a large initial "S" and "L".

Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

Attachment 1.

cc: Chairperson's Office
Kauai Board Member
Kauai Land Agent
Kauai County Planning Department (Ian Costa)
Kauai County Council
Office of Environmental Quality Control 235 South Beretania St. Suite 702 Honolulu
Hi 96813

BERNARD P. CARVALHO, JR.
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-4992

GARY K. HEU
ADMINISTRATIVE ASSISTANT

EDMOND P.K. RENAUD
DEPUTY COUNTY ENGINEER
TELEPHONE 241-4992

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUA'I
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 275
LIHU'E, KAUA'I, HAWAII 96766-1340

April 14, 2010

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

Subject: Draft Environmental Assessment
Pono Kai Shore Protection, Kapaa, Kauai
TMK: (4) 4-5-007: 001, 009

Dear Mr. Lemmo:

Thank you for your comments on the Draft Environmental Assessment (EA). We appreciate your review of the document.

1. We concur that the shoreline structure will be placed landward of the certified shoreline.
2. We concur that the sand source is from the dredged material from the Waika`ea Canal. We will seek your final review and approval to use this material for beach nourishment.
3. We concur that the excavated material will be placed back on the beach and will include anticipated volumes of the sand sources.
4. We will include the US Army Corps of Engineers in Table 9.1, Permits as one of the agencies that might require a permit.
5. We appreciate your support of sand restoration to mitigate potential negative impacts.
6. The following are responses to Item 6 of your letter:
 - a. The existing seawall is already collapsing, especially on the north end where the waves are scouring behind the wall (see attached photo). Based on estimates of shoreline erosion conducted by the University of Hawaii, the

erosion rate in the vicinity of the existing seawall is about 1.5 feet per year (see attached map). The narrowest section, from the front face of the existing wall to the bike path, is approximately 21 feet. Therefore at an erosion rate of 1.5 feet, it would take approximately 14 years to reach the bike path. The nearest building on the Pono Kai property to the seaward edge of the bike path is approximately 49 feet and would take an additional 33 years to reach the nearest building.

- b. We concur that moving threatened structures landward is not viable because of high cost to relocate the bike path and resort. We will add this rationale to the EA.
 - c. Beach restoration alternatives with and without structures will be added to the EA.
 - d. Dewatering at the site is a significant factor because there is no nearby area that can be used for this purpose. In addition, dewatering activities would add additional cost because significant Best Management Practices would be needed to prevent turbidity of coastal waters.
 - e. We will add the conceptual sketches for the different alternatives.
7. More detail has been added. The impacts and mitigation paragraphs 4.2.2/4.3.1 will be revised as follows:

4.2.1 Impacts

The new wall is not expected to change future damage from hurricane waves or tsunami. It should not affect flooding from Waika`ea Canal. The seawall will offer some protection to property from high wind waves or swell but could be overtopped under severe conditions. The sheet piles will be deep enough to stop undermining and loss of sand from behind the wall, which will eliminate dangerous sink holes. The ends of the sheet pile wall will be moved inland away from the certified shoreline and close to the bike path, which will reduce interaction with waves.

4.2.2 Mitigation

Moving the ends of the new wall inland and placing beach nourishment will help mitigate sand loss from natural hazards including wave interaction with the wall.

4.3.1 Impacts

The new sheet pile wall will reduce sand loss from the mauka side of the wall and better protect the bike path. There should be little change in erosion or sand transport rate on the ocean side of the wall, since the new rock toe will be similar to the existing rock seawall.

4.3.2 Mitigation

Beach nourishment will mitigate sand loss. Sand from dredging of Waika`ea Canal will initially be used. Sand for future nourishment could come from dredging the canal, or the large sand channel offshore from the beach may be a good source. The offshore source should be studied to determine sand quality and available volume.

8. Construction of the project is expected to take approximately two months. Therefore, pedestrian and bike path users will be routed around the construction site during that time period.
9. Potential sources for ongoing beach restoration may include future dredged material from the adjacent Waiaka`ea Canal or from offshore sand sources that could be pumped back onto the beach. This will be included in the EA.

