ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI

DEPARTMENT OF PLANNING

July 1, 2014

FILE COPY

JUL 2 3 2014

'14 JUL -8 P1:50

Ms. Jessica Wooley, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Wooley:

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT (EA) FOR THE PROPOSED MILOWAI MA'ALAEA SEAWALL REPAIR PROJECT, LOCATED AT 50 HAUOLI STREET, WAILUKU, MAUI, HAWAII; TMK: (2) 3-8-014:022 (SM1 2012/0008) (EA 2012/0006) (SSV 2012/0004)

At its regular meeting of June 10, 2014, the Maui Planning Commission (Commission) reviewed the above request. After receipt of testimony, exhibits, and due deliberation, the Commission accepted the Final EA and issued a Finding of No Significant Impact (FONSI). Please publish the notice of availability for this project in the next available publication of the Office of Environmental Quality Control (OEQC) Environmental Notice.

The following items are attached:

- One (1) hard copy of the completed OEQC Publication Form;
- One (1) CD (PDF file) of the completed OEQC Publication Form;
- One (1) hard copy of the completed NEPA Action Publication Form;
- One (1) CD (PDF file) of the completed NEPA Action Publication Form;
- One (1) hard copy of the Final EA; and
- One (1) CD (PDF file) of the Final EA.

Thank you for your cooperation. Should you have any questions, please feel free to contact Staff Planner Keith Scott at keith.scott@mauicounty.gov or at (808) 463-3867.

Sincerely,

WILLIAM SPENCE
Planning Director

ONE MAIN PLAZA BUILDING / 2200 MAIN STREET, SUITE 315 / WAILUKU, MAUI, HAWAII 96793
MAIN LINE (808) 270-7735 / FACSIMILE (808) 270-7634
CURRENT DIVISION (808) 270-8205 / LONG RANGE DIVISION (808) 270-7214 / ZONING DIVISION (808) 270-7253

Attachment
xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Keith C. Scott, Staff Planner (PDF)
Brett Davis, Planning Consultant, Chris Hart and Partners, Inc.
Project File
General File
WRS:KCS:nst
K:\WP_DOCS\PLANNING\SM1\2012\0008_MilowaiMa'alaea\OEQC\FONSI_Milowai\OEQC_FONSITransmittal_Milowai.doc

APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JULY 2012 REVISION)

Project Name: Milowai Ma'alaea Seawall Repair Final EA
Island: Maui
District: Lahaina
TMK: TMK's (2) **3-8-014:022**
Permits: Final EA, Special Management Area Permit, Shoreline Setback Variance

Approving Agency:
Maui Planning Commission
250 S. High St. #200
Wailuku, HI 96793
Mr. Keith Scott, Planner
Phone: (808) 270-7735

Applicant:
Milowai Ma'alaea AOAO
Ms. Christine Conlon-Kemp, Director
50 Hauoli St. #310
Wailuku, HI 96793
Phone: (415) 845-7669

Consultant:
Chris Hart and Partners, Inc.

Address	115 N. Market St. Wailuku, HI 96793
Contact & Phone	Mr. Brett Davis, Planning Consultant (808) 242-1955

Status (check one only):

__DEA-AFNSI	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day comment period ensues upon publication in the periodic bulletin.
_X_FEA-FONSI	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov; no comment period ensues upon publication in the periodic bulletin.
__FEA-EISPN	Submit the approving agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov; a 30-day consultation period ensues upon publication in the periodic bulletin.
__Act 172-12 EISPN	Submit the approving agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov. NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
__FEIS	The applicant simultaneously transmits to both the OEQC and the approving agency, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23 Determination	The approving agency simultaneous transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the applicant. No comment period ensues upon publication in the periodic bulletin.
__Statutory hammer Acceptance	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it failed to timely make a determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and that the applicant's FEIS is deemed accepted as a matter of law.
__Section 11-200-27	

Determination	The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):

The proposed seawall repair project will include:

- Excavating the soil out from behind the 180- foot wall down to sea level, opening a trench wide enough to safely access the bottom of the wall and filling the voids beneath the wall with pressure injected urethane foam.

- The trench will be lined with a "filter fabric" capable of containing fine soil particles while allowing free movement of water through the soil. The "filter fabric" extends from the bottom of the excavation up both sides, be filled with appropriate granular soil or sand before being covered by lawn.

- Removing all loose and cracked mortar and displaced stones and applying new mortar to replace material removed.

- During the excavation discussed above, applying a 6"-8"inch thick layer of "gunite" with reinforcing steel over the land side surface of the wall from the base of the stone structure to the top with weepholes. Properly design and installed, this can reinforce the existing stone wall against future deterioration.

Consolidated Final Environmental Assessment, Special Management Area, & Shoreline Setback Variance Applications

Milowai Ma'alaea Seawall Repair

TMK (2) 3-8-014:022

Ma'alaea, Maui, Hawaii

January 2014

Prepared for:
Milowai AOAO

Prepared by:
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Maui, Hawaii 96793
808/242-1955

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CONSOLIDATED
EA/SMA/SSV APPLICATION

Milowai Ma'alaea

TMK (2) 3-8-014: 022
Ma'alaea, Maui, Hawaii

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EA, SMA,SSV APPLICATION FORMS

NOTICE OF APPLICATION

Date: _____

TO: OWNERS/LESSEES

Please be advised that the undersigned has filed an application for a Special Management Area Permit with the County of Maui, Department of Planning for the following parcel(s):

1. Tax Map Key Number: (2) 3-014:022 (see attached map)
2. Street address: 50 Hauoli Street Ma'alaea Village, Maui, HI 96793
3. Land Use Designations:
   - State Land Use District: Urban
   - Community Plan: LI Light Industrial
   - County Zoning: M-1 Light Industrial and A-2 Apartment Districts
   - Other: SMA
4. Description of the existing uses on the Property: Milowai Ma'alaea Residential Condominium
5. Description of the proposed development and uses on the Property: The proposed project is to repair an existing seawall on the property. The existing building will not be expanded or modified.

The Applicant is responsible for ensuring accuracy of the information.

Owner/Applicant Name: Sand Hills Gang (See letter of Authorization)	Owner/Applicant Name: Milowai Ma'alaea AOAO(Christine Conlon-Kemp, Director)
Owner/Applicant Signature	Owner/Applicant Signature Christine Conlon-Kemp
Phone Number: 244-3796	Phone Number:
Mailing Address: 38 South Market Street	Mailing Address: C/O Hawaiian Mgmt. 140 Hoohana St., Ste. 208, Kahului, HI 96732
Wailuku, HI 96793	Kahului, Maui, HI 96732

COUNTY OF MAUI
DEPARTMENT OF PLANNING
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793
TELEPHONE: (808) 270-7735 FAX: (808) 270-7634

APPLICATION TYPE: **ENVIRONMENTAL (ASSESSMENT) REVIEW**

DATE: _____ **VALUATION:** $ 400,000.00

PROJECT NAME: Milowai Ma'alaea

PROPOSED DEVELOPMENT: The proposed project is to repair an existing seawall.

TAX MAP KEY NO.: (2) 3-8-014:022 **CPR/HPR NO.:** _____ **LOT SIZE:** 1.240 acres

PROPERTY ADDRESS: 50 Hauoli Street

OWNER: Sandhills Gang PHONE:(B) _____ (H) _____

ADDRESS: 38 S. Market Street

CITY: Wailuku STATE: HI ZIP CODE: 96793

OWNER SIGNATURE: See Letter of Authorization

APPLICANT: Milowai Ma'alaea AOAO (Christine Conlon-Kemp, Director)

ADDRESS: C/O Hawaiiana Mgmt. 140 Hoohana St., Ste. 208

CITY: Kahului STATE: HI ZIP CODE: 96732

PHONE (B): _____ (H): _____ FAX: (808) 244-5864

APPLICANT SIGNATURE: Christine Conlon-Kemp

AGENT NAME: Chris Hart and Partners, Inc.

ADDRESS: 115 North Market Street

CITY: Wailuku STATE: HI ZIP CODE: 96793

PHONE (B): 242-1955 (H): _____ FAX: 242-1956

EXISTING USE OF PROPERTY: Milowai Ma'alaea Residential Condominium

CURRENT STATE LAND USE DISTRICT BOUNDARY DESIGNATION: URBAN

COMMUNITY PLAN DESIGNATION: LI ZONING DESIGNATION: M-1 & A-2

OTHER SPECIAL DESIGNATIONS: SMA

COUNTY OF MAUI
DEPARTMENT OF PLANNING
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793
TELEPHONE: (808) 270-7735 FAX: (808) 270-7634

APPLICATION TYPE: SHORELINE SETBACK VARIANCE **(Rev. 7/10/03)**

DATE: _____

PROJECT NAME: Milowai Ma'alaea

PROPOSED DEVELOPMENT: Seawall repair project

TAX MAP KEY NO.: (2) 3-8-014:022 **CPR/HPR NO.:** _____ **LOT SIZE:** 1.240 acres

PROPERTY ADDRESS: 50 Hauoli Street

OWNER: Sandhills Gang Partners PHONE:(B) 244-3796 (H) _____

ADDRESS: 38 South Market Street

CITY: Wailuku STATE: HI ZIP CODE: 96793

OWNER SIGNATURE: _____

APPLICANT: Milowai Ma'alaea AOAO (Christine Conlon-Kemp, Director)

ADDRESS: C/O Hawaiiana Mgmt. 140 Hoohana St. Ste. 208

CITY: Kahului STATE: HI ZIP CODE: 96732

PHONE (B): _____ (H): _____ FAX: (808) 244-5864

APPLICANT SIGNATURE: Christine Conlon-Kemp

AGENT NAME: Chris Hart and Partners, Inc.

ADDRESS: 115 North Market Street

CITY: Wailuku STATE: HI ZIP CODE: 96793

PHONE (B): 242-1955 (H): _____ FAX: 242-1956

EXISTING USE OF PROPERTY: Milowai Ma'alaea Residential Condominium

CURRENT STATE LAND USE DISTRICT BOUNDARY DESIGNATION: Urban

COMMUNITY PLAN DESIGNATION: LI ZONING DESIGNATION: A2 & M-1

OTHER SPECIAL DESIGNATIONS: SMA

VALUATION: $ 400,000.00

APPLICATION Special Management Area Use Permit (SM1)

Please print legibly or type the following.

PROPERTY ADDRESS / PROJECT INFORMATION

Name of Project: (*If project name is not provided, applicants name will be used*) Milowai Ma'alaea Seawall Repair

Tax Map Key No: (2) 3-8-014: 022 **Total Lot Area:** 1.240 acres

Physical Address / Location of Project: 50 Hauoli Street

Additional Location Information:

DESCRIPTION OF PROPOSED ACTIVITY OR DEVELOPMENT

Written description of the proposed action shall include, but not be limited to: use, length, width, height, depth, building material(s), and statement of objectives of the proposed action. Attach additional sheets, if needed:

Describe the Existing Use: Milowai Ma'alaea residential condominium. The proposed project is the repair of an existing seawall.

Describe the Proposed Use:
Include a description of all proposed ground altering activities (e.g., area of disturbance, quantity of fill, depth of excavation, etc.)

No development or expansion to the existing building is proposed.

Valuation*: $ 400,000.00 **Building Permit Application No:** (*if applicable*)

**Total cost or fair market value as estimated by an architect, engineer, or contractor licensed by the Department of Commerce and Consumer Affairs, State of Hawaii; or, by the administrator of Department of Public Works, Development Services Administration.*

CONTACT INFORMATION

APPLICANT INFORMATION

Applicant's Name(s): Milowai Ma'alaea AOAO(Christine Conlon-Kemp, Director) **Email:** conlonkemp@earthlink.net

Mailing Address: C/O Hawaiian Mgmt. 140 Hoohana St., Ste. 208, Kahului, HI 96732

Phone Number(s): bus hm cel fax (808) 244-5864

Signature(s): Christine Conlon-Kemp **Date:**

CONSULTANT INFORMATION

Contact Name(s): Chris Hart Partners, Inc. **Email:** bdavis@chpmaui.com

Mailing Address: 115 North Market Street

Phone Number(s): bus 242-1955 hm cel fax 242-1956

Signature(s): **Date:**

OWNER INFORMATION

Owner's Name(s): Sand Hills Gang (See letter of authorization) **Email:** cns@maui.net

Mailing Address: 38 South Market Street Wailuku, HI 96793

Phone Number(s): bus 244-3796 hm cel fax 242-8720

Signature(s): **Date:**

LETTER OF AUTHORIZATION

LAW OFFICES
CROCKETT AND NAKAMURA
38 SOUTH MARKET STREET
POST OFFICE BOX 1431
WAILUKU, MAUI, HAWAII 96793

WILLIAM F. CROCKETT
DAVID H. NAKAMURA

WENDELL F. CROCKETT 1891-1977

TELEPHONE (808) 244-3796
FACSIMILE (808) 242-8720
EMAIL: cns@maui.net

October 26, 2011

Mr. William Spence, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Maui, Hawaii 96793

Subject: Authorization for a Land Use Permitting for the Milowai Condo, Proposed Seawall Project; for the property located at 50 Hauoli Street, Maalaea, Maui. TMK (2) 3-8-014:022

Dear Mr. Spence:

Sandhills Gang Partners, owner of the subject property, authorize Chris Hart & Partners, Inc., to prepare, file, process and obtain all necessary permits and approvals for the development of the above referenced Project.

Very truly yours,

Sandhills Gang Partners, by its General Partner: Sandhills Gang, Ltd.

By: William F. Crockett
William F. Crockett
Its President

Subscribed and sworn to before me on October 26, 2011.

Christine G. Pagan
Signature

Christine G. Pagan
Print Name

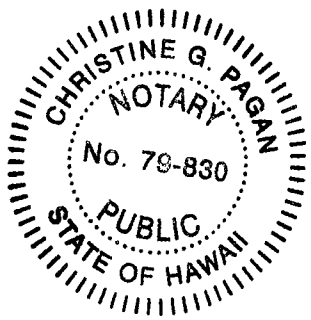
My commission expires: 12-14-2011

CHRISTINE G. PAGAN
NOTARY
No. 79-830
PUBLIC
STATE OF HAWAII

Doc. Date: October 26, 2011
Second Circuit # Pages: 2
Doc. Description: Letter to Mr. William Spence, Director, Department of Planning, County of Maui

Christine G. Pagan
Signature

Christine G. Pagan
Printed Name
Notary Public
Date: October 26, 2011



CONSOLIDATED EA, SMA, SSV REPORT

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I. PROJECT INFORMATION

A. Overview of the Request

On behalf of the Owner, Sandhills Gang Partners, the Applicant, Milowai Ma'alaea AOAO is seeking a Special Management Area (SMA) Permit, and a Shoreline Setback Variance (SSV) as part of this Final Environmental Assessment (FEA) to repair an existing seawall at the Milowai Ma'alaea Residential Condominium project.

The subject parcel is located in Ma'alaea, Maui and is identified by TMK (2) 3-8-014:022. (**See:** Figures 1, Regional Location Map 2, Tax Map Key 3, Topographic Survey, & 4 Aerial Photograph.)

The property is located in the State Urban District and the Maui County Zoning is M-1 Light Industrial and A-2 Apartment Districts. The Kihei Makena Community Plan Map identifies the parcel as (LI) Light Industrial. The parcel is located within the Special Management Area (SMA) which is regulated by the County of Maui. (**See:** Figures 6, State Land Use District Map, 7, Kihei Makena Community Plan Map, & 8, Maui County Zoning Map.)

Since the Applicant's request for the seawall repair work involves a Special Management Area (SMA) Permit, a Shoreline Setback Variance (SSV) and a ~~Draft~~ Final Environmental Assessment (FEA) has been prepared in accordance with Chapter 343, Hawaii Revised Statutes (HRS). The FEA describes the proposed project, evaluates the potential impacts the action may have on the environment, public services, and infrastructure, and discusses appropriate measures to minimize impacts to the environment.

B. Project Profile

Tax Map Key:	(2) 3-8-014:022
Project Name:	Milowai Ma'alaea Seawall repair
Street Address:	50 Hauoli Street Ma'alaea Village
Land Area:	1.240 acres
Applicant:	Milowai Ma'alaea AOAO Ms. Christine Conlon-Kemp, Director C/O Hawaiiana Management 140 Hoohana St. Ste 208 Kahului, HI 96732 Email: conlonkemp@earthlink.net Fax: (808) 244-5864
Landowners:	Sandhills Gang Partners Mr. William Crockett 28 S. Market St Wailuku, HI 96793 Phone: (808) 244-3796 Fax: (808) 242-8720
Planning Consultant:	Chris Hart & Partners, Inc. Mr. Brett Davis 115 N. Market Street Wailuku, HI 96793 Email: bdavis@chpmaui.com Phone: (808) 242-1955 Fax: (808) 242-1956
State Land Use District:	Urban
Kihei-Makena Community Plan:	Light Industrial (LI)
Maui County Zoning:	M-1 Light Industrial District and A-2 Apartment District

Flood Insurance Rate Map:	Zones VE & X
Other Designations:	Special Management Area
Existing Land Use:	Milowai Ma'alaea Residential Condominium
Proposed Use:	Continued use as the Milowai Ma'alaea Residential Condominium
Existing Access:	Hauoli Street

C. Chapter 343, HRS Accepting Agency

Agency: Maui Planning Commission
c/o: Maui Planning Department
Mr. William Spence, Director
One Main Plaza #315
2200 Main Street
Wailuku, HI 96793
Phone: (808) 270-7735
Fax: (808) 270-7634

D. Required Permits and Approvals

1. The Applicant's Shoreline Setback Variance (SSV) is subject to approval by the Maui County Planning Department.

2. A Special Management Area (SMA) application is subject to approval by the Maui County Planning Commission.

3. Environmental Assessment Review by the State of Hawaii, Department of Health, Office of Environmental Quality Control.

4. Building Permit approval by Development Services Administration, Maui County Department of Public Works.

E. Early Consultation

As part of the early consultation process for the preparation of the Draft EA, a letter dated March 21, 2012, requesting comments on the seawall repair project was mailed to various County, State, Federal agencies and other. The early consultation letter, agency comment letters, with responses are included in Appendix A, Early Consultation Letters. Note: The agencies with an asterisk provided comments.

CONSULTED PARTIES:

FEDERAL
U.S. Army Corps of Engineers*
U.S. Fish and Wildlife Services
Natural Resources Conservation Services

STATE OF HAWAII
Department of Land and Natural Resources*
Department of Transportation
Department of Education
Office of Hawaiian Affairs
Department of Hawaiian Homelands*
Department of Health*
Department of Business, Economic Development & Tourism
University of Hawaii, Environmental Center
Sea Grant College Program

COUNTY OF MAUI
Department of Water Supply
Department of Environmental Management
Department of Fire Control & Public Safety*
Department of Public Works*
Department of Parks and Recreation*
Department of Planning
Police Department*
Department of Transportation*
Department of Housing and Human Concerns*

OTHER
Hawaiian Telecommunications*
Maui Electric Company, Ltd.

F. Comments on the Draft EA

The DEA was published by the Department of Health, Office of Environmental Quality Control (OEQC) on April 23, 2013 and the 30-Day public comment deadline was May 23, 2013. The following comments were received from various State and County agencies. (**See:** Appendix K, DEA Comment Letters with responses.)

STATE OF HAWAII
Department of Health, Maui District Health Office
Department of Health, Environmental Planning Office
Department of Business, Economic Development & Tourism, Office of Planning
Department of Accounting and General Services
Department of Land & Natural Resources, Office of Conservation and Coastal Lands

COUNTY OF MAUI
Department of Environmental Management
Department of Public Works
Department of Planning/Planning Commission

II. DESCRIPTION OF THE PROPERTY AND PROPOSED PROJECT

A. PROPERTY LOCATION

Identified by TMK (2) 3-8-014: 022, the subject property is located in Ma'alaea, Maui and occupies an area of 1.240 acres and is situated adjacent to the Ma'alaea Small Boat Harbor. **(See:** Figure 4, Aerial Photograph)

B. EXISTING SITE CONDITIONS

The four (4)-story Milowai Ma'alaea Residential Condominium was built in 1975 and contains 43 units in a single building. In 1977 a swimming pool with deck and associated improvements were constructed on the property. The property contains covered and uncovered off street parking, ocean fronting lawn with landscape planting and barbeque area. The 180 foot seawall is located at the rear of the property and rises to an approximate height of 4-6 feet above the shoreline. The surface of the wall is nearly completely covered by mortar, with little if any rock exposed. The west end of the wall terminates into the break wall of Maalaea Small Boat Harbor, west of the break wall is a 75-foot long sandy beach. The east end of the seawall continues into a neighboring wall with less mortar and more exposed stone. The shoreline at the base of the wall varies from sand and rocks, to solid rock. (**See** Figures 4, Aerial Photograph, and 5, Site Photographs.)

C. LAND USE HISTORY

The Milowai Ma'alaea property was originally purchased by Wendell and Myrtle Crockett in the 1940's. The property had no seawall and a sand beach existed where the Small Boat Harbor facility is currently located. Their son, attorney William Crockett, returned home from the Army in 1948 and remembers that while visiting the family property, the seawall was not yet built.

In 1952 the Small Boat Harbor facility was developed by Territory of Hawaii officials in 1952. Further improvements were made in 1955 and 1959, which included construction of break walls.

Upon William's return from law school in 1956, the seawall had been built. It is estimated that the wall was built in the early 1950's around the same time as the Harbor improvements. Wendell and Myrtle then built a family home on the subject parcel in the early 1960's. (**See:** Appendix H, Cultural Impact Assessment Report.)

In the early 1970's the Crockett family leased the land to begin developing the Milowai Condominium building and in 1975, the building was complete. In 1997 the swimming pool was complete.

The shoreline of the Milowai property was certified by the State of Hawaii on September 25, 1975 and January 10, 1978. **(See:** Appendix B, Historical Shoreline Certifications.)

On September 20, 2012, the Maui County Department of Planning approved a Special Management Area Assessment application (SMX 2012/0087) for the use of beach quality sand to fill in the existing hole behind the seawall. (**See:** Appendix I, SMX Approval Letter.)

D. REASONS JUSTIFYING THE REQUEST

The entire existing 180-foot seawall is in need of repair. The wall is a stone and mortar retaining wall protecting the rear yard area of the property from wave action along the shoreline. The western portion of the seawall is cracking as a result of settlement at the base of the wall. The top of the wall is cracked and a fissure (hole) in the soil has developed between the back of the seawall and the soil beneath the adjacent lawn. Fine soil material has migrated down the back of the seawall and out through the bottom of the seawall into the ocean. **(See:** Appendix E, Structural Engineering Report.)

In December 2011 the fissure was measured as wide as 18 inches and as deep as 3 to 6 inches. In June 2012, the fissure had widened and its depth had increased to as much as 5 feet in several locations. It is obvious that the condition at the base of the wall is somewhat porous and allows flow of the saturated soil, little by little, into the ocean. The observed continued deterioration of this section of wall over the period of 1 year indicates that it is in a state of progressive failure. With continued loss of support below the wall due to erosion as well as loss of soil from behind the wall, it is imminent that collapse will happen at some time.

The eastern portion of the wall is in better condition, however it is inevitable that repair work will be needed. During a site visit with the project structural engineer, the Department of Planning and University of Hawaii Sea Grant Program on February 26, 2013, depressions in the lawn behind the wall were observed, further clarifying that repair work will eventually be necessary for the entire 180-foot wall.

Considering the conditions observed in the seawall and the analysis by the structural and coastal engineers, it is our recommendation that immediate action be taken to fill the fissure behind the wall to prevent anyone from stepping into the fissure and injuring themselves. (**See:** Appendix E, Structural Engineering Report.)

E. Alternatives

1. No Action

Analysis. Under the "no action" alternative, the physical condition of the seawall and its structures would be maintained and the existing seawall would continue deteriorating into the ocean, causing erosion of the lawn that could ultimately threaten the Condominium building. Additionally, the erosion of clay soil sediments will continue to negatively affect water quality. The no action alternative does not support HRS Chapter 226, Part III Climate Change Priority Guidelines. In light of the foregoing, the "no action" alternative is not a viable option and was dropped from consideration.

2. Alternate Action Beach Nourishment

Analysis. When sand loss is gradual and the beach has a high economic value for recreation and tourism, replenishing the beach with sand from offshore or other sources is an attractive alternative. This alternative could support HRS Chapter 226, Part III Climate Change Priority Guideline:

> *(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;*

Sand beaches in the Maalaea area have been negatively affected since the construction of the Small Boat Harbor facilities and the break wall and sand dunes are not present in front or adjacent to the project site. Beach nourishment is expensive, and containment features or structures are sometimes necessary to stabilize the sand. Additionally, in Hawaii good quality beach sand is in short supply. A public beach park with a large sandy beach is available within walking distance from the Milowai, therefore this alternative was not considered.

3. Alternate Action Revetment

Analysis. The rock revetment wall is made up of a porous rock surface with a gradual slope to the structure to absorb wave energy, reduce wave reflection, and promote accretion of sand as a result. ~~The conditions at the Milowai would require a revetment to extend from approximately +8 feet (MSL) to about -1 foot (MSL). This size of the wall would require a horizontal footprint of 13 feet. The rock revetment would require demolition of the existing seawall and would require excavation into the substrate for placement of the revetment toe. A revetment would have to be located on property resulting in substantial loss of useable land and would require~~

~~use of State lands. This alternative was not selected as the preferred action for seawall repair.~~

In consultation with the project's Coastal Engineer, Sea Engineering, Inc., there is no anticipated increased benefit of constructing a revetment over repair of the existing seawall at the Milowai.

While a revetment is a less reflective structure that can be more conducive to sand accretion in some conditions; the lack of sand fronting the Milowai is primarily due to the impact of the Maalaea harbor breakwater. The effects of the existence and proximity of the harbor breakwater is not likely to be improved by the choice of shore protection.

The implementation of a sloping rock revetment at the Milowai would require approximately 20 feet to construct and therefore result in a significant loss of private land. If a sloping revetment was constructed the remaining lawn would range from approximately 23 feet near the Milowai main structure to as little as 3 feet near the swimming pool. The expanded scope of soil exposure increases the risk of soil erosion into the ocean during the construction phase (**See**: Exhibit 1a, "Shoreline Plan").

A sloping revetment would require construction of a portion of the revetment on state land, in the ocean. This would require additional, intensive review and approval by the State of Hawaii, Department of Land & Natural Resources, and the Army Corps of Engineers.

Finally, the majority of the existing seawall fronting the Milowai remains intact and continues to provide protection to existing structures. The proposed preferred alternative of in place repair to the existing seawall is the least disruptive option when compared with the demolition and removal of the existing seawall, expanded excavation process, importation of boulders and the use of machinery for the placement of the boulders for a new sloping revetment.

This alternative could support HRS Chapter 226, Part III Climate Change Priority Guideline:

> *(5) Encourage the preservation and restoration of natural landscape features, such as coral reefs, beaches and dunes, forests, streams, floodplains, and wetlands, that have the inherent capacity to avoid, minimize, or mitigate the impacts of climate change;*

However, Sand beaches in the Maalaea area have been negatively affected since the construction of the Small Boat Harbor facilities and the break wall. CH&P has consulted with Sea Engineering, Inc. on the existing revetment at the Mahana Kaanapali, and the potential application of this structure at the Milowai in Maalaea. Sea Engineering indicated that differences in the amount of sand existing, proximity

to the Maalaea Harbor Breakwall and other site specific conditions are not expected to yield the same results in the separate locations.

Finally, the majority of the existing seawall fronting the Milowai remains intact and continues to provide protection to existing structures. The proposed preferred alternative of in place repair to the existing seawall is the least disruptive option when compared with the demolition and removal of the existing seawall, expanded excavation process, importation of boulders and the use of machinery for the placement of the boulders for a new sloping revetment. This alternative was not selected as the preferred action for seawall repair.

F. DESCRIPTION OF THE PROPOSED ACTION (PREFERED ALTERNATIVE)

4. Preferred Action Seawall Repair

As mentioned above, the proposed seawall repair project is the preferred alternative and will include stopping fissures and reinforcing the 180-foot seawall.

Permanent measures to eliminate the occurrence of the fissure might involve the following:

- Excavating the soil out from behind the seawall down to sea level, opening a trench wide enough to safely access the bottom of the wall.
  Filling the voids beneath the wall with pressure injected urethane foam, to block future passage of fines through the bottom of the wall. Pressure injected urethane grout can be injected into the sand /rock matrix below the wall base to a depth of two or three feet, binding those materials together into a less permeable, less erodible mass. This will result in a more stable base below the existing wall and possibly prevent or limit further erosion.

  The primary procedure for strengthening and stabilizing the substrate supporting the seawall involves the injection, under pressure, of a hydrophobic polyurethane grout (de neef Cut PURe) into the gravel sand material beneath the seawall.

  The hydrophobic polyurethane grout (HPG) is designed to fill large voids in rock fissures, gravel and sand layers and cracks and joints in concrete structures. The HPG is capable of migrating into the pore structure of very fine material and, when injected with pressure, will follow the path of least resistance, filling voids as small as the thickness of a hair. Once the HPG can no longer penetrate it continues to expand against the limits of the confined space(s) and compress within itself, forming a dense, closed cell foam, bonded to the surround sand, gravel and rocks. The cured foam achieves compressive strengths between 1800 and 4000 psi depending on density of the soil material

it is injected into. It is feasible to inject the HPG to depths of 2 feet or more below the seawall base, depending on porosity of the material. Where hard monolithic rock occurs, the grout will not penetrate, but it is also not necessary. The grout can also be injected into the seawall itself, a process which will fill voids between mortar and rock and sealing cracks through which water can pass. The final foam/ rock/gravel/sand mass becomes a monolithic substrate bonded together and strengthened by the presence of the HPG injection process. The process would continue from one location to another along the length of the seawall until all loose substrate material is reinforced. Following application, the reinforced substrate would no longer be susceptible to erosion from scouring of loose material beneath the wall, as it will extend to approximately 24 inches below sea level at low tide and effectively prevent movement of water through the soil structure supporting the wall.

- In addition to the injection of foam grout below the wall, the proposed reinforcement method involves pneumatically applying a layer of reinforced concrete to the back side of the seawall after an excavation is completed to expose the base of the wall from the landward side. This blanket of reinforced concrete adhered to the back of the stone and mortar wall will serve to provide it with greater longitudinal structural continuity that, when combined with the reinforced foundation substrate, should serve to prevent future localized settlement of the seawall and resulting deterioration of the mortar and stone portion.

- The current proposed solution is designed to accumulate any water build-up behind the wall in a continuous layer of sand and gravel wrapped in a geotechnical filter fabric placed behind the concrete blanket wall. The porosity of the sand and gravel material will cause water buildup to seep down behind the concrete wall and be discharged by gravity flow through weep holes added through the original seawall. The 3-inch PVC pipe weep holes will be located at the base of the wall, passing from the sand/gravel drainage gallery, through the concrete blanket wall to the seaward surface of the original stone and mortar seawall. Hydrostatic pressures will not be allowed to occur, as the water that would produce them will be eliminated through the weep holes in the repaired wall. In addition the existing drainage patterns occurring at the project site are not directed towards the existing seawall, instead drainage flows to the drainageway and outputs inside of the Maalaea Harbor breakwall.

- Finally, in order to further prevent migration of fines through the wall base, the trench should be lined with a "filter fabric" capable of containing fine soil particles while allowing free movement of water through the soil. This material should extend from the bottom of the excavation up both sides, be filled with appropriate granular soil or sand and folded back over itself at the top of the excavation before being covered by lawn. If multiple lengths of

fabric are necessary to line the entire opened trench they should overlap each snuggly other by at least two feet.

Permanent measures to reinforce the 180-foot seawall would include the following:

- Removing all loose and cracked mortar and displaced stones and applying new mortar to replace material removed.

- During the excavation discussed above, applying a 6"-8''inch thick layer of "gunite" or "shotcrete" (pneumatically applied structurally concrete) over the land side surface of the wall from the base of the stone structure to the top. A 6"x6" mat of galvanized 6 gauge welded wire reinforcing or a mat of epoxy reinforcing bars should be placed in the middle of the gunite thickness. The rock material exposed during excavation should be cleaned of all loose soil and organic matter prior to placing of the gunite so that the concrete can adequately engage and bond with the stone wall. Properly design and installed, this concrete and reinforcing steel can reinforce the existing stone wall against future deterioration that might otherwise result from settlement. If the urethane grout is injected into the sand/rock material below the wall as well, a much more stable condition will result. The filter fabric/granular soil or sand procedure discussed above would be installed after completion of the gunite reinforcing application.

The proposed repair project is expected to take 90 days to construct at a cost of approximately $400,000.00.

G. SHORELINE SETBACK ASSESSMENT

The shoreline fronting the parcel was submitted to the State of Hawaii by Newcomer-Lee Land Surveying for certification based on a shoreline survey. (**See:** Figure 3, Topographic Survey)

§12-203-6 "Establishment of shoreline setback lines" of the Shoreline Rules for the Maui Planning Commission states:

(a) All lots shall have a shoreline setback line that is the greater of the distances from the shoreline as calculated under the methods listed below or the overlay of such distances:

(i) Twenty-five feet plus a distance of fifty times the annual erosion hazard rate from the shoreline;

(ii) Based on the lot's depth as follows:

(C) A lot with an average lot depth of one hundred sixty feet or more shall have a shoreline setback line located at a distance from the shoreline equal to twenty-five percent of the average lot depth, but not more than one hundred fifty feet.

§12-203-4 of the Shoreline Rules states,

Where the shoreline is fixed by:

(1) Artificial structures that are nonconforming or that have been approved by appropriate government agencies and for which engineering drawings exist to locate the interface between the shoreline and the structure, or

(2) Exposed natural stabilized geographic features such as cliffs and rock formations, the Annual Erosion Hazard Rate shall cease at the interface."

Using the Average Lot Depth (ALD) method, the shoreline setback is calculated as follows:

Average Lot Depth:	341.10
	284.40
	+358.13
	983.63
	983.63 / 3 = 327.87 feet
Setback:	327.87 x .25 = **81.97 feet**

Using the Annual Erosion Hazard Rate (AEHR) method, the shoreline setback is calculated as follows (**See:** Figure 12, Annual Erosion Hazard Rate Map)

Transect	AEHR (feet)		Setback (feet)
98	.5	x 50 years + 25 feet	**50**
99	0.75		**62.5**
100	0.9		**70**
101	1		**75**

Assuming that shoreline is considered "fixed" (by artificial structures) at all transects, the effective setback is 25 feet.

Since the ALD setback is greater, the shoreline setback for the subject property is 81.97 feet.

The entire existing seawall is within the shoreline setback area. Chapter VII of this application addresses the justification for the Shoreline Setback Variance (SSV).

III. DESCRIPTION OF THE EXISTING ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

Existing Conditions. The subject parcel is a coastal property located in Ma'alaea Bay adjacent to the Ma'alaea Small Boat Harbor facilities. The property bounded by Hauoli Street on the north, and the Pacific Ocean to south. Residential Condominiums neighbor the Milowai on either side, the Ma'alaea Yacht Marina Condominium to the west, and the Ma'alaea Kai Condominium to the east.

Potential Impacts and Mitigation Measures. The subject parcel is located in between existing residential condominiums within a developed coastal urban environment. The proposed use of the subject parcel for continued residential condominium purposes will not change as a result of the proposed seawall repair work and therefore is compatible with current uses in the surrounding area.

From a long-term perspective, the proposed repair work will not have an adverse impact on land uses in the vicinity as the basic character of the surrounding environs will be maintained.

2. Topography and Soils

Existing Conditions. A Preliminary Engineering Report was prepared by Otomo Engineering, Inc. in July 2012. The parcel slopes down in a north to south direction from an elevation of approximately 14 feet above mean sea level at the northwesterly corner to approximately 6 feet above mean seal level at the southwesterly corner, averaging approximately 2.5%. (**See:** Appendix C, Preliminary Engineering Report.)

According to the *Soil Survey of the Islands of Kauai, Oahu, Maui, Moloka`i, and Lana`i, State of Hawai`i, April 1972*, prepared by the United States Department of Agriculture, the soil associated with the subject parcel is

EsB. (**See:** Figure 9, Soil Classifications Map.) This soil is comprised entirely of the Ewa silty clay, with slopes of 3 to 7 percent.

Potential Impacts and Mitigation Measures. Due to the nature of the seawall repair work there will not be an alteration in topography, site work behind the existing seawall will be minimal and the ocean fronting lawn will be maintained. To the extent possible, earthwork will be kept to a minimum to reduce site work costs and maintain the existing drainage pattern.

Best Management Practices (BMPs) will be implemented during construction activities to control fugitive dust, soil erosion, storm water runoff, and non-point source pollution. The BMPs will be prepared in accordance with Chapter 20.08, Maui County Code (*Soil Erosion and Sedimentation Control*).

3. Flood and Tsunami Hazards

Existing Conditions. The flood insurance rate map (Map Number 1500030190E, Revised September 25, 2009) prepared by the Federal Emergency Management Agency, reveals that the majority of the subject parcel is located in Zone "X". Zone X is area determined to be outside the 0.2% annual chance floodplain (i.e., a low risk flood hazard area). A small portion of the property along the shoreline is situated in Flood VE. Zone VE is a coastal flood zone with velocity hazard, the Base Flood Elevation is 11 feet. (**See:** Figure 10, Flood Hazard Areas.) The Civil Defense Tsunami Evacuation Map number 3 for this part of the island reveals that the Milowai and all structures makai of Hauoli Street are located within a tsunami inundation zone. (**See:** Figure 11, Tsunami Evacuation Areas Map.)

Potential Impacts and Mitigation Measures. The site of the proposed repair work is located in Flood AE. The proposed actions are not anticipated to have any adverse effects with respect to flooding since no habitable structures are being constructed. The proposed seawall repairs will be designed and engineered to withstand the calculated forces, thus reducing the likelihood that an extreme event would damage the structure. The proposed project should not be affected by or have adverse impacts upon its neighbors with regards to flood hazard potential since drainage patterns are not expected to change. See Section III.D.3 for a discussion on drainage.

4. Flora and Fauna

Existing Conditions. The subject parcel has been developed as a four (4) story multi-family condominium since 1975 and family vacation home since the 1960's. There are no critical wildlife habitats such as ponds, streams or wetlands located on the site. Due to developed urban environment, the subject parcel does not provide a natural habitat for rare, threatened or endangered species of flora and fauna. Landscape planting on the subject parcel consists of ornamental tree plantings and other shrubs. Avifauna that is typically found in the area includes the common myna, several species of dove, cardinal, house finch, and house sparrow. Mammals common to this area include cats, dogs, rats, mice, and mongoose.

Potential Impacts and Mitigation Measures. The proposed seawall repairs will not have an adverse impact upon plant and animal life. There are no known rare, threatened, or endangered species of flora or fauna on the site neither are there any species that are candidates for Federal listing nor any important wildlife habitats such as ponds, streams, or wetlands. As such, the proposed project will not have a significant impact upon plant and animal life.

With regard to the proposed project, the use of chemicals and fertilizers will not be used.

5. Noise Characteristics

Existing Conditions. The level of ambient noise is an important indicator of environmental quality. Noise in the project area is attributable to the boats and machinery at the Ma'alaea Small Boat Harbor facilities and vehicular traffic on surrounding roads.

Potential Impacts and Mitigation Measures. During the short-term, ambient noise levels will temporarily increase during the seawall repair work. Noise from construction equipment, such as excavators, and power tools would be the dominant source of noise during the construction phase. Impacts from these sources can be minimized by using appropriate sound-dampening devices (e.g., baffles, mufflers) and by properly maintaining all equipment, vehicles, and machinery.

To minimize noise impacts during the repair project, the Applicant will limit construction to normal daylight hours. According to Chapter 11-46, HAR (*Community Noise Control*), the maximum permissible sound level for construction activities in areas zoned for multi-family,

apartment, business, commercial, hotel, resort, or similar type uses is (60 dBA). Should construction noise exceed this threshold, a Community Noise Permit will be obtained from the State Department of Health in accordance with the applicable provisions of Chapter 11-46, HAR.

In the long-term, the seawall repairs will not generate noise and therefore is not expected to have an adverse impact on ambient noise levels.

6. Air Quality

Existing Conditions. Air quality refers to the presence or absence of pollutants in the atmosphere. It is the combined result of natural conditions (e.g. dust from wind erosion) and emissions from a variety of pollution sources (e.g. automobiles, power-generating plants). Generally, the impact of a development upon air quality depends upon the type of project (e.g., residential, commercial, industrial) and its stage of progress (e.g., site preparation, infrastructure development, building construction).

The air quality in the Ma'alaea region and Maui in general is relatively good. Non-point source vehicle emissions do not generate a significant or high concentration of pollutants, as prevailing winds help to disperse emissions quickly. The Ma'alaea region is currently in attainment of all Federal and State air quality standards.

Potential Impacts and Mitigation Measures. Minimal excavation will be required for the seawall repair work. As necessary, dust control measures that comply with the provisions of Chapter 11-60.1, HAR (*Pollution Control)* and Section 11-60.1-33, HAR (*Fugitive Dust)*, will be implemented during construction to minimize the effects of fugitive dust. Examples of such measures include but are not limited to the following:

- Ensure that an adequate source of water is available for dust control before the start of seawall repairs.
- Use dust fences, water sprinklers, and water wagons to prevent airborne dust from leaving the site.
- Temporarily cover exposed areas with plywood or plastic sheeting material.

- Phase site work to limit the exposure of bare areas and leave existing vegetation in place for as long as possible prior to clearing.

- Place soil stockpiles away from adjacent properties and cover the stockpiles with plastic sheeting or similar material when not in use.

- Limit the areas of disturbance and hydromulch or grass finished areas on a timely basis.

- Water loose soil until damp and spray water during grading to control airborne dust.

- Use dust control measures during weekends, after hours and prior to daily start-up of construction activities.

From a long-term perspective, the proposed seawall repair work will not generate adverse air quality impacts after build out.

7. Archaeological/Historical Resources

Existing Conditions.

The Milowai has been a developed property since the 1960's and the ground had been previously disturbed during the construction the Milowai in the 1970's. An Archaeological Monitoring Plan (AMP) was prepared by Archaeological Services Hawaii. (ASH) in May 2012. (**See:** Appendix F, Archaeological Monitoring Plan.)

Potential Impacts and Mitigation Measures. The AMP did not identify any historic sites, features, deposits, or artifacts on the subject parcel. (**See:** Appendix F, Archaeological Monitoring Plan.)