If you have any questions, please feel free to call me at 808-241-4849.

Sincerely:



Douglas Haigh, P.E., CFM
Chief, Building Division

Concur:



Donald M. Fujimoto
County Engineer

cc: DCE
Parks & Recreation
Oceanit



STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HI 96801-3378

In reply, please refer to:
DOH/CWB

03035PKP.10

March 10, 2010

Mr. Douglas Haigh
Department of Public Works
County of Kauai
4444 Rice Street, Suite 255
Lihue, Hawaii 96766

Dear Mr. Haigh:

**SUBJECT: Draft Environmental Assessment for Pono Kai Shore Protection
Kapaa District, Island of Kauai, Hawaii**

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at <http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
 - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
 - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
 - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. The Army Corps of Engineers should be contacted at (808) 438-9258 to see if this project requires a Department of the Army (DA) permit. Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.
3. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters

(HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting the applicable Notice of Intent (NOI) form:

- a. Storm water associated with construction activities, including excavation, grading, clearing, demolition, uprooting of vegetation, equipment staging, and storage areas that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. An NPDES permit is required before the start of the construction activities.
- b. Discharges of construction dewatering effluent.

You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html>.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 Water Quality Certification are required, must comply with the Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

If you have any questions, please visit our website at <http://www.hawaii.gov/health/environmental/water/cleanwater/index.html>, or contact the Engineering Section, CWB, at 586-4309.

Sincerely,



ALEC WONG, P.E., CHIEF
Clean Water Branch

KP:ml

c: OEQC
Mr. Warren Bucher, Oceanit

BERNARD P. CARVALHO, JR.
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-4992

GARY HEU
ADMINISTRATIVE ASSISTANT

EDMOND P.K. RENAUD
DEPUTY COUNTY ENGINEER
TELEPHONE 241-4992

**AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUA'I**

DEPARTMENT OF PUBLIC WORKS
BUILDING DIVISION
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 175
LIHU'E, KAUA'I, HAWAII 96766-1340

April 19, 2010

State of Hawaii
Department of Health
Clean Water Branch
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Attention: Mr. Alec Wong, P.E., Chief
Clean Water Branch

Subject: Draft Environmental Assessment
Pono Kai Shore Protection, Kapaa, Kauai
TMK: (4) 4-5-007: 001, 009

Thank you for your comments on the Draft Environmental Assessment. We appreciate your review of the document.

1. For potential impacts on waters of the State, we will coordinate with your office on the possible need for a Water Quality Certification or other requirement your department may require during construction. All work will be conducted mauka of the certified shoreline.
2. We will consult with the Army Corps of Engineers to confirm whether or not a Department of Army (DA) permit would be required.
3. We do not anticipate that a National Pollutant Discharge Elimination System (NPDES) permit will be required because of the sheetpile design with a rock toe. UngROUTED boulders will be placed in a trench that will be excavated to a depth of approximately (-) three feet below mean sea level. No dewatering will be required. The total construction land area is less than 1 acre.
4. The County will comply with the Water Quality Standards.

If you have any questions, please feel free to call me.

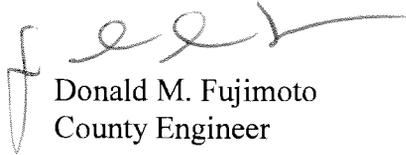
Mr. Wong
April 19, 2010
Page 2 of 2

Sincerely:



Douglas Haigh, P.E., CFM
Chief, Building Division

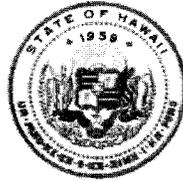
Concur:



Donald M. Fujimoto
County Engineer

cc: DCE, Parks & Recreation
Oceanit

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

March 30, 2010

Ian Dough Haigh
County of Kauai, Public Works Department
4444 Rice St. Suite 255
Lihue, Hawaii 96766

LOG NO: 2010.0610
DOC NO: 1003NM58
Archaeology

Dear Mr. Haigh:

**SUBJECT: Chapter 6E-8 Historic Preservation Review – DEA Pono Kai Shore Protections
(County of Kauai- Public Works) Rock Seawall
Kapaa, Kawaihau, Kauai
TMK: (4) 4-5-007: 001, 009**

The aforementioned project proposes to existing seawall. We recommend the following condition be attached to this permit:

1) Archaeological monitoring shall take place during all subsurface construction work due to the high probability of finding human burials. An archaeological monitoring plan shall be submitted in accordance with HAR 13-279 for review and approval by our office. A burial treatment plan shall be prepared and approved for burial discoveries encountered during the project. In addition, consultation with the appropriate ethnic groups as outlined in Chapter 6E-43 shall be followed. It is necessary that the treatment plan be prepared after consultation with native Hawaiians, such as the Kaua'i Island Burial Council and the Office of Hawaiian Affairs.

If you have any questions please call me at 692-8015.

Aloha,

A handwritten signature in cursive script that reads "Nancy A. McMahon".

Nancy McMahon, Deputy Administrator
State Historic Preservation Division

BERNARD P. CARVALHO
MAYOR



DONALD M. FUJIMOTO
COUNTY ENGINEER
TELEPHONE 241-4992

GARY K. HEU
ADMINISTRATIVE ASSISTANT

EDMOND P.K. RENAUD
DEPUTY COUNTY ENGINEER
TELEPHONE 241-4992

AN EQUAL OPPORTUNITY EMPLOYER
COUNTY OF KAUA'I
DEPARTMENT OF PUBLIC WORKS
4444 RICE STREET
MO'IKEHA BUILDING, SUITE 275
LIHU'E, KAUA'I, HAWAII 96766-1340

April 15, 2010

State of Hawaii
State Historic Preservation Office
601 Kamokila Boulevard, Room 555
Kapolei, Hawaii 96707

Attention: Ms. Nancy McMahan
Deputy Administrator

Subject: Draft Environmental Assessment
Pono Kai Shore Protection, Kapaa, Kauai
TMK: (4) 4-5-007: 001, 009

Thank you for your comments on the Draft Environmental Assessment. We appreciate your review of the document. Based on your comments we will take the following actions:

1. Prior to construction an archaeological monitoring plan shall be submitted in accordance with HAR13-279 for review and approval by your office. The monitoring plans shall address the proposed treatment of any burials that may be discovered during construction.
2. Archaeological monitoring in accordance with the approved monitoring plan shall take place during all subsurface construction work due to the high probability of finding human burials. A burial treatment plan shall be prepared for any burial discoveries encountered during the project. In addition, consultation with the appropriate ethnic groups as outlined in Chapter 6E-43 shall be followed. Prior to preparing the treatment plan there will consultations with native Hawaiians, such as the Kaua'i Island Burial Council and the Office of Hawaiian Affairs.

Sincerely:

Douglas Haigh, P.E., CFM
Chief, Building Division

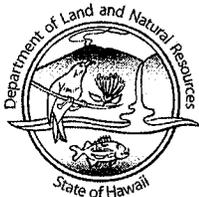
Concur:

Donald M. Fujimoto
County Engineer

cc: DCE, Parks & Recreation
Oceanit

Appendix D
Site Plan Approval KA-15-23
dated November 13, 2014

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
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CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

REF:OCCL:MC

Site Plan Approval KA-15-23

Douglas Haigh
Department of Public Works
County of Kaua'i
4444 Rice Street, Suite 275
Līhu'e, Hawai'i 96766

NOV 13 2014

Dear Mr. Haigh,

SUBJECT: PONO KAI SEAWALL REPAIR
Kapa`a, Kawaihau, Kaua`i
TMK (4) 4-5-007:001

The Office of Conservation and Coastal Lands (OCCL) has reviewed your site plan approval request regarding proposed repairs to the north and south flanks of the Pono Kai seawall fronting the above subject parcel. The submerged lands makai of the parcel's certified shoreline are in the Resource Subzone of the State Land Use Conservation District.