If human remains are located, work will immediately cease in the vicinity of the find and the find protected from further disturbance. The SHPD and the Maui/Lana`i Islands Burial Council will be promptly notified and procedures for the treatment of the remains will be implemented in accordance with Chapter 6E-43, HRS (*Historic Preservation*).

In a letter dated July 6, 2012 the SHPD accepted the AMP for the subject parcel. (**See:** Appendix G, SHPD Approval Letter.) In light of the

foregoing, the proposed project is not expected to result in adverse impacts to archaeological and historical resources.

8. Cultural Resources

Existing Conditions. In accordance with Act 50, since the proposed project triggers an environmental assessment, a cultural impact assessment (CIA) has been prepared to assess the effects the action may have on cultural practices of the community and State of Hawai`i. The CIA for the proposed seawall repair project was prepared by Ms. Jillian Engledow in July, 2012. (**See:** Appendix H, Cultural Impact Assessment.)

The preparation of the CIA involved archival and documentary research, as well as consultation with agencies, organizations, and individuals with knowledge of native Hawaiian cultural resources, practices, and beliefs about the project area.

Potential Impacts and Mitigation Measures. The proposed seawall repair project is located in an area that has been previously disturbed and therefore is not expected to have an adverse impact upon native Hawaiian cultural beliefs, practices, and resources. Due to the absence of cultural deposits and features found during the archaeological field survey for the project, ground-altering construction activities will not have an adverse effect upon cultural resources. There are no known traditional beach and mountain access trails on the subject parcel nor did the CIA locate such features.

9. Scenic Resources

Existing Conditions. From the coastal property, the Pacific Ocean and the islands of Lanai and Kahoolawe and Molokini Crater can be seen. The property also offers views of the West Maui Mountains and Haleakala. (**See:** Figure 12, Scenic Resources Map.)

Potential Impacts and Mitigation Measures. The Milowai is an existing four (4) story condominium building that was built in 1975. The proposed seawall repair work will not impact the view towards the Ocean and is not located within a scenic view corridor. In addition, the proposed project will not alter the existing public views to and along the shoreline. The seawall repair work will not have a significant

impact upon *mauka* and *makai* facing views from the property or its surroundings.

10. Shoreline and Coastal Resources

Existing Conditions. The Milowai is located on the western shoreline of Maalaea Bay and a portion is within the Maalaea Small Boat Harbor east break wall. The property's shoreline ranges from protected waters with a gently sloping sand beach along the southwest corner located within Maalaea Harbor to exposed waters with a nearly vertical CRM seawall along the remaining reach of shoreline located outside of the harbor. Offshore, a broad and shallow reef extends roughly 500 FT from the shoreline, averaging two (2) to three (3) feet in depth. The sandy beach within the harbor was created as result of accretion after the construction of the east break wall. The Milowai property's oceanfront shoreline is devoid of beach material. No significant sandy beach is present along this stretch of Maalaea Bay shoreline, stretching from the break wall roughly 1800 feet up the coast to the Ocean View Maui Condominiums. The majority of the shoreline appears to be hardened over this reach by continuous series of seawalls and revetments. (**See:** Appendix D, Coastal Engineering Report.)

Potential Impacts and Mitigation Measures. The existing seawall is deteriorating and erosion of clay soil sediments will continue to negatively affect water quality if the seawall is not repaired. The preferred alternative will reduce the negative affects of erosion runoff into the ocean therefore improving water quality and reducing the threat to a habitable structure. **(See:** Appendix D, Coastal Engineering Report.)

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population

Existing Conditions. The population of the County of Maui has exhibited relatively strong growth over the past decade with a 2010 population of 155,214, a 16.8% increase over 2000 population of 129,078. Maui Island is expected to increase to 181,000 in 2020 and 207,300 in 2030. (*"Table 1.1 Resident Population by County 1980-2040" DBEDT 2040 Series, March 2012*)

Potential Impacts and Mitigation Measures. The proposed seawall repair work does not involve a housing component nor will it generate a new or secondary demand for housing therefore the proposed project will not impact the population of Maui County.

2. Economy

Existing Conditions. The visitor industry is a major component of the island's economy and the dominant economic force in the Ma'alaea region. Visitor accommodations and facilities are situated in Kihei, Wailea, Makena, and Ma'alaea. The Ma'alaea area is home to several residential condominiums, visitor accommodations, a boat harbor with restaurants, retail and the Maui Ocean Center.

Potential Impacts and Mitigation Measures. From a short-term perspective, the seawall repair work will support the economy via direct and indirect construction-related employment, as well as through the purchase of construction materials and building-related services. During the long-term, the seawall repair work will contribute to the economy through the preservation of the Milowai Ma'alaea condominium property which will provide a positive impact to the economy in the form of continued property taxes generated by the residents of the property.

C. PUBLIC SERVICES AND FACILITIES

1. Recreational Facilities

Existing Conditions. The Maui Department of Parks and Recreation operates and maintains a total of 19 parks in the Kihei-Makena region, as well as several community recreational facilities such as the Kihei Recreation Center. In the immediate area, residents have access to Haycraft Beach Park, located at the end of Hauoli Street.

Potential Impacts and Mitigation Measures. The proposed seawall repair work will not have an impact upon recreational facilities or the popular surf spot "Freight Trains" nor will it trigger any County requirements for park dedication or assessment fees pursuant to Section 18.16.320, Maui County Code (*Parks and Playgrounds*).

2. Police and Fire Protection

Existing Conditions. The Maui Department of Police is responsible for the preservation of the public peace, prevention of crime, and protection of life and property. Headquartered at the Foodland shopping Center, the Department's Kihei Patrol District is one of the six (6) such districts in Maui County. The new Kihei Police Station is being constructed mauka of Piilani Highway and will be completed in 2013. In addition to regular patrol duties, the Kihei Patrol District has programs for a bike detail, citizen's patrol, parks patrol officer, school resource officer, parking enforcement officer, and visitor- and community-oriented policing. The district also has its own criminal investigation division.

The mandate of the Maui Department of Fire and Public Safety is to protect life, property, and the environment from fires, hazardous material releases and other life-threatening emergencies. The Department of Fire and Public Safety has fourteen (14) stations throughout the County including ten (10) stations on the island of Maui. The Wailuku station is assigned to the Maalaea region.

Potential Impacts and Mitigation Measures. The proposed seawall repair work will not impact the current service area limits for police and fire protection. The proposed project will not impact Fire flow requirements for the Milowai Ma'alaea property.

3. Schools

Existing Conditions. Maui schools are organized into complexes and complex-areas. A complex consists of a high school and all of the intermediate/middle and elementary schools that flow into it. Groups of two (2) to four (4) complexes form a "complex area" that is under the supervision of a complex area superintendent. The Milowai Ma'alaea residential condominium is located within the State Department of Education's (DOE) Baldwin High School Complex.

Currently, the State DOE is planning to build a new high school for grades 9-12 in Kihei on approximately 77 acres mauka of Piilani Highway between Kulanihakoi and Waipuilani Gulches, north of the Kihei Research and Technology Park. Phase I is slated to open in 2016 with a design capacity of 930 students, staff and visitors and Phase II is planned to open in 2025 with a design capacity of 1,941.

Potential Impacts and Mitigation Measures. The proposed seawall repair work will not result in increase school enrollment or population such as housing; therefore the proposed project will not impact schools in Maui County.

4. Medical Facilities

Existing Conditions. Located in Wailuku, the approximately 200-bed Maui Memorial Medical Center provides acute and emergency health care services for the County of Maui. Various private care physicians and clinics in the West Maui region also provide medical care and out patient services. In addition, American Medical Response provides 24-hour emergency medical service through ten ambulance facilities stationed throughout the County, including eight (8) facilities on the island of Maui.

Potential Impacts and Mitigation Measures. The proposed seawall repair work will not generate a demand for new or additional health care facilities or services or have an adverse impact upon existing medical facilities and emergency medical response.

5. Solid Waste

Existing Conditions. The Solid Waste Division of the Department of Environmental Management is responsible for the collection and disposal of residential refuse on the island of Maui. County landfills located in Hana, Central Maui, Lana`i, and Moloka`i accepts residential

and commercial solid waste for disposal. In addition to the disposal of solid waste, the Central Maui Landfill, which is located near Pu`unene, contains recycling, and composting facilities and also accepts green waste and used motor oil.

In the Ma'alaea area, self-hauled residential refuse is taken to the Central Maui Landfill. The Maui Demolition and Construction Landfill, a commercial facility near Ma'alaea, accepts construction and demolition waste for disposal.

Potential Impacts and Mitigation Measures. As previously indicated, the seawall repair work will not contribute towards an increase in solid waste. If construction waste is generated it will be reused or disposed of properly. As such, no significant impacts to solid waste services and facilities are anticipated. The Maui County Department of Environmental Management had no comments on the proposed seawall repair work. (**See:** Appendix K, Comments on the Draft EA.)

D. INFRASTRUCTURE

1. Water

Existing Conditions. The Maui Department of Water Supply (DWS) provides domestic water and fire flow service to the Milowai Ma'alaea residential condominium project. There is an existing 8-inch waterline along Hauoli Road which connects to the existing 300,000 gallon reservoir mauka of Honoapiilani Highway. The water for this water system is supplied from the Central Maui source. (**See:** Appendix C, Preliminary Engineering Report.)

Potential Impacts and Mitigation Measures. The proposed seawall repair work will not increase domestic water consumption, fire flow, or irrigation demand, therefore the repair work is not expected to have an adverse effect upon the County wastewater system.

2. Wastewater

Existing Conditions. There are no County sewer facilities in the Maalaea area. There is an existing privately owned and operated onsite wastewater treatment plant which collects and processes wastewater from the Milowai Condominium. After the treatment process, wastewater is disposed through an injection well. (**See:** Appendix C, Preliminary Engineering Report.)

Potential Impacts and Mitigation Measures. There will be no increase in the quantity of wastewater generated from the project. Wastewater will continue to be processed by the existing onsite private wastewater treatment plant. The proposed seawall repair work is not expected to have an adverse effect upon the County wastewater system. The Maui County Department of Public Works had no comments on the proposed seawall repair work. (**See:** Appendix K, Comments on the Draft EA.)

3. Drainage

Existing Conditions. A Preliminary Engineering Report (PER) for the proposed project was prepared in July 2012 by Otomo Engineering. The parcel slopes down in a north to south direction from an elevation of approximately 14 feet above mean sea level at the northwesterly corner to approximately 6 feet above mean seal level at the southwesterly corner, averaging approximately 2.5%. Presently, runoff from the project site sheet flows in an north to south direction and into the existing drainage improvements which was installed as part of the Milowai project. The majority of runoff from the impervious areas is currently collected in onsite catch basins and conveyed to the drainage swale located along the western property line. The drainage swale traverses from Hauoli Road and outlets at the southwestern corner of the subject parcel and into Maalaea Harbor. The existing run-off at the Milowai resulting from a 50-year storm is 3.83 cfs. The existing drainage pattern at the property centers on the drainage swale and easement at the western edge of the property. Run-off is conveyed from *mauka* A&B land (HC&S fields), across Hauoli Street, through the drainage easement and into the Maalaea Harbor. Runoff generated by the Milowai is collected in onsite catch basins and conveyed into the same drainage easement and ultimately into the Maalaea Harbor.

(**See:** Appendix C, Preliminary Engineering Report.)

Potential Impacts and Mitigation Measures. No new development is being proposed as part of the repair work. The preferred alternative and the sloping rock revetment alternative would generate no increase in run-off volumes, therefore the drainage patterns would be unchanged for either alternative. Furthermore, the drainage pattern will remain unchanged from the existing condition. (**See:** Appendix C, Preliminary Engineering Report.)

Besides the preceding measures, appropriate Best Management Practices (BMPs) will be implemented during construction to ensure that storm water runoff will not adversely affect downstream and

adjacent properties or negatively impact stream and coastal resources and water quality. Examples of BMPs for controlling soil erosion and sedimentation include but are not limited to the following:

- Clearing shall be kept to the minimum necessary for equipment operation.
- Construction shall be sequenced to minimize the time of exposure of cleared surface areas.
- Stabilization shall be accomplished by protecting areas of disturbed soils from rainfall and runoff by use of structural controls such as PVC sheets, geotextile filter fabric, berms or sediment basins, or vegetative controls such as grass seeding and/or hydro-mulching.
- Temporary erosion controls shall not be removed before permanent erosion controls are in place and established.
- All control measures shall be checked and repaired as necessary (e.g., weekly, during dry periods, and within 24 hours after any rainfall event of 0.5 inches or greater within a 24-hour period). During prolonged rainfall, daily inspection will be required. The contractor shall maintain records of checks and repairs to structural and vegetative controls.
- A stabilized construction entrance with a required 50-foot minimum length shall be provided to reduce vehicle tracking of sediments.
- Frequent wetting of exposed surfaces shall be used to minimize fugitive dust.

<u>As requested in comment letters from the State Department of Land and Natural Resources and the Maui Planning Commission, the following additional BMP's will be implemented a part of the seawall repair.</u>

- <u>An effective turbidity barrier (e.g. silt curtain) shall be deployed as necessary to isolate the construction activity, to avoid degradation of marine waters and prevent migration of fine material and suspended solids during the construction operations. Barriers shall extend to the ocean bottom and be</u>

weighed down. The barriers shall remain in place during construction and until post-construction water quality monitoring results show water quality inside the barrier to be equivalent to ambient conditions as shown by control stations outside of the turbidity barriers.

- Excavated material that is stockpiled on-site will be contained by barrier systems to prevent run-off into marine waters.

- Fueling of equipment shall take place away from the water. Fuels, oils and waste materials shall be properly contained and not be allowed to leak, leach or otherwise enter marine waters. The Contractor shall have established procedures for immediate clean up of fuel or oil spills.

- The contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface or marine waters. Shoreline construction activities shall cease when ocean conditions become severe enough that containment devices (i.e. silt curtains) become ineffective. Environmental resources outside the immediate area of material removal shall be protected.

- A dust control program will be implemented, and wind blown sand and dust shall be prevented from blowing.

- Material delivery and storage shall take place in designated areas.

- The work shall be completed in accordance with all applicable State and County health and safety regulations.

- Concrete truck wash water shall be contained in pits or other containment devices provided with impermeable liners for evaporative dissipation. Spoil shall be disposed of at an appropriate landfill site.

- Stockpiled material for use or reuse in construction shall not be co-mingled with concrete truck wash water, equipment wash down effluent or other spoil.

Prior to the repair work, the Applicant's contractor will provide a plan for the disposal and or recycling of the existing wall that is replaced as requested by the Department of Environmental Management, Solid Waste Division.

The proposed seawall repair project is not expected to result in any adverse drainage impacts to adjoining or downstream properties.

4. Roadways

Existing Conditions. The Milowai Ma'alaea Residential Condominium is directly accessed by Hauoli Street. Honoapiilani Highway intersects with Ma'alaea Road which provides access to Hauoli Street.

In the project area, Honoapiilani Highway is classified as an arterial by the State, while Ma'alaea Road and Hauoli Street are considered collectors and are under the control of the Maui Department of Public Works (DPW).

Potential Impacts and Mitigation Measures. The Milowai Ma'alaea Residential Condominium seawall repair work is not the type of project that will increase traffic. During the construction phase which is expected to last six (6) weeks, equipment truck use will be minimal and limited to daytime hours. It is anticipated that the construction vehicle traffic will not impact the Milowai or the surrounding area. Therefore the repair work is not expected to impact the existing roadways on Maui.

5. Electrical and Telephone Systems

Existing Conditions. Maui Electric Company (MECO) and Hawaiian Telcom provide electrical and telephone services to the Ma'alaea region. In the vicinity of the subject parcel, power and phone lines are placed on overhead utility poles along the southern side of Hauoli Street. Electrical and telephone service for the subject parcel was installed underground from Hauoli Road as part of the Milowai Condominium development.

Potential Impacts and Mitigation Measures. As previously indicated, the proposed sea wall repair project will not impact electrical, cable or telephone systems.

IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE LAW

The rules of the State Land Use Commission are set forth in Chapter 205, HRS. These rules establish four (4) land use districts in the State of Hawai`i into which all lands in the State are placed: *Urban, Rural, Agricultural,* and *Conservation*. The subject parcel is located in the *State Urban District*. (**See:** Figure 6, State Land Use District Map.)

Pursuant to Chapter 15-15, HAR, any and all uses permitted by local (County) government, either by ordinances or rules, may be allowed in the *State Urban District*, subject to any conditions imposed by the State Land Use Commission.

The seawall repair work is permissible in the *State Urban District*.

B. GENERAL PLAN OF THE COUNTY

The Maui Island Plan serves as the regional plan for the Island of Maui. The Plan is comprised of the following ten elements: 1) Population; 2) Heritage Resources; 3) Natural Hazards; 4) Economic Development; 5) Housing; 6) Infrastructure and Public Facilities; 7) Land Use; 8) Directed Growth Plan; 9) Long Range Implementation Plan; and 10) Monitoring and Evaluation. Each element contains goals, objectives, policies and implementing actions. The Directed Growth Plan identifies the location of future development through 2030. The Directed Growth Plan is intended to guide the location and general character of future urban development and will direct future zoning changes and guide the development of the County's short-term and long-term capital improvement plan budgets.

The General Plan of the County of Maui refers to a hierarchy of planning documents that together set forth future growth and policy direction in the County. The General Plan is comprised of the following documents: 1) County-wide Policy Plan; 2) Maui Island Plan; and 3) nine community plans.

The County-wide Policy Plan was adopted on March 19, 2010 and is a broad policy document that identifies a vision for the future of Maui County. It establishes a set of guiding principles and provides comprehensive goals, objectives, policies and implementing actions that portray the desired direction of the County's future. The County-wide Policy Plan provides the policy framework for the development of the Maui Island Plan and nine Community Plans.

The Maui Island Plan functions as a regional plan and addresses the policies and issued that are not confined to just one community plan area, including regional systems such as transportation, utilities and growth management, for the Island of Maui. Together, the Island and Community Plans develop strategies with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design and other matters related to development.

The County-wide Policy Plan guiding principles, goals, objectives, policies and implementing actions that are as follows:

A. Protect the Natural Environment			
Goal: Maui County's natural environment and distinctive open spaces will be preserved, managed, and cared for in perpetuity.			
Objective:			
(3) Improve the stewardship of the natural environment.			
Policies:			
c. Evaluate development to assess potential short-term and long-term impacts on land, air, aquatic, and marine environments.			
h. Provide public access to beaches and shoreline for recreational and cultural purposes where appropriate.			
Analysis: The Milowai is located within the State's Special Management Area and the proposed seawall repair work is not expected to negatively impact the shoreline or reef environments. Best management practices will be implemented to mitigate non-point source pollution to Maui's coastal resources. In addition, the proposed repair work will stop the current soil erosion entering the Ocean. The repair work will not impact the existing shoreline access provided to the west of the Milowai condominium building. The site itself is not located within an area of critical habitat, threatened or endangered species of flora or fauna are not on the property.			

F. Strengthen the Local Economy			
Goal: Maui County's economy will be diverse, sustainable, and supportive of community values.			
Objective 3:			
Support a visitor industry that respects the resident culture and the environment.			
Policies:			
f. Encourage resident ownership of visitor-related businesses and facilities.			
Analysis: The ownership group of the Milowai Ma'alaea are residents and the residential condominium complex that has been developed since 1975 and will continue to offer residences and short term vacation rental. The proposed seawall repair work will protect and maintain the size of the lawn that is enjoyed by residents and visitors.			
J. Promote Sustainable Land Use and Growth Management			
Goal: Community character, lifestyles, economies, and natural assets will be preserved by managing growth and using land in a sustainable manner.			
Objective:			
1. Improve land use management and implement a directed-growth strategy.			
Policies:			
k. Preserve the public's rights of access to and continuous lateral access along all shorelines.			
Analysis: The Milowai Ma'alaea is an existing residential condominium on the shoreline. To the west of the building there is a drainage way that the public trespasses through for shoreline access ~~pathway~~ from Hauoli Street to a small sand beach that is open to the public. Occasionally fishermen use the beach however it has been the observation of the residents of the Milowai that a majority of beach visitors go to Haycraft Park. ~~Milowai will maintain the existing shoreline access.~~ The Milowai has never had a formal pathway established on its property, laterally along the shoreline. In an effort to enhance lateral shoreline access the Milowai is proposing to provide directional signage to identify a public access pathway along the shoreline.			

C. KIHEI-MAKENA COMMUNITY PLAN

Maui County has adopted nine (9) community plans. Each community plan examines the conditions and needs of the planning region and outlines objectives, policies, planning standards and implementing actions to guide future growth and development in accordance with the Maui County General Plan. Each community plan serves as a relatively detailed agenda for implementing the broad General Plan themes, objectives and policies.

The subject parcel is located in the Kihei-Makena Community Plan region and is designated for *(LI) Light Industrial* use. (**See:** Figure 11, Kihei-Makena Community Plan Map.) The Community Plan was adopted by Ordinance No. 2641 and went into effect on March 6, 1998.

The following Community Plan objectives and policies are applicable to the proposed project:

> The following Kihei-Makena Community Plan goals, objectives, and policies are applicable to the proposed action:

Land Use
Goal*: A well-planned community with land use and development patterns designed to achieve the efficient and timely provision of infrastructural and community needs while preserving and enhancing the unique character of Ma'alaea, Kihei, Wailea and Makena as well as the region's natural environment, marine resources and traditional shoreline uses.*
Analysis: The proposed seawall repair work will not impact the Land Use of the Milowai property or the surrounding urban area. The Milowai Ma'alaea is an existing residential condominium and no new building development is proposed as part of the seawall repair. The proposed repair work will not impact the existing public views of Haleakala, the West Maui Mountains or the Pacific Ocean.
Environment

Goal: Preservation, protection, and enhancement of Kihei-Makena's unique and fragile environmental resources.			
c. Require that new shoreline development respect shoreline resources and maintain public access: *1) Existing dune formations are important elements of the natural setting and should remain intact.* *2) Indigenous or endemic strand vegetation should remain undisturbed; new development and landscaping should treat such vegetation as given conditions.* *3) Planning for new shoreline development, as well as redevelopment, shall consider the cyclic nature of beach processes. Setbacks shall be used to provide a sufficient buffer between the ocean and structures to allow for periodic and long-term accretion and erosion of the shoreline. A Coastal Erosion Rate Analysis shall be developed. The planning commissions are encouraged to incorporate data from the analysis into planning decisions for shoreline areas, especially with respect to shoreline building setbacks. In the interim period prior to the completion of the analysis, the planning commissions are further encouraged to utilize minimum setbacks for multi-family and hotel uses of 150 feet from sandy shorelines, and 75 feet from rocky shorelines, or 25% of the average lot depth, whichever is greater.* *Where shoreline erosion threatens existing structures or facilities, beach replenishment shall be the preferred means of controlling erosion, as opposed to sole reliance on seawalls or other permanent shoreline hardening structures.* *4) Storm water run-off from proposed developments shall not adversely affect the marine environment and nearshore and offshore water quality.* *5) Planning, design, and layout for new development shall be integrated with public shoreline use and sound principles of resource management.*	✓		
Analysis: The proposed project is the repair of an existing seawall and is not new development; therefore the proposed project is not anticipated to disrupt Kihei-Makena's unique and fragile environmental resources. During the construction phase best management practices will be implemented to mitigate non-point source pollution to Maui's coastal resources.			
Economic Activity			
Goal: A diversified and stable economic base which serves resident and visitor needs while providing long-term resident employment.			
Analysis: As discussed in Section III.B.3 (Economy) In the Short term, construction activities would support area businesses specializing in seawall projects, however the proposed seawall repair work is not expected to substantially impact the Island of Maui economy.			

Housing and Urban Design
Goal: A variety of attractive, sanitary, safe and affordable homes for Kihei's residents, especially for families earning less than the median income for families within the County. Also, a built environment which provides complementary and aesthetically pleasing physical and visual linkages with the natural environment.
Analysis: As discussed in Section III.B.2 (Housing) the Milowai is an existing residential condominium. The seawall repair work will not include new building development or expansion of the existing building therefore Chapter 2.96, MCC Residential Workforce housing Policy is not applicable.

D. MAUI COUNTY ZONING

The subject parcel is currently zoned for M-1 Light Industrial and A-2, Apartment District uses. (**See:** Figure 8, Maui County Zoning) Apartment Houses are a permitted use in the A-2 Apartment and M-1 Light Industrial Districts; therefore the Milowai residential condominium is in conformance with the Maui County Zoning designations.

E. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

The subject project is located within the Special Management Area (SMA). As such, the proposed repairs require an SMA permit. Pursuant to Chapter 205A, Hawaii Revised Statues, and the Rules and Regulations of the Planning Commission of the County of Maui, projects located within the SMA are evaluated with respect to SMA objectives, policies, and guidelines. This section addresses the project's relationship to applicable coastal zone management considerations, as set forth in Chapter 205A and the rules and Regulations of the Planning Commission.

1. Recreational Resources

Objective: Provide coastal recreational resources accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreation planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring placement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or require reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing;

(viii) Encourage reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning

commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Analysis. The Milowai abuts the shoreline; however the proposed project will not have a direct impact on the publics use or access to the sandy beach. Public access to the sandy beach is provided along the west side of the Milowai building. The small sand beach that was created as a result of trapped sand from the installation of the Maalaea Small Boat Harbor breakwater in the late 1950's. The primary users of the access are local fisherman to fish from the breakwater, however a majority of the public go to Haycraft Beach Park down the road approximately 0.46 miles from the Milowai. The Milowai has never had a formal pathway established on its property, laterally along the shoreline. In an effort to enhance lateral shoreline access the Milowai is proposing to provide directional signage to identify a public access pathway along the shoreline.

2. *Historical/Cultural Resources*

Objective: *Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

Policies:

(a) *Identify and analyze significant archeological resources;*

(b) *Maximize information retention through preservation of remains and artifacts or salvage operations; and*

(c) *Support state goals for protection, restoration, interpretation, and display of historic structures.*

Analysis. As discussed in Section III of this report, the State Historic Preservation Division (SHPD) accepted the archaeological monitoring plan for the subject parcel. In addition, the proposed project is not expected to have an adverse impact upon historical and cultural resources or native Hawaiian cultural practices and beliefs. The proposed project is consistent with the SMA objective of protecting and preserving historic and cultural resources in the coastal zone

management area that are significant in Hawaiian and American history and culture.

3. Scenic and Open Space Resources

Objective: *Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.*

Policies:

(a) *Identify valued scenic resources in the coastal zone management area;*

(b) *Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;*

(c) *Preserve, maintain, and where desirable, improve and restore shoreline open space and scenic resources; and*

(d) *Encourage those developments that are not coastal dependent to locate in inland areas.*

Analysis. As discussed in Section III of this report, the proposed project is not expected to result in any significant impacts to scenic and open space resources as the subject parcel is not located within a scenic view corridor nor does it contain any scenic features. The proposed seawall repair work will not alter the existing public views to and along the shoreline.

4. Coastal Ecosystems

Objective: *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

Policies:

(a) *Improve the technical basis for natural resource management;*

(b) *Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;*

(c) *Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and*

(d) *Promote water quantity and quality planning and management practices, which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses, which violate state water quality standards.*

Analysis. As described in Section III of this report, the proposed project is not expected to have an adverse effect upon the region's coastal ecosystem. With the incorporation of Best Management Practices and appropriate mitigation measures during the seawall repair work, no significant adverse impacts to near shore waters from non-point sources of pollution are anticipated.

5. Economic Uses

Objective: *Provide public or private facilities and improvements important to the State's economy in suitable locations.*

Policies:

(a) *Concentrate coastal dependent development in appropriate areas;*

(b) *Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area;*

(c) *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*

(i) *Use of presently designated locations is not feasible;*

(ii) *Adverse environmental impacts are minimized; and*

(iii) The development is important to the State's economy.

Analysis. The proposed seawall repair work will not impact public or private facilities important to the State's economy. The Milowai is an existing residential condominium and will continue to contribute towards Maui's economy in the form of the property taxes collected by the County.

6. Coastal Hazards

Objective: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.*

Policies:

(a) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and non-point source pollution hazards;

(b) Control development in areas subject to storm wave, tsunami, flood, erosion, subsidence, and point and non-point pollution hazards;

(c) Ensure that developments comply with requirements of the Federal Flood Insurance Program;

(d) Prevent coastal flooding from inland projects; and

(e) Develop a coastal point and non-point source pollution control program.

Analysis. The proposed repair work will protect the landward portion of the property from erosion due to storm waves. Stabilization of the shoreline will provide greater site safety to other residents living along the shoreline. Shoreline stabilization will also positively impact the nearshore waters quality related to eroded soils transported by wave action.

7. Managing Development

Objective: *Improve the development review process, communication, and public participation in the management of coastal resources hazards.*

Policies:

(a) *Use, implement, and enforce existing laws effectively to the maximum extent possible in managing present and future coastal zone development;*

(b) *Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and*

(c) *Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning process and review process.*

Analysis. The proposed seawall repair work will be conducted in accordance with applicable State and County requirements. Opportunity for review of the proposed action is provided through the County's Special Management Area permitting process and the States Environmental Assessment review process.

8. Public Participation

Objective: *Stimulate public awareness, education, and participation in coastal management.*

Policies:

(a) *Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program.*

(b) *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and*

(c) *Organize workshops, policy dialogues, and site-specific medications to respond to coastal issues and conflicts.*

Analysis. As part of the early consultation process for the preparation of the Draft Environmental Assessment (DEA), a description of the project and request for comments was sent to various government agencies. (**See:** Appendix A, Early Consultation Letters) The public will have an opportunity to review and comment on the proposed project during the environmental review process. Opportunities for public participation will be available during future SMA permit processing which would involve public notification by mail to surrounding owners within 500 feet of the property and a public hearing before the Maui Planning Commission. As part of this FEA, the comment letters with responses are included (**See:** Appendix K, DEA Comment letters)

9. Beach Protection

Objective: *Protect beaches for public use and recreation.*

Policies:

(a) *Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;*

(b) *Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and*

(c) *Minimize the construction of public erosion-protection structures seaward of the shoreline.*

Analysis. The seawall repair work is an engineered solution which improves public safety and does not interfere with public's use of the small sandy beach in the Maalaea Small Boat Harbor.

10. Marine Resources

Objective: *Implement the State's ocean resources management plan.*

Policies:

(a) *Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*

(b) *Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*

(c) *Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;*

(d) *Assert and articulate the interest of the state as a partner with federal agencies in the sound management of the ocean resources within the United States exclusive economic zone;*

(e) *Promote research, study, and understanding of ocean processes, marine life, and other ocean development activities relate to and impact upon the ocean and coastal resources; and*

(f) *Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

Analysis. The proposed project does not involve the direct use or development of marine resources. In addition, with the incorporation of erosion and drainage control measures during construction and after construction as identified in this report, there should not be significant adverse impacts to nearshore waters from point and non-point sources of pollution. Therefore, the seawall repairs will not produce and significant impacts on any coastal or marine resources.

V. CHAPTER 343, HRS SIGNIFICANCE CRITERIA

Since the proposed repair work involves an unpermitted seawall within the Shoreline Setback Area this ~~Draft~~ Final Environmental Assessment (FEA) is required by Chapter 343, Hawaii Revised Statutes (HRS). A finding of no significant impact (FONSI) is anticipated and therefore and Environmental Impact Statement (EIS) will not be required for the proposed action. In accordance with Title 11, Department of Health, chapter 200 and Subchapter 6, 11-200-12, Environmental Impact Statement Rules, and based on the detailed analysis contained within this document, the following conclusions are supported.

(a) *The proposed action will not result in an irrevocable commitment to loss or destruction of any natural or cultural resource.*

As documented in this report, the proposed project will not result in the loss or destruction of any natural or cultural resources.

(b) *The proposed action will not curtail the range of beneficial uses of the environment.*

The range of beneficial uses of the environment will not be curtailed by the proposed seawall repair work. The repair work will reduce the amount of sediment that is currently entering the ocean, positively impacting the coastal environment. The repair work will enhance safety in the shoreline area immediately fronting the Milowai. Based upon existing development on neighboring properties, it is unlikely the improvements will result in a significant change to the coastal area. Thus, the proposed action will not curtail the range of beneficial uses of the environment.

(c) *The proposed action will not conflict with State or County long-term environmental policies and goals as expressed in Chapter 344, HRS, and those which are more specifically outlined in the Conservation District Rules.*

The repair work is being developed in compliance with the State's long-term environmental goals. As documented in this report, appropriate mitigation measures will be implemented to minimize the potential for

negative impacts to the environment, including near and off-shore coastal waters. The project will not have any impact on flora and fauna, and is not expected to have a negative impact on archaeological or cultural resources.

(d) *The proposed action will no substantially affect the economic or social welfare and activities of the community, County or State.*

The proposed repair work will improve public safety in the immediate area. Short-term economic impacts will result from the increase in activity associated with the construction of the project. Because of the limited scope of the project, impacts on the socio-economic environment will be minimal.

(e). *The proposed action will not substantially affect public health.*

There are no special or unique aspects of the project that will have a direct impact on public health.

(f). *The proposed action will not result in substantial secondary impacts.*

The proposed project is not a population generator nor does it trigger the Maui County Residential workforce housing requirements. Increase activity at the site during the repair work may result in an increase in traffic from construction equipment, however the repair work is limited in scope and will not substantially impact the environment. Based on existing development in the project vicinity, the proposed repair work is not expected to cause any secondary effects that would significantly impact the coastal area.

(g). *The proposed action will not involve substantial degradation of environmental quality.*

Mitigation measures will be implemented during the construction phase in order to minimize negative impacts on the environment, especially with regards to construction runoff. During the repair work, mitigation measures will be incorporated to minimize impacts to nearshore water quality that could arise as result of the repair work. The proposed repair work will prevent erosion and keep soils from entering into coastal waters. Other environmental resources such as endangered species of flora and fauna, air and water quality and archaeological resources will not be significantly impacted by the repair work.

(h). *The proposed project will not produce cumulative impacts and does not have considerable effect upon the environment or involve a commitment for larger actions.*

The proposed repair work does not involve a commitment for larger action on behalf of the applicant or any public agency. The subject property is State and County zoned and community planned for urban development, and as such, is part of the planned future growth of that region. As described in this report, the repair work will not significantly impact public infrastructure and services including roadways, drainage facilities, water systems, sewers and educational facilities. In addition, the repair work will not increase population growth and will therefore not produce considerable effect on the environment nor require a commitment for larger actions by governmental agencies.

Armoring of a shoreline area is known to lead to successive armoring of adjacent shoreline areas, which creates a large (cumulative) structure that can have greater impacts. As discussed above, most of the shoreline adjacent to the Milowai is artificially armored with vertical reinforced concrete stone masonry seawalls. Given that significant shoreline armoring exists, repair work will not encourage addition development or require a commitment for larger actions.

(i). *The proposed project will not affect a rare, threatened, or endangered species, or its habitat.*

There are no rare, threatened, or endangered species of flora and fauna at the project site.

(j). *Detrimentally affects air or water quality or ambient noise levels.*

Short-term impacts upon air and water quality and ambient noise levels could occur during construction. These effects, however, will be minimized through the use of appropriate mitigation measures and Best Management Practices. Adverse long-term impacts to these environmental components are not anticipated.

(k) *The proposed action will not substantially affect or be subject to damage by being located in an environmentally sensitive area such as a flood plain, shoreline, tsunami zone, beach, erosion prone areas, estuary, fresh waters, geologically hazardous land, estuary, fresh water, or coastal waters.*

There are no ponds, wetlands, streams or important plant or animal habitats on the subject parcel nor are there any rare, threatened or endangered species of flora and fauna on the site.

The subject parcel is primarily located in Zone X, an area determined to be outside the 0.2 percent annual chance flood plain (i.e., a low risk flood hazard area). The seawall repair will be engineered to withstand the design forces calculated by the structural engineer, thus reducing the likelihood that an extreme event would damage the structure. The proposed project therefore should not be affected by flood hazard, or have adverse impacts upon its neighbors with regard to flood hazard potential.

(l) *Substantially affects scenic vistas and view planes identified in county or state plans or studies.*

The proposed seawall repair work will not result in the vertical or horizontal expansion of the wall, therefore no significant impacts to the existing scenic vistas and view planes are anticipated.

(m) *Requires substantial energy consumption.*

The proposed seawall repair work will not require substantial energy consumption.

VI. Justification for Shoreline Setback Variance

As set forth in the Shoreline Rules for the Maui Planning Commission, §12-203-2, "Purpose":

Due to competing demands for utilization and preservation of the beach and ocean resources, it is imperative:

(1) That use and enjoyment of the shoreline area be ensured for the public to the fullest extent possible;

The proposed project will not prevent the public from full use and enjoyment of the shoreline area to which it is already entitled. The Milowai has never had a formal pathway established on its property, laterally along the shoreline. In an effort to enhance lateral shoreline access the Milowai is proposing to provide directional signage to identify a public access pathway along the shoreline.

(2) That the natural shoreline environment be preserved;

The repair work is just landward of the assumed shoreline, and will not result in the expansion of the wall. Therefore the proposed repair work is not expected to alter the existing shoreline environment.

(3) That man-made features in the shoreline area be limited to features compatible with the shoreline area;

The proposed action involves the repair of an existing seawall; therefore the proposed action does not include any new actions or features that are incompatible with the shoreline as it currently exists.

(4) That the natural movement of the shoreline be protected from development;

The proposed action involves the repair of an existing seawall within the shoreline setback area as determined by the Average Lot Depth (ALD) method. As previously noted, a majority of shoreline of Maalaea harbor in the vicinity of the Milowai is hardened with artificial protective structures. The proposed repair work is therefore not expected to affect natural movement of the shoreline

or other coastal processes in a manner different from existing conditions.

(5) That the quality of scenic and open space resources be protected, preserved, and where desirable, restored; and

As discussed in Section III.A.10, the proposed project will not involve vertical or horizontal expansion of the seawall therefore the project will not interfere with the existing public views to and along the shoreline.

(6) That adequate public access to and along the shoreline be provided.

The project site abuts the shoreline; however the proposed project will not have a direct impact on the publics use or access to the shoreline area. Public shoreline access is provided along the west side of the Milowai building. The pathway leads to a very small sand beach that was created as a result of trapped sand from the installation of the Small Boat Harbor breakwall. The primary users of the access are local fisherman to fish from the breakwall, however a majority of the public go to Haycraft Beach Park down the road from the Milowai. The Milowai has never had a formal pathway established on its property, laterally along the shoreline. In an effort to enhance lateral shoreline access the Milowai is proposing to provide directional signage to identify a public access pathway along the shoreline.

The variance request must meet §12-203-15 "Criteria for approval of a variance":

(a) A shoreline area variance may be granted for a structure or activity otherwise prohibited by this chapter, if the commission finds in writing, based on the record presented, that the proposed structure or activity is necessary for or ancillary to:

(4) Drainage;

(8) Private facilities or improvements which will neither adversely affect beach processes nor artificially fix the shoreline; provided that, the commission also finds that hardship will result to the applicant if the facilities or improvements are not allowed within the shoreline area;

and:

(b) A structure or activity may be granted a variance upon grounds of hardship if:

(1) The applicant would be deprived of reasonable use of the land if required to fully comply with the shoreline setback rules;

The condition of the existing seawall, along with documentation of prior erosion at the site, indicates that if left unchecked, the existing seawall will eventually collapse and erosion will continue, eventually threatening habitable structures on the property. Milowai would eventually lose more of its lawn and would be deprived of its reasonable use.

(2) The applicant's proposal is due to unique circumstances and does not draw into question the reasonableness of the shoreline setback rules; and

The proposed project does not draw into question the reasonableness of the shoreline setback rules. The purpose of the seawall repair work is to prevent future erosion of the property and potential undermining of the habitable structures; to prevent earthen soils from eroding and entering the coastal waters; and to remove the public hazard associated with the eventual collapse of the existing wall.

(3) The proposal is the practicable alternative which best conforms to the purpose of the shoreline setback rules.

As discussed in the above written justification for the requested variance, and in Section II.F of this document, the preferred alternative is the practicable option which best conforms to the purpose of the Shoreline Setback Rules.

VII. CONCLUSIONS

This ~~Draft~~ Final Environmental Assessment and consolidated applications for a Special Management Area (SMA) Use Permit and Shoreline Setback Variance (SSV) for repair to an existing seawall on a 1.240 acre site at the Milowai, Maui, Hawaii, analyzes the environmental and socio-economic impacts associated with the applicant's proposal to repair an existing seawall.

The proposed repair work is not anticipated to result in significant environmental impacts to surrounding properties, and/or archaeological and historic resources on the site or in the immediate area. Public infrastructure and services including roadways, sewer and water systems, medical facilities, police and fire protection, parks, and schools, will not be significantly impacted. The proposed action will not impact public view corridors and will not produce significant adverse impacts upon the visual character of the site and its immediate environs.

The subject property is situated within the State's Urban District and is Community Planned Light Industrial (LI) and County zoned M-1 Light Industrial District and A-2 Apartment District.

Based on the foregoing analysis and conclusion, the proposed repair project will not result in significant impacts to the environment and is consistent with the requirements of HRS Chapter 343, and a Finding of No Significant Impact (FONSI) is warranted. The applicant also requests approval of the Special Management Area Use Permit and Shoreline Setback Variance applications.

VIII. REFERENCES

1. County of Maui, Department of Planning, 2012. *Maui Island Plan,* Wailuku, Hawaii.

2. County of Maui, Department of Planning, *Kihei-Makena Community Plan*. 1996.

3. County of Maui, Department of Planning. 2010. *The Countywide Policy Plan, County of Maui 2030 General Plan*. Wailuku, Hawaii.

4. Environmental Planning Associates. August 31, 1990. Maui Coastal Scenic Resources Study. Lahaina, Hawaii.

5. Federal Emergency Management Agency, *Flood Insurance Rate Map.* Community Panel No. 1500030190E, September 25, 2009.

6. State of Hawaii, Department of Business, Economic Development and Tourism *"Table 1.1 Resident Population by County 1980-2040" DBEDT 2040 Series, March 2012*)

7. University of Hawai`i, Land Study Bureau, *Detailed Land Classification – Island of Maui,* May 1967.

8. U.S. Department of Agriculture, Soil Conservation Service in Cooperation with the University of Hawai`i, Agricultural Experiment Station, *Soil Survey of the Islands of Kauai, Oahu, Maui, Moloka`i, and Lana`i, State of Hawai`i*, 1972.

FIGURES

Figure 1
Regional Location Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

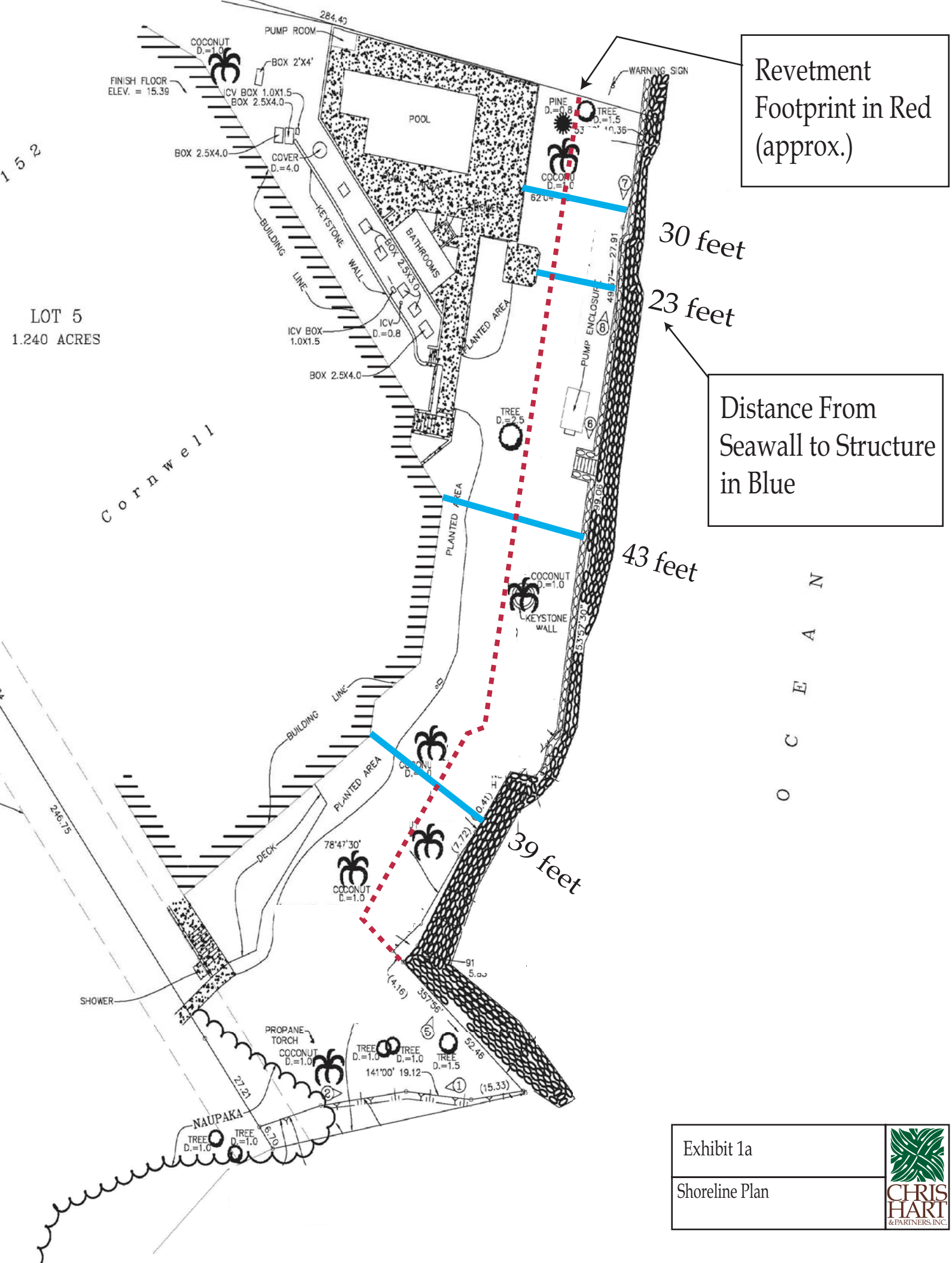


Exhibit 1a	CHRIS HART & PARTNERS, INC.
Shoreline Plan	

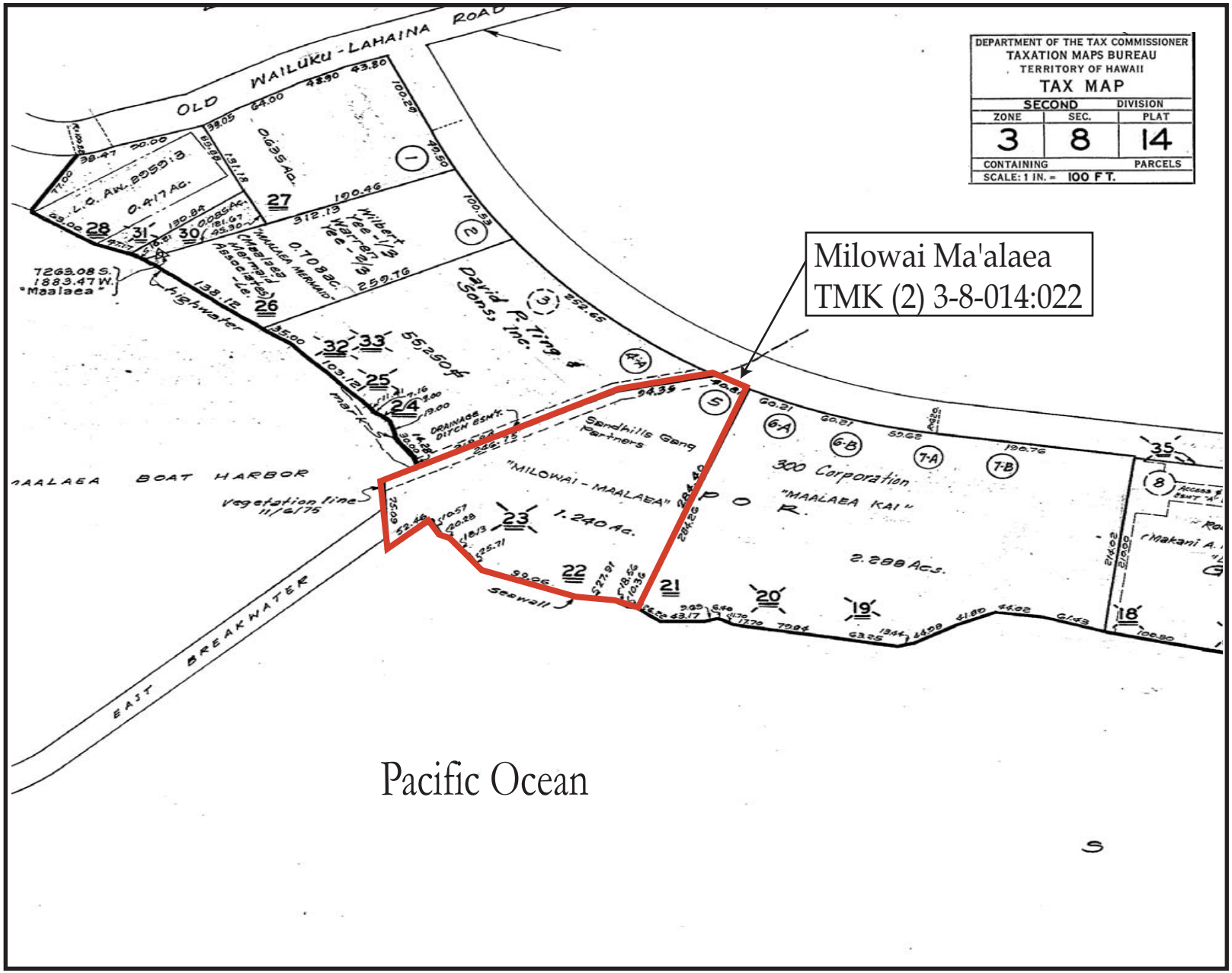
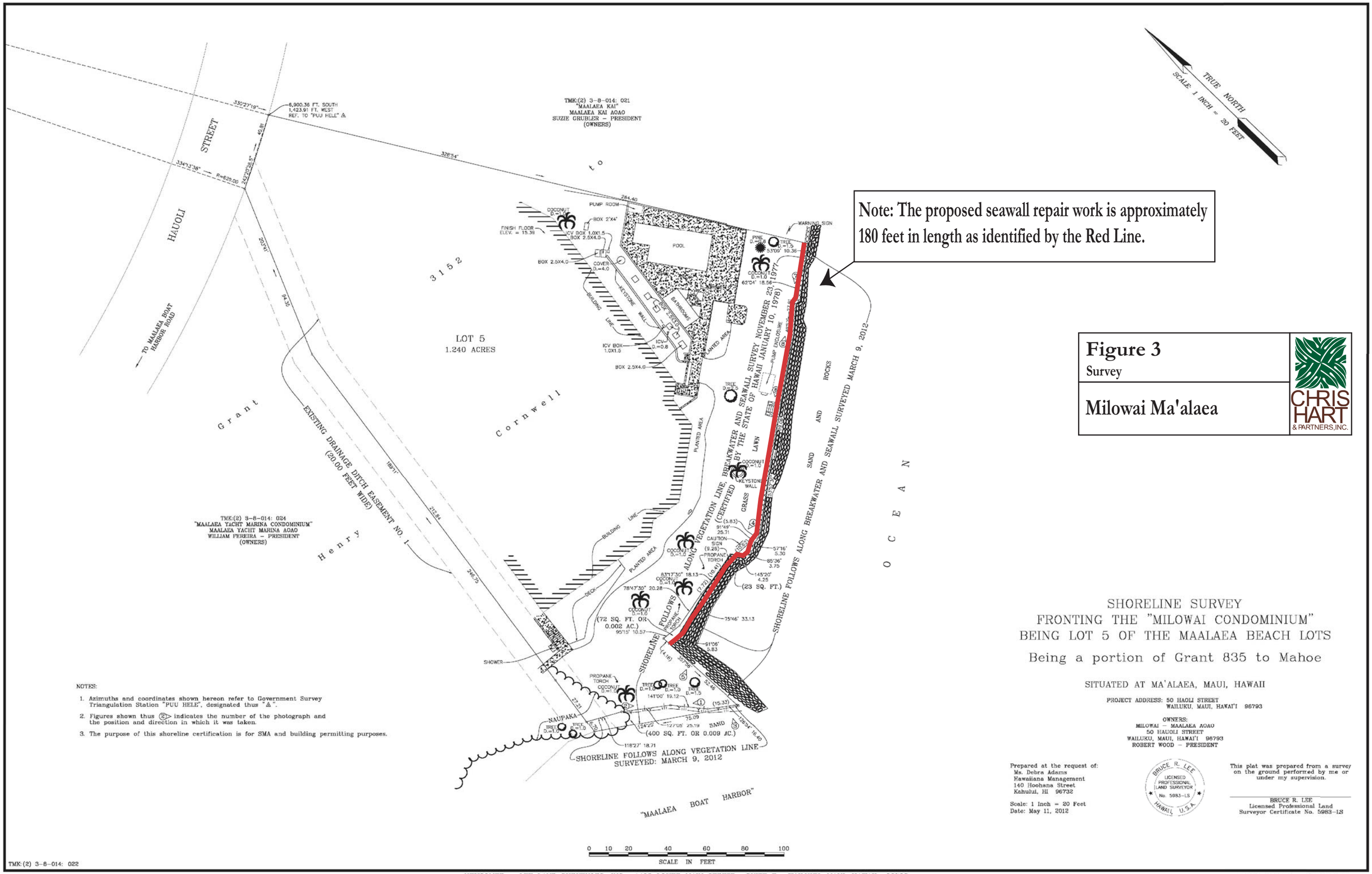


Figure 2
Tax Map Key

Not to Scale

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.



NOTES:

1. Azimuths and coordinates shown hereon refer to Government Survey Triangulation Station "PUU HELE", designated thus "△".
2. Figures shown thus ②> indicates the number of the photograph and the position and direction in which it was taken.
3. The purpose of this shoreline certification is for SMA and building permitting purposes.

Figure 3
Survey

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

SHORELINE SURVEY
FRONTING THE "MILOWAI CONDOMINIUM"
BEING LOT 5 OF THE MAALAEA BEACH LOTS

Being a portion of Grant 835 to Mahoe

SITUATED AT MA'ALAEA, MAUI, HAWAII

PROJECT ADDRESS: 50 HAOLI STREET
WAILUKU, MAUI, HAWAI'I 96793

OWNERS:
MILOWAI – MAALAEA AOAO
50 HAUOLI STREET
WAILUKU, MAUI, HAWAI'I 96793
ROBERT WOOD – PRESIDENT

Prepared at the request of:
Ms. Debra Adams
Hawaiiana Management
140 Hoohana Street
Kahului, HI 96732

Scale: 1 Inch = 20 Feet
Date: May 11, 2012

BRUCE R. LEE
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5983-LS
HAWAII, U.S.A.

This plat was prepared from a survey on the ground performed by me or under my supervision.

BRUCE R. LEE
Licensed Professional Land Surveyor Certificate No. 5983-LS

TMK:(2) 3-8-014: 022

24" X 36" = 6.0 SQ. FT.

NEWCOMER – LEE LAND SURVEYORS, INC. 1498 LOWER MAIN STREET, SUITE E, WAILUKU, MAUI, HAWAII 96793

DWG NO. 9322-SL JOB NO. 12-9322

Figure 4
Aerial Photograph

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

View of the Milowai and the existing seawall. Photo taken from the Ma'alaea breakwall.

View of the sink hole behind the top of the existing seawall. Note small sand beach and base of Ma'alaea breakwall in the background.

Photo of barbeque area and rear lawn.

View of the Milowai seawall and rear lawn with barbeque and Ma'alaea breakwall in the background.

View of the Milowai rear lawn and sandy beach on the west side of Ma'alaea breakwall. Note Ma'alaea small boat harbor in the background.

Photo of staircase to the ocean.

Figure 5
Site Photographs

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

View of the Milowai and the existing seawall. Photo taken from the Ma'alaea breakwall.

View of the sink hole behind the top of the existing seawall. Note small sand beach and base of Ma'alaea breakwall in the background.

View of the Milowai rear lawn and sandy beach on the west side of Ma'alaea breakwall, with Ma'alaea small boat harbor in the background.

View of the Milowai seawall and rear lawn.

View of the Milowai rear lawn facing west with the Ma'alaea breakwall and small boat harbor in the background.

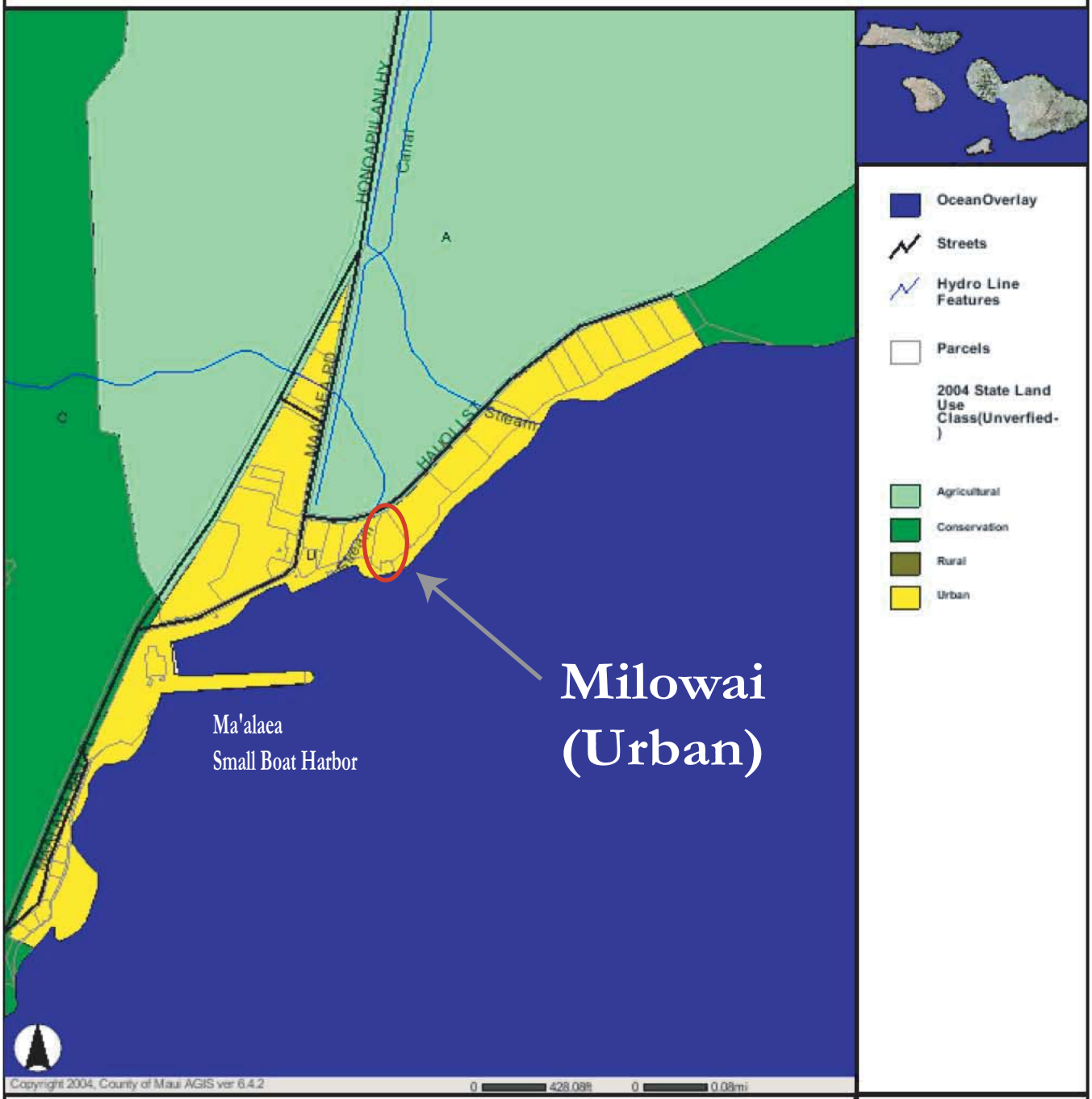
Photo of Ma'alaea breakwall.

Figure 5a
Site Photographs

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

MILOWAI



Refer to the Accela GIS Administrators Guide for instructions on how to set the disclaimer text displayed in this area.

Figure 6

State Land Use District Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

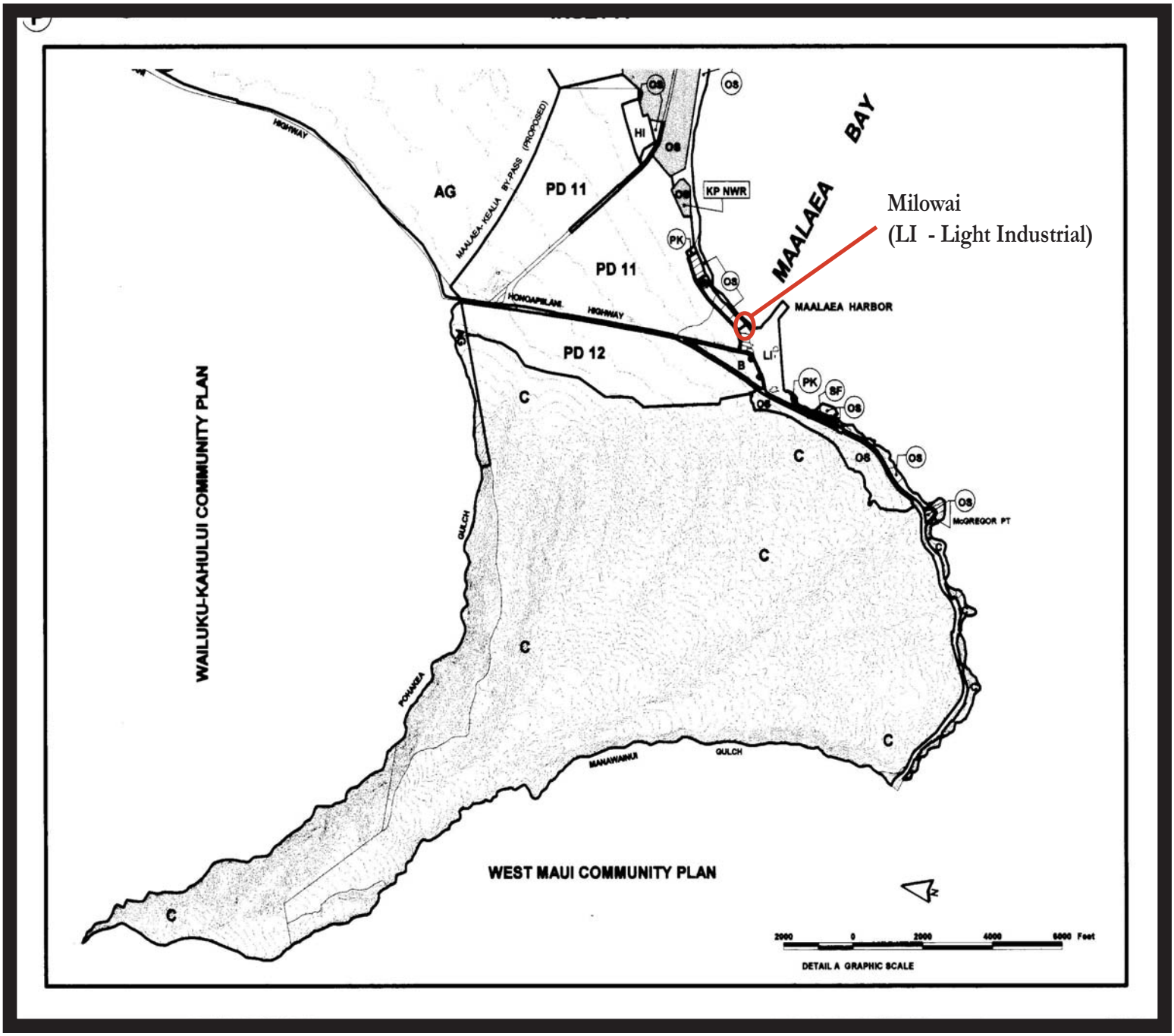


Figure 7

Kihei-Makena Community Plan Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

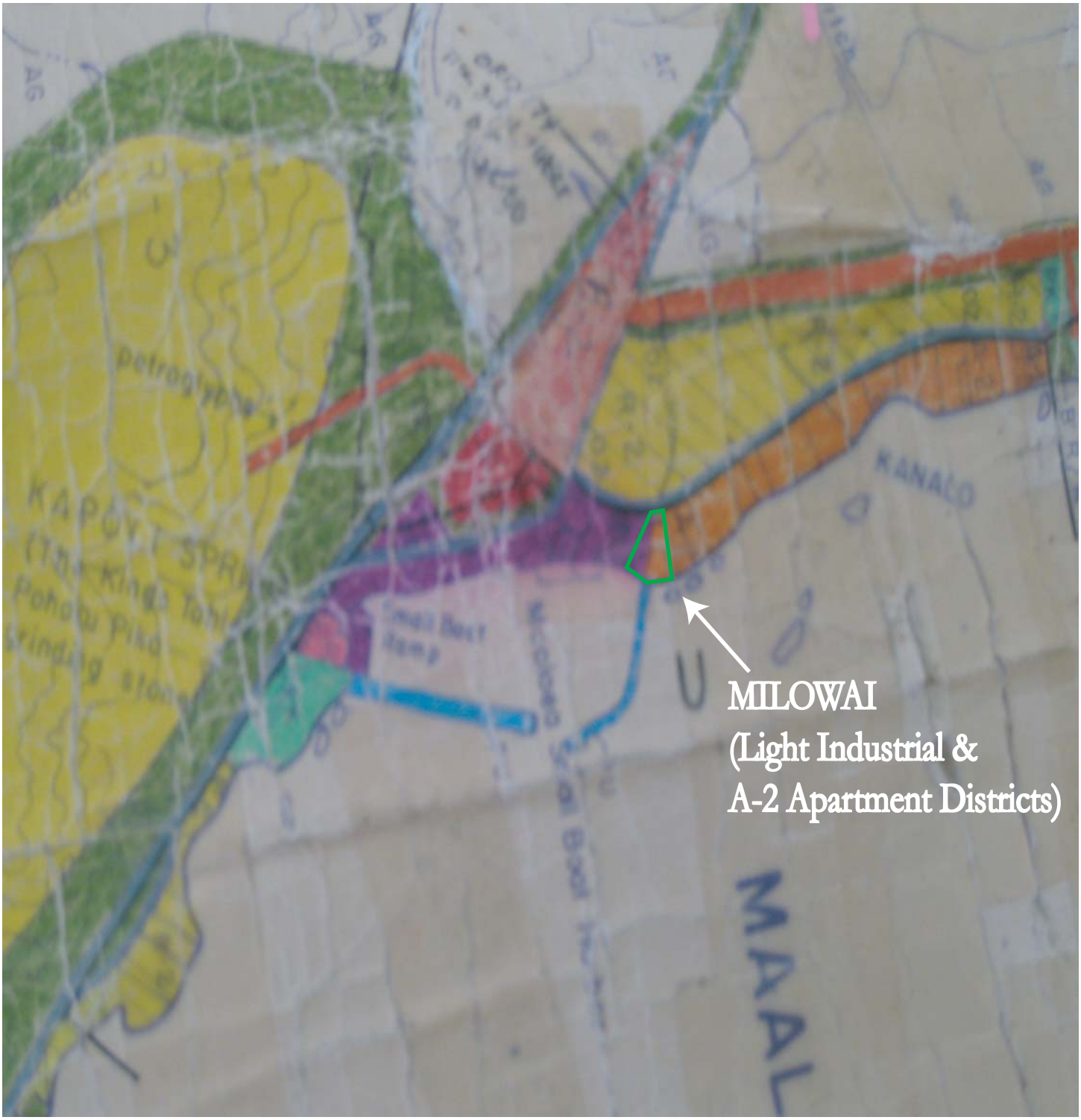
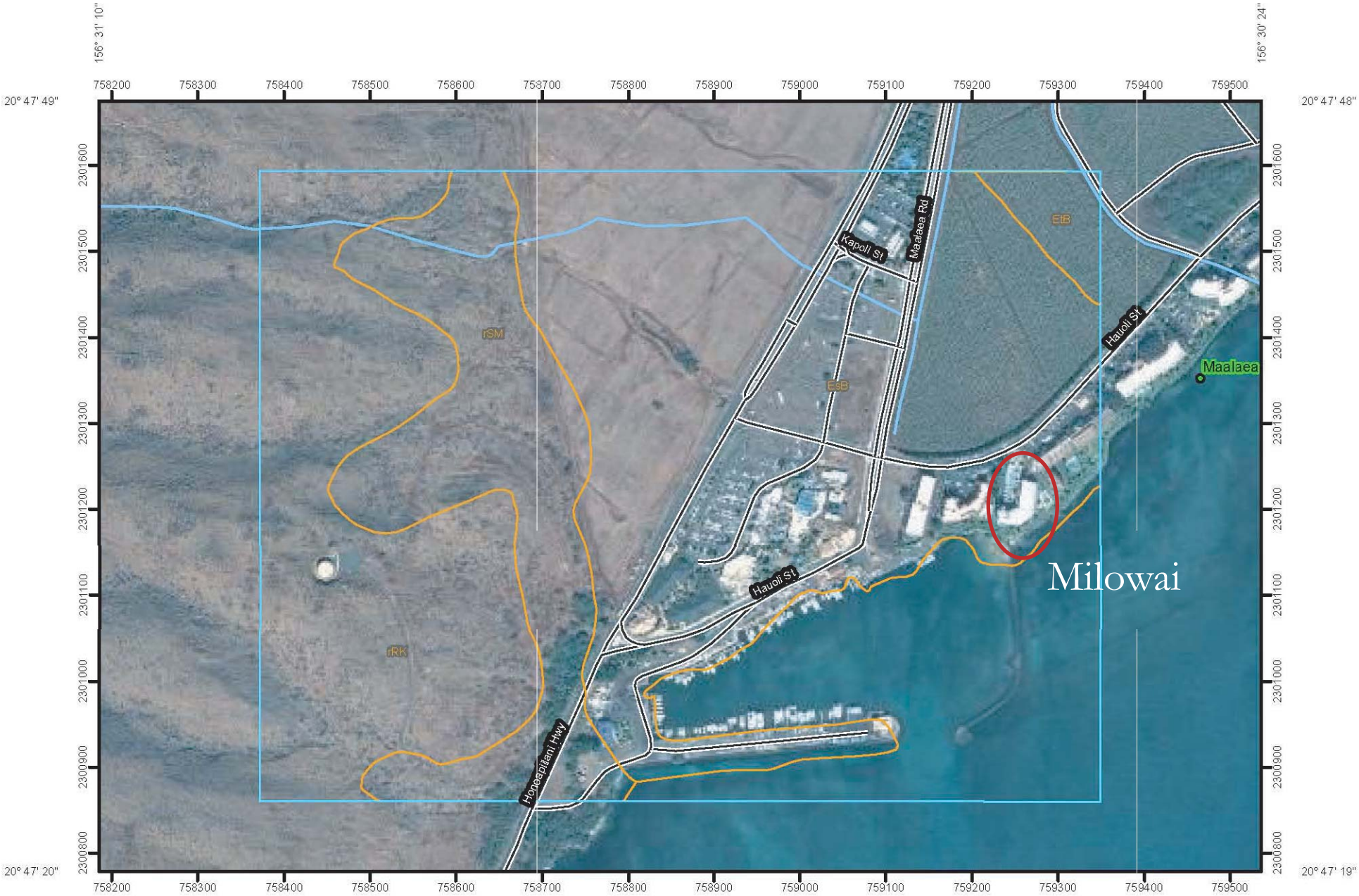


Figure 8
Maui County Zoning Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

Soil Map—Island of Maui, Hawaii



156° 31' 11"

N

Map Scale: 1:6,410 if printed on A size (8.5" x 11") sheet.

Meters: 0 50 100 200 300

Feet: 0 350 700 1,400 2,100

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Figure 9

Soil Classifications Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- **Zone A:** No BFE determined.
- **Zone AE:** BFE determined.
- **Zone AH:** Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- **Zone AO:** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- **Zone V:** Coastal flood zone with velocity hazard (wave action); no BFE determined.
- **Zone VE:** Coastal flood zone with velocity hazard (wave action); BFE determined.
- **Zone AEF:** Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- **Zone XS (X shaded):** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- **Zone X:** Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- **Zone D:** Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY:	MAUI
TMK NO:	(2) 3-8-014-022
PARCEL ADDRESS:	50 HAUOLI ST WAILUKU, HI 96793
FIRM INDEX DATE:	SEPTEMBER 25, 2009
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL(S):	1500030560E
PANEL EFFECTIVE DATE:	SEPTEMBER 25, 2009

PARCEL DATA FROM:	JUNE 2011
IMAGERY DATA FROM:	MAY 2005

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
County of Maui	
Francis Cerizo, CFM	(808) 270-7771
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

Disclaimer: The Department of Land and Natural Resources assumes no responsibility arising from the use of the information contained in this report. Y
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**PRELI*
purpose
regulato

Figure 10

Flood Hazard Assessment Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

EVACUATE ALL SHORELINES AND SHADED AREAS

(If outside the tsunami evacuation areas, avoid non-essential travel.)

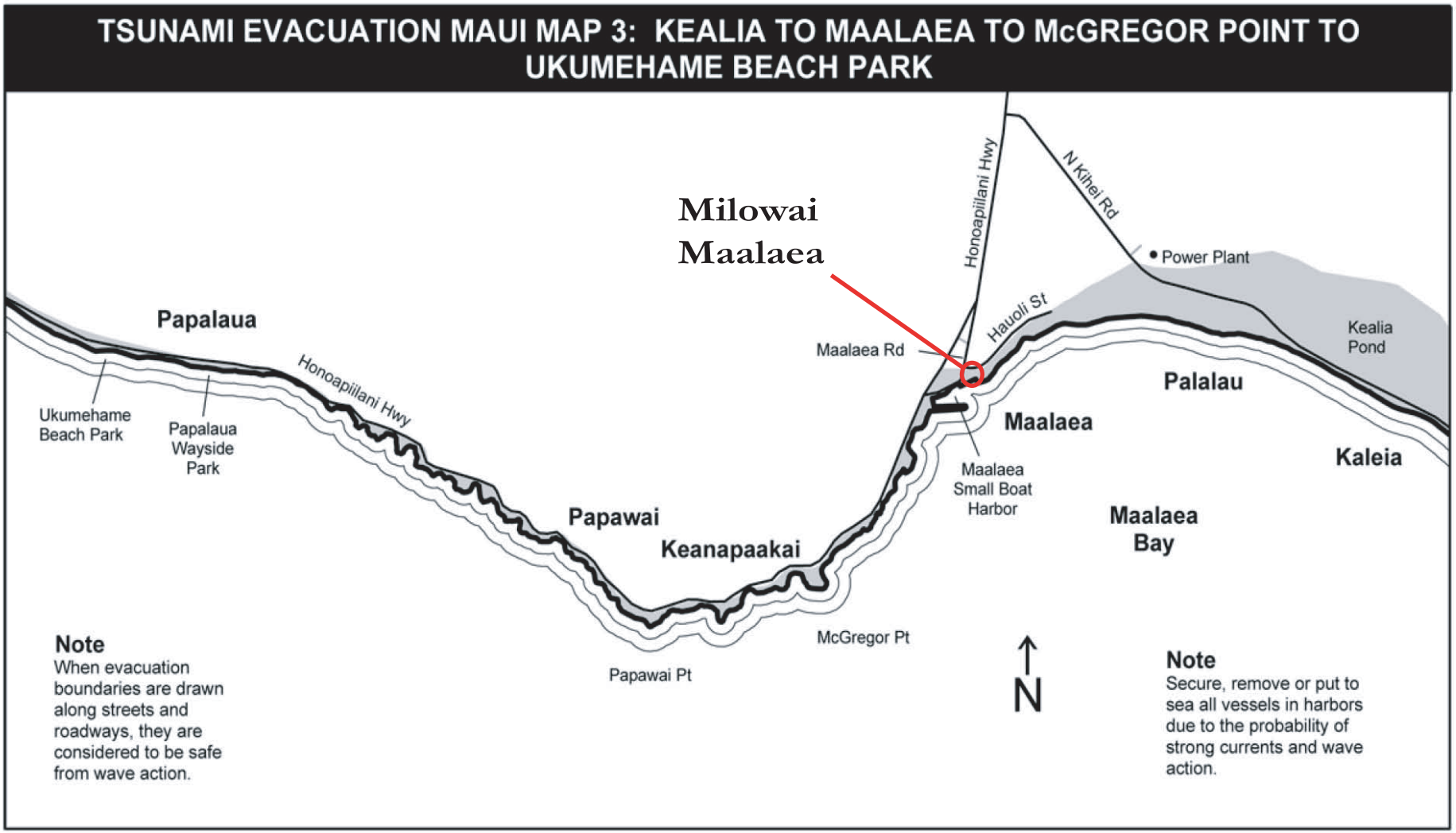

Figure 11

Tsunami Evacuation Maui Map #3

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

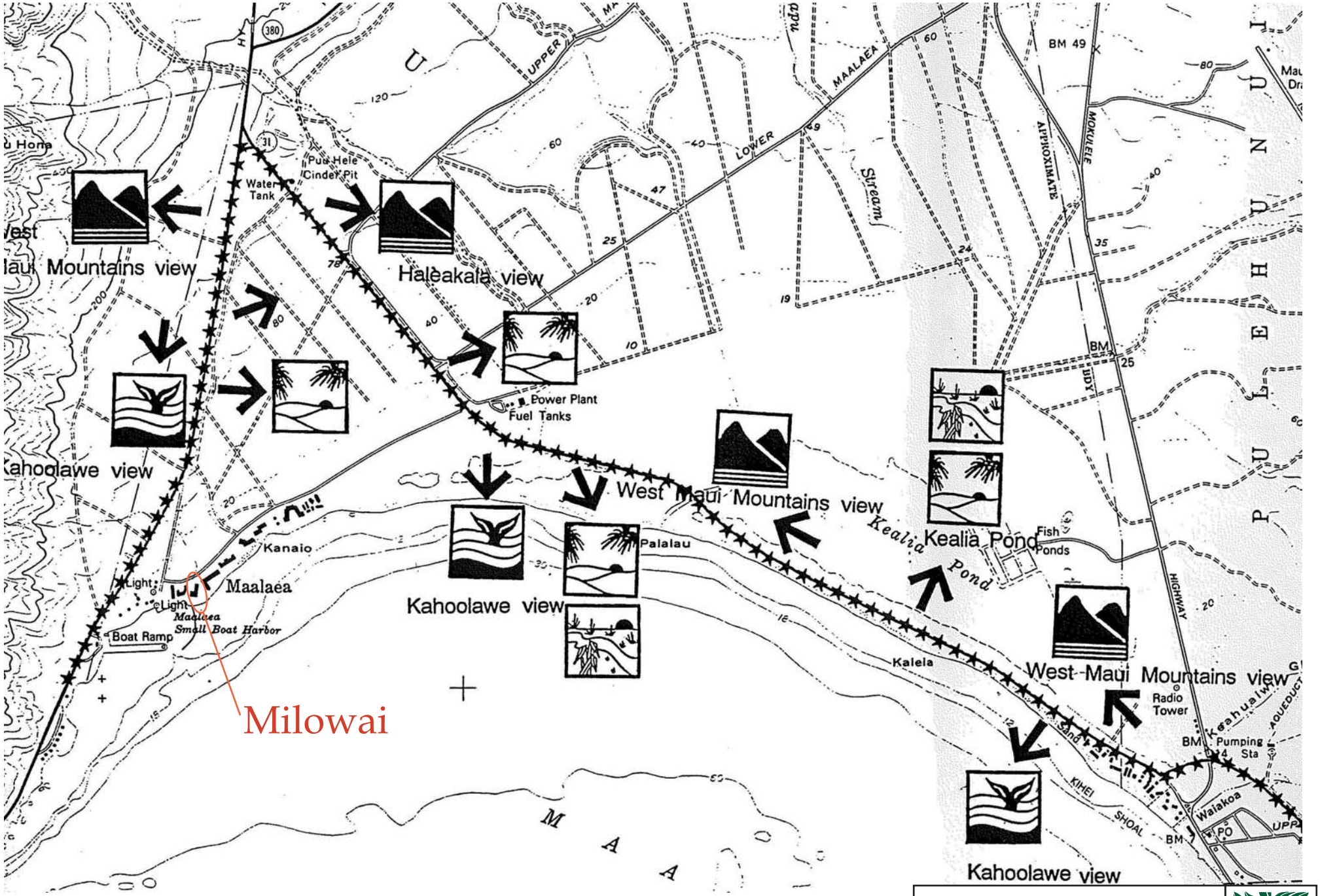

Figure 12

Scenic Resources Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

HISTORICAL SHORELINES

- 1900
- Nov 1949*
- Oct 1960
- Mar 1975
- Aug 1987
- Mar 1988
- May 1997
- Erosion rate measurement locations (shore normal transects)

Historical beach positions, color coded by year, are determined using ortho-rectified 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).

For situations in which there is coastal armoring or rocky shoreline seaward of any vegetation, the vegetation line is drawn along the seaward side of the rock or armoring. If there is no sandy beach in these areas, both the vegetation line and the SCRF are delineated along the mean high water line.

Movement of the SCRF is used to calculate erosion rates along shore-normal transects spaced every 20 m (66 ft) along the shoreline. The 1987 SCRF is not used in the calculation of the AEHR, however it provides a gauge of seasonal uncertainty.

* Included in this mosaic is a Feb 1950 photo covering the central portion of the mosaic area.

EROSION RATES

Annual Erosion Hazard Rates (AEHR)

Erosion rates are measured every 20 m along the shoreline. These sites are denoted by yellow shore normal transects. The Annual Erosion Hazard Rate (red), is a spatially smoothed center weighted average of calculated erosion rates. Five contiguous transects are incorporated in the smoothing process. The transects are weighted: 1-3-5-3-1 with the smoothed rate assigned to the center transect. The AEHRs are shown on the shore-parallel histogram graph. Colored bars on the graph correspond to shore-normal transects; approximately every fifth transect and bar are numbered. Where necessary, some transects have been purposely deleted during data processing; as a result, transect numbering is not consecutive everywhere. Where complete beach loss has occurred, erosion rate calculations apply only to the time period when a beach existed.

Despite some scatter, shorelines between 1900 and 1997 show a reasonably consistent trend and are used to calculate AEHRs for the Maalaea Harbor study area.

Figure 13

Annual Erosion Map

Milowai Ma'alaea

CHRIS HART & PARTNERS, INC.

APPENDICES

APPENDIX A
EARLY CONSULTATION LETTERS

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

12-053
Milowai Ma`alaea Seawall

April 2, 2012

Christopher L. Hart, ALSA
115 North Market Street
Wailuku, Hawaii 96793

Dear Mr. Hart:

SUBJECT: Early Consultation on the Proposed Seawall Improvement Project at the Milowai Ma`alaea Residential Condominium, located at 50 Hauoli Street, Ma`alaea, Hawaii at TMK: (2) 3-8-014: 022

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your letter, dated March 21, 2012. Thank you for allowing us to review and comment on the subject document. The document was routed to the various branches of the Environmental Health Administration. We have no comments at this time, but reserve the right to future comments. We strongly recommend that you review all of the Standard Comments on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this application should be adhered to.

The United States Environmental Protection Agency (EPA) provides a wealth of information on their website including strategies to help protect our natural environment and build sustainable communities at: www.epa.gov/sustainability. The DOH encourages State and county planning departments, developers, planners, engineers and other interested parties to apply these strategies and environment principles whenever they plan or review new developments or redevelopments projects. We also ask you to share this information with others to increase community awareness on healthy, sustainable community design. If there are any questions about these comments please contact me.

Sincerely,

Laura Leialoha Phillips McIntyre, AICP
Environmental Planning Office Manager
Environmental Health Administration
Department of Heath
919 Ala Moana Blvd., Ste. 312
Honolulu, Hawaii 96814
Phone: 586-4337
Fax: 586-4370
Email: laura.mcintyre@doh.hawaii.gov
Website: www.hawaii.gov/health/environmental

CC: Brett

RECEIVED
APR - 9 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning
11/028

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 18, 2012

Ms. Joanna L. Seto, P.E., Chief
Safe Water Drinking Branch
Environmental Management Division
Department of Health
919 Ala Moana Blvd. Room 308
Honolulu, HI 96814-4920

Dear Ms. Seto,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 10, 2012. The proposed seawall improvement project shall be limited to the structural stabilization of an existing seawall; however, we will provide the Safe Water Drinking Branch with a copy of the Draft EA, which will clarify potential impacts to drinking water facilities.