The seawall was built following Hurricane Iniki, and has experienced damage from erosion in the years since. Currently sink holes are appearing in the mauka side of the wall, indicating that sand loss is occurring through gaps in the wall. The County proposes to repair the wall by excavating behind it and installing a filter structure to prevent sand loss, repairing the side flanks, and placing sand on the beach.

Much of the proposed work - excavating behind the seawall, placing a geo-textile fabric there, filling behind the geo-textile rocks, and backfilling the excavation - will occur mauka of the certified shoreline and is not in the Conservation District.

One part of the proposal involves changing the flanks so that they curve inward, away from the sea. The revetments at each end appear to bisect the certified shoreline done in 2007, placing them in the Conservation District. In addition, the County proposes to place up to 40 cubic yards of sand at the north end of the wall to soften the existing vertical drop.

The sand will be taken from the existing stockpile that was created by the dredging of the Waiake`a Canal, and has been previously determined by OCCL to be appropriate for nourishment at the adjoining beaches.

Additional sand placement will be requested via a Small Scale Beach Nourishment application.

After reviewing the plans, OCCL finds that:

1. The repair to the revetment flanks and sand placement are identified land uses pursuant to HAR §13-5-22, P-8 STRUCTURES AND LAND USES, EXISTING, (B-1) *Demolition, removal, or minor alteration of existing structures, facilities, land, and equipment.*

2. The project as described is identified as exempt pursuant to HAR §11-200-8 EXEMPT CLASSES OF ACTION, 4) *Minor alterations in the conditions of land, water, or vegetation*, and 6) *Construction or placement of minor structures accessory to existing facilities*. The project would not need an Environmental Assessment.
3. It is the applicant's responsibility to comply with the provisions of Hawaii's Coastal Zone Management law (HRS Chapter 205A) pertaining to the Special Management Area (SMA) requirements administered by the various counties.

After careful review of the proposed project, the Department gives Site Plan Approval for the repairs to the Pono Kai Seawall, and to the placement of 40 cubic yards of sand on the north end, at Kapa'a, Kawaihau, Kaua'i, TMK (4) 4-5-007:001, subject to the following conditions:

1. The permittee shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of this chapter;
2. The permittee shall obtain appropriate authorization from the department for the occupancy of state lands, if applicable;
3. The permittee shall comply with all applicable department of health administrative rules;
4. Unless otherwise authorized, any work or construction to be done on the land shall be initiated within one year of the approval of such use, in accordance with construction plans that have been signed by the chairperson, and shall be completed within three years of the approval of such use. The permittee shall notify the department in writing when construction activity is initiated and when it is completed;
5. In issuing the permit, the department and board have relied on the information and data that the permittee has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;
6. When provided or required, potable water supply and sanitation facilities shall have the approval of the department of health and the county department of water supply;
7. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the permittee shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;
8. Obstruction of public roads, trails, lateral shoreline access, and pathways shall be avoided or minimized. If obstruction is unavoidable, the permittee shall provide alternative roads, trails, lateral beach access, or pathways acceptable to the department;
9. During construction, appropriate mitigation measures shall be implemented to minimize impacts to off-site roadways, utilities, and public facilities;
10. The permittee shall obtain a county building or grading permit or both for the use prior to final construction plan approval by the department;
11. The permittee acknowledges that the approved work shall not hamper, impede, or otherwise limit the exercise of traditional, customary, or religious practices of native Hawaiians in the immediate area, to the extent the practices are provided for by the Constitution of the State of Hawaii, and by Hawaii statutory and case law; and

- 12. Other terms and conditions as prescribed by the chairperson; and
- 13. Failure to comply with any of these conditions shall render a permit void under the chapter, as determined by the chairperson or board.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below. Please sign two copies, retain one and return one to OCCL.

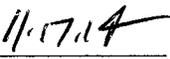
Should you have any questions, please feel free to contact Michael Cain of OCCL at 587-0048.

Sincerely,


for Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

Receipt acknowledged:


Applicant's Signature


Date

c: Chairperson