Thank you again for providing us with your response. Please feel free to call me or Mr. Brett Davis of our office at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793

RECEIVED
APR 13 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture, Planning
CC: Brett 14058

April 13, 2012

Mr. Christopher Hart, ALSA
President
Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, Hawai`i 96793

Dear Mr. Hart:

Subject: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium, located at 50 Hauoli Street, Wailuku, Maui, Hawaii TMK: (2) 3-8-014:022

Thank you for the opportunity to review this project. We have the following comments to offer:

National Pollutant Discharge Elimination System (NPDES) permit coverage maybe required for this project. The Clean Water Branch should be contacted at 808 586-4309.

It is strongly recommended that the Standard Comments found at the Department's website: http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html be reviewed, and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please call me at 808 984-8230 or E-mail me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c EPO

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 18, 2012

Ms. Patti Kitkowski
Acting District Environmental Health Program Chief
Dept. of Health
Maui District Health Office
54. High St.
Wailuku, HI 96793-2102

Dear Ms. Kitkowski,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 13, 2012. The Applicant will contact the Clean Water Branch to determine if a National Pollutant Discharge Elimination System (NPDES) permit is necessary for the proposed seawall improvement project. In addition we have reviewed the Standard Comments provided.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

April 25, 2012

Mr. Bret Davis
Chris Hart and Partners, Inc.
115 N. Market Street
Wailuku, HI 96793

Dear Mr. Davis:

This correspondence is in response to your request for comments to the pre-Environmental Assessment for the Proposed Seawall Improvement Project at Milowai Ma'alaea Residential Condominium (Tax Map Key: (2) 3-8-014: 022), 50 Hauoli Street, Ma'alaea, Maui.

Project activities shall comply with the following Administrative Rules of the Department of Health:

- Chapter 11-46 Community Noise Control

Should you have any questions, please contact me at (808) 586-4701.

Sincerely,

Jeffrey M. Eckerd
Program Manager
Indoor and Radiological Health Branch

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 27, 2012

Mr. Jeffrey M. Eckerd, Program Manager
Indoor and Radiological Health Branch
Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Mr. Eckerd,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 25, 2012. The Applicant and Contractor will ensure that the proposed seawall improvement project will comply with Chapter 11-46 Community Noise Control.

Thank you again for providing us with your response. Please feel free to call me or Mr. Brett Davis of our office at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR
STATE OF HAWAI'I

ALBERT "ALAPAKI" NAHALE-A
CHAIRMAN
HAWAIIAN HOMES COMMISSION

MICHELLE K. KAUHANE
DEPUTY TO THE CHAIRMAN

M. WAIALEALE SARSONA
EXECUTIVE ASSISTANT

STATE OF HAWAI'I
DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 2009
KAUNAKAKAI, HAWAI'I 96748

April 2, 2012

Chris Hart and Partners, Inc.
Attn: Brett Davis
115 North Market Street
Wailuku, Hawai'i 96793-1717

Subject: Request for Early Consultation in Preparation of a Draft Environmental Assessment, Proposed Seawall Improvement Project at Milowai Ma'alaea Residential Condominium, 50 Hau'oli Street, TMK (2) 3-8-014:022, Ma'alaea, Maui, Hawai'i

Dear Mr. Davis,

Thank you for the opportunity to provide pre-assessment comments in preparation of the Draft Environmental Assessment (DEA) for the Proposed Seawall Improvement Project at Milowai Ma'alaea Residential Condominium in Ma'alaea, Maui. The Department understands that this project will involve maintenance of the seawall and excavation and fill behind the seawall to eliminate the sinkholes, for a 43-unit condominium complex adjacent to the Ma'alaea Boat Harbor east breakwater.

The Department's Maui Island Plan identifies five tracts totaling 878.3 acres in the Central Maui region. The Department-owned lands closest to the project site, at a distance of three to four miles, are a 646 acre parcel and an 80 acre parcel. The larger parcel to the south is designated for continued agricultural use, and the smaller parcel to the north is designated for future development of industrial and commercial land uses. There are no Department owned lands directly adjacent to the project site.

Please consider the following comments on your proposed project in the development of the Draft Environmental Assessment:

CC: Brett

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MAY - 1 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

1. The Department of Hawaiian Homelands (Department) commends the applicants for commissioning the six studies listed on Page 2 of the Request. The proposed approach to gathering data and research in support of the Draft Environmental Assessment seems to be adequate and thorough.

2. Shoreline access rights for fishing, gathering and cultural practices are very important to our beneficiaries. Seawalls tend to restrict shoreline access by eliminating the beach and creating hazards for alongshore access, particularly at times of high tide and high surf. Please include a discussion of potential mitigation measures for loss of shoreline access due to repair of shoreline armoring, such as recessed walkways in the seawall, pathways on top of the seawall, or other means to provide safer alongshore access, and condominium owner and visitor education regarding N(n)ative Hawaiian rights to access and subsistence.

3. As there are no lands owned by the Department adjacent to the project site, the Department has no other comments to offer at this time.

We thank you for the opportunity to provide preliminary comments as part of early consultation for preparation of a Draft Environmental Assessment. If you have any questions, please contact Nancy McPherson at our Planning Office via email at nancy.m.mcpherson@hawaii.gov or by phone at 808.620.9519.

Aloha and mahalo,

Albert "Alapaki" Nahale-a, Chairman
Hawaiian Homes Commission

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

May 3, 2012

Mr. Albert "Alapaki" Nahale-a, Chairman
Hawaiian Homes Commission
Department of Hawaiian Homelands
P.O. Box 2009
Kaunakakai, HI 96748

Dear Mr. Nahale-a,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 2, 2012. The forthcoming Draft Environmental Assessment will include discussion of potential mitigation measures to enhance shoreline access.

Thank you again for providing us with your response. Please feel free to call me or Mr. Brett Davis of our office at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 1, 2012

Chris Hart & Partners, Inc.
Attention: Mr. Christopher L. Hart, President
115 N. Market Street
Wailuku, HI 96793-1717

Dear Mr. Hart:

SUBJECT: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from (a) Division of Boating & Ocean Recreation, (b) Commission on Water Resource Management, (c) Land Division – Maui District, (d) Division of Aquatic Resources and (e) Engineering Division on the subject matter. Should you have any questions, please feel free to call Lydia Morikawa at 587-0410. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosure(s)

cc: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 30, 2012

MEMORANDUM

RECEIVED
LAND DIVISION
2012 APR -5 A 10 15
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
X Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium
LOCATION: Ma'alaea, Island of Maui; TMK: (2) 3-8-014:022
APPLICANT: Milowai Ma'alaea AOAO

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 30, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
(X) We have no comments.
( ) Comments are attached.

Signed: [signature]
Date: 4/4/12

cc: Central Files

APR 2'12AM10:49BOR DIV

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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LAND DIVISION

2012 APR 10 P 4:00

DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 30, 2012

2012 APR -2 PM 3:34

COMMISSION ON WATER RESOURCE MANAGEMENT

MEMORANDUM

From:

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
X Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

To:

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium
LOCATION: Ma'alaea, Island of Maui; TMK: (2) 3-8-014:022
APPLICANT: Milowai Ma'alaea AOAO

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 30, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: W. Rasheed
Date: APR 10 2012

cc: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

RECEIVED
MAUI DISTRICT
LAND DIVISION
2012 APR -3 PM 12: 12

March 30, 2012

MEMORANDUM

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
X Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

RECEIVED
LAND DIVISION
2012 APR 13 A 11: 01
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium
LOCATION: Ma'alaea, Island of Maui; TMK: (2) 3-8-014:022
APPLICANT: Milowai Ma'alaea AOAO

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 30, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: _____
Date: 4/11/12

cc: Central Files

Improvement should allow for lateral public access along the shoreline.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

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NATURAL RESOURCES
STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
POST OFFICE BOX 621
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March 30, 2012

DAR4371

MEMORANDUM

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APR - 5 2012
Div. of Aquatic Resources
Maui

RECEIVED
APR 2 2012
AQUATIC RESOURCES

TO: **DLNR Agencies:**

X Div. of Aquatic Resources
X Div. of Boating & Ocean Recreation
X Engineering Division
__ Div. of Forestry & Wildlife
__ Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium
LOCATION: Ma'alaea, Island of Maui; TMK: (2) 3-8-014:022
APPLICANT: Milowai Ma'alaea AOAO

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 30, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(X) Comments are attached.

Signed: _____
Date: 4/5/2012

cc: Central Files

DIVISION OF AQUATIC RESOURCES - MAUI
DEPARTMENT OF LAND & NATURAL RESOURCES
130 Mahalani Street
Wailuku, Hawai'i 96793
April 5, 2011

To: Alton Miyasaka, Aquatic Biologist

From: Skippy Hau, Aquatic Biologist

Subject: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium (DAR 4277)
(Lydia Morikawa, Land – Due April 30, 2012)

The public shoreline access for divers, fishers, limu pickers, and beach goers should be maintained as much as possible. Drainage runoff should be minimized and near shore water quality impacts should be minimized.

There was a proposal to expand the breakwater and Ma'alaea Harbor in the future. The sand beach is relatively safe and appears to be protected from erosion. Due to five years of below average rainfall, we have not observed heavy algal blooms that have occurred in the past.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

APR 02 AM 10:17 ENGINEERING

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 30, 2012

RECEIVED
LAND DIVISION
2012 APR 26 A 8:55
DEPT. OF LAND &
NATURAL RESOURCES
STATE OF HAWAII

MEMORANDUM

TO: **DLNR Agencies:**
X Div. of Aquatic Resources
X Div. of Boating & Ocean Recreation
X Engineering Division
__Div. of Forestry & Wildlife
__Div. of State Parks
X Commission on Water Resource Management
X Office of Conservation & Coastal Lands
X Land Division – Maui District
X Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Early Consultant Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium
LOCATION: Ma'alaea, Island of Maui; TMK: (2) 3-8-014:022
APPLICANT: Milowai Ma'alaea AOAO

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by April 30, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Lydia Morikawa at 587-0410. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____
Date: 4/25/12

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LA/LydiaMorikawa
Ref.: EarlyConsultationMilowaiSeawallImpvts.
Maui.567

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) Please take note that based on the maps provided it appears that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zones X and VE. The Flood Insurance Program does not have any regulations for developments within Flood Zone X however; it does regulate developments within Zone VE as indicated in bold letters below.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

(X) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Mario Siu Li at (808) 768-8098 or Ms. Ardis Kim at (808) 768-8296 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Carter Romero at (808) 961-8943 of the County of Hawaii, Department of Public Works.

(X) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

( ) Other: _____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 4/25/12

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

May 3, 2012

Mr. Russell Tsuji, Land Administrator
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Dear Mr. Tsuji,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of May 1, 2012 with comments from the following the divisions;

Division of Boating and Ocean Recreation

This Division has no comments.

Commission Water Resource Management

The Commission has no comments.

Land Division-Maui District

Comment: Improvements should allow for lateral public access along the shoreline.

The forthcoming Draft Environmental Assessment will describe potential mitigation measures that will allow for lateral public access along the shoreline.

Division of Aquatic Resources

Comment: The public shoreline access for divers, fishers, limu pickers, and beach goers should be maintained as much as possible. Drainage runoff should be minimized and near shore water quality impacts should be minimized.

The Applicant intends to maintain public shoreline access for beach uses described above. The forthcoming Draft Environmental Assessment will describe potential mitigation measures that will minimize drainage runoff to protect near shore water quality.

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

Engineering Division

The Applicant acknowledges that the property is located in Flood Zones X and VE. The Applicant will comply with the rules and regulations of the National Flood Insurance Program (NFIP) and coordinate with Mr. Francis Cerizo, Maui County NFIP Coordinator.

Thank you again for providing us with your response. Please feel free to call me or Mr. Brett Davis of our office at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

ALAN M. ARAKAWA
Mayor

GLENN T. CORREA
Director

PATRICK T. MATSUI
Deputy Director

(808) 270-7230
FAX (808) 270-7934

DEPARTMENT OF PARKS & RECREATION
700 Hali'a Nakoa Street, Unit 2, Wailuku, Hawaii 96793

April 26, 2012

Christopher L. Hart, ALSA
President
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Hawaii 96793

Dear Mr. Hart:

SUBJECT: Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium, Ma'alaea, Maui, Hawaii
TMK: (2) 3-8-014:022

Thank you for the opportunity to review and comment on the subject project. The Department of Parks and Recreation has no comments at this time, and looks forward to reviewing the Draft Environmental Assessment when it is available.

Please feel free to contact me or Robert Halvorson, Chief of Parks Planning and Development, at 270-7931, should you have any questions.

Sincerely,

GLENN T. CORREA
Director of Parks & Recreation

c: Robert Halvorson, Chief of Planning and Development
Project File

GTC:RH:kp

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MAY - 2 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning
CC: Brett
11/2012

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

May 3, 2012

Mr. Glenn Correa, Director
Department of Parks and Recreation
700 Hali'a Nakoa Street, Unit 2
Wailuku, HI 96793

Dear Mr. Correa,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 26, 2012 indicating that your office has no comment. A copy of the forthcoming Draft Environmental Assessment will be sent to your office for review.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
HOUSING DIVISION
COUNTY OF MAUI

ALAN M. ARAKAWA
Mayor
JO-ANN T. RIDAO
Director
JAN SHISHIDO
Deputy Director

35 LUNALILO STREET, SUITE 102 • WAILUKU, HAWAII 96793 • PHONE (808) 270-7351 • FAX (808) 270-6284

March 29, 2012

Mr. Christopher L. Hart, ALSA
President
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, Hawaii 96793-1717

Dear Mr. Hart:

Subject: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium, located at 50 Hauoli Street, Ma'alaea, Maui, Hawaii at TMK's: (2) 3-8-014:022

The Department has reviewed the request for Early Consultation for the above subject project. Based on our review, we have determined that the subject project is not subject to Chapter 2.96, Maui County Code. At the present time, the Department has no additional comments to offer.

Please call Mr. Veranio Tongson Jr. of our Housing Division at (808) 270-1741 if you have any questions.

Sincerely,

For:
WAYDE T. OSHIRO
Housing Administrator

RECEIVED
APR - 2 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning
CC: BRCH 1/028

cc: Director of Housing and Human Concerns

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 18, 2012

Mr. Wayde Oshiro, Administrator
Department of Housing and Human Concerns
35 Lunalilo St. Suite 102
Wailuku, HI 96793

Dear Mr. Oshiro,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of March 29, 2012 indicating that the proposed project is not subject to Chapter 2.96, Maui County Code and that your department has no additional comments to offer at this time.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

ALAN M. ARAKAWA
Mayor

JO ANNE JOHNSON-WINER
Director
MARC I. TAKAMORI
Deputy Director
Telephone (808) 270-7511

RECEIVED
APR - 2 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning
CL: Brett
11/028

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

March 28, 2012

Mr. Chris Hart
Chris Hart & Partners Inc.
115 N. Market Street
Wailuku, Maui, Hawaii 96793

Subject: Proposed Seawall Improvement Project at the Milowai Residential Condominium

Dear Mr. Hart,

Thank you for the opportunity to comment on this project. We have no comments to make at this time.

Please feel free to contact me if you have any questions.

Sincerely,

Jo Anne Johnson Winer
Director

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 18, 2012

Ms. Jo Anne Johnson Winer, Director
County of Maui Dept. of Transportation
2145 Kaohu St.
David Trask Bldg Ste 102
Wailuku, HI 96793

Dear Ms. Johnson Winer,

RE: Early Consultation Letter for the Proposed Seawall improvement project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your Departments letter of March 28, 2012 indicating your department has "no comments" on this project at this time.

Thank you again for providing us with your response. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
200 SOUTH HIGH STREET, ROOM NO. 434
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

RECEIVED
APR 20 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

cc: Mrlt 14/028

April 17, 2012

Mr. Christopher L. Hart, ASLA
CHRIS HART & PARTNERS, INC.
115 North Market Street
Wailuku, Maui, Hawaii 96793-1717

Dear Mr. Hart:

SUBJECT: EARLY CONSULTATION FOR THE PROPOSED SEAWALL IMPROVEMENT PROJECT LOCATED AT THE MILOWAI MAALAEA RESIDENTIAL CONDOMINIUM TMK: (2) 3-8-014:022

We reviewed your early consultation request and have no comments.

Please call Rowena M. Dagdag-Andaya at 270-7845 if you have any questions regarding this letter.

Sincerely,

DAVID C. GOODE
Director of Public Works

DCG:ls
xc: Highways Division
Engineering Division
S:\LUCA\CZM\prop_seawall_improv_at_milowai_maalaea_condo_ec_38014022_ls.wpd

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 23, 2012

Mr. David C. Goode, Director
Department of Public Works
250 South High Street, Room No. 434
Wailuku, HI 96793

Dear Mr. Goode,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 17, 2012 indicating that your office has no comment.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

ALAN M. ARAKAWA
MAYOR

JEFFREY A. MURRAY
CHIEF

ROBERT M. SHIMADA
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE AND PUBLIC SAFETY
FIRE PREVENTION BUREAU

313 MANEA PLACE • WAILUKU, HAWAII 96793
(808) 244-9161 • FAX (808) 244-1363

RECEIVED
APR 20 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

CC: Brett 11/028

April 17, 2012

To : Chris Hart
Chris Hart & Partners, Inc.
115 N.Market St.
Wailuku, HI 96793

Re : **Proposed Seawall Improvement Project**
Milowai Ma'alaea Residential Condominium
(2) 3-8-014: 022

Dear Chris:

Thank you for the opportunity to comment on the proposed project. At this time, our office has no comment to provide in regards to this proposed project.

If there are any questions or comments, please feel free to contact me at 244-9161 ext. 23. Thank you for your attention to fire prevention and public safety.

Sincerely,

Paul Haake
Captain, Fire Prevention Bureau
Department of Fire & Public Safety
313 Manea Place
Wailuku, HI 96793

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 23, 2012

Captain Paul Haake
Department of Fire and Public Safety
Fire Prevention Bureau
313 Manea Place
Wailuku, HI 96793

Dear Captain Haake,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 17, 2012 indicating that your office has no comment at this time.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

POLICE DEPARTMENT

COUNTY OF MAUI

ALAN M. ARAKAWA
MAYOR

OUR REFERENCE

YOUR REFERENCE

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411

GARY A. YABUTA
CHIEF OF POLICE

CLAYTON N.Y.W. TOM
DEPUTY CHIEF OF POLICE

April 11, 2012

Mr. Christopher L. Hart, ASLA
President
Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, HI 96793

Dear Mr. Hart:

SUBJECT: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium
TMK: (2) 3-8-014:022

This is in response to your letter requesting comments on the above subject.

We have reviewed the information and have no comments or concerns at this time. Thank you for allowing us to review this project.

Very truly yours,

Assistant Chief Victor K. Ramos
for: Gary A. Yabuta
Chief of Police

Enclosures

c: William Spence, Maui County Dept. of Planning

RECEIVED
APR 23 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

cc: Brett
14628

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 23, 2012

Chief Gary A. Yabuta
Police Department
55 Mahalani Street
Wailuku, HI 96793

Attention: Assistant Chief Victor K. Ramos

Dear Chief Yabuta,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of April 11, 2012 indicating that the Police Department has no comment at this time.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

Hawaiian Telcom
Network Engineering and Planning
OSP Engineering - Maui
60 South Church St.
Wailuku, HI 96793
Phone 808 242-5102
Fax 808 242-8899

RECEIVED
APR - 4 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning
CC: Brett 11/028

March 29, 2012

Chris Hart & Partners, Inc.
115 N. Market Street
Wailuku, HI 96793-1717

Attention: Chris Hart

Subject: Early Consultation Letter for the Proposed Seawall Improvement Project At the Milowai Ma'alaea Residential Condominium

Dear Sir,

Thank you for allowing us to review and comment on the subject project. Your plans have been received and put on file.

Hawaiian Telcom, Inc. has no comment, nor do we require any additional information at this time.

Should you require further assistance, please call me at 242-5107.

Sincerely,

Tom Hutchison
OSP Engineer

cc: Gerry Saguico, Section Manager

BICS File # (3080) 1203-013

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

April 18, 2012

Mr. Tom Hutchison, OSP Engineer
Hawaiian Telcom
OSP Engineering-Maui
60 S. Church St.
Wailuku, HI 96793

Dear Mr. Hutchison,

RE: Early Consultation Letter for the Proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022

Thank you for your letter of March 29, 2012 indicating that Hawaiian Telcom, Inc. has no comment at this time.

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

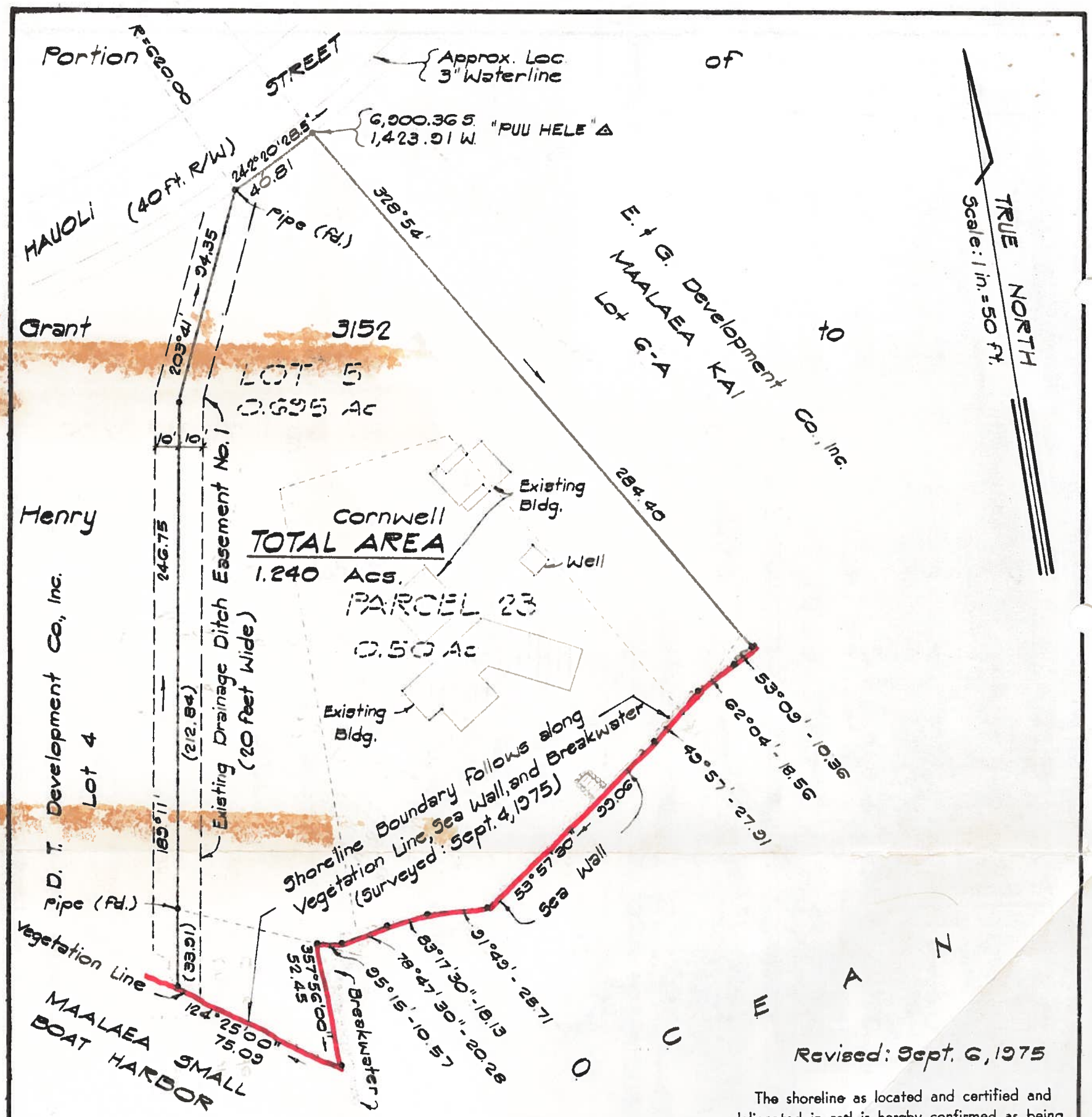
Sincerely yours,

Christopher L. Hart, President
Landscape Architect ▪ Planner

CC. Mr. Bob Wood, Milowai
Project File 11-028

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

APPENDIX B
HISTORICAL SHORELINE CERTIFICATIONS



Revised: Sept. 6, 1975

The shoreline as located and certified and delineated in red is hereby confirmed as being the actual shoreline as of SEP 25 1975

C Colb
K Baiki
Chairman, Board of Land and Natural Resources

MAALAEA BEACH LOTS

CONSOLIDATION OF LOT 5 AND PARCEL 23 OF T.M.K. 3-8-14 INTO ONE LOT

Being a portion of Grant 3152 to Henry Cornwell
MAALAEA, WAIKAPU, MAUI, HAWAII

Scale: 1 inch = 50 feet Date: August 28, 1974

Owner: Wendell F. Cockett & wf. Myrtle L.

Prepared for: Joseph Kealoha

Prepared by: NORMAN SAITO
ENGINEERING CONSULTANTS, INC
Wailuku, Maui, Hawaii

This work was prepared by me or under my supervision.

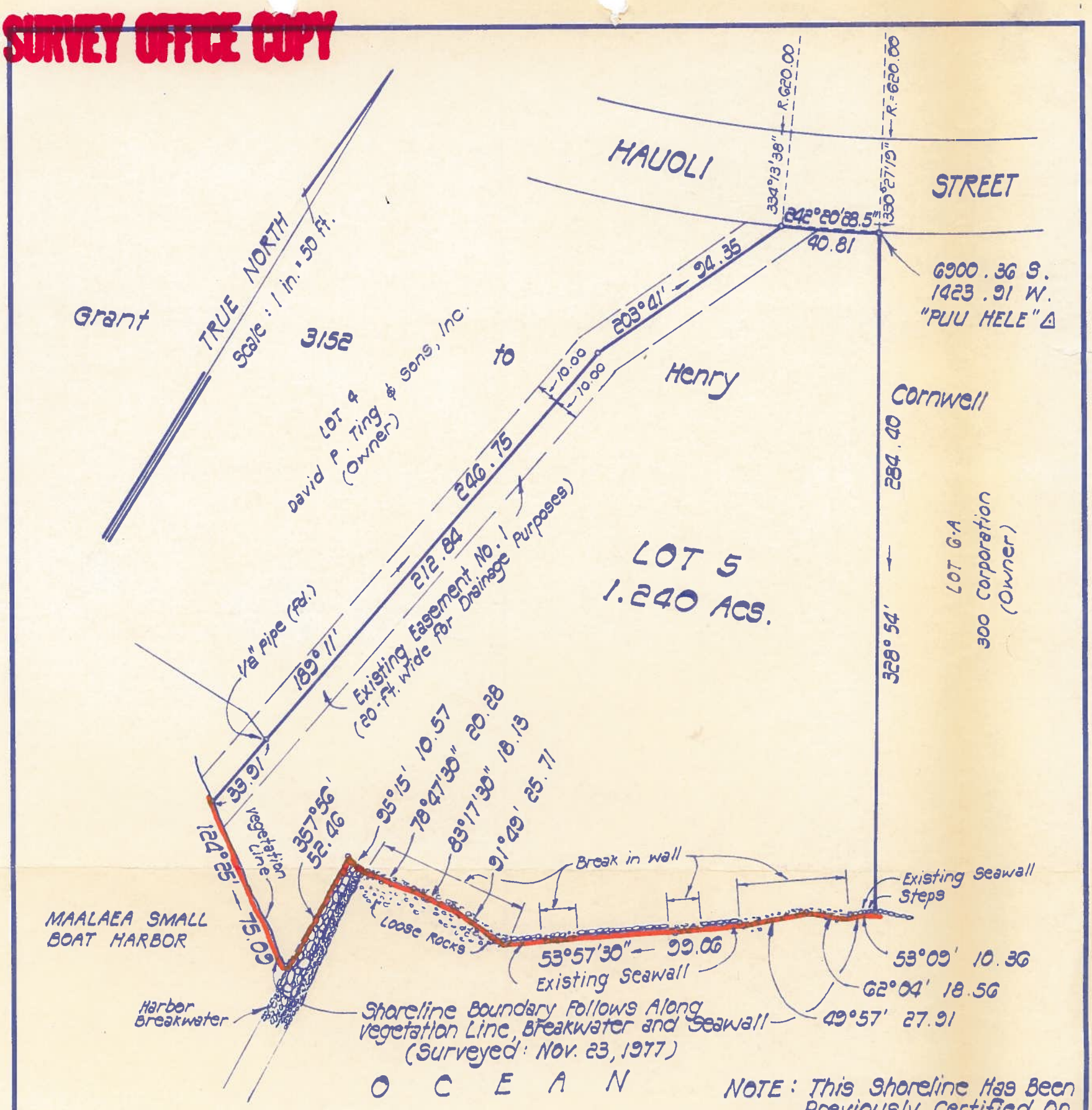
ROBERT N. OTA
REGISTERED PROFESSIONAL LAND SURVEYOR
No. 3501-S
HAWAII, U.S.A.

Robert N. Ota 9/8/75
Registered Professional Land Surveyor No. 3501-S

SURVEY OFFICE COPY

Tax Map Key: 3-8-14: 22 & 23 10"×15" 635

SURVEY OFFICE COPY



NOTE: This Shoreline Has Been Previously Certified On Sept. 25, 1975.

MAALAEA BEACH LOTS
SHORELINE BOUNDARY
FRONTING LOT 5

Being a portion of Grant 3152 to Henry Cornwell

MAALAEA, WAIKAPU, WAILUKU, MAUI, HAWAII

The shoreline as located and certified and delineated in red is hereby confirmed as being the actual shoreline as of JAN 10 1978

W. Thompson
Chairman, Board of Land and Natural Resources
K Saiki

OWNERS: Wendell F. Crockett and wf. Myrtle L., Trust

ADDRESS: Wailuku, Maui, Hawaii

SCALE: 1 in. = 50 ft.
DATE: Dec. 8, 1977

Prepared by: NORMAN SAITO
ENGINEERING CONSULTANTS, INC.
Kahului, Maui, Hawaii

NORMAN M. SAITO
REGISTERED PROFESSIONAL LAND SURVEYOR
No. 803-S
HAWAII

SURVEY OFFICE COPY

This work was prepared by me or under my supervision. Norman M Saito 12/12/77
Registered Professional Land Surveyor No. 803-S

Tax Map Key: 3-8-14:22

10"x15"

418-18

APPENDIX C
PRELIMINARY ENGINEERING REPORT

PRELIMINARY ENGINEERING REPORT

FOR

SHORELINE PROTECTION PROJECT FOR THE MILOWAI CONDOMINIUM

Maalaea, Maui, Hawaii

T.M.K.: (2) 3-8-014: 022

Prepared for:

Milowai - Maalaea AOAO
c/o Hawaiiana Management Company, Ltd.
140 Hoohana Street, Suite 210
Kahului, Maui, Hawaii 96732

STACY A. OTOMO
LICENSED PROFESSIONAL ENGINEER
No. 5115-C
HAWAII, U.S.A.

Prepared by:

OTOMO ENGINEERING, INC.

CONSULTING CIVIL ENGINEERS
305 SOUTH HIGH STREET, SUITE 102
WAILUKU, MAUI, HAWAII 96793
PHONE: (808) 242-0032
FAX: (808) 242-5779

July 2012
Revised April 2014

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PRELIMINARY ENGINEERING REPORT
FOR
SHORELINE PROTECTION FOR
THE MILOWAI CONDOMINIUM
T.M.K.: (2) 3-8-014: 022

1.0 INTRODUCTION

The purpose of this report is to provide information on the existing infrastructure which will be servicing the proposed project. It will also evaluate the adequacy of the existing infrastructure and anticipated improvements which may be required for the proposed project.

The subject property is identified as T.M.K.: (2) 3-8-014: 022. It is also Lot 5 of the Maalaea Beach Lots, which contains approximately1.24 acres. The project site is bordered by Hauoli Street to the north, the Maalaea Kai Condominium to the east, the ocean to the south, and the Maalaea Yacht Marina Condominium to the west.

There is no development plan for the project. Sink holes have emerged mauka of the existing seawall running along the southern boundary of the subject parcel and it was determined that repair work to the wall is necessary. The purpose of this report is to provide technical information in the preparation of an Environmental Assessment, Shoreline Setback Variance and a Special Management Area Permit for repair and remedial work on the existing seawall.

2.0 EXISTING INFRASTRUCTURE

2.1 ROADWAYS

Honoapiilani Highway is the major arterial highway which links Central Maui and West Maui. It is a two-way roadway with varying widths of two and four lanes. In the vicinity of the project site, Honoapiilani Highway is a three-lane highway with two lanes in the northbound direction and one in the southbound direction.

Maalaea Road is a two-way, two-lane roadway, which loops onto Honoapiilani Highway. It provides access to the apartments and residential areas along the Maalaea coastline and Maalea Harbor. At its north terminus with Honoapiilani Highway, only right turn movements are allowed northbound onto Honoapiilani Highway. At its south terminus, only right turn in and right turn out movements are allowed to and from the northbound lane on Honoapiilani Highway.

Hauoli Road intersects Maalaea Road and terminates at Haycraft Park. It is a two-way, two-lane roadway which serves the beach front condominiums and apartments in Maalaea. The driveway access for the Milowai Condominium is from an existing concrete driveway from Hauoli Road.

2.2 DRAINAGE

The project site is developed with a condominium, parking area, pool, private wastewater treatment facility, and landscaping. The parcel slopes down in a north to south direction from an elevation of approximately 14 feet above mean sea level at the northwesterly corner to approximately 6 feet above mean sea level at the southwesterly corner, averaging approximately 2.5%.

According to Panel Number 150003 0190E of the Flood Insurance Rate Map, revised September 25, 2009, prepared by the United States Federal Emergency Management Agency, a majority of the project site is situated in Flood Zone X. Flood Zone X represents areas outside the 0.2% annual chance floodplain. A small portion of the property along the shoreline is situated in Flood Zone VE. Flood Zone VE represents coastal flood zone areas with velocity hazard (wave action). The base flood elevation for this zone has been determined at 11 feet.

According to the "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii (August, 1972)," prepared by the United States Department of Agriculture Soil Conservation Service, the soils within the subject parcel are classified as Ewa silty clay, 3 to 7 percent slopes (EsB).

Ewa silty clay is characterized as having moderate permeability, slow runoff, and a slight erosion hazard.

Presently, runoff from the project site sheet flows in a north to south direction and into the existing drainage improvements which was installed as part of the Milowai project. The majority of runoff from the impervious areas is currently collected in onsite catch basins and conveyed to the drainage swale located along the western property line. The drainage swale traverses from Hauoli Road and outlets at the southwestern corner of the subject parcel and into Maalaea Harbor. It is estimated that the existing 50-year storm runoff from the developed project site is 3.83 cfs.

2.3 SEWER

There are no County sewer facilities in the Maalaea area. There is an existing privately owned and operated onsite wastewater treatment plant which collects and processes wastewater from the Milowai Condominium. After the treatment process, wastewater is disposed through an injection well.

2.4 WATER

Domestic water and fire flow is provided by the County□s water system. There is an existing 8-inch waterline along Hauoli Road which connects to the existing 300,000 gallon reservoir mauka of Honoapiilani Highway. The water for this water system is supplied from the Central Maui source.

An existing 1-1/2-inch water meter provides domestic water and irrigation for the Milowai Condominium. Fire hydrants are located along Hauoli Road, approximately 60 feet to the west and 60 feet to the east, which provides fire protection for the project.

2.5 ELECTRIC, TELEPHONE AND CABLE TV

There are existing overhead power and telephone lines on the southern side of Hauoli Road. Electrical and telephone service for the subject parcel

was installed underground from Hauoli Road as part of the Milowai Condominium development.

3.0 ANTICIPATED INFRASTRUCTURE IMPROVEMENTS

3.1 ROADWAYS

No new driveway access is being proposed and the existing driveway from Hauoli Road will continue to provide access to the development.

3.2 DRAINAGE

No new development is being proposed as part of the shoreline protection project. Improvements will be limited to the repairs to the existing seawall. Runoff presently generated from the project site will not change and there will be no increase in the runoff. Furthermore, the drainage pattern will remain unchanged from the existing condition.

3.3 SEWER

There will be no increase in the quantity of wastewater generated from the project. Wastewater will continue to be processed by the existing onsite private wastewater treatment plant.

3.4 WATER

There will be no increase in domestic water consumption or irrigation demand due to the project. The existing 1-1/2-inch water meter will continue to serve the project.

3.5 ELECTRIC, TELEPHONE AND CABLE TV

The existing electrical and telephone distribution systems for the project will continued to be used. There will not be an increase in electrical or telephone demand due to the project.

3.6 COORDINATION OF THE SEAWALL REPAIRS

A site meeting was held with the Milowai Condominium AOAO, Maui County Planning Department, Land Planner, Coastal Engineer, Structural Engineer and Civil Engineer to assess the condition of the wall and potential mitigation measures. The Structural Engineer will be providing temporary and permanent solutions to repair the failing seawall.

After review of the condition of the existing seawall, it was determined that the failure of the wall is primarily from the waves pounding the front side of the wall. Based on the site observation, it appears that the existing seawall lacks a footing deep enough to protect the wall, causing the wall to crack and lose its backfill material.

From a civil engineering standpoint, one factor that could affect the integrity of the seawall is the onsite runoff which is not captured by the drainage system and conveyed to the existing drainage swale. Runoff sheet flowing from the area makai of the existing condominium is directed toward the seawall. The runoff could cause pressure build up in the back of the wall and accelerate the loss of backfill through the bottom of the wall.

The Structural Engineer is responsible for the design and supervision of the repairs to restore the integrity of the seawall. Based on the review of the condition of the seawall, a granular backfill wrapped in a geotextile fabric will be implemented into the wall design. The granular backfill will capture accumulated water in the back of the wall and allow it to discharge through weep holes or some other feature and reduce the pressure on the back of the wall.

APPENDIX A

HYDROLOGIC CALCULATIONS

Hydrologic Calculations

Purpose: Determine the surface runoff from the developed project site based on a 50-year storm.

The hydrologic calculations are based on the "Drainage Master Plan for the County of Maui," and the "Rainfall Frequency Atlas of the Hawaiian Islands," Technical Paper No. 43, U.S. Department of Commerce, Weather Bureau.

Rational Formula Used: $Q = CIA$

Where Q = rate of flow (cfs)

C = rainfall coefficient

I = rainfall intensity for a duration equal to the time of concentration (inches/hour)

A = drainage area (Acres)

A. Determine the Runoff Coefficient (C):

DRAINAGE AREA CHARACTERISTICS:

ROOF AREAS:

Infiltration (Negligible)	=	0.20
Relief (Steep)	=	0.08
Vegetal Cover (None)	=	0.07
Development Type (Roof)	=	0.55
C	=	0.90

PAVEMENT AREAS:

Infiltration (Negligible)	=	0.20
Relief (Flat)	=	0.00
Vegetal Cover (None)	=	0.07
Development Type (Pavement)	=	0.55
C	=	0.82

LANDSCAPE AREAS:

Infiltration (Medium)	=	0.07
Relief (Flat)	=	0.00
Vegetal Cover (Good)	=	0.03
Development Type (Landscape)	=	0.15
C	=	0.25

EXISTING CONDITION:

Roof Area = 0.36 Acres
Paved Area = 0.43 Acres
Landscaped Area = 0.45 Acres
WEIGHTED C = 0.63

B. Determine the 50-year 1-hour rainfall:

i_{50} = 2.5 inches

Adjust for time of concentration to compute Rainfall Intensity (I):

Existing Condition:

T_c = 13 minutes
I = 4.90 inches/hour

C. Drainage Area (A) = 1.24 Acres

D. Compute the 50-year storm runoff volume (Q):

$$\mathbf{Q = CIA}$$

Existing Conditions:

$$Q = (0.63)(4.90)(1.24)$$

$$= 3.83 \text{ cfs}$$

Since there will not be any new improvements for the project, there will be no increase in surface runoff from a 50-year, 1-hour storm.

Hydrograph Plot

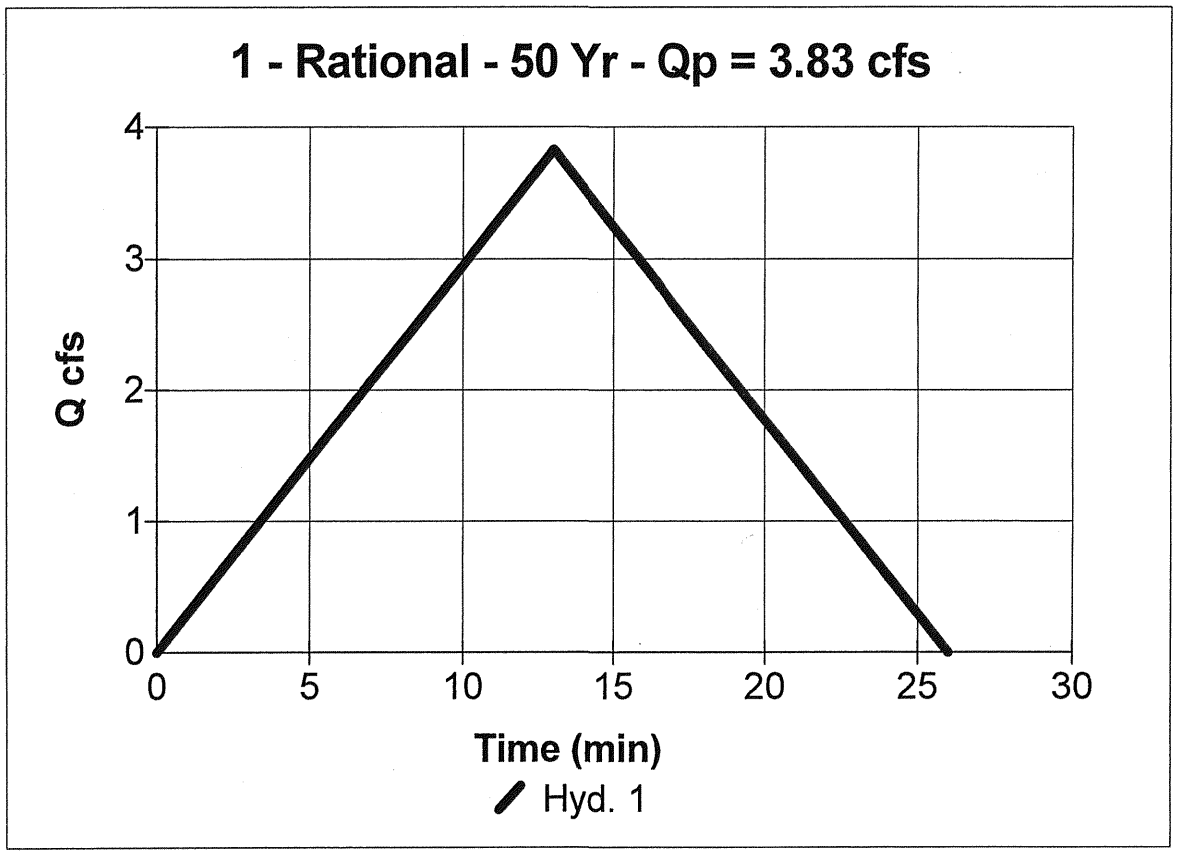
English

Hyd. No. 1

Exisiting Conditions

Hydrograph type	= Rational	Peak discharge	= 3.83 cfs
Storm frequency	= 50 yrs	Time interval	= 1 min
Drainage area	= 1.2 ac	Runoff coeff.	= 0.63
Intensity	= 4.90 in	Time of conc. (Tc)	= 13 min
I-D-F Curve	= 2-5.IDF	Reced. limb factor	= 1

Total Volume = 2,987 cuft



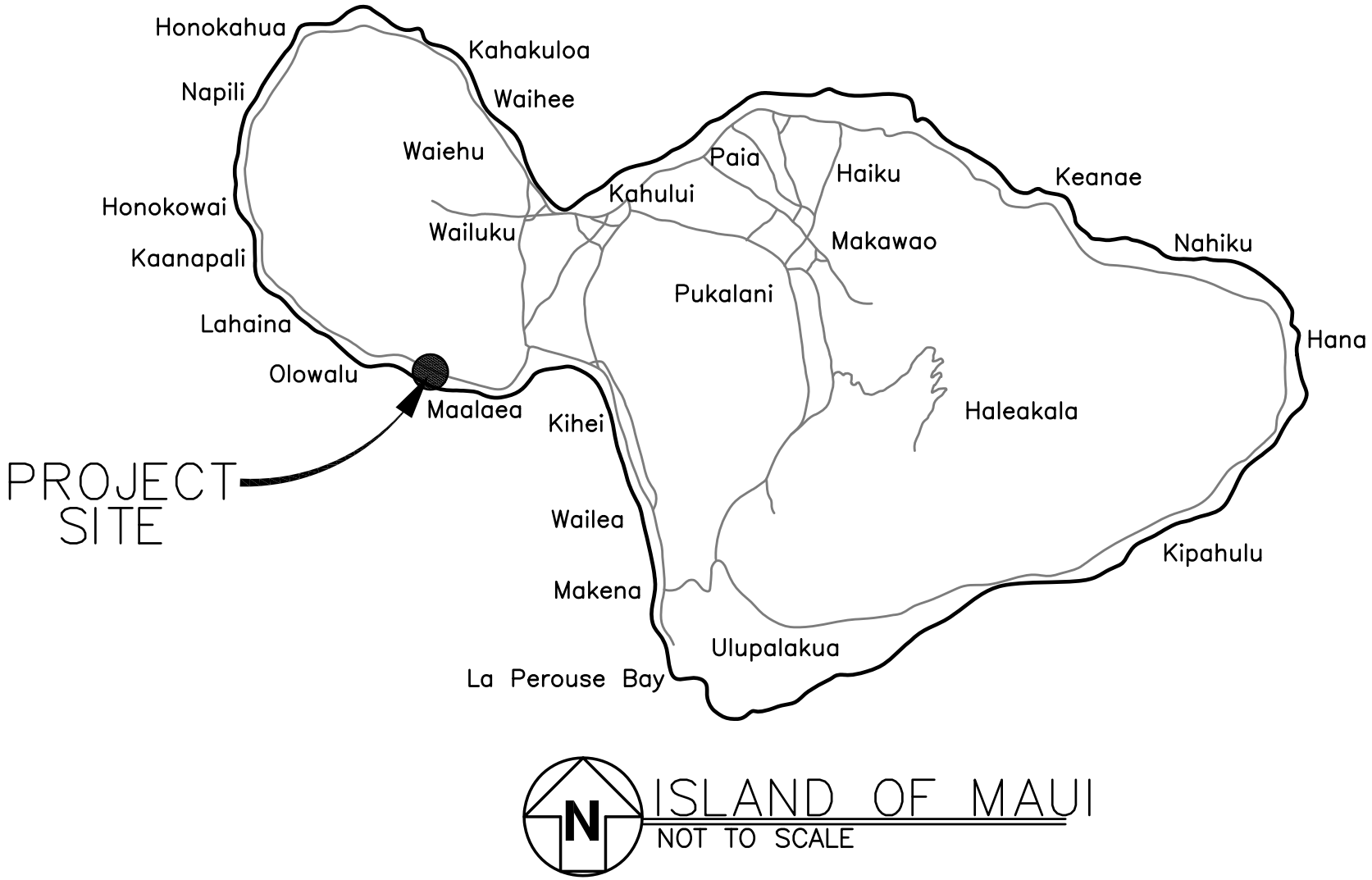
EXHIBITS

1 Location Map

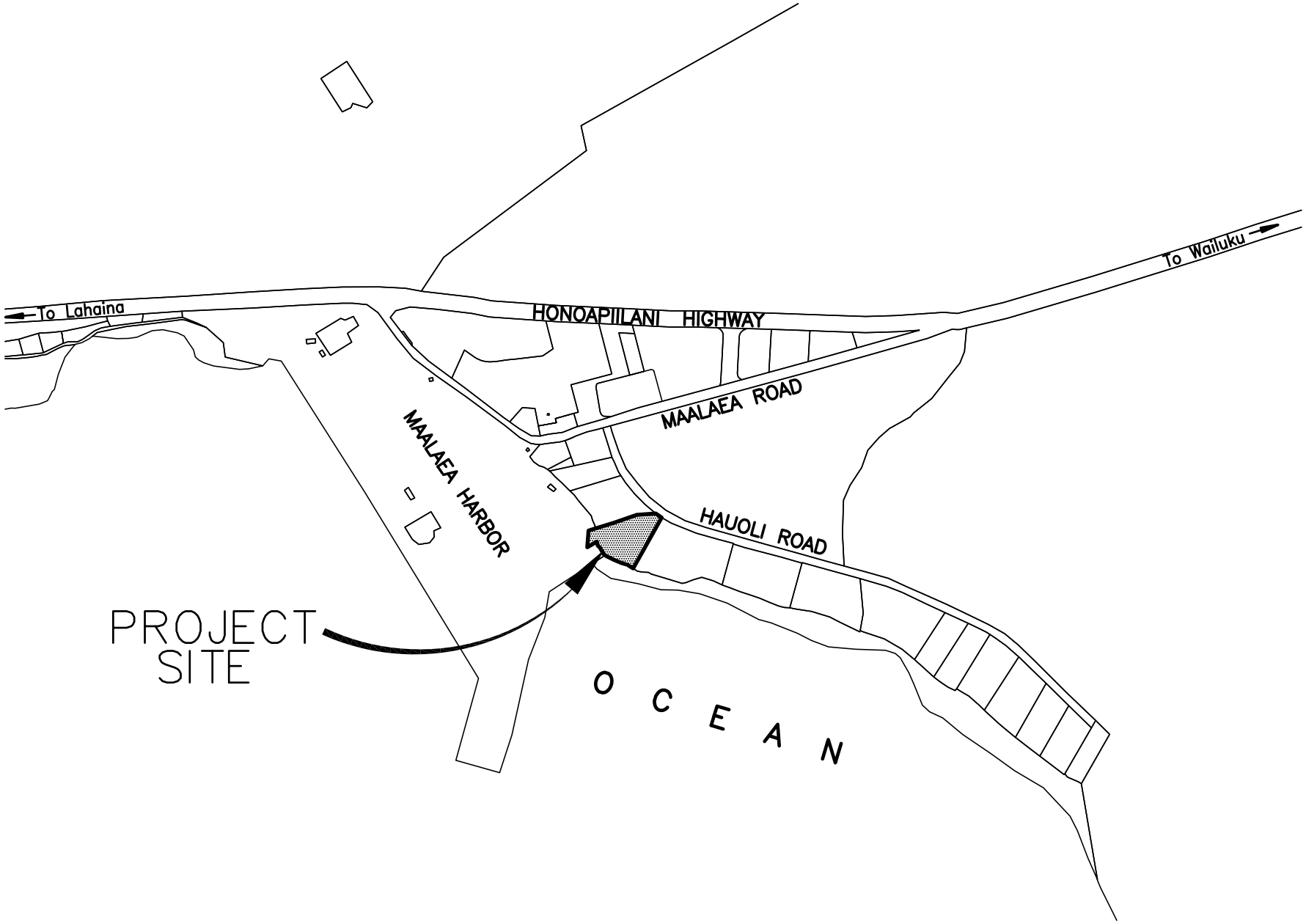
2 Vicinity Map

3 Soil Survey Map

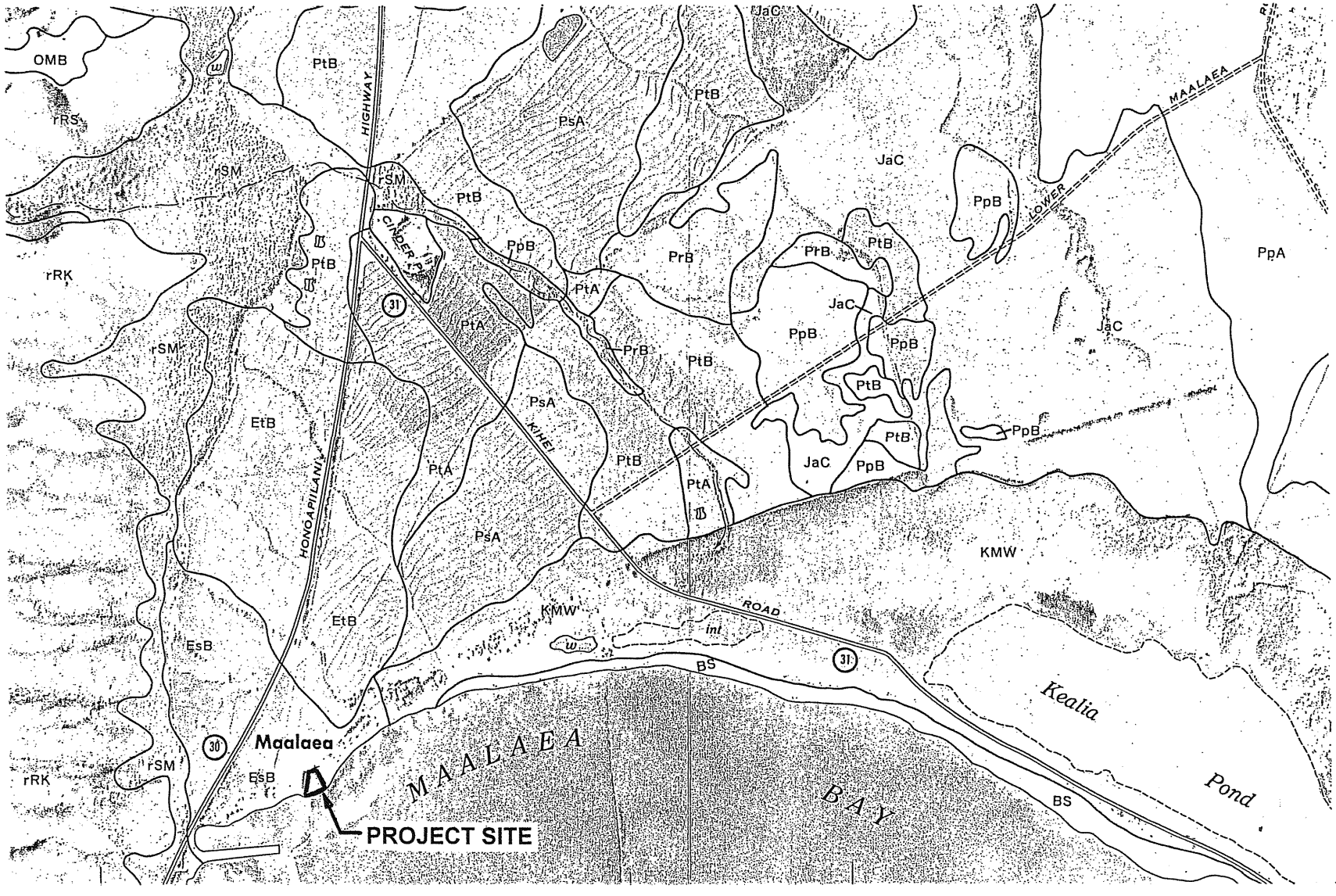
4 Flood Insurance Rate Map



LOCATION MAP
EXHIBIT 1



VICINITY MAP
EXHIBIT 2



SOIL SURVEY MAP
EXHIBIT 3

State of Hawaii

FLOOD HAZARD ASSESSMENT REPORT

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD ZONE DEFINITIONS

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD – The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water-surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

- Zone A: No BFE determined.
- Zone AE: BFE determined.
- Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
- Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
- Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
- Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
- Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA – An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

- Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

OTHER FLOOD AREAS

- Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

PROPERTY INFORMATION

COUNTY:	MAUI
TMK NO:	(2) 3-8-014-022
PARCEL ADDRESS:	50 HAUOLI ST WAILUKU, HI 96793
FIRM INDEX DATE:	SEPTEMBER 19, 2012
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL(S):	1500030558F
PANEL EFFECTIVE DATE:	SEPTEMBER 19, 2012

PARCEL DATA FROM:	JULY 2013
IMAGERY DATA FROM:	MAY 2005

IMPORTANT PHONE NUMBERS

County NFIP Coordinator	
County of Maui	
Carolyn Cortez	(808) 270-7253
State NFIP Coordinator	
Carol Tyau-Beam, P.E., CFM	(808) 587-0267

Disclaimer: The Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use of the information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR from any liability, which may arise from its use.

If this map has been identified as 'PRELIMINARY' or 'UNOFFICIAL', please note that it is being provided for informational purposes and is not to be used for official/legal decisions, regulatory compliance, or flood insurance rating. Contact your county NFIP coordinator for flood zone determinations to be used for compliance with local floodplain management regulations.

EXHIBIT 4

FLOOD INSURANCE RATE MAP

APPENDIX D
COASTAL ENGINEERING REPORT

COASTAL ENGINEERING REPORT

Milowai Condominiums
Maalaea, Maui, Hawaii

August, 2012

REVISED OCTOBER, 2013

Prepared for:
Milowai Association of
Apartment Owners

Prepared by:
Sea Engineering, Inc.
Makai Research Pier
Waimanalo, HI 96795

Job No. 25323

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1. INTRODUCTION

Sea Engineering, Inc. (SEI) was selected to conduct an evaluation of shoreline erosion processes and provide an engineering comparison of shore protection alternatives for the shoreline fronting the Milowai Condominiums, in Maalaea, Maui. The specific parcel is identified as Tax Map Key (2) 3-8-014:022. The property's management commissioned the effort in response to recent damage incurred from shoreline erosion. The existing seawall fronting the Milowai Condominium is suffering from structural failure, with cracks evident in several locations along the seaward face of the structure, sink holes appearing in the lawn on the landward side of the wall, and partial collapse occurring along a limited section near the Maalaea Harbor's east jetty.

The shoreline evaluation included a site visit, development of a coastal engineering report, and drafting of a conceptual plan for an engineered rock revetment to reinforce the seawall. The report will be suitable for incorporation into an Environmental Assessment (EA) for the project.

Maalaea is located on the south shore of Maui, approximately six miles south of Kahului and three miles northwest of Kihei, as shown in Figure 1-1. The shoreline faces south southeast and is in a fairly well protected location, as seen in the figure. The parcel boundaries can be seen in the site map presented in Figure 1-2.

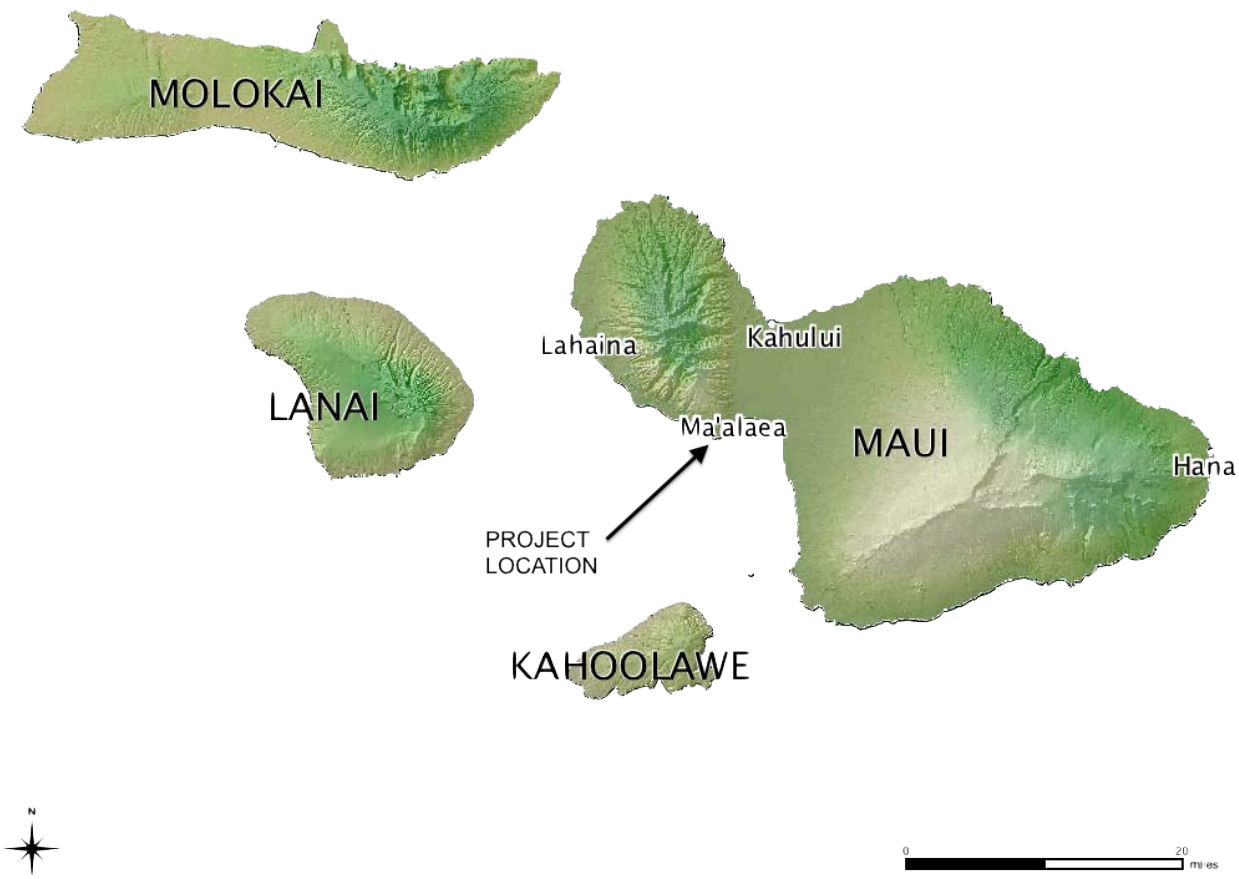


Figure 1-1. Project location map

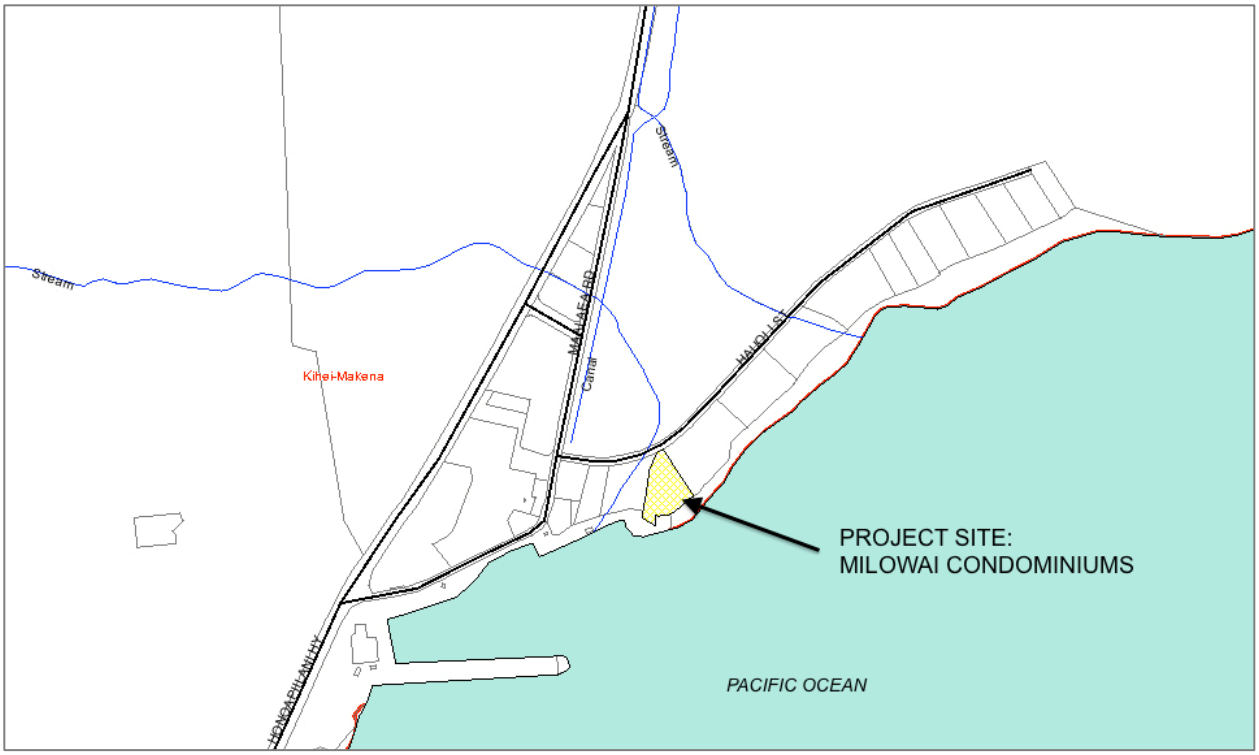


Figure 1-2. Project site map

2. SITE CONDITIONS

2.1 Regional Setting

The project site is located on the western shoreline of Maalaea Bay, straddling the east jetty of Maalaea Harbor (see Figure 2-1). The property's shoreline ranges from protected waters with a gently sloping sandy beach along the southwest corner located within Maalaea Harbor, to exposed waters with a nearly vertical CRM seawall along the remaining reach of shoreline located outside of the harbor. Offshore, a broad and relatively shallow fringing reef extends roughly 500 feet from the shoreline, averaging two to three feet in depth. A topographic survey of the property was completed by Newcomer – Lee Land Surveyors, Inc. in April 2012 and is provided in the Appendix for reference.

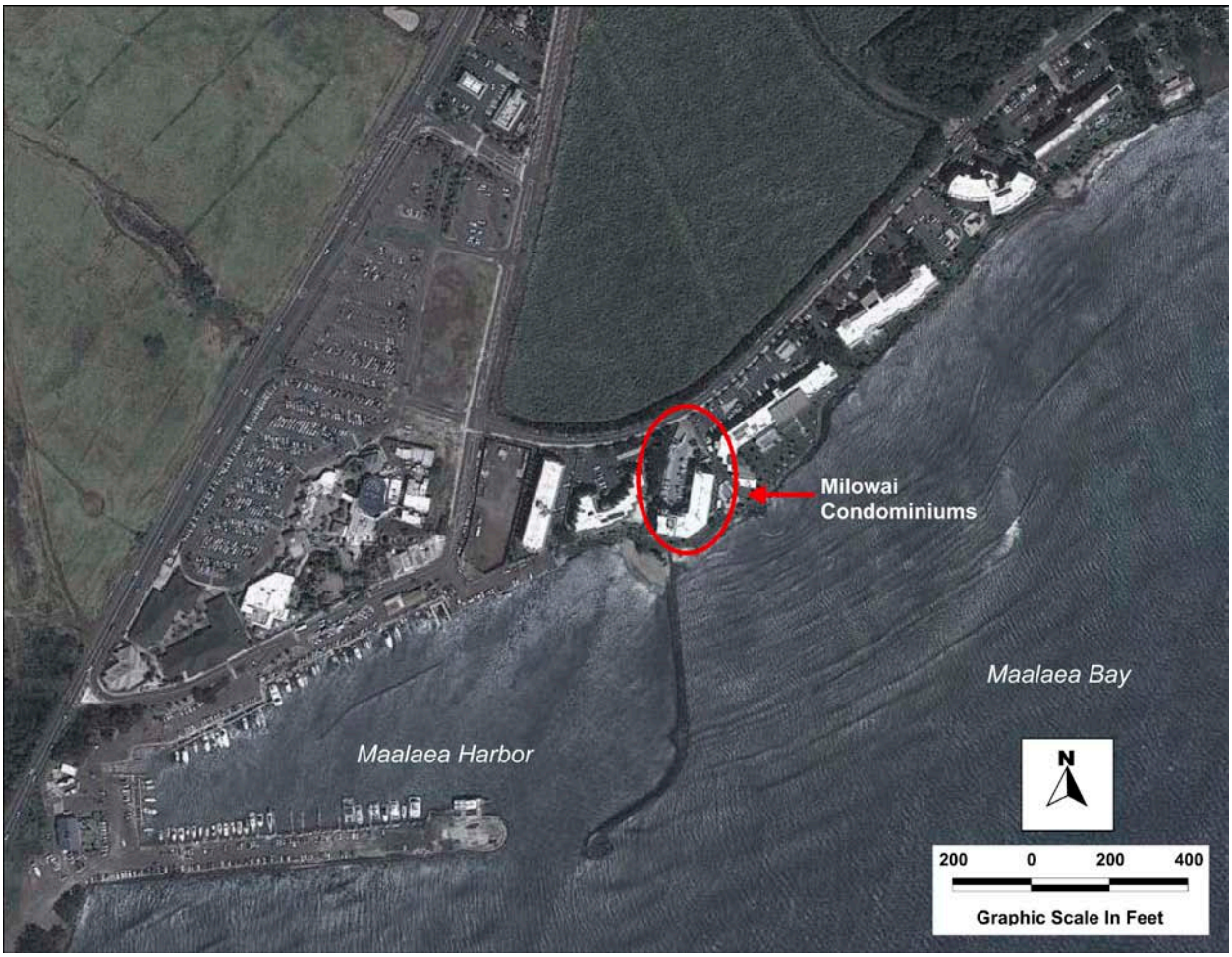


Figure 2-1. Project location map

2.2 Existing Shoreline Condition

The portion of shoreline lying within Maalaea Harbor appears to be relatively stable, as suggested from historic aerial images. This harbor-fronting segment of shoreline is characterized by an accretionary beach created following the construction of the harbor's east jetty. East of the

jetty, the Milowai property's oceanfront shoreline is devoid of beach material, except for a small pocket of mixed sand, coral rubble, and cobbles directly adjacent to the jetty. No significant sandy beach is present along this this stretch of Maalaea Bay shoreline, stretching from the jetty at Maalaea Harbor, northeast to the Ocean View Maui condominiums, roughly 1,800 feet up the coast. The majority of shoreline appears to be hardened over this reach by a continuous series of seawalls and revetments.

The Milowai property's oceanfront shoreline is hardened with a vertical to nearly vertical seawall from the Maalaea jetty to the eastern property boundary, where it ties into the neighboring property's rock revetment. In a number of locations, the seawall exhibits considerable evidence of instability and partial failure likely due to wave overtopping, supportive sediment undermining, and subsequent wall cracking. Based on visual observations of exposed portions of the wall's foundation, the seawall appears to be constructed on substrate consisting of a weathered volcanic material composed of tuffaceous rock with clasts of basalt cobbles, as shown in Figure 2-2 and Figure 2-3.

Figure 2-2. Milowai seawall footing on weathered rock foundation

The weathered material is solution pitted due to the chemical and mechanical forces of wave action. As illustrated by Figure 2-2, this process may also be responsible for the undermining found along portions of the wall's footing, leaving the wall unsupported at a number of locations. Saltwater damage to vegetation and sink holes directly behind the wall, are evidence of both wave overtopping and wall undermining.

Figure 2-3. Undermined section of seawall footing, revealing weathered volcanic rock as the foundation material

General layout and existing conditions of the shoreline and CRM seawall are illustrated by the site photographs in Figure 2-4 through Figure 2-7.

Sea Engineering measured typical shoreline profiles at the property, running offshore for approximately 200 feet, to identify any significant nearshore features. It was found that nearshore bathymetry was relatively flat and shallow. Profile locations and results are presented on the site map (Figure 2-8) and profiles (Figure 2-9).

Figure 2-4. Extensive cracking and settlement along western reach of seawall

Figure 2-5. Wall displacement away from supportive soil along with significant void space behind wall, indicative of structural instability and failure

Figure 2-6. General layout of shoreline and seawall, as seen from the Maalaea jetty

Figure 2-7. General layout of shoreline and seawall, as seen from eastern property boundary

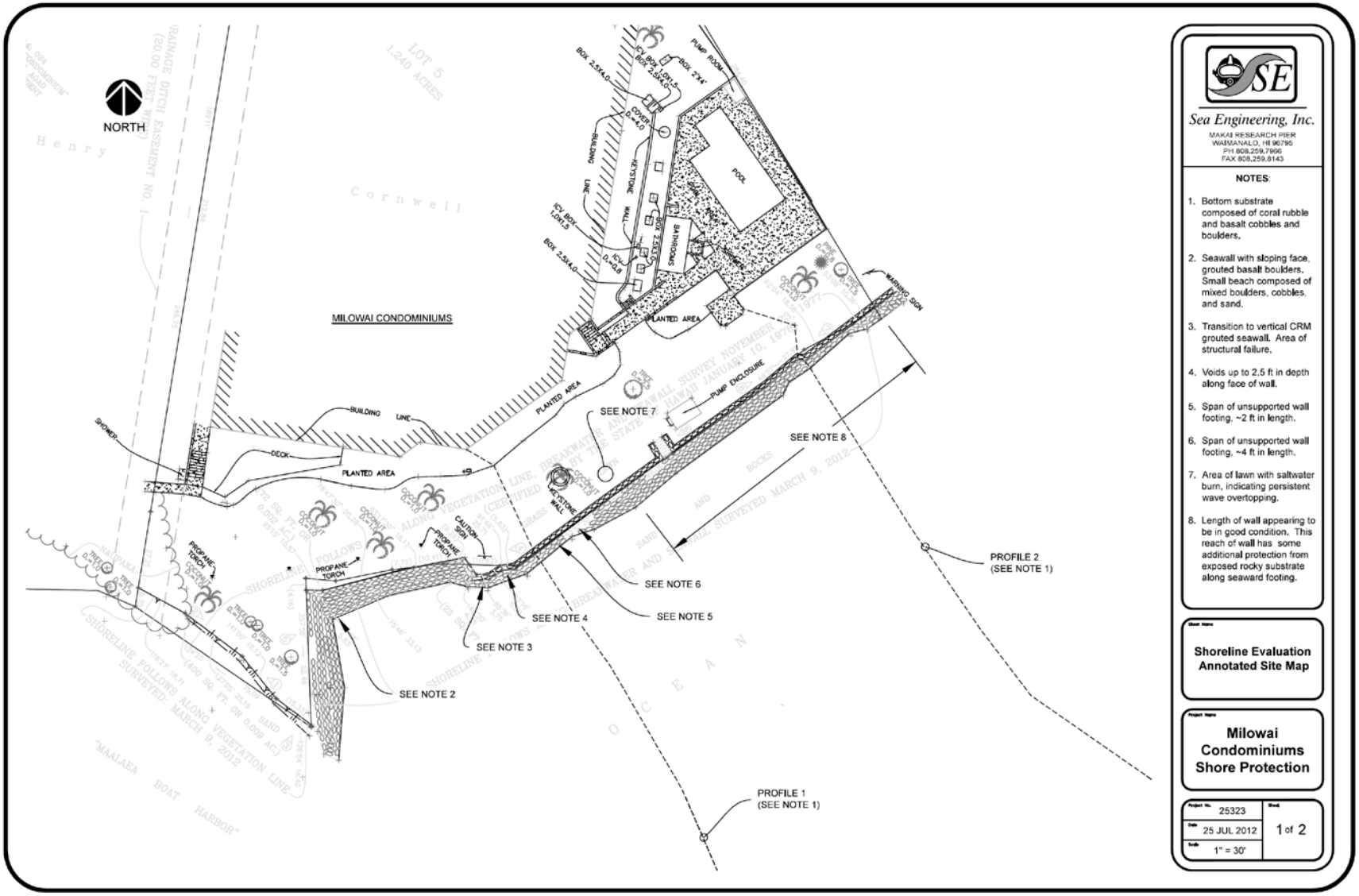


Figure 2-8. Milowai Condominiums site map (*topographic survey by Newcomer-Lee Land Surveyors, Inc.*)

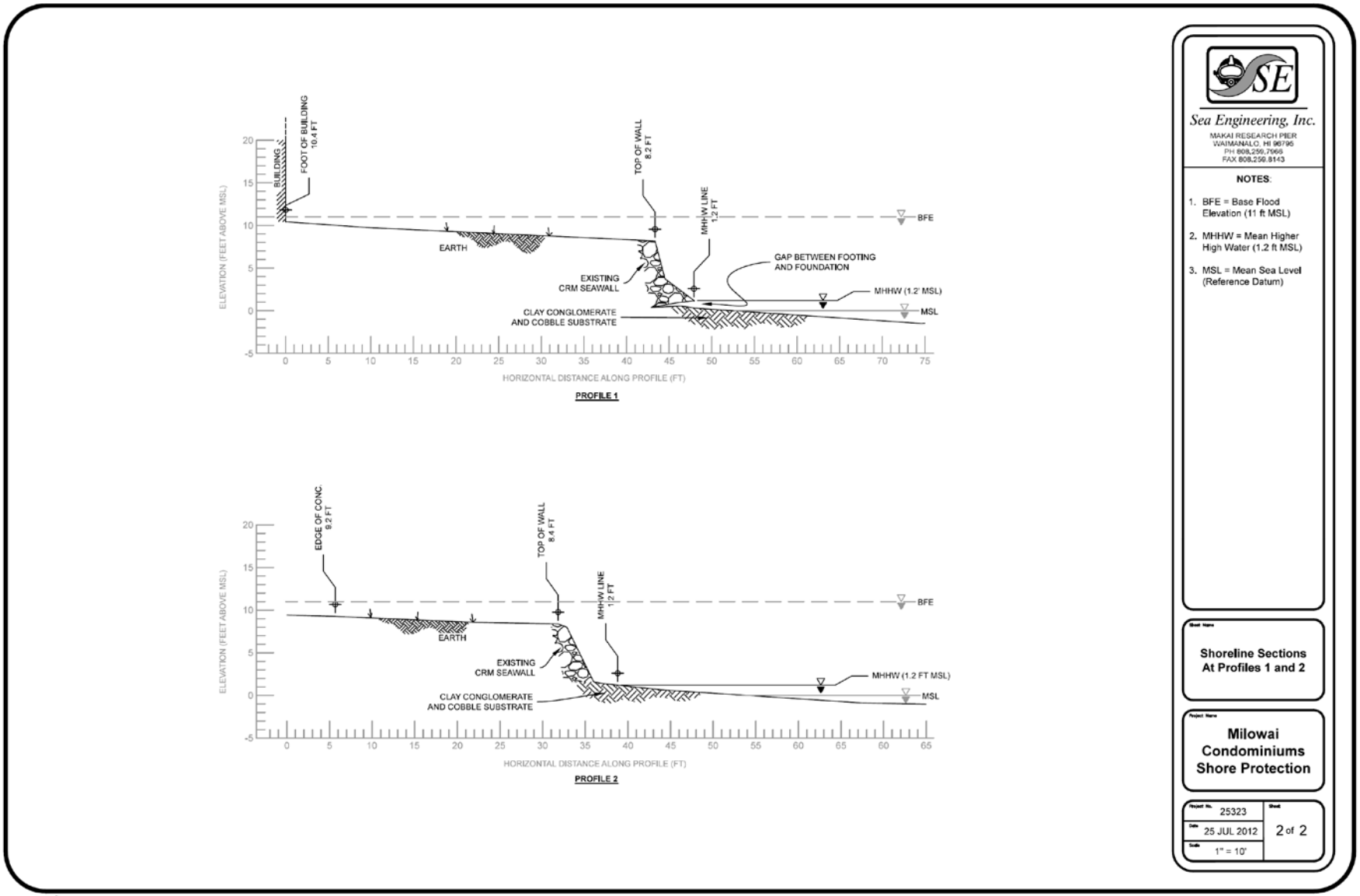


Figure 2-9. Shoreline profiles at Milowai Condominiums

2.3 Shoreline Erosion History

Coastal erosion trends along the south Maui shoreline have been documented by researchers at the University of Hawaii's Coastal Geology Group (CGG). The CGG analyzed historical aerial photographs dating from 1900 to 2007 to quantify the relative shoreline change over time. During this process, the aerial images were digitally orthorectified (i.e., corrected for distortion and scale) and georeferenced, where points in the image are registered to known ground control points, in order to create accurate photographic maps. The maps were then used to digitize the low water marks in order to develop a quantitative record of historic shoreline change. This historic shoreline data was acquired from the university and used to develop the map presented in Figure 2-8. Interpretation of the historical shorelines suggests that a beach has been absent from the condominium's Maalaea Bay shoreline since at least 1960, except for a small, fluctuating pocket of beach material next to the jetty. The isolated beach on Milowai's protected harbor-front shoreline appears relatively stable, with a net accretion since construction of the jetty.

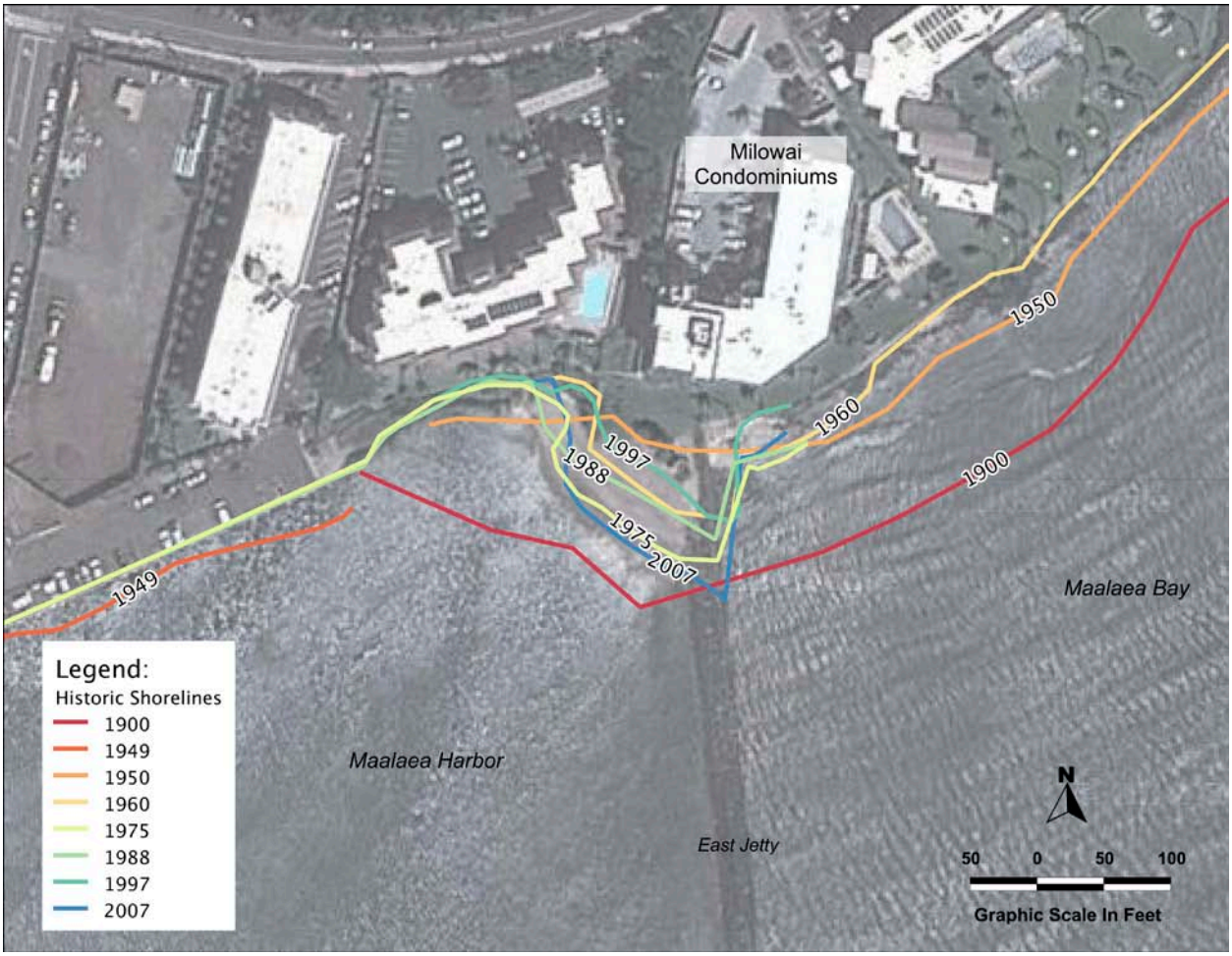


Figure 2-10. Historic shorelines at Maalaea, digitized from aerial photographs. Background image date is March 2011, from Google Maps (*Shoreline data source: University of Hawaii Coastal Geology Group*)

2.4 Coastal Hazards

The Flood Insurance Rate Maps (FIRMs) produced by the Federal Emergency Management Agency (FEMA) are a planning tool used show a community's base flood elevations, flood zones, and floodplain boundaries. Property owners and stakeholders can use this map to get a reliable indication of what flood zone their land interests may lie in. The flood zones are land areas identified by FEMA which describe that land area in terms of its risk of flooding.

Maalaea Bay is covered by FIRM number 1500030560E, where it is shown that the Milowai property's shoreline lies within a special flood hazard area subject to inundation by the 1% Annual Chance Flood. The 1% annual flood (100-year flood), also known as the base flood, is the flood event that has a 1% chance of being equaled or exceeded in any given year. The special area is further subdivided into several flood zones, with the Milowai shoreline lying within the most hazardous category of Zone VE (see Figure 2-9), which is defined as a coastal flood zone with velocity hazard due to wave action.

The coastal Base Flood Elevation (BFE) for the Milowai property in this zone is given as 11 feet above mean sea level (see Figure 2-9), where the BFE is defined as the maximum computed water surface elevation for the 1% annual flood event. In contrast to inland BFEs along rivers and streams which contain only one component, coastal BFEs may be based on many additive components such as storm surge, wave height, wave setup, and wave runup. These components are discussed in more detail in Section 3.

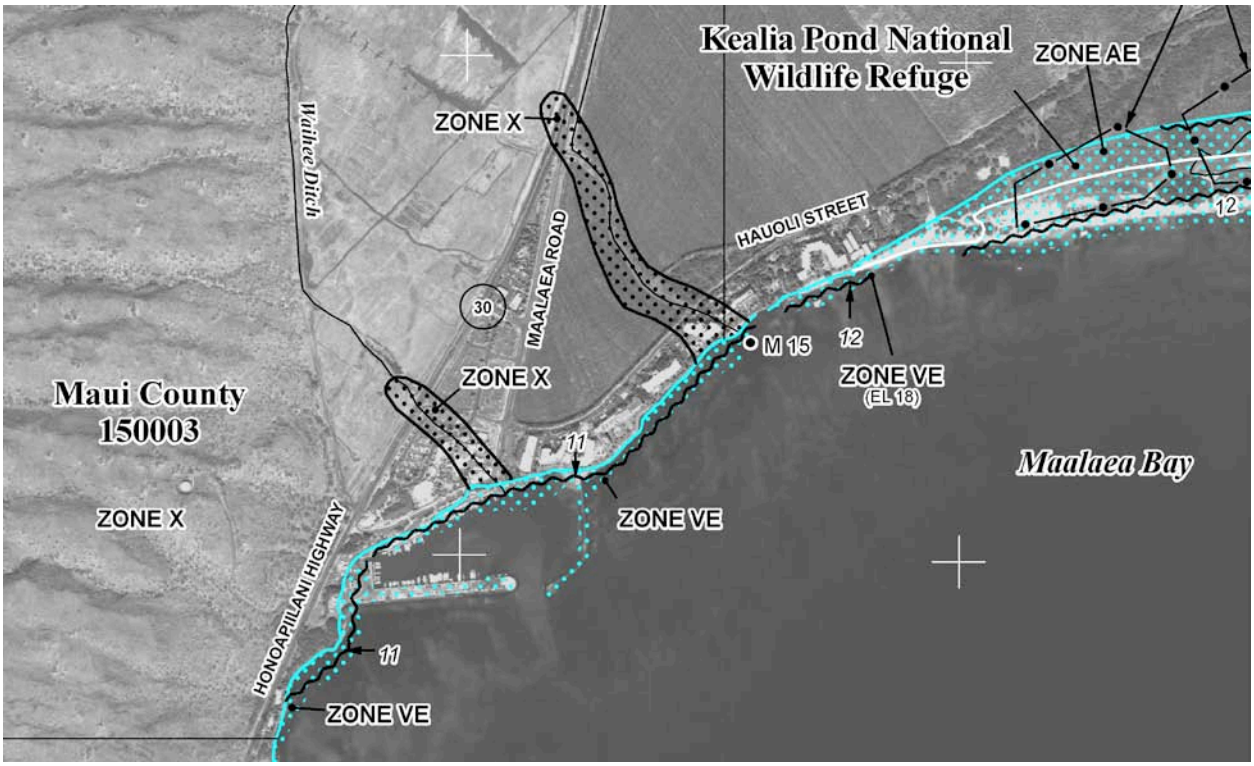


Figure 2-11. Cropped area of the Maalaea FIRM, showing Milowai's flood hazard as Zone VE, with a Base Flood Elevation of 11 feet (MSL)

3. OCEANOGRAPHIC DESIGN CONSIDERATIONS

Existing wind, wave, and water level data were acquired by SEI and used to develop a basic climatological analysis of the Maalaea Bay vicinity. The following sections present the findings, organized by oceanographic parameter.

3.1 Wind Climate

3.1.1 General Wind Climate in the State of Hawaii

The prevailing wind regime in Hawaii is dominated by the northeasterly trade winds, which are spawned by the outflow of air from the Pacific Anticyclone (also known as the Pacific High, which is a vast area of high pressure that typically resides over the northeast Pacific Ocean). The center of this high pressure system is located well northeast of the Hawaiian Islands, and shifts northward and southward with the seasons. The summer months from May through September are when the trades are typically at their strongest. In the winter months from October through April, the Pacific High shifts northward and trades become less frequent. Trade wind frequency varies from approximately 90% in the summer to 50% during the winter, with a yearly average of around 70%.

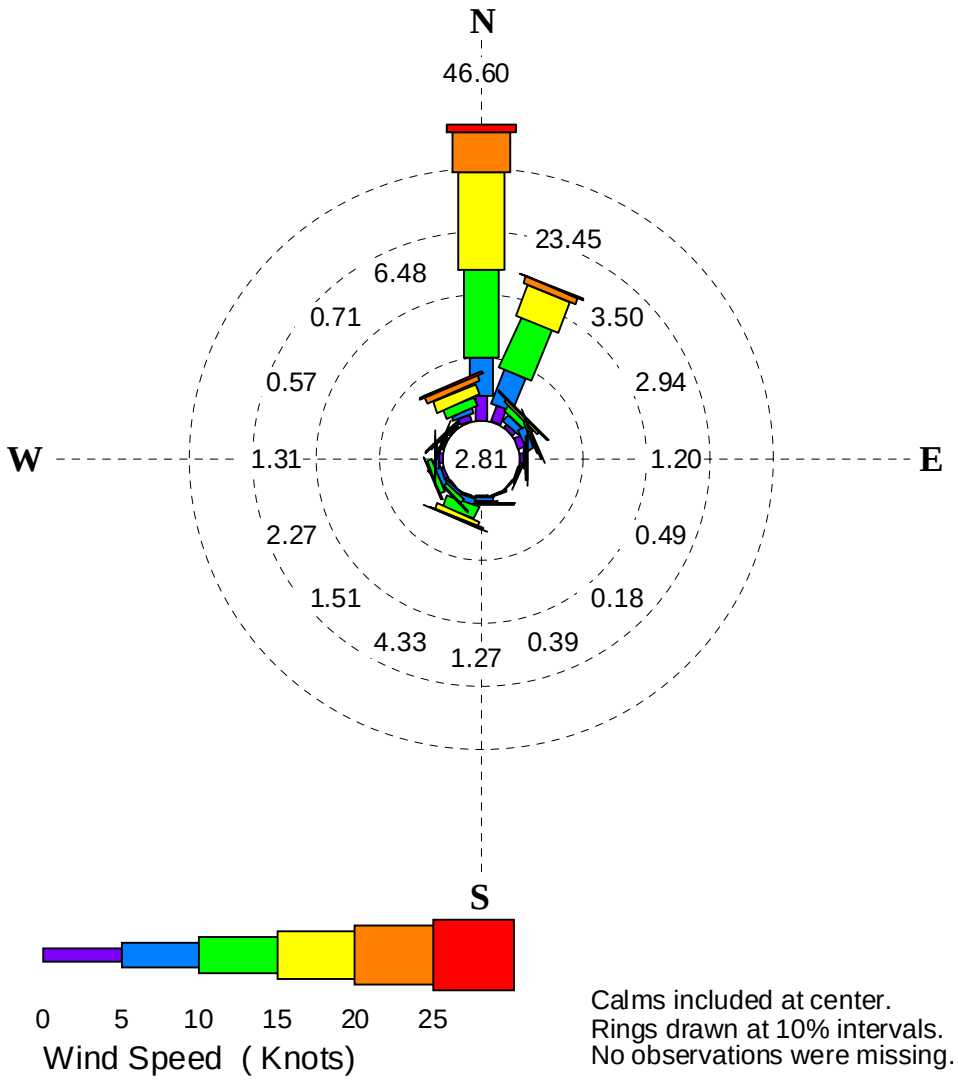
Winds from the south and west (colloquially referred to as Kona winds) occur primarily during the winter months, and are generated by cold fronts or cut-off low pressure systems that migrate eastward across the Pacific. Winds from cut-off lows or extra-tropical storms can be strong and may blow from any direction, depending on the strength and position of the storm relative to the Islands. Wind speeds exceeding 60 miles per hour have been known to occur. Southerly winds from these storms are often stronger on the north and east (windward) sides of the Islands due to downslope acceleration and the funneling effects of the steeper valleys and ridges typical of windward slopes. Generally, winds from these storms range from gentle to severe, and are often associated with heavy rainfall.

The Hawaiian Islands lie within a zone of the Earth's climate that is susceptible to tropical storms and hurricanes, however typical sea surface temperatures around Hawaii are generally not warm enough to encourage or sustain hurricane formation and growth. Although very infrequent events in Hawaii, two hurricanes did strike the island of Kauai within an approximate ten year period – Hurricane Iwa (1982) and Hurricane Iniki (1992). Hurricane Iwa was dimensionally a large storm, and possessed wind speeds at the low end of hurricane strength (74 miles per hour), while Hurricane Iniki was a smaller, much more powerful storm, with peak wind speeds of approximately 130 miles per hour at the time of landfall. In general, scenario hurricanes reaching Hawaii are predicted to have relatively low wind speeds, between 75 and 115 miles per hour (Haraguchi, 1984).

3.1.2 Maui Wind Climate

On Maui, local wind conditions are heavily influenced by regional topography. At Maalaea, the northeast trade winds become more northerly as they are bounded between the massive volcanic summits of Haleakala on one side and West Maui on the other. Typical wind velocities at Maalaea are significantly greater than those upwind along the windward coast of Maui due to the Venturi effect created by the funnel-shaped topography. Hourly wind data recorded at Maalaea

for a total duration of 12 months was obtained from the National Weather Service office. The dataset covers the periods of July through December of 2003, February through March of 2004, and July though October of 2004. The hourly data was provided in the form of 2-minute sustained wind speeds at 10 meters (33 feet) elevation above ground, and directions given in meteorological convention. Figure 3-1 presents a wind rose diagram of the Maalaea wind data, where the statistical occurrence of a particular wind speed and direction are expressed as a histogram wrapped around the compass directions. The wind rose clearly shows that winds at Maalaea Harbor come from a narrow directional sector between north and northwest more than 75 percent of the time. Although southerly winds occur only a small percentage of the time, they are occasionally strong. The strongest wind in this record is 39.96 knots from 350° true north (TN), while the strongest southerly wind was 29.97 knots from 210° TN.



PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	5	10	15	20	25
N	3.85	5.95	13.77	15.52	6.31	1.20
NNE	2.65	5.65	8.72	5.16	1.16	0.10
NE	0.73	1.18	0.99	0.39	0.17	0.04
ENE	1.21	1.18	0.33	0.18	0.03	0.00
E	0.70	0.28	0.12	0.08	0.03	0.00
ESE	0.31	0.13	0.04	0.01	0.00	0.00
SE	0.09	0.08	0.01	0.00	0.00	0.00
SSE	0.26	0.13	0.00	0.00	0.00	0.00

TOTAL OBS = 7764 MISSING OBS = 0

PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	5	10	15	20	25
S	0.32	0.36	0.30	0.14	0.12	0.04
SSW	0.37	1.00	1.93	0.84	0.13	0.05
SW	0.15	0.49	0.62	0.22	0.03	0.00
WSW	0.49	0.86	0.73	0.18	0.00	0.00
W	0.52	0.57	0.17	0.03	0.03	0.01
WNW	0.28	0.19	0.03	0.04	0.01	0.01
NW	0.21	0.19	0.15	0.09	0.04	0.03
NNW	1.08	0.70	1.49	1.93	1.09	0.18

CALM OBS = 218 PERCENT CALM = 2.81

Figure 3-1. Wind rose plot, Maalaea Harbor (July 2003 – October 2004)

3.2 Wave Climate

3.2.1 Prevailing Waves

The wave climate in Hawaii is typically characterized by waves from four general sources, which include northeast trade wind waves, North Pacific swell, South Pacific swell, and Kona storm wind waves. Additionally, tropical storms and hurricanes may generate waves that can approach the islands from virtually any direction. Of note is the fact that any combination of these wave conditions may occur simultaneously, in contrast to wind directions which are mutually exclusive.

Trade wind waves occur throughout the year and are most persistent in April through September when they usually dominate the Hawaiian wave climate. Trade wind waves result from the strong and steady trade winds blowing from the northeast quadrant over long fetches of open ocean in the northeastern Pacific. Trade wind deep water waves are characteristically between 3 to 8 feet high with periods of 5 to 10 seconds, depending upon the strength of the winds and how far the fetch extends to the east of the Hawaiian Islands. The direction of approach, like the trade winds themselves, varies between north-northeast and east-southeast and is centered on the east-northeast direction.

During the winter months in the northern hemisphere, strong storms are frequent in the North Pacific at mid latitudes, such as near the Aleutian Islands. These storms generate the large North Pacific swells that range in direction from west-northwest to northeast, and arrive at north-facing Hawaiian shorelines with minimal loss of energy. Deep water wave heights often reach 15 feet and in extreme cases can exceed 30 feet. Wave periods vary between 12 and 22 seconds, depending on the location of the source storm system.

Southern swell is generated by large storms in the mid latitudes of the southern hemisphere and is most prevalent during the summer months of May through September (winter in the southern hemisphere). Propagating over distances of greater than 5,000 miles, these waves typically arrive with relatively low deep water wave heights of 1 to 4 feet and periods of 14 to 22 seconds. Depending on the positions and tracks of the southern hemisphere storms creating these waves, southern swells approach mainly from the southwesterly direction but occasionally track to more southeasterly directions.

Kona storm waves are less frequent than the previously discussed wave components, occurring approximately 10 percent of the time during a typical year. Kona waves are characterized by short period, steep wind waves, typically ranging in period from 6 to 10 seconds with heights of 5 to 10 feet, and approaching from the west to southwest. Deep water wave heights during the severe Kona storm of January 1980 were about 17 feet. It is notable that these waves had a significant impact on the south and west shores of Maui.

Severe tropical storms and the unlikely but possible hurricane event have the potential to generate extremely large waves, which in turn could potentially result in large waves nearly anywhere in the State, including at the project site. Recent hurricanes impacting the Hawaiian Islands include Hurricane Iwa in 1982 and Hurricane Iniki in 1992, however, no direct strikes by a hurricane on the island of Maui have been recorded. Iniki directly hit the island of Kauai and resulted in large waves along the southern shores of all the Hawaiian islands. Damage from these hurricanes was extensive.

3.2.2 Maalaea Wave Climate

The Maalaea shoreline generally faces southeast, and it's direct exposure to the open ocean is significantly limited by swell shadowing from the nearby islands of Kahoolawe and Lanai, as well as by the land masses of East and West Maui, as illustrated by Figure 3-2. Maalaea is affected however, by southwest and south swells during the summer months and Kona storm waves during the winter and spring. In both cases, the level of exposure is highly dependent upon wave direction, as the swells must pass through a narrow corridor in order to propagate in to Maalaea Bay.

Historic information on wave climate for Maalaea is available in the form of *hindcast* data sets provided by the U.S. Army Corps of Engineers' Wave Information Studies (WIS). WIS hindcast results are generated by numerical modeling of past wind and wave conditions. WIS information produces records of wave conditions based on these historical wind and wave conditions at specified virtual stations in the waters surrounding the Hawaiian Islands. These records of wave conditions are available as hourly data for the years 1981 through 2004 at all of the virtual station locations.

WIS Station 114, which is located approximately 65 miles southwest of Maalaea, was chosen as being most representative, since it's exposure is most similar to that of Maalaea. Table 3-1 shows the frequency of occurrence of wave height and period for the WIS data, grouped by directional band. The data was sorted into 22.5-degree bins (along the points of the compass) for directions southeast clockwise through west-southwest. Additionally, the wave height and wave period distributions for the full WIS 114 data set are presented as wave rose plots in Figure 3-3 and Figure 3-4. Because the WIS station is located far from shore, the wave roses do register some of the north swell and trade wind waves not seen in Maalaea.

A wave refraction analysis was completed by Sea Engineering (1994) for compass points centered on 135° (SE), 157.5° (SSE), 180° (S), 202.5° (SSW), 225° (SW), 247.5° (WSW), and 270° (W). This analysis revealed that, because of the sheltering effects of Kahoolawe, Lanai, Molokai, and West Maui, waves coming from 247.5, 225, 202.5, and 180 degrees produce the most wave energy in the vicinity of Maalaea. Waves from 247.5, 225, and 180 degrees travel in nearly straight paths toward Maalaea Bay, while waves from 202.5 degrees are refracted around Kahoolawe toward Maalaea Bay. The occurrence of waves from these directions is shown in Table 3-1. The data show peak wave occurrence from the south-southwest, with typical heights and periods of 2 to 6 feet and 12 to 18 seconds, respectively.

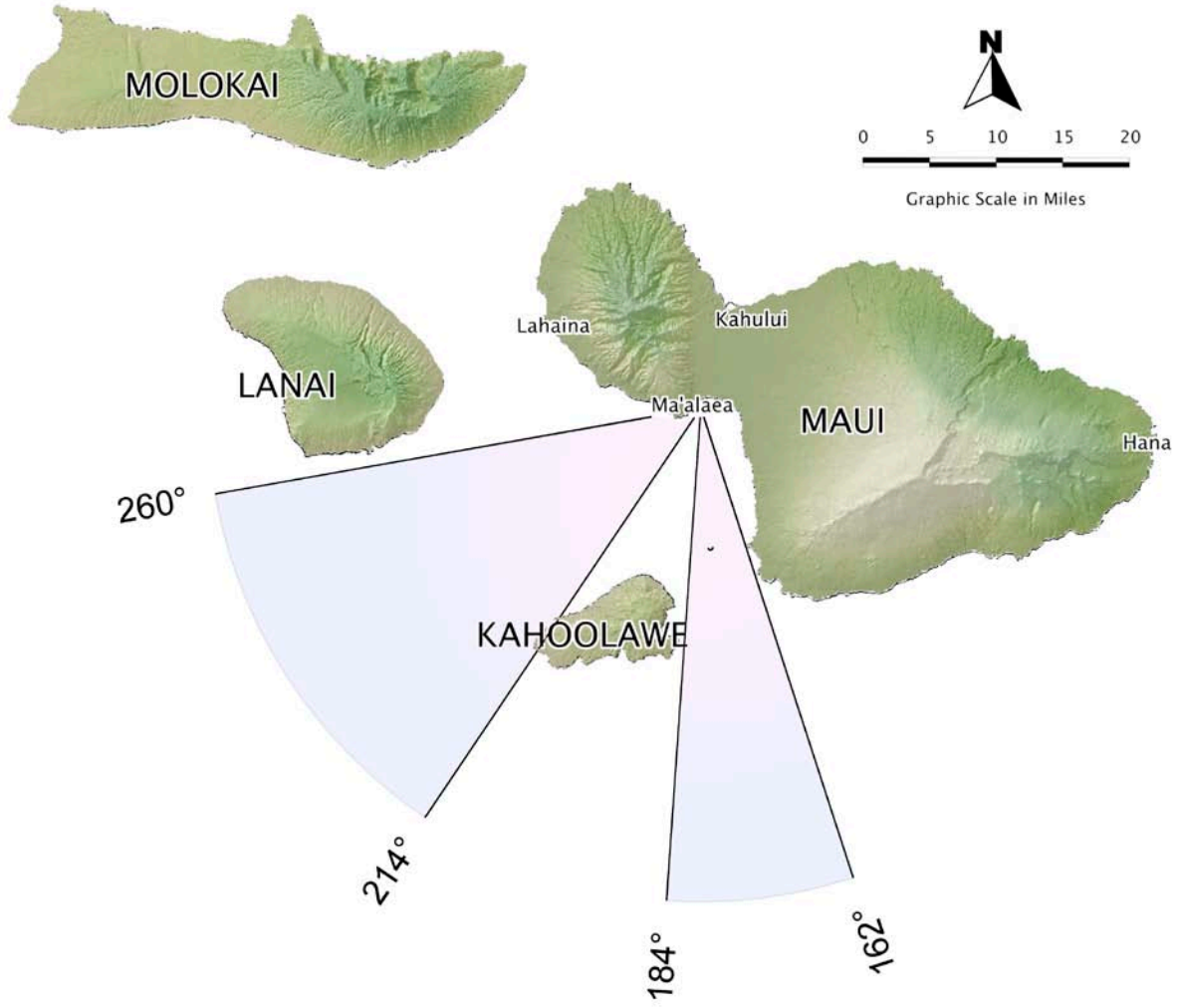


Figure 3-2. Wave exposure windows for Maalaea Bay

Table 3-1. WIS Station 114: Wave height versus period, grouped by compass point

(percent occurrence)

Dir (°TN)	Hs\Tp	<6	6-8	8-10	10-12	12-14	14-16	16-18	>=18	Total%
SE	<1	-	-	-	-	-	-	-	-	0.0
123.75 -	1-2	-	-	-	-	-	-	-	-	0.0
146.25	2-3	-	-	0.97	0.08	-	-	-	-	1.0
	3-4	-	-	0.85	0.14	-	-	-	-	1.0
	4-5	-	-	0.10	0.02	-	-	-	-	0.1
	5-6	0.06	-	-	-	-	-	-	-	0.1
	Total%	0.1	0.0	1.9	0.2	0.0	0.0	0.0	0.0	**2.2**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
SSE	<1	-	-	-	-	-	-	-	-	0.0
146.25 -	1-2	-	-	-	-	-	-	-	-	0.0
168.75	2-3	-	-	0.83	0.75	-	-	-	-	1.6
	3-4	-	-	0.24	1.80	-	-	-	-	2.0
	4-5	-	-	0.45	0.28	-	-	-	-	0.7
	5-6	-	-	-	0.12	-	-	-	-	0.1
	Total%	0.0	0.0	1.5	2.9	0.0	0.0	0.0	0.0	**4.5**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
S	<1	-	-	-	-	-	-	-	-	0.0
168.75 -	1-2	-	-	-	-	-	-	-	-	0.0
191.25	2-3	-	-	0.99	2.07	0.32	0.22	0.14	-	3.7
	3-4	-	-	0.14	5.75	5.14	1.88	0.63	-	13.5
	4-5	-	-	-	1.09	3.02	2.01	0.41	-	6.5
	5-6	-	-	-	0.08	-	-	0.02	-	0.1
	6-7	-	-	-	-	-	-	-	-	0.0
	7-8	0.06	-	-	-	-	-	-	-	0.1
	8-9	-	0.18	-	-	-	-	-	-	0.2
	Total%	0.1	0.2	1.1	9.0	8.5	4.1	1.2	0.0	**24.1**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
SSW	<1	-	-	-	-	-	-	-	-	0.0
191.25 -	1-2	-	-	-	-	-	-	-	-	0.0
213.75	2-3	-	-	0.30	1.96	3.42	2.19	1.24	0.24	9.3
	3-4	-	-	0.36	3.73	11.63	7.53	3.79	0.36	27.4
	4-5	-	-	-	1.28	4.98	4.62	1.84	0.08	12.8
	5-6	-	-	-	0.04	0.41	1.96	0.59	0.16	3.2
	6-7	-	-	-	-	0.04	0.40	0.55	-	1.0
	7-8	-	-	-	-	-	-	-	-	0.0
	8-9	-	0.06	-	-	-	-	-	-	0.1
	9-10	-	0.02	-	-	-	-	-	-	0.0
	Total%	0.0	0.1	0.7	7.0	20.5	16.7	8.0	0.8	**53.7**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
SW	<1	-	-	-	-	-	-	-	-	0.0
213.75 -	1-2	-	-	-	0.02	-	-	-	-	0.0
236.25	2-3	-	-	0.41	1.19	0.93	0.18	-	-	2.7
	3-4	-	-	0.18	1.66	2.05	0.75	0.16	-	4.8
	4-5	-	-	-	0.63	1.07	0.14	0.02	-	1.9
	5-6	-	-	-	0.02	0.24	-	-	-	0.3
	6-7	-	-	-	-	0.04	-	-	-	0.0
	7-8	-	-	-	-	-	-	-	-	0.0
	8-9	-	-	-	-	-	-	-	-	0.0
	9-10	-	0.04	-	-	-	-	-	-	0.0
	Total%	0.0	0.0	0.6	3.5	4.3	1.1	0.2	0.0	**9.7**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
WSW	<1	-	-	-	-	-	-	-	-	0.0
236.25 -	1-2	-	-	-	-	-	-	-	-	0.0
258.75	2-3	-	-	0.32	0.38	0.04	-	-	-	0.7
	3-4	-	-	0.10	1.24	1.62	0.14	-	-	3.1
	4-5	-	-	-	0.87	0.65	0.06	-	-	1.6
	5-6	-	-	-	0.04	0.12	-	-	-	0.2
	6-7	-	-	-	-	0.02	-	-	-	0.0
	7-8	-	-	-	-	0.04	-	-	-	0.0
	8-9	-	-	-	-	0.08	-	-	-	0.1
	Total%	0.0	0.0	0.4	2.5	2.6	0.2	0.0	0.0	**5.7**
	All %	0.1	0.2	6.2	25.2	35.8	22.1	9.4	0.8	**100.0**

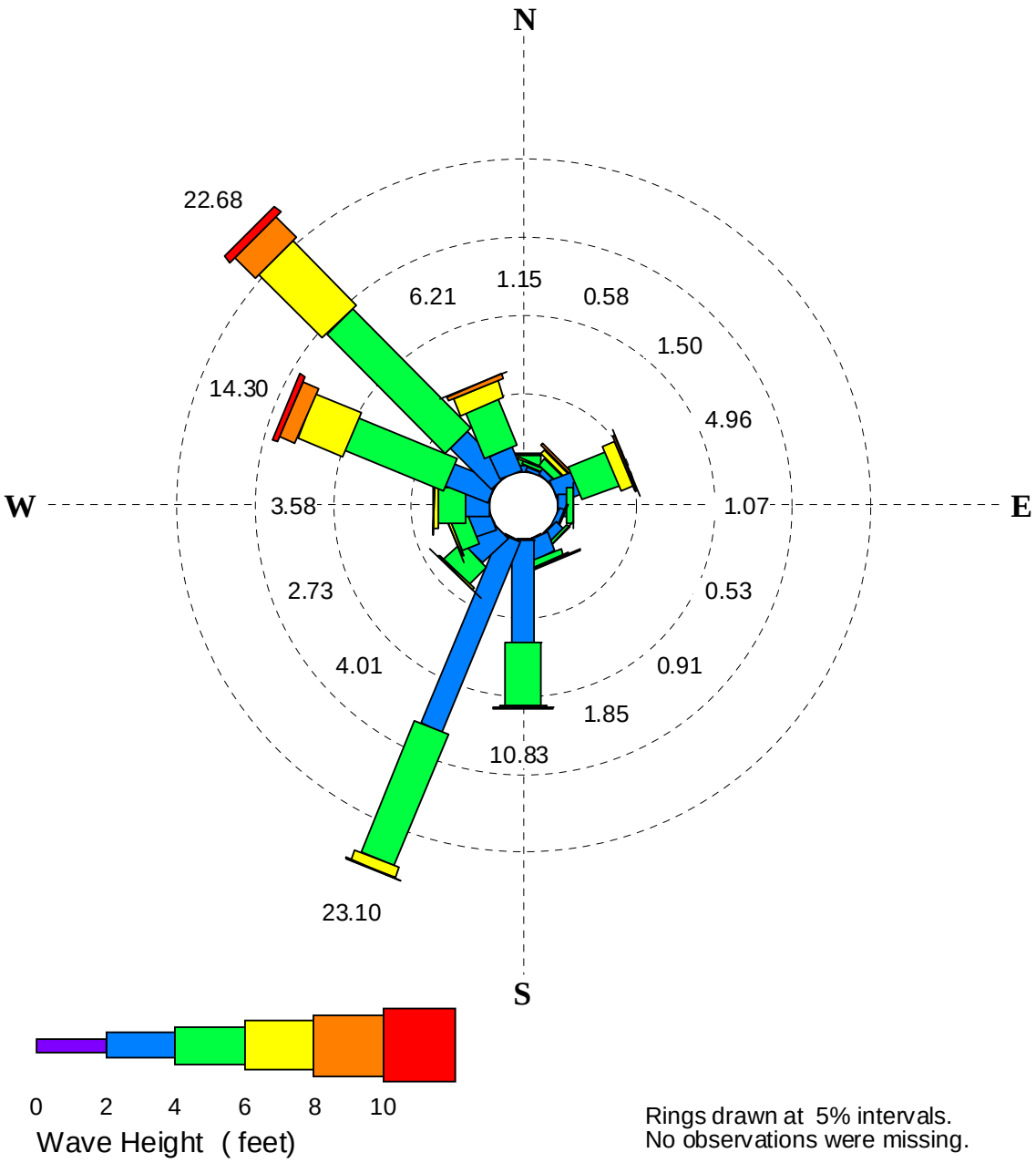


Figure 3-3. Wave Height Rose Plot for WIS Station 114

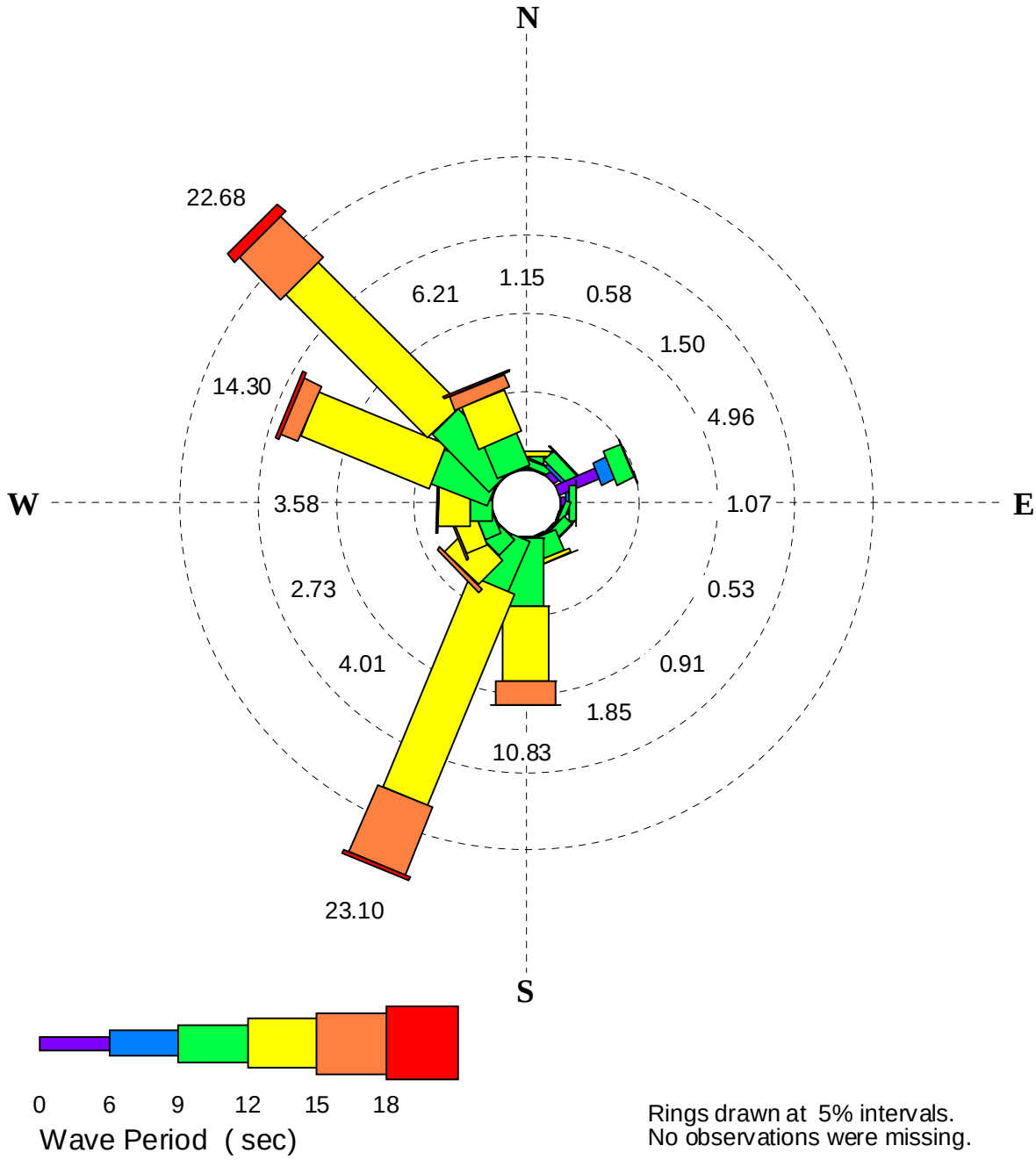


Figure 3-4. Wave Period Rose Plot for WIS Station 114

3.2.3 Extreme Deep Water Wave Height

The Hawaiian Islands are annually exposed to severe storms and storm waves generated by passing low pressure systems, tropical storms including hurricanes, and high surf episodes generated by distant north or south Pacific storms. Storms and high surf were considered for extreme wave height analysis at Maalaea, and included the following scenarios:

- One-year return period wave (100% chance of occurring annually)
- Fifty-year return period wave (2% chance of occurring annually)
- Severe Kona storm wave
- Close approach hurricane generated waves

The WIS hindcast wave data set presented previously was further analyzed using a Gumbel distribution of extreme wave events to obtain design wave heights and return periods. The data set was filtered for waves whose approach direction was between south and west-southwest, which was shown by Sea Engineering (1994) to be the range of wave directions that affects the project site. The annual highest waves from the filtered data were obtained and these 24 waves ranged from 6.0 feet to 18.9 feet. The wave periods corresponding to these waves ranged from 6.5 seconds to 16.5 seconds. The design wave heights and return periods based on the Gumbel analysis are presented in Table 3-2.

Table 3-2. Gumbel distribution return period wave heights for Maalaea

Return Period (years)	Chance of Exceedence	Wave Height (feet)
1	100%	8.5
5	20%	11.8
10	10%	13.2
25	4%	15.1
50	2%	16.6
75	1.33%	17.4
100	1%	18

The severe Kona storm of January 1980 is commonly used as a design Kona storm condition in Hawaii. The severity of this storm has been approximated as a 50-year event (e.g., having a 2% annual chance of being met or exceeded for any given year). Sea Engineering created hindcasts of the wave conditions following the storm which indicated a deep water wave height of 17 feet with a 9 second period approaching from 210° (TN). For this study, the 50-year wave is selected as being representative of a severe storm condition. Selection of such an event is typical for coastal engineering design, and the selection is further justified by the similarity between the 50-year wave and the 1980 Kona storm waves.

Within the 24 years of wave data, the five largest waves have periods of 7.1 to 12.9 seconds, which appear to be associated with Kona low pressure systems or tropical storms. Thus, the wave period of the 50-year wave is taken as the average which is 10 seconds. The 1-year event

has a wave height of 8.5 feet and may be either a storm wave or south swell. The average period of an 8 to 9 foot wave in the complete WIS 114 data set is also 10 seconds.

The report titled, *Hurricanes in Hawaii* (Haraguchi, 1984), prepared for the U.S. Army Corps of Engineers (USACE), Honolulu Engineer District, presents hypothetical model and worst-case hurricane scenarios for the Hawaiian Islands. These scenario hurricanes have been used for detailed studies of hurricane storm wave inundation limits for the islands of Oahu and Kauai, prepared by Bretschneider and Noda (1985), and Sea Engineering (1986, 1993, and 2000) for the USACE. The model hurricane is defined as the probable hurricane that will strike Hawaii in the future, based on the characteristics of storms which have previously approached or impacted the islands in the past. The worst-case hurricane characteristics are based on subjective analysis of the data from 20 critical hurricanes in the Central Pacific and understanding of the basic atmospheric and oceanic conditions surrounding the Hawaiian Islands. For this study, deep water model hurricane wave parameters off the south shore of Oahu, as reported by Bretschneider and Noda (1985), are selected as the design hurricane wave. Wave heights, periods and approach directions for the model hurricanes are 31 feet, 12 seconds, 175 degrees, and 36 feet, 13.5 seconds, and 210 degrees, respectively. The design wave conditions selected for further analysis are summarized in Table 3-3.

Table 3-3. Selected design wave conditions

Design Wave	Deepwater Wave Height (feet)	Breaking Wave Height (feet)	Wave Period (seconds)
1-Year Wave	8.5	12.3	10
50-Year Wave	16.6	20.5	10
Kona Storm Wave (1980)	17	19.8	9
Model Hurricane	31	35.3	12

3.3 Nearshore Water Levels

3.3.1 Wave Transformation in Shallow Water

The behavior of nearshore waves is influenced by many factors, but primarily it is dependent on water depth. As incident deep water waves propagate toward land, bottom effects from the increasingly shallower water will act to transform the waves. Mathematically, this is because wave speed in deep water is proportional to wave period (the inverse of frequency); whereas in shallow water, wave speed is directly related to water depth. As waves decelerate with decreasing depth, the process of *wave shoaling* generally steepens the wave by compressing it (increasing the wave height and decreasing the wavelength). The phenomenon of *wave refraction* is caused by differential wave speed along a wave crest, and will cause wave crests to bend, converge or diverge, and may locally increase or decrease wave heights. *Wave diffraction* is the lateral transmission of wave energy along the wave crest, and will cause the spreading of wave energy in a shadow zone, such as occurs behind a breakwater or other barrier. *Wave reflection* will occur along vertical or steep shorelines or submerged features, including steep beaches, rock formations, reefs, or a man-made structures such as a breakwaters or seawalls.

When shoaling transforms a wave to the point where it has become unstable, it's crest then spills, plunges, or surges as a breaking wave. Breaking typically occurs when the ratio of wave height to water depth is approximately 0.78. In the process of breaking, a significant amount of energy is dissipated from the wave, along with smaller losses from bottom friction and sometimes currents. The process of wave breaking induces a net mass transport of water towards shore, often forcing water levels to rise landward of the breaker zone. This phenomenon is known as *wave setup*, and the gradient in wave setup elevations along shoreline boundaries is the hydraulic mechanism responsible for powering wave-derived longshore and cross-shore ("rip") currents. The breaking wave values given in Table 3-3 for the selected design wave conditions reflect the shoaling and refraction characteristics of these waves at the project site.

3.3.2 Tsunamis

Loomis (1976) presented runup elevations for tsunamis that have affected the Hawaiian Islands. Table 3-4 provides the tsunami runup elevations that were measured near the Maalaea project site. Runup elevations are relative to mean lower low water (MLLW). The 1946 and 1957 tsunamis were generated near Alaska, while the 1960 tsunami was generated near Chile. Based on these historical tsunamis and average elevations from the provided topographic survey of the property, a tsunami of similar size would likely cause overtopping of the seawall and minor to moderate inundation of the property.

Table 3-4. Tsunami Runup Elevation, Maalaea

Tsunami	Runup elevation (feet)
1946	9
1957	8
1960	11

3.3.3 Tide

Hawaii tides are semi-diurnal with pronounced diurnal inequalities (i.e., two high and low tides each 24-hour period with different elevations). Tidal predictions and historical extreme water levels are given by the Center for Operational Oceanographic Products and Services, NOS, NOAA, website. The water level data for Kihei/Maalaea Bay, based on the 1983-2001 tidal epoch, are shown in Table 3-5.

Table 3-5. Water level datums for Maalaea Bay

Tidal Datum	Relative Elevation
Mean Higher High Water	1.15 feet
Mean High Water	0.80 feet
Mean Sea Level (reference)	0.00 feet
Mean Low Water	-0.80 feet
Mean Lower Low Water	-1.15 feet

Hawaii is also subject to periodic extreme tide levels due to *mesoscale* (large) oceanic eddies that propagate through the islands. These eddies produce tide levels up to 0.5 feet higher than normal for periods of up to several weeks, and shoreline damage during these elevated water levels has been documented.

3.3.4 Still Water Levels and Nearshore Wave Heights

During high wave events, the local nearshore water level may be greater than the expected tidal elevation. This water level rise is termed *wave setup*, and the water level could be elevated by an estimated 1 to 2 feet during a severe storm wave event. During hurricane conditions, an additional water level rise due to wind stress and reduced atmospheric pressure can also occur simultaneously. Collectively termed *storm surge*, this can potentially add another 1 to 2 feet in addition to the wave setup, and normal astronomical tide. For example, during the 1992 passage of Hurricane Iniki over Port Allen Harbor on the island of Kauai, a National Weather Service tide gauge recorded a water level rise of 4.4 feet above the predicted tide elevation.

During storm or large wave conditions, there may be multiple zones of wave breaking. Wave heights are said to be *depth-limited* because once the water depth becomes shallow enough the wave breaks, losing size and energy. The wave, however, may reform before it reaches the shoreline and break again when the depth-limited ratio is attained. The still water level rise during storm events is an important design consideration because it allows larger wave heights to reach the shoreline.

3.3.5 Design Still Water Level

Still water level rise at the shoreline is a combination of astronomical tide, mesoscale eddies, storm surge, and wave setup. The astronomical tide level chosen for design conditions is mean higher high water (MHHW) due its frequency of occurrence. In Maalaea Bay, MHHW is 2.3 feet above MLLW (Table 3-5).

Wave setup is a function of the breaking wave height, period, and bottom topography. The mass transport of water due to breaking waves is the actual mechanism which produces wave setup—which typically occurs in the nearshore waters shoreward of the breaker zone. The available methods for calculating wave setup are empirical and simplified; the method assumes long, straight, parallel bathymetric contours, continuous breaking waves, and breaker zones relatively near shore.

The project site is exposed to waves from south through west-southwest as presented in Section 3.2.2. While all of these waves would lose some energy through refraction, a wave approaching with a deep water direction from the south would experience the least refraction. For design purposes, the design wave is considered to approach from the south, which will yield a more conservative result. The 50-yr wave is selected as the design wave; however, due to the relatively flat offshore bathymetry, the initial breaking zone would be far offshore. The waves reform from the breaker zone toward shore and shoal to a height limited by the water depth. The appropriate wave breaker index for shallow, mildly sloping bathymetry is 0.78, and the controlling water depth in the nearshore is approximately 1 foot below MLLW. The design wave height at the shoreline is therefore purely a function of water depth. For purposes of

comparison, the design wave and water levels for the four wave conditions mentioned are presented in Table 3-6.

Table 3-6 shows that the annual event and the 50-year (design) event result in statistically similar design wave heights at the structure. As noted earlier, this is because the wave height at the shoreline is depth-limited, and the factors that contribute to water level rise are generally consistent for these two events. Due to the initial breaker zone being relatively far from shore, the wave setup produced is expected to be quite small. In Table 3-6, wave setup values of 0.5 ft for the 1-year wave and 1.0 feet for the 50-year and Kona storm waves are included, and are considered to be conservative values. A hurricane would produce an additional water level rise due to atmospheric pressure drop known as storm surge. In summary, the design waves presented in Table 3-6 are 3.4 feet for the 1-year wave and 3.7 feet for the 50-year wave.

Table 3-6. Summary of design wave conditions

Component Value	1-year wave	50-year wave	Kona Storm	Hurricane
Deepwater Wave Height, H_o (ft)	8.5	16.6	17.0	31.0
Still Water Level Rise:				
Astronomical tide (ft)	2.3	2.3	2.3	2.3
Large-scale eddy (ft)	0.5	0.5	0.5	0.5
Wave setup (ft)	0.5	1.0	1.0	4.4*
Total SWL Rise (ft)	3.3	3.8	3.8	7.2
Nominal Water Depth (ft)	1.0	1.0	1.0	1.0
Design Water Depth (ft)	4.3	4.8	4.8	8.2
Design Wave Height, H_D (ft)	3.4	3.7	3.7	6.4

**Combined wave setup and storm surge*

3.4 Discussion of Nearshore Circulation and Sediment Transport

The primary forces driving shoreline change and sand transport along most Hawaiian beaches, including Maalaea Bay, are waves and wave induced currents. Deep water waves approach the shoreline at varying angles, and as they propagate over shallower water they begin to transform due to effects from shoaling, bottom friction, refraction and diffraction. Ultimately, as the waves reach depths sufficiently shallow to induce breaking, an increase in local water level elevation known as wave setup may occur under certain conditions, which is responsible for driving *longshore* currents (currents moving parallel to the shoreline). The angle of the wave front or *crest* as it approaches the shore often influences the direction of the resultant longshore current. Longshore currents are typically found along broad, uninterrupted beaches where bottom topography is gradual and constant across the beach, features which are more commonly associated with the U.S. Mainland. When the wave crests approach at an angle to the shoreline, a longshore current will generally develop in the direction of the breaking wave front, as illustrated in Figure 3-5. The breaking wave itself can suspend sediment which can then be transported both in the swash zone (area between the upper and lower wash of waves on the beach) and by longshore currents until the current terminates, dissipates, or reaches an area of reduced wave energy such as an obstacle, structure, or the deeper water of a channel. In areas where the seafloor is primarily hard bottom, the nearshore bathymetry determines the path of the currents. Current flow from wave setup is channeled and steered as it returns seaward through troughs and around shoals.

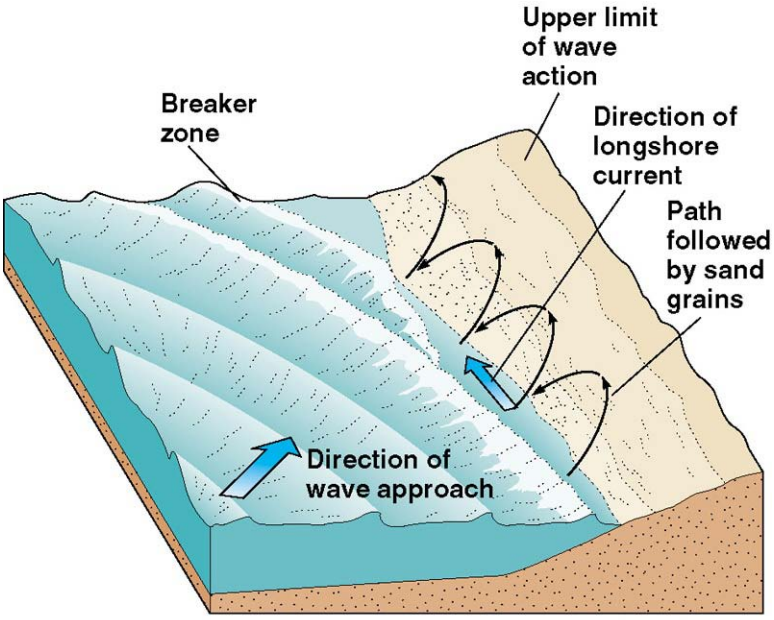


Figure 3-5. Diagram of longshore transport and swash zone

For shorelines such as Maalaea, which have a broad and shallow fringing reef, breaking waves force a net flow of water over the reef where it is then bounded by the shoreline on the landward side and incoming flow on the seaward side. The locally elevated water surface induces flow in the path of least resistance, which is typically along the shoreline in the form of a longshore current. With the Maalaea Harbor's east jetty to the west of the Milowai property, the 'trapped' longshore current will continue northeastward until it encounters deeper water, or a natural channel in the reef, where the current then flows back out to sea as a cross-shore or rip current. The western portion of Maalaea Bay's shoreline creates an oblique angle to the predominant wave directions of south to southwest. This angle of wave approach has the potential to generate longshore currents in the northeastward direction in the manner portrayed by Figure 3-5.

Waves and wave-driven nearshore currents are the primary mechanism for sediment transport along Hawaiian beaches, and therefore sediment transport paths typically mirror the nearshore current pattern and wave approach direction. The absence of a sandy beach along the western reach of Maalaea Bay's shoreline supports this generalization. Wave approach is from the south and southwest along the shoreline here, driving sediment transport to the northeast. With Maalaea Harbor's east jetty cutting off transport from further upstream to the west, this area is starved from sediment delivery from that portion of the littoral cell[†].

[†] A littoral cell is a reach of the coast that is isolated in terms of sediment circulation, from adjacent coastal reaches, and that features its own sand sources and sinks. Isolation is typically imposed by protruding headlands, submarine canyons, inlets and some river mouths that prevent littoral sediment from one cell to pass into the next. Cells may range in size from a small pocket beach in a rocky coast to a sandy barrier island many tens of miles long such as along the US East Coast.

4. SHORE PROTECTION ALTERNATIVES

4.1 Introduction

There are many ways to offset the effects of coastal erosion, and which method is appropriate to a particular site is dependent on the characteristics of each site, and primarily based on the following elements:

1. Nature of the erosion – seasonal, cyclic, chronic
2. Nature of the risk – presence of buildings, infrastructure, valuable land
3. Availability of resources – availability of backshore land, availability of sand for nourishment, construction access

Coastal protection engineering is generally divided into two basic solution types, soft solutions and hard solutions. Soft solutions include the following: 1) a strategy of retreat from the shoreline; 2) beach nourishment – adding sand to the littoral cell; and, 3) using protective vegetation for sand stabilization. Hard solutions involve the construction of rock or concrete structures, normally a shore-parallel revetment or seawall, to permanently fix or harden the shoreline. Beach nourishment can be combined with structures such as shore-perpendicular groins or offshore breakwaters to stabilize the sand fill. In recent years, temporary emergency structures, typically large sand bags, have also been used to protect the shoreline in order to gain time for the design and permitting of a permanent solution.

4.2 Shore Protection Methods

4.2.1 Soft Solutions—Shoreline Retreat

The concept of shoreline retreat is to let nature have its way. Rather than trying to permanently fix the shoreline and protect the land from further erosion, the idea of retreat is to move important structures and infrastructure further inland. Retreat from a sandy coast can sometimes allow preservation of the sand beach system for public use and coastal protection. However, in many cases a policy of retreat is difficult to implement or may not be appropriate. The expense of moving buildings and roadways can be prohibitive, and often there is simply not enough land available to accommodate the change. Private property owners, in particular, are generally reluctant to give up their valuable coastal land to erosion.

4.2.2 Soft Solutions—Beach Nourishment

When sand loss is gradual and the beach has a high economic value for recreation and tourism, replenishing the beach with sand from offshore or other sources is an attractive and viable alternative. Beach nourishment is being promoted by the State of Hawaii as an alternative means of erosion control to hard shore protection structures such as seawalls and revetments. Massive beach nourishment projects have taken place on the eastern seaboard, Gulf coasts (USACE CEM, 2006), and Southern California (SANDAG, 2000). Kuhio Beach in Waikiki has had at least nine beach nourishment projects since 1939 (DLNR-OCCL). The most recent project used offshore dredging to move 24,000 yd^3 of sand onto the beach from sand fields offshore (Healy Tibbitts, 2012).

Beach nourishment is expensive, and containment features or structures are sometimes necessary to stabilize the fill. On open ocean or otherwise unprotected coasts, it may be necessary to design structures, such as T-head groins, that both decrease the amount of wave energy reaching the beach, and that act as artificial littoral cells to stabilize the sand.

Beach nourishment requires a supply of sand that is ideally similar in character to the native beach sand. In Hawai‘i, good quality beach sand is in short supply. Inland dune deposits have been used for some nourishment efforts, however dune sand tends to be too fine for many beach nourishment applications. Submerged sand deposits are also a potential source, but offshore sand deposits have frequently been found to contain sands that are finer than many beaches, while many reef-top deposits are thin and of insufficient volume for meaningful use. However, offshore deposits have been found that are in some cases suitable. Dredging and recovery operations are expensive, but have been shown to be effective (American Marine, 2007 and Healy Tibbitts, 2012), and the further use of offshore sand deposits as a borrow source is likely to be implemented in future projects.

4.2.3 Soft Solutions—Vegetation and Dune Stabilization

Beach backshore and upland areas, including storm berms and dunes are often naturally colonized by specialized vegetation that can help to stabilize the sand (UH Sea Grant/DLNR-OCCL, 2004). Low growing native vegetation such as grass (Aki Aki and Seashore Paspalum), Beach Morning Glory (Pohuehue), and Akulikuli can both attract sand and act as a protective mat. Higher cover such as Naupaka and Pohinahina can offer substantial sand stabilization, and help control foot traffic. Although thick Naupaka can offer some resistance to wave action, the primary value for shoreline vegetation is in attracting and protecting sand as a reserve for times of erosion. On chronically eroding shorelines, dune vegetation will not stem the erosion and will do little to help preserve the beach.

Another form of dune or berm stabilization is ‘sand pushing’, used on beaches with seasonal erosion problems. During periods with plentiful sand, earth moving equipment (such as bulldozers or bobcats) is used to move sand from lower elevations on the beach to replenish and reinforce the higher elevation storm berms in the backshore. Sand pushing is a beach maintenance operation that has proven effective on some of Oahu’s beaches, where plentiful sand is available from surrounding areas.

4.2.4 Hard Solutions—Seawalls

A seawall is a vertical or sloping concrete, cement-rubble-masonry (CRM), or cement-masonry-unit (CMU) wall used to protect the land from wave damage and erosion (Figure 4-1). A seawall, if properly designed and constructed, is a proven, long lasting, and relatively low maintenance shore protection method. Seawalls also have the advantage of having a relatively small “footprint” on the shore.

The impervious and vertical face of a seawall results in very little wave energy dissipation however. Hence, wave energy is deflected both upward and downward, and also a large amount of wave energy is reflected seaward. Reflected wave energy can inhibit accretion of sand in front of the wall, and thus seawalls are not a suitable alternative if maintaining a beach is desired. The downward energy component can cause scour at the base of the wall, and thus the

foundation of a seawall is critical for its stability, particularly on a sandy and eroding shoreline. Ideally, a seawall should be constructed on solid, non-erodible substrate. Seawalls are not flexible structures, and their structural integrity is dependent upon the stability of their foundations.

Figure 4-1. CRM seawall in Kahala, Oahu

4.2.5 Hard Solutions—Revetments

A revetment is a sloping, un-cemented structure built of wave resistant material. The most common method of revetment construction is to place an armor layer of stone, sized according to the design wave height, over a bed stone layer and filter designed to distribute the weight of the armor stone and to prevent loss of fine shoreline material through voids in the revetment (Figure 4-2).

Scour protection at the base of a revetment can be provided by excavating to place the revetment toe on solid substrate where possible, constructing the foundation as much as practical below the maximum depth of anticipated scour, or extending the toe to provide a scour apron of excess stone.

Properly designed and constructed rock revetments are durable, flexible, and highly resistant to wave damage. Should toe scour occur, the structure can settle and readjust without major failure. Damage from large waves is typically not catastrophic, and the revetment can still function effectively even if damage occurs.

The rough and porous surface and gradual slope of revetments absorb and dissipate more wave energy than the smooth vertical faces of sea wall structures, thus reducing wave reflection, runup and overtopping. The result is a greater likelihood of sand accumulation seaward of the structure. The sloping revetment does occupy more horizontal space and has a larger footprint than a seawall would. Because of its durability, flexibility, and reduced wave reflection, a rock revetment is often considered the best erosion control/shore protection measure for sites where shoreline hardening is considered appropriate.

Because both seawalls and revetments fix the shoreline at the position of the structure, on chronically eroding coasts, they will eventually lead to loss of the beach.

Figure 4-2. Example of typical rock revetment structure (Talofofo, Guam)

4.2.6 Temporary Shore Protection Options

In recent years, shore protection options have been developed and installed that are less permanent in nature than rock revetments or seawalls, and built with the concept of eventual removal. They have been used when the erosion threat is perceived as seasonal or temporary, or for emergency situations where more time is necessary for the design and permitting of a permanent structure. Two basic types of temporary structures have been used to-date in Hawaii: geotextile sand bags and articulating mattresses.

4.2.6.1 Geotextile sand bags

Small, hand-filled sand bags are an ancient flood control and shore protection remedy, and they are still frequently used. However, they tend to degrade quickly and loose bags in the water can be an environmental nuisance. Geotextile materials are a more recent development, with large, 5 feet x 10 feet geotextile sand bags and custom sized large diameter geotextile tubes that have been used for temporary emergency shore protection in Hawaii in recent years (Figure 4-3 and Figure 4-4). The bags or tubes are filled with beach quality sand with the understanding that should the fabric become damaged or otherwise fail, the sand will be released and become part of the beach system.

Figure 4-3. Geotextile Sand Bags

Figure 4-4. Geotextile Tubes, Waikoloa

Sand filled geotextile structures are not without drawbacks, however. Terrestrial sources of beach quality sand are difficult to find and costly. Filling and placement of the bags is a labor-intensive process, and the temporary shore protection tends to be almost as expensive as a permanent structure. The bags are not particularly attractive, and can promote algae growth that is slippery and possibly dangerous. In most cases, eventual removal of the bags has only been for construction of a more permanent seawall or revetment.

Sand bags constructed from natural, bio-degradable materials have also been used for temporary emergency structures. The preferred bio-degradable material is coconut husk fiber, known as ‘coir’.

4.2.6.2 Articulating Mattresses

Two types of articulating mattresses have been used in Hawai‘i: articulating block mats (such as Armorflex brand) and rock filled high density plastic mattresses (such as Tensar Marine Mattresses). Articulated block mats are constructed from concrete blocks cabled together to form a flexible mattress. Block size is variable for different applications. Appropriately sized blocks can be laid over geotextile fabric to create an effective form of erosion protection. As the shoreline erodes, the articulating properties of the concrete block mat enable the mat to fall and steepen to seal off the eroding bank while not losing any structural integrity.

Triton Marine Mattresses are fabricated by the Tensar Corp., and consist of rock filled HDPE (high density polyethylene) grids. The typical width is 5 ft and the recommended maximum length is 35 ft. However, the length can vary and design length is dependent on the desired handling characteristics of the mattress. A 12-inch by 35-ft mattress weighs about 9 tons. Figure 4-5 is a photograph of the Triton marine mattresses used as an articulating revetment. The marine mattresses have also been effectively used as a foundation for a geotextile sand bag revetment.

Figure 4-5. Tensar™ Marine Mattresses Used for Articulating Protection

4.3 Recommended Shoreline Improvement Alternatives for Milowai Condominiums

Two shoreline improvement alternatives are recommended for the Milowai Condominiums, and are discussed in the order of preference. All alternatives considered for Milowai result in shoreline hardening, due to the following conditions: the chronic nature of erosion at this location, absence of any sandy beach, lack of available backshore space for retreat, and presence of existing hard shoreline structures on both sides of the property. Beach nourishment is a realistic option only if undertaken as a joint project by the larger community, and some type of retention structures are installed such as T-head groins, both of which are likely unrealistic at least in the near term.

4.3.1 Repair of Existing Seawall

Repair of the existing seawall is the preferred alternative. Repairs to the existing seawall will not change the existing environment, and is the least invasive option of all the solutions considered. The wall repair has been designed by Walter Vorfeld & Associates, consulting structural engineers.

A typical section for the seawall repair is shown in Figure 4-6. Repairs to repair the wall undermining involve the following:

- Excavating the soil out from behind the wall down to sea level, opening a trench wide enough to safely access the bottom of the wall.
- Filling the voids beneath the wall with pressure injected urethane foam, to block future passage of fines through the bottom of the wall. Pressure injected urethane grout can be injected into the sand /rock matrix below the wall base to a depth of two or three feet, binding those materials together into a less permeable, less erodible mass. This will result in a more stable base below the existing wall and possible prevent or limit further erosion.
- Finally, in order to further prevent migration of fines through the wall base, the trench should be lined with a geotextile filter fabric capable of containing fine soil particles while allowing free movement of water through the soil. This material should extend from the bottom of the excavation up both sides, be filled with appropriate granular soil or sand and folded back over itself at the top of the excavation before being covered by lawn. If multiple lengths of fabric are necessary to line the entire opened trench they should overlap each snuggly other by at least two feet.

Permanent measures to reinforce the deteriorating sections of seawall include:

- Removing all loose and cracked mortar and displaced stones and applying new mortar to replace material removed.

- During the excavation discussed above, applying a 6”-8’’inch thick layer of “gunite” or “shotcrete” (pneumatically applied structurally concrete) over the land side surface of the wall from the base of the stone structure to the top. A 6”x 6” mat of galvanized 6 gauge welded wire reinforcing or a mat of epoxy reinforcing bars should be placed in the middle of the gunite thickness. The rock material exposed during excavation should be cleaned of all loose soil and organic matter prior to placing of the gunite so that the concrete can adequately engage and bond with the stone wall. Properly design and installed, this concrete and reinforcing steel can reinforce the existing stone wall against future deterioration that might otherwise result from settlement. If the urethane grout is injected into the sand/rock material below the wall as well, a much more stable condition

will result. The filter fabric/granular soil or sand procedure discussed above would be installed after completion of the gunite reinforcing application.

- If felt necessary a system of corrosion protection utilizing sacrificial anodes or some other effective system may be included in the reinforcing to extend its life in the highly corrosive conditions.

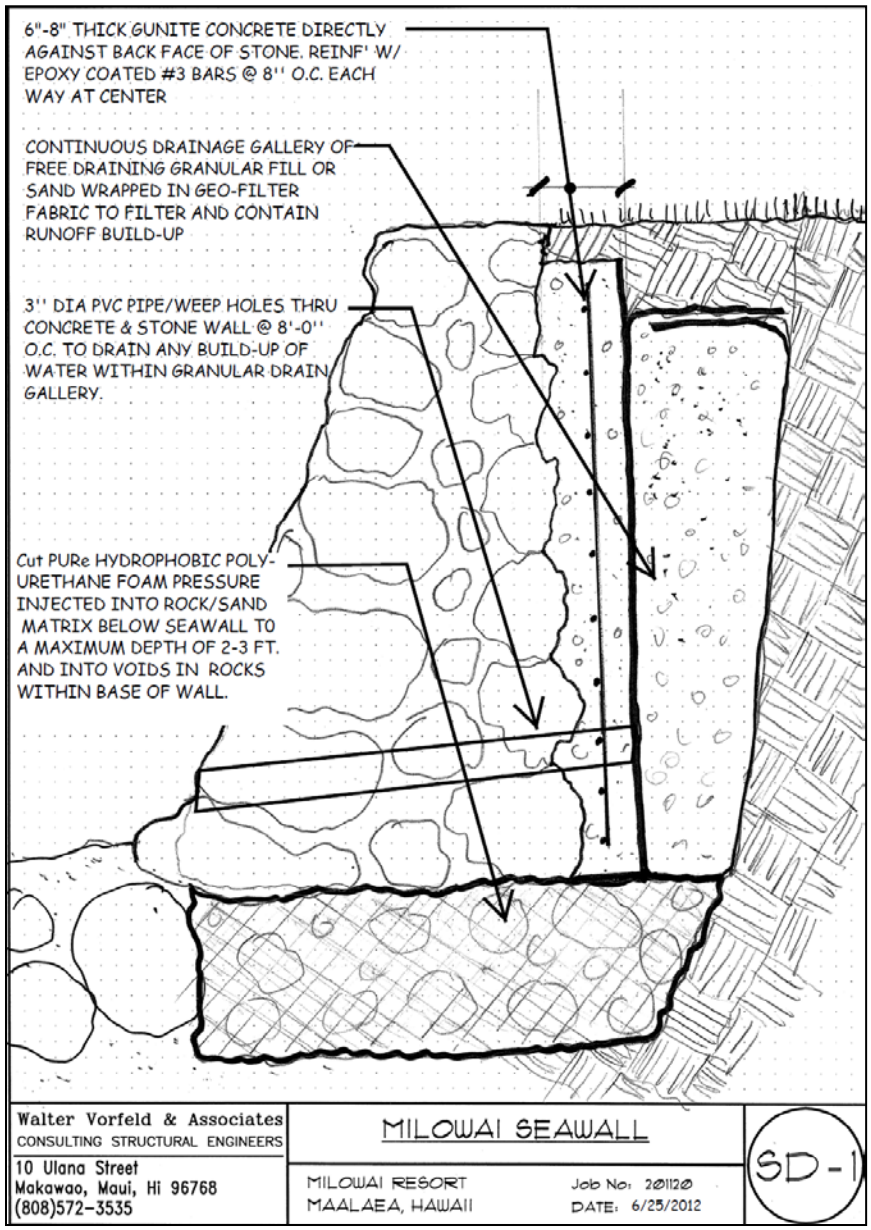


Figure 4-6. Wall repair schematic by Walter Vorfeld & Associates

4.3.2 Replace Existing Seawall with Rock Revetment

A major advantage of revetments over vertical seawalls is that the rough and porous rock surface and gradual slope of the structure will absorb wave energy, reduce wave reflection, and promote accretion of sand as a result. Revetments in Hawaii are typically built on a 1.5:1 to 2:1 (H:V) slope to ensure stability. Conditions at the Milowai project site would call for a revetment to extend from approximately +8 feet (MSL) to about –1 foot (MSL). These dimensions would require a horizontal footprint of about 13 feet.

A rock revetment would require demolition of the existing sea wall and would require excavation into the substrate for placement of the revetment toe. A sloping revetment would have to be inset into the property, causing loss of useable land. A conceptual section for this type of revetment is presented in Figure 4-7.

The parameters necessary for the design and construction of a rock revetment at Milowai Condominiums are discussed in Section 5, along with a typical section.

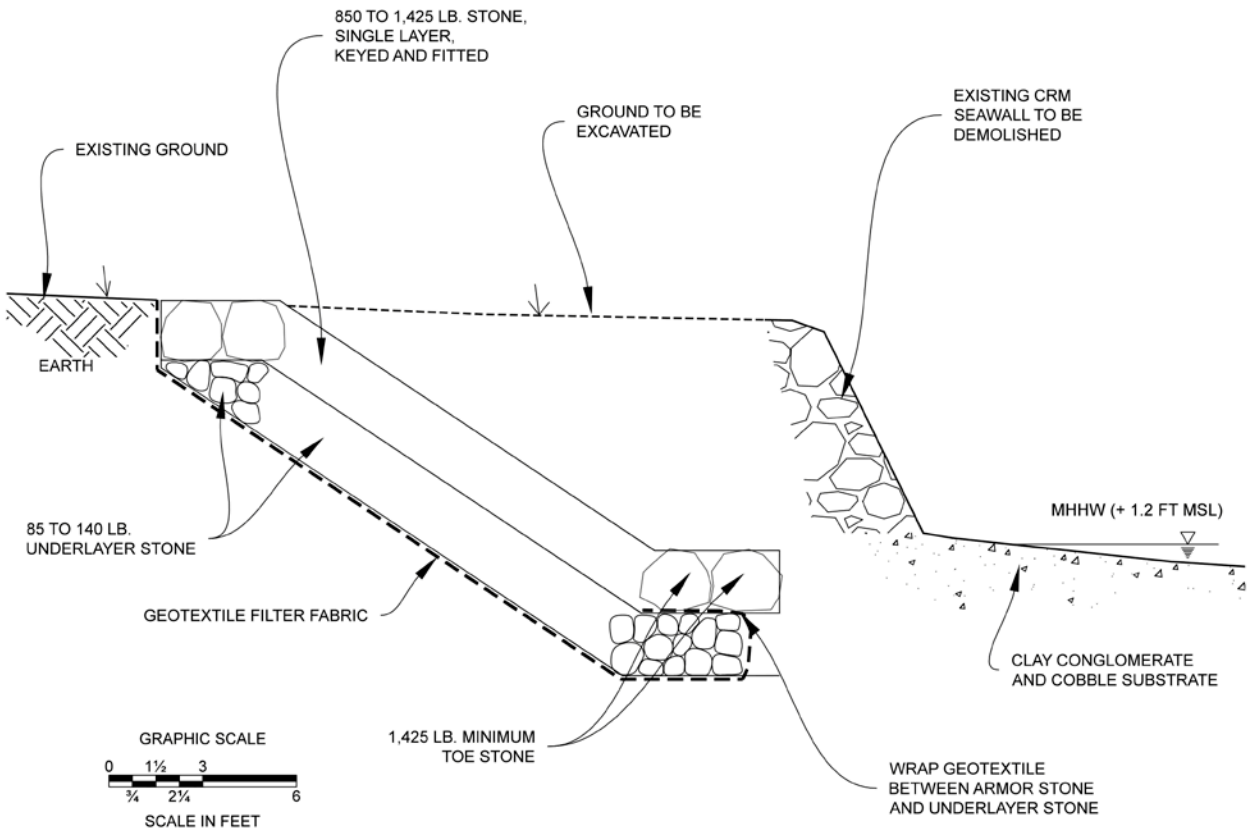


Figure 4-7. Conceptual revetment section (typical), shown at Profile 2

5. REVETMENT DESIGN PARAMETERS

Shore protection revetment armor layers are sized according to the design wave height. Methodology developed by the U.S. Army Corps of Engineers provides the required stone size and crest elevation.

5.1 Single-layer Armor Stone Size

Revetment structures are designed as rock rubble mounds with a side slope of 1.5H:1V, which is the steepest slope recommended by the Coastal Engineering Manual (2006). Armor stone size calculations were done for the four design wave conditions discussed in Section 3.2. The stone size calculations below use the 50-year wave criteria presented in Table 3-6. The required armor stone weight for stability under the design wave height is given by the Hudson Formula (Coastal Engineering Manual, 2006):

$$W = \frac{w_r H^3}{K_D (S_r - 1)^3 \cot\theta}$$

where,

W = weight in pounds of an individual armor stone

w_r = unit weight of the stone, 160 lb/ft^3

H = wave height, 3.7 feet

K_D = armor stone stability coefficient, 1.4 for a single layers keyed and fitted

S_r = specific gravity of the stone relative to seawater, use 2.5

cot θ = cotangent of the groin side slope, use 1.5

The Shore Protection Manual (USACE, 1984) lists a stability coefficient of K_D = 2 for a two-layer armor stone revetment; however, there is no value of K_D for a single-layer armor stone revetment. Experience based on revetments designed and constructed for the U.S. Army Corps of Engineers (Honolulu District) has shown that reducing the published value of K_D by 30% produces a larger stone size with increased stability, both of which are satisfactory for a single-layer armor stone revetment. The stability coefficient K_D used for these design calculations is therefore taken to be 1.4, and it is recommended that the armor stone be keyed-and-fitted for an added level of stability.

The resultant armor stone weight would be approximately 1,140 pounds with a corresponding nominal diameter of 1.9 feet. A range of ± 25% of the median weight is typically utilized, which yields a stone weight range of 855 to 1,425 pounds.

For reference, armor stone sizes for other wave conditions have been calculated and are shown in Table 5-1. The calculations show that a revetment design based on the model hurricane would require a very large stone size of 8,400 lbs., which corresponds to a stone diameter of 3.7 ft. Since the occurrence of hurricanes is low in Hawaii and the exposure of Maalaea is limited,

designing the revetment based on a hurricane seems unnecessarily conservative. It should be noted, however, that hurricane occurrence on the south shore of Maui would likely damage a revetment designed for the 50-year wave event.

Crest and toe widths are taken to be two stones each, with the toe stones sizes being from the larger end of the weight range.

5.2 Underlayer

Underlayer stone is utilized to transition between the large armor stone and small filter stone or filter layer. Sizing of the underlayer stone is important for providing sufficient porosity for energy dissipation rather than reflection, to achieve interlocking between the armor and underlayer, and to insure that the underlayer material cannot be dislodged through voids in the armor layer. Underlayer stone is sized at approximately $^{1}/_{10}$ the armor stone weight, which in this case is 85 to 140 pounds, corresponding to stones of less than one foot in diameter. A two-foot thick underlayer is recommended.

The underlayer stone should be placed over a geotextile filter fabric layer. The geotextile prevents the migration of fine soil particles through voids in the structure, and permits relief of hydrostatic pressures within the soils. The underlayer stone protects the geotextile from damage during placement of the armor layer, and together with the geotextile helps distribute the weight of the armor stone to provide for more uniform settling. The existing slope should be graded and dressed prior to revetment construction to provide a 1.5H:1V slope. Rocks and other debris which might puncture or tear the geotextile should be removed from the prepared slope.

5.3 Wave Runup and Crest Elevation

Wave runup is the vertical excursion of a wave breaking at the shoreline or on a structure. Runup elevation was calculated using the Automated Coastal Engineering System (ACES) module in the Coastal Engineering Design and Analysis System (CEDAS) package, both of which were developed by the U.S. Army Corps of Engineers' Coastal & Hydraulic Laboratory (CHL). Runup is a function of the wave height at the project site at the prevailing or design water level.

Table 5-1 presents the wave runup calculations for the four selected wave cases. The runup calculations are based on an infinitely high structure. If the structure crest is lower than the runup height, the structure would be considered overtopped. The calculations show that the annual event, which is a wave condition that can be expected each year, would produce a runup to elevation +9.1 ft relative to MLLW, and the 50-year event would produce runup to +9.7 ft MLLW. Calculations also show that a hurricane would have the most severe result—a crest elevation of +16.9 ft MLLW would be required to prevent overtopping, however this is infeasible to design to this situation.

Based on these calculations, the revetment crest elevation was chosen to be +9.0 ft MLLW, which would allow only a small amount of overtopping during the annual condition, and slightly more overtopping during the 50-year event. This elevation is only a fraction of a foot higher than the majority of the existing seawall, and accepting a reasonable amount of overtopping is recommended versus increasing revetment crest elevation.

Table 5-1. Design wave conditions, armor stone sizes, and runup elevations

Design Parameter	1-Year Wave	50-Year Wave	Kona Storm	Hurricane
Deepwater Wave Height, H_o (ft)	8.5	16.6	17	31
Design Water Depth (ft)	4.3	4.8	4.8	8.2
Design Wave Height (ft)	3.4	3.7	3.7	6.4
Armor Stone Size, W_{50} (lbs)	890	1,140	1,140	5,900
Runup Elevation (ft MLLW)	9.1	9.7	9.7	16.9

5.4 Revetment Cross-Section

The revetment design cross-section is presented in Figure 5-1. The revetment crest and face consist of armor stone with a median stone size of 1.9 feet based on the design wave conditions calculated in Section 5.1. Crest elevation is designed at + 9.0 ft MSL, which is the approximate elevation of existing grade immediately landward of the revetment, as well as the computed runup elevation for the annual event. The revetment crest is two stones wide, or approximately 4 ft.

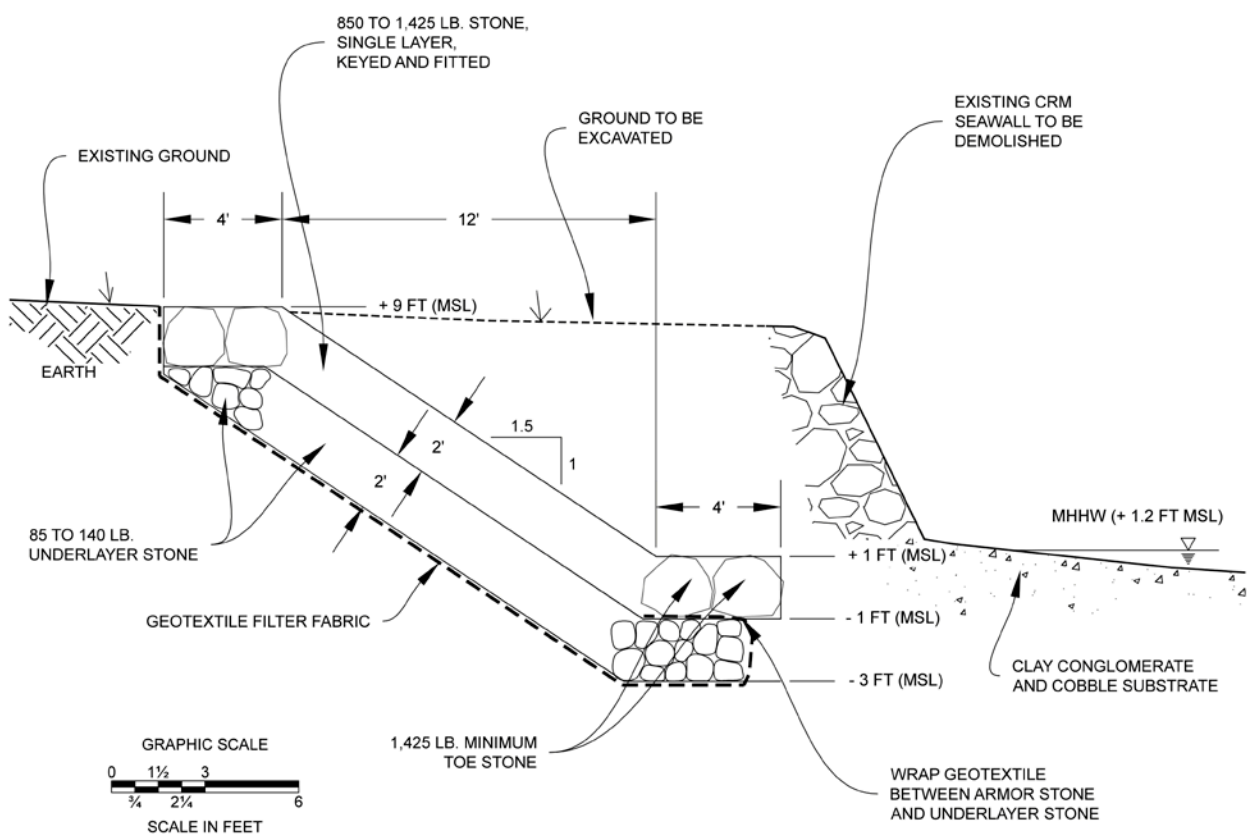


Figure 5-1. Typical armor stone revetment section

The revetment face has a slope of 1H:1.5V, which is the steepest face recommended by the USACE's Shore Protection Manual. The armor stone should be placed in a keyed-and-fitted configuration to increase stability. The revetment toe is 4 feet wide, and should consist of the largest recommended stone (1,425 pounds). The rough face and porosity of the revetment and toe stones should help dissipate wave energy, reduce wave reflection, and potentially assist in the accretion of sand at the structure toe.

5.5 Revetment Termination

Termination at the ends of the revetment should be constructed such that the structure ties into the Maalaea jetty on one end, and the existing rock revetment along the neighboring property at the opposite end. Proper end termination is important in order to prevent flanking, which occurs when an unprotected section lies next to the revetment, and is eroded to the point where supporting sediments behind revetment are exposed.

6. REFERENCES

Bretchneider, C.L. and Edward K. Noda and Associates. 1985. *Hurricane Vulnerability Study for Honolulu, Hawaii, and Vicinity: Volume 2, Determination of Coastal Inundation Limits for South Oahu from Barbers Point to Koko Head*, Prepared for US Army Engineer Division, Pacific Ocean Planning Branch, Flood Plains Management Section.

Haraguchi, P., 1984, *Hurricanes in Hawaii*, Prepared for USACOE, Pacific Ocean Division.

Loomis, H. G. 1976. *Tsunami Wave Runup Heights in Hawaii*. Hawaii Institute of Geophysics report no. HIG-76-5.

Sea Engineering, Inc. and C.L. Bretchneider 1986. *Hurricane Vulnerability Study for Kauai, Poipu and Vicinity, Storm Wave Runup and Inundation.* Prepared for the U.S. Army Corps of Engineers, Pacific Division.

Sea Engineering, Inc. 1986. *Hurricane Vulnerability Study for Kauai, Vicinity of Waimea and Kekaha, Storm Wave Runup and Inundation.* Prepared for the U.S. Army Corps of Engineers, Pacific Division.

Sea Engineering, Inc. 1993a. *Hurricane Iniki Coastal Inundation Modeling.* Prepared for the U.S. Army Corps of Engineers, Pacific Division.

Sea Engineering, Inc. 1993b. *Leeward Oahu Hurricane Vulnerability Study, Determination of Coastal Inundation Limits.* Prepared for the State of Hawaii Department of Defense, the U.S. Army Corps of Engineers, Pacific Division, and Federal Emergency Management Agency, Region IX.

Sea Engineering, Inc. 1994. *Oceanographic Conditions, Maalaea Harbor, Maui*. Prepared for AECOS, Inc. SEI report no. 94-40.

Sea Engineering, Inc. 2000. *Kauai Island Hurricane Vulnerability Study, Determination of Coastal Inundation Limits.* Prepared for the State of Hawaii Department of Defense, the U.S. Army Corps of Engineers, Pacific Division, and Federal Emergency Management Agency, Region IX.

U.S. Army Corps of Engineers. 2006. *Coastal Engineering Manual*.

U.S. Army Corps of Engineers. 1984. *Shore Protection Manual*.

Westinghouse Electric Corporation. 1972. *Environmental Impact Analysis for the Proposed Maalaea Bay Generating Facility.* Submitted to Maui Electric Company.

APPENDIX E
STRUCTURAL ENGINEERING REPORT

Walter Vorfeld & Associates
CONSULTING STRUCTURAL ENGINEERS

July 23, 2012 Job No. 201120

To: Chris Hart & Partners
115 N. Main St.
Wailuku, HI 96793

Attn: Brett Davis

Re: Structural Engineering Review of Sea Wall
Milowai Condominium Resort
50 Hauoli Street
Maalaea, Maui, Hawaii

To whom it may concern:

At the request of the Milowai-Maalaea AOAO through Hawaiiana Mgmt. Executive – Maui, we have prepared this letter of report addressing the condition of the Seawall along the south side of the Milowai property. The report is the second of two reports, prepared after completing a third visit to the property to observe wall conditions. The first two visits were made on May 26 and December 20, 2011 and the third on June 27, 2012. Jordan Hart of Chris Hart Partners, Inc. was present during the first two visits, and Chris Hart and Brett Davis attended during the third. The purpose of the visits was to observe and attempt to assess the structural condition of the seawall, in particular at a location about a third of the way along the wall's length, starting at its west end (Maalaea Harbor break wall). At this location the wall jogs seaward for approximately 12-15 feet and then turns back to the east for the remainder of the shoreline line. An initial report was prepared for the Milowai AOAO after the first two visits. This report is made after the third visit. The following represents the results of our assessment, including observations made during all three visits, conclusions reached and recommendations for remedial actions where judged necessary.

The wall is a stone and mortar retaining wall protecting the rear yard area of the property from wave action along the shoreline. It rises to an approximate height of 4-6 feet above the shoreline, with the exposed face battered at an angle of about 1:4 (H:V). The seaward surface of the wall is nearly completely covered by mortar, with little if any rock exposed. The west end of the wall terminates into the break wall of Maalaea harbor, and the east end continues into a wall with less mortar and more exposed stone. It is not known whether this extension is on the Milowai property or part of the adjacent lot. The shoreline at the base of the wall from the harbor though the jog and for the distance of 15-20 feet past is a rocky/sandy beach, with the wider area of sand occurring between the break wall and the jog, after which the more seaward length has a lesser width of sand and rock in front of it. Beyond this point, the shoreline at the wall base is somewhat more protected, with a mixture of solid rock and boulders in front of the wall and a groin of large boulders at the east end of the wall. It is not known when the wall was originally constructed nor if additional work was performed at some point applying additional mortar over original construction. The segment between the break wall and the jog that is further inland is less steep in its batter and may have been a reconstruction of a more seaward wall at some point in the past.

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Makawao, Maui, HI 96768
(808)572-3535
Fax (808)572-3616

The area of the wall length that is of current and immediate concern is the portion at the jog and the 15-20 feet east of that section. The mortar facing of the wall in this area appears to be cracking as a result of settlement at the base of the wall, and in some locations mortar as well as rocks have fallen or been displaced as a result. The greatest evidence of this is at the corner of the jog where the wall turns eastward again. West of this location the wall appears to be in sound condition. East of this corner, cracks in mortar are still prevalent but with less displacement and little movement of rocks. The top of the wall at the jog and the affected length beyond has numerous cracks in the mortar cap and shows signs of settlement where vertical fissures have developed between layers of rock. A review of photos taken in May and December indicates that mortar cracking and displacement of mortar and rocks had worsened in those six months. This was particularly evident at the jog corner and at a portion along the top of the wall near the east end of the affected length. The third visit indicates the deterioration of the wall face at the corner to have advanced further, with more cracking of the mortar being evident as well as some displacement of stones that were previously in place. In addition, the section of wall near the corner appears to have settled as much as 2-3 inches since December

In addition to the observed deterioration of the wall mortar/stone matrix, a fissure in the soil immediately behind the wall was observed in both May and December. This fissure was noticeably wider in December. The fissure occurs between the back of the wall and the soil beneath the adjacent lawn. Fine soil material has migrated down the back of the wall and out through the bottom of the wall into the ocean. In December this fissure was measured as wide as 18 inches and as deep as 3'-6" inches, representing a hazard to anyone walking in this area. In December the width of the fissure had increased by 6-8 inches. In June the fissure had widened further along its length, especially near the wall corner, and its depth had increased to as much as 5'-0" in several locations. The migration of the soil material down the back of the wall is caused by wave action splashing up onto the lawn during high tide and/or large surf and possibly by irrigation water applied to the lawn flowing toward the wall and down into the fissure. It is obvious that the condition at the base of the wall is somewhat porous and allows flow of the saturated soil, little by little, into the ocean. Photos taken at each of the three visits of two specific locations are included with this letter to illustrate these changes.

All of the conditions described above are a result of shoreline erosion/recession in front of this area of wall. Less beach was present at the base of the corner section in June than was present in December. Some of this may be due to seasonal gain and loss of sand due to waves and current. The level of sand in May 2011 was similar to that in June of 2012. The additional width of beach in front of the length of wall just east of the break wall may indicate less recession occurring in this area. This is likely attributable to the proximity of this segment to the break wall and the angle between them. A condition may occur here that results in the accretion of sand and washing away of it at the jog just beyond. Oral history indicates that over time the permanent level of sand in front of the wall has dropped.

The observed continued deterioration of this section of wall over the period of 1 year indicates that it is in a state of progressive failure. With continued loss of support below the wall due to erosion as well as loss of soil from behind it due to the same, it is imminent that collapse, at least at the corner section, will occur at some time in the future. Only if measures can be taken to slow or stop the erosion process and strengthen the wall and its underlying supporting sand/rock can failure be avoided.

Considering the conditions observed in the seawall, it is our recommendation that immediate action be taken to fill the fissure behind the wall to prevent anyone from stepping into it and possibly breaking a leg or worse. During the June visit the wall length where the fissure occurs was cordoned off in an attempt to restrict access. If filling the fissure is acceptable, it is likely that it will be so with a requirement of using only clean beach sand. It should be noted that a permanent solution will be necessary to prevent any material used to fill the fissure from eroding through the bottom of the wall, but until such time as permission from appropriate agencies is obtained, it may be necessary to add material to the fissure from time to time. The area should remain cordoned off until such time as it can be filled.

Permanent measures to eliminate the occurrence of the fissure might involve the following:

- Excavating the soil out from behind the wall down to sea level, opening a trench wide enough to safely access the bottom of the wall.

- Filling the voids beneath the wall with pressure injected urethane foam, to block future passage of fines through the bottom of the wall. Pressure injected urethane grout can be injected into the sand /rock matrix below the wall base to a depth of two or three feet, binding those materials together into a less permeable, less erodible mass. This will result in a more stable base below the existing wall and possible prevent or limit further erosion. Documents provided by deNeef, a provider of the type of urethane foam that would be used to stabilize the wall base, are included with the letter.

- Finally, in order to further prevent migration of fines through the wall base, the trench should be lined with a "filter fabric" capable of containing fine soil particles while allowing free movement of water through the soil. This material should extend from the bottom of the excavation up both sides, be filled with appropriate granular soil or sand and folded back over itself at the top of the excavation before being covered by lawn. If multiple lengths of fabric are necessary to line the entire opened trench they should overlap each snuggly other by at least two feet.

Permanent measures to reinforce the deteriorating sections of seawall might include the following:

- Removing all loose and cracked mortar and displaced stones and applying new mortar to replace material removed.

- During the excavation discussed above, applying a 6"-8"inch thick layer of "gunite" or "shotcrete" (pneumatically applied structurally concrete) over the land side surface of the wall from the base of the stone structure to the top. A 6"x6" mat of galvanized 6 gauge welded wire reinforcing or a mat of epoxy reinforcing bars should be placed in the middle of the gunite thickness. The rock material exposed during excavation should be cleaned of all loose soil and organic matter prior to placing of the gunite so that the concrete can adequately engage and bond with the stone wall. Properly design and installed, this concrete and reinforcing steel can reinforce the existing stone wall against future deterioration that might otherwise result from settlement. If the urethane grout is injected into the sand/rock material below the wall as well, a much more stable condition will result. The filter fabric/granular soil or sand procedure discussed above would be installed after completion of the gunite reinforcing application.

- If felt necessary a system of corrosion protection utilizing sacrificial anodes or some other effective system may be included in the reinforcing to extend its life in the highly corrosive conditions.

A detail sketch, SD-1, illustrating these recommendations is included with this report.

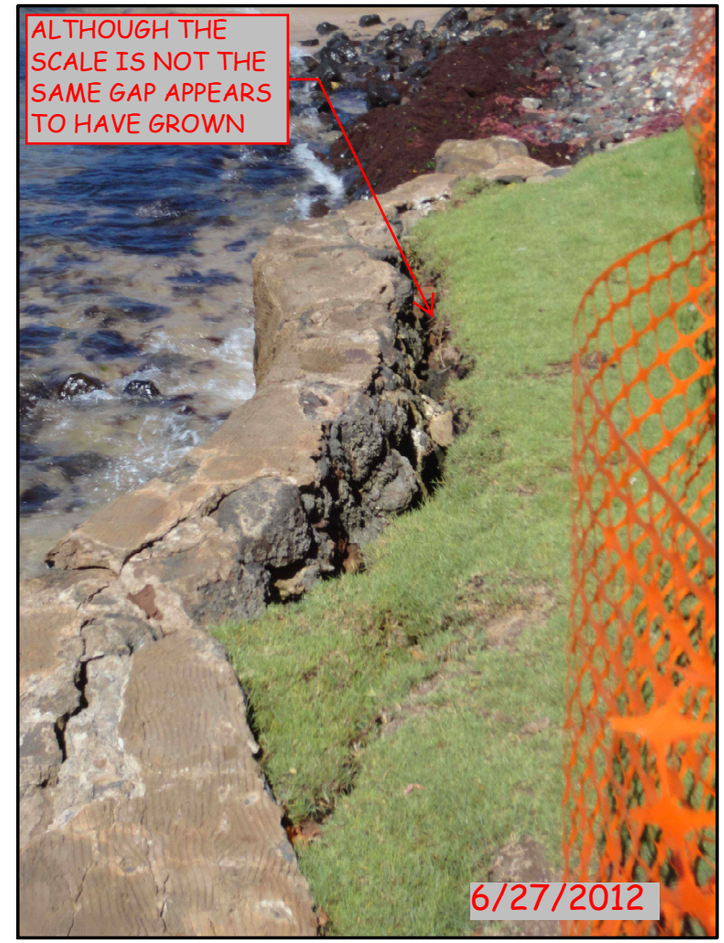
With the exception of filling the fissure with clean sand, the above recommendations will require more specification and detail for proper installation, which can be prepared after the governing agencies approve the measures being proposed.

We hope the discussion presented in this letter meets your needs, but if further information or clarification is required please contact our office.

Sincerely,
Walter Vorfeld & Associates

Walter T. Vorfeld

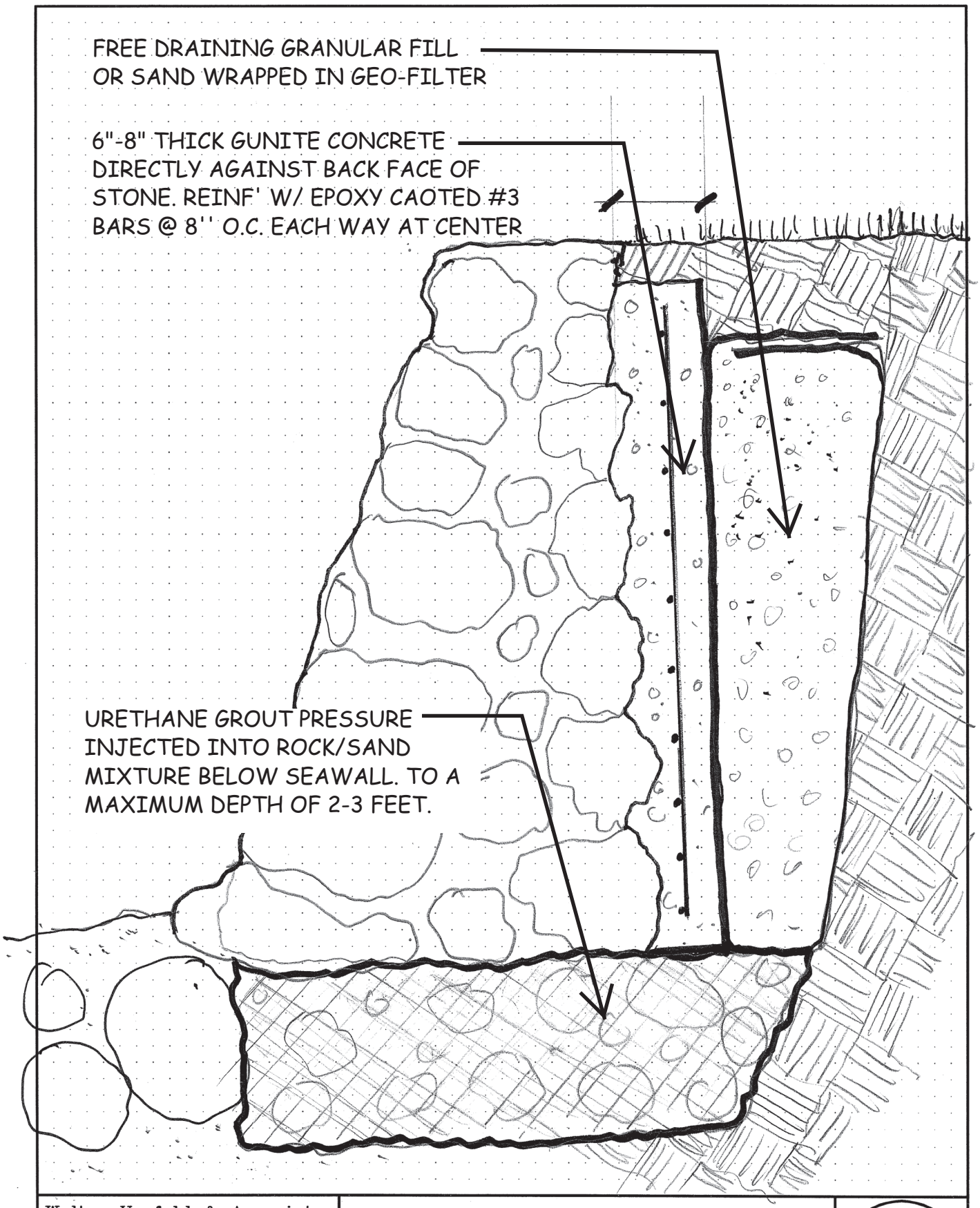
Walter T. Vorfeld SE
WTV/el
Encls.



TOP VIEW OF SEAWALL NEAR CORNER

(APPROXIMATELY 6 MONTHS BETWEEN EACH PHOTO)

SEAWALL CORNER IMAGE



Walter Vorfeld & Associates
CONSULTING STRUCTURAL ENGINEERS
10 Ulana Street
Makawao, Maui, Hi 96768
(808)572-3535

MILOWAI SEAWALL

MILOWAI RESORT
MAALAEA, HAWAII

Job No: 201120
DATE: 7/23/2009

SD-1

APPENDIX F
ARCHAEOLOGICAL MONITORING PLAN

ARCHAEOLOGICAL MONITORING PLAN FOR THE REPAIR OF A SEAWALL AT THE MILOWAI CONDMINIUM LOCATED AT TMK: 3-08-014: 022 WAIKAPU *AHUPUA'A;* WAILUKU DISTRICT ISLAND OF MAUI

FOR: Ms. Debra Adams
Hawaiiana Management

BY: Ms. Lisa J. Rotunno-Hazuka (B.A.)
and Mr.Jeffrey Pantaleo (M.A.)

MAY 2012

ARCHAEOLOGICAL SERVICES HAWAII, LLC.
1930 A Vineyard Street
Wailuku, HI 96793

"Protecting, Preserving, Interpreting the Past, While Planning the Future"

INTRODUCTION

At the request of Ms. Debra Adams of Hawaiiana Management, and pursuant to discussions with Ms. Theresa Donham-Archaeology Branch Chief of the State Historic Preservation Division (SHPD), Archaeological Services Hawaii, LLC (ASH) of Wailuku proposes to undertake archaeological monitoring for all ground-disturbing activities in association with the proposed improvements at the Milowai Condominium in Ma`alaea located at TMK: 3-08-014: 022 Waikapu *ahupua'a*, Wailuku District, Island of Maui, (Figures 1 and 2).

The proposed activity consists of the repair and remedial work on the existing seawall. All ground-disturbing development related activities, as well as any additional offsite improvements required by the County of Maui, or State of Hawaii, would be covered under this monitoring plan.

PROJECT AREA DESCRIPTION

The parcel is an improved lot comprised of 1.24 acres situated along the shoreline in Ma`alaea. It is located adjacent and north of Ma`alaea Boat Harbor and south along Ma` alaea Road. The subject parcel is developed with a condominium complex, associated utilities, ancillary buildings and a pool. No inventory survey of the project area has been conducted however several studies have been performed in the Ma`alaea area.

North *(mauka)* of Ma`alaea Town and Honoapi`ilani Highway along the slope of the West Maui Mountains is a complex of petroglyph panels designated Site 1169. This historic property is comprised of over 60 petroglyph panels on 11 boulders. Also *mauka* and inland of the project area at the Sandalwood Golf Course, Sites 2019-2027 were recorded and consisted of the following: Site 2019 (wall & ditch), Site 2020 (ag. complex), Site 2021 (terrace), Site 2022 (wall & ditch), Sites 2023-2026 (temporary habitation complex with agricultural features) and Site 2027 (habitation complex/ranching/*Heiau*/shrine).

Several historic properties have been identified within the immediate vicinity of the project area at the Ma`alaea Triangle and Harbor area. Site 1604 is the remnant structural remains of the Ma`alaea Ebisu Jinja shrine. Sites 3553 and 3554 are *in situ* Native Hawaiian burials identified during backhoe testing at the Ma`alaea Traingle Area (TMK 3-6-001:001). And during recent monitoring activities at Ma`alaea Harbor, a historic burial within a wooden coffin was documented and will be reinterred along the shoreline (Rotunno-Hazuka et. al. in prep.). No other subsurface features were noted during the monitoring program.

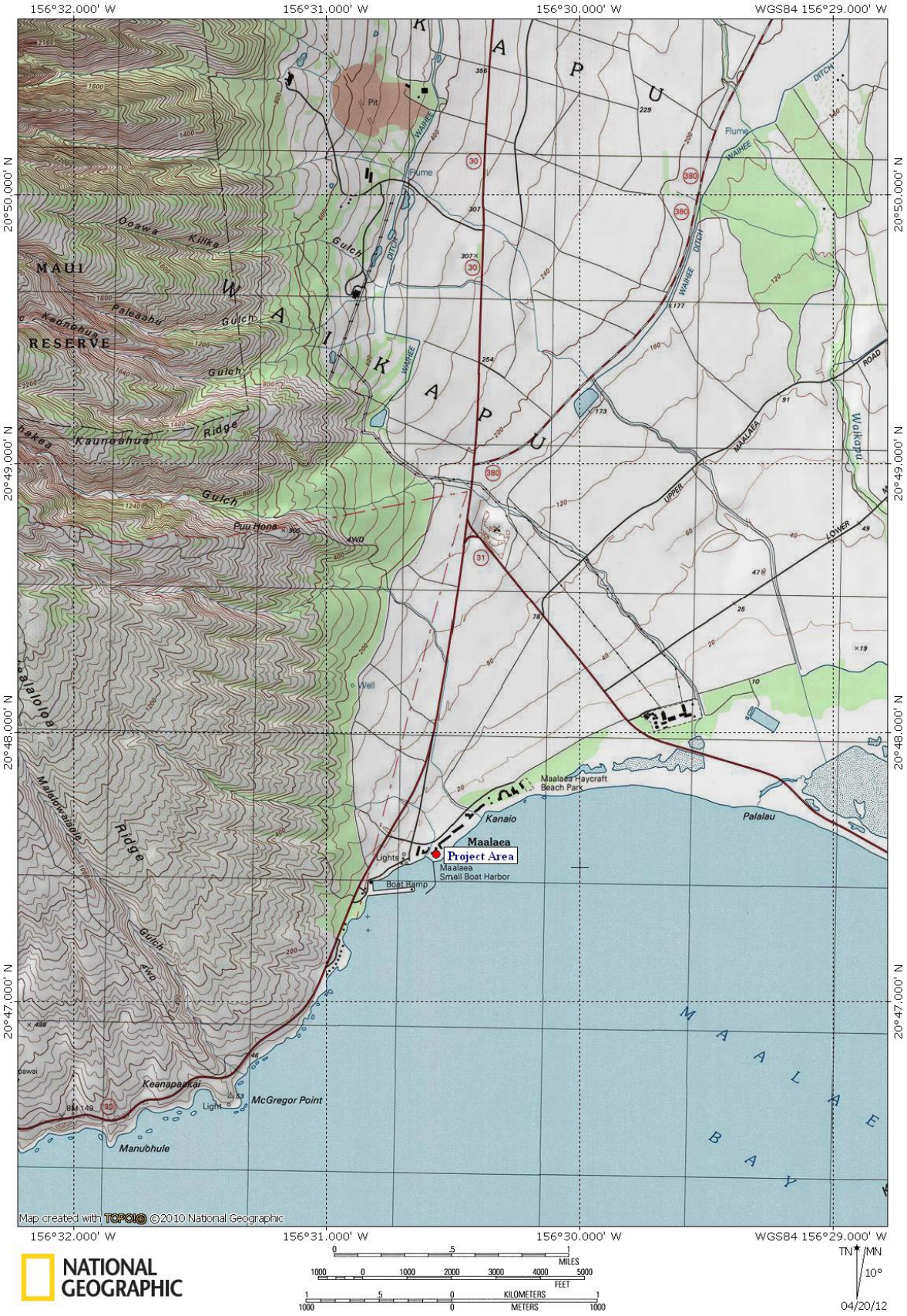


Figure 1. Location of Project Area on USGS Quadrangle

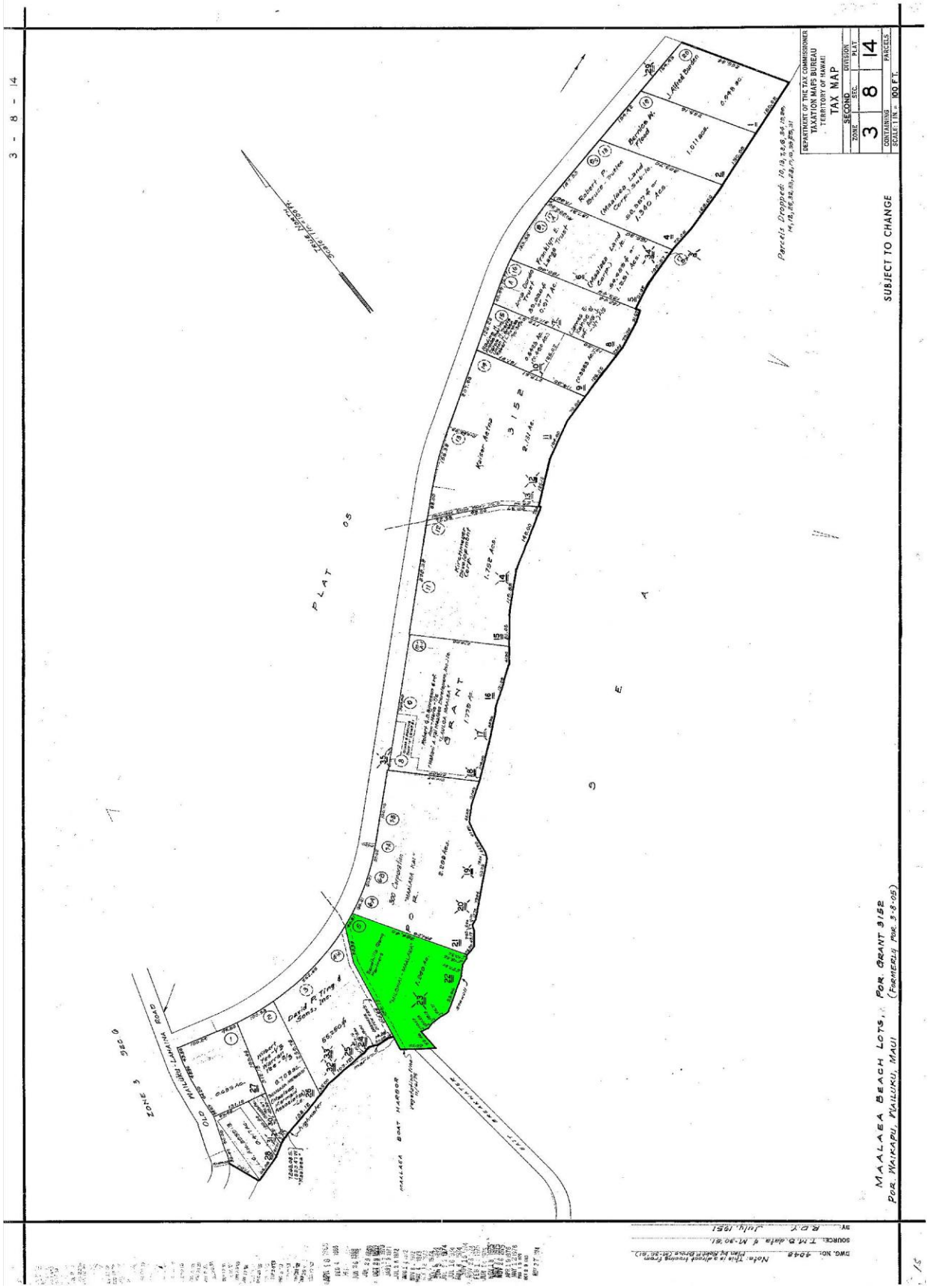


Figure 2. Location of Project Area on Tax Map Key

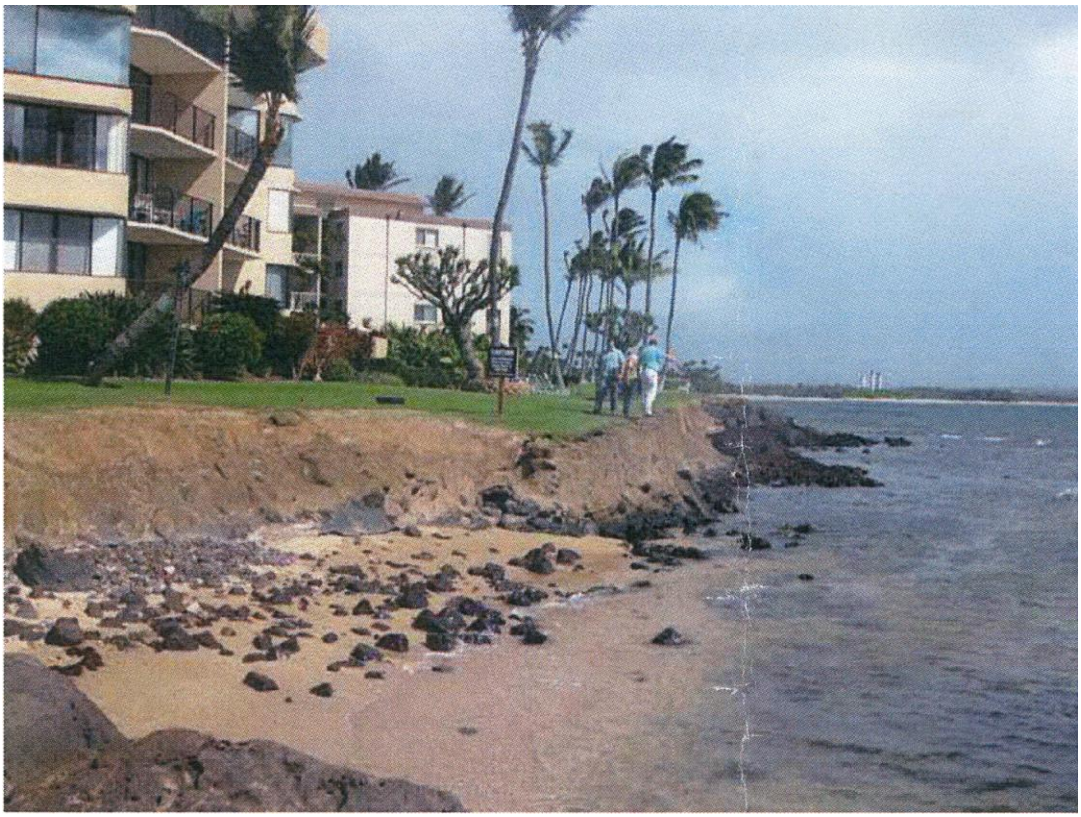


Figure 3. View of Shoreline condition along property

Figure 4. View of oceanfront lawn along seawall

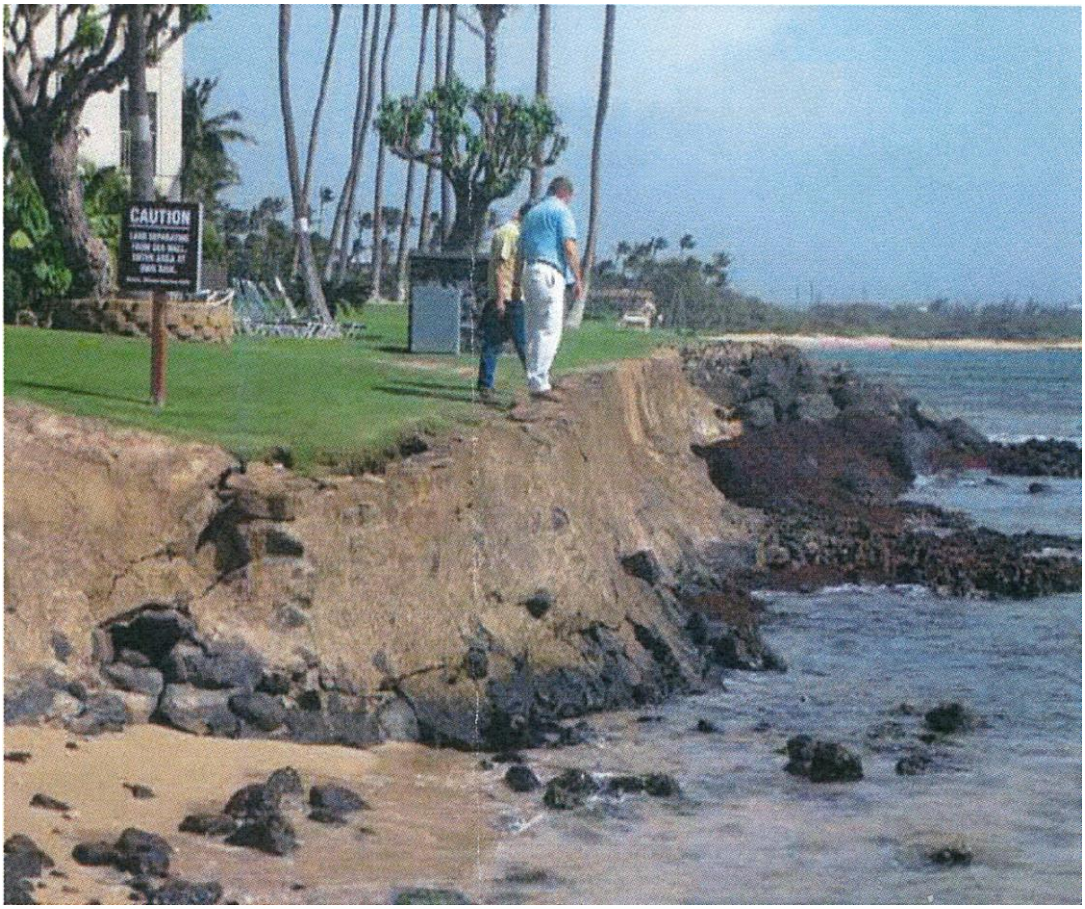


Figure 5. View of Shoreline condition along property

Figure 6. Close-up view of seawall

EXPECTABILITY OF SUBSURFACE SITES

Based on the forgoing historic properties, remnant subsurface features consisting of cultural layers and burials may be present; thus all ground disturbing activities shall be monitored.

MONITORING PLAN

The construction plans call for excavations ranging from 1.0 to 10.0 feet in depth. All ground-disturbing related excavations will be monitored full-time, in the event that dense rock, fill materials and or the water table is encountered, monitoring procedures may need to be adjusted; however no changes may be made without prior consultation and approval by SHPD via telephone and in writing. SHPD will also be notified of the onset and completion of the proposed undertaking.

One archaeological monitor per piece of ground disturbing equipment is the protocol for this monitoring project. Dependent on availability, Maui resident archaeologists will be assigned to this project. Prior to the commencement of construction, all pertinent parties including but not limited to construction and archaeological personnel will be informed of the monitoring procedures as stipulated in the monitoring plan, as well as the monitors' authority to halt work in the vicinity of a find. In the event that subsurface sites are exposed during construction, ground-disturbing activities in the immediate area will temporarily halt and project activities may shift to other areas of the project. Once the archaeologist makes an assessment, they will then consult with SHPD to determine the appropriate mitigation measures for the find. The area around the site shall be protected by erecting orange fencing or yellow caution tape. The site will be recorded utilizing all standard archaeological methods and procedures. Stratigraphic profiles will be drawn, photographs will be taken, and soil samples collected not only from the subsurface site, but from selected locations within the project area. If nighttime work is performed, the general contractor must notify the consulting archaeologist at least 3 days in advance. The archaeological monitor has sole discretion to determine if lighting is adequate to perform visual inspections of the soil.

If historic bottles are found they are to be collected by the archaeologist. No bottles may be collected or taken by any construction worker.

In the event that human remains are inadvertently exposed during this undertaking, the aforementioned procedures of halting and securing the site will be performed. After and

initial assessment is made by Mr. Hinano Rodrigues of SHPD, and members of the Maui/Lana'i Islands Burial Council-MLIBC (if the remains are believed to be Native Hawaiian), procedures for documenting the burial find shall be undertaken. These mitigation measures may include mapping and collecting displaced human skeletal remains, raking and screening of the area to collect all displaced human remains, and excavations to ascertain the context (*in situ* or displaced) and number of individuals represented by the skeletal remains.

The procedures for exposed skeletal remains and possible burial pit outlines is presented below.

1. Upon identification of displaced human remains, a possible burial pit outline, or basalt and coral manuports all construction activities in the immediate area of the find is temporarily halted.

2. SHPD and the MLIBC shall be notified.

3. Mark the perimeter of the avoidance area with yellow caution tape, and or orange construction fencing and cover the remains to protect them from the elements

4. Extend a baseline through the center of the dispersal area.

5. After notification and concurrence with SHPD, mark all displaced remains with pin flags and produce a plan view map. Locate and identify displaced remains and only collect the displaced remains.

6. If a concentration is identified, map the concentration and leave in place for determination of disposition and controlled manual excavations, as warranted.

7. Manually rake bulldozed or other mechanically produced tailings and screen push piles to collect all displaced and fragmented remains.

8. If no concentration was identified and raking is complete, skip to blade testing on item #13.

9. Complete an osteological inventory of the collected remains to determine the components that may be left *in situ* or missing.

10. If a concentration or possible burial pit was identified, notify SHPD of the possible burial feature and ask for written authorization to test the possible burial feature. Once authorization for testing has been received by SHPD, place a 2.0 by 2.0 meter controlled test unit, centrally locating the concentration within the test unit. Clean the surface with a trowel to determine if a pit outline is present. Map pit outline.

11. If SHPD has provided written authorization to test an *in situ* burial, excavate the *in situ* portion to identify any articulation, document the articulated portion

within the pit outline, and collect all clearly displaced remains. Articulated remains and those in an anatomically correct position, shall be left in place until a disposition determination can be made by SHPD in consultation with the MLIBC.

12. Fill out all test excavation and burial forms and draw a plan view map of the *in situ* remains. Then cover remains with a thin layer of sand (if SHPD and MLIBC have seen the feature) and or tarp.

13. Conduct mechanical blade testing in potential areas of further discoveries. Blade testing is conducted by removing shallow (2-6") lifts over a predetermined area.

After consultation with the owner, SHPD and the MLIBC (if the remains are believed to be Native Hawaiian), a burial treatment plan will be prepared.

Upon completion of the fieldwork, all necessary lab procedures including but not limited to processing, cataloguing and analyses of artifacts and photographs; analyses of soil samples as warranted and submitting of charcoal samples for radiocarbon dating will be performed. All analyses will be synthesized into a final monitoring report, and the report shall be submitted within 180 days of the completion of fieldwork. Copies of this report will be sent to the State Historic Preservation Division offices on Oahu and Maui for their review and comments.

All notes, photographs and artifacts will be archived at the offices of Archaeological Services Hawaii, LLC at 1930 A Vineyard Street, Wailuku, HI 96793.

APPENDIX G
SHPD APPROVAL LETTER

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAHUHIHEWA BUILDING
601 KAMOKILA BLVD, KAPOLEI HI 96707

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

GUY KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
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

July 6, 2012

Mr. Jeffrey Pantaleo
C/O Ms. Lisa Rutunno-Hazuka
Archaeological Services Hawai‘i
Via Email: lisa@ashMaui.com

LOG NO: 2012.0825
LOG NO: 2012.1890
DOC NO: 1207JP01

Aloha Ms. Rotunno-Hazuka:

SUBJECT: Chapter 6E-42 Historic Preservation Review- Maui County
Archaeological Monitoring Plan for the Repair of a Seawall at the Milowai Condominium
Waikapu Ahupua‘a, Wailuku District, Island of Maui
TMK (2) 3-8-014:022 (por)

Thank you for the opportunity to review the draft report titled *Archaeological Monitoring Plan for the Repair of a Seawall at the Milowai Condominium Located at TMK: 3-8-014:022; Waikapu Ahupua‘a, Wailuku District, Island of Maui* by Lisa J. Rotunno-Hazuka and Jeffrey Pantaleo (May 2012). This document was received by our staff in June 2012. This letter provides updated information for related SHPD reviews including the early consultation letter for the project received on March 27, 2012 (Chris Hart & Partners); and the work on County Roadway permit application (WTP T2012/0029) received by our staff on June 30, 2012.

According to the submittals, the proposed work within the shoreline area needs a consolidated Draft Environmental Assessment, Special Management Area Permit, and a Shoreline Setback Variance. The overall project area includes a 43-unit condominium complex adjacent to the Ma‘alaea Boat Harbor east breakwater. The seawall is showing signs of age and dangerous sinkholes have developed. Archaeological monitoring was recommended for the project.

The monitoring plan outlines the proposed objectives and procedures that will be implemented to prevent damage to historic properties including the identification and documentation of any archaeological and cultural features. The plan meets the requirements of HAR 13-279 and is accepted by SHPD. It’s possible the proposed work may have an effect on historic properties -subsequently proposed mitigation includes the implementation of the monitoring plan.

Please send one hardcopy of the final document, clearly marked **FINAL**, along with a copy of this review letter and a text-searchable PDF version on CD to the Kapolei SHPD office, attention SHPD Library. For questions about this letter, please contact Jenny at (808) 243-5169 or Jenny.L.Pickett@Hawaii.gov.

Mahalo,

Theresa Donham
Archaeology Branch Chief

cc: Chris Hart via Fax (808) 242-1956
County of Maui DSA via fax ATTN Ty Fukuroku: (808) 270-7972
County of Maui, Department of Planning via fax: (808) 270-7634

APPENDIX H
CULTURAL IMPACT ASSESSMENT REPORT

Milowai Condominium

Cultural Impact Assessment

for

Milowai Condominium
50 Hau‘oli Street
Mā‘alaea, Wailuku, HI
TMK (2) 3-8-014:022

by

Jill Engledow
Historical Consultant
Wailuku, Maui

July 2012

Prepared for
Milowai Maui AOAO

Milowai Condominium
Cultural Impact Assessment
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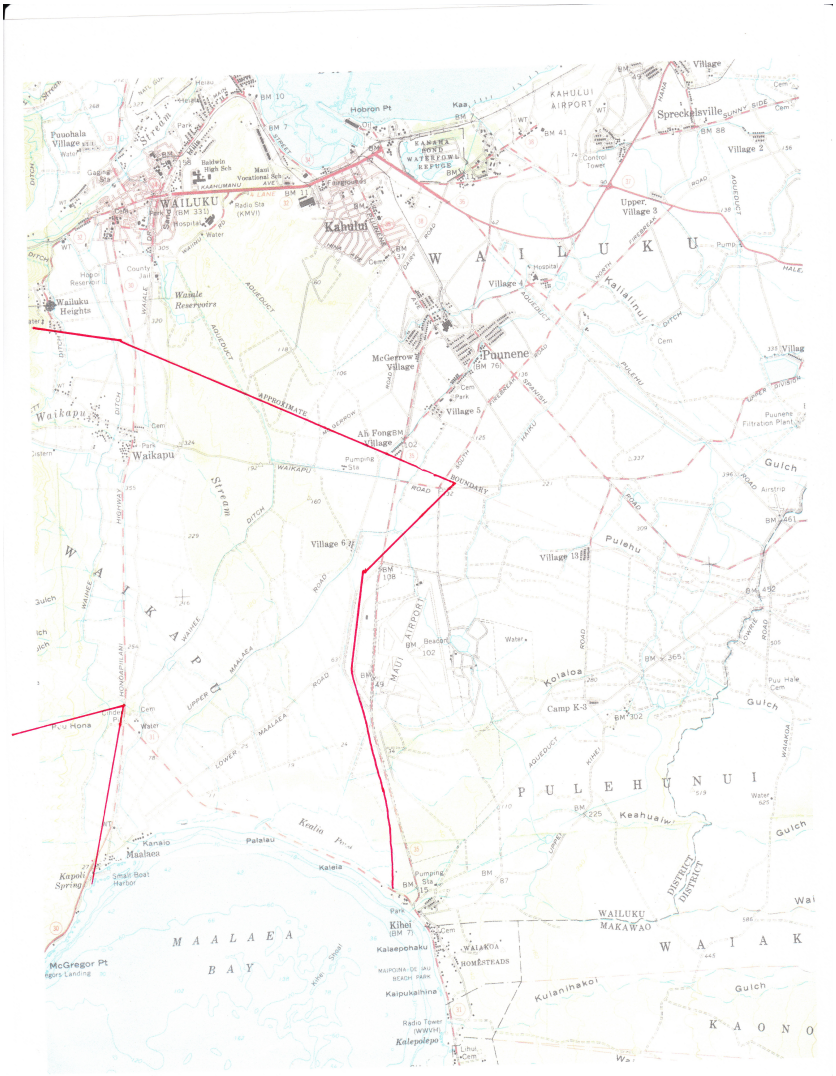


Fig 1. 1954 USGS map, with approximate Waikapū boundaries marked in red

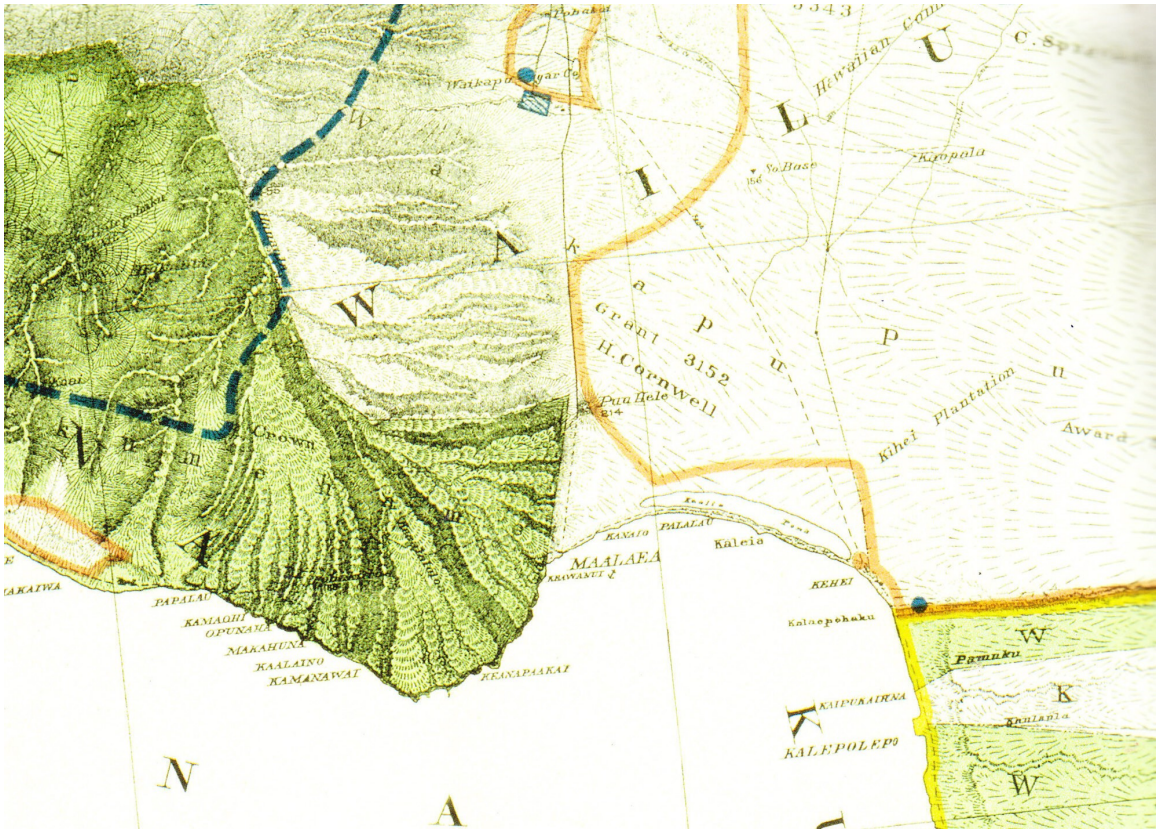


Fig. 2. Hawaiian Government Survey Map, 1885/1903. (Fragment) The orange outlines indicate sugar plantation land; the yellow outline indicates grazing land. The blue dots are schools. An orange dot near the word "Kehei," indicates a post office. The small cross-hatched square near the top of the map indicates a wetland (rice or taro).

Figure 3. Site of erosion undermining Milowai property. Engledow photos 6/12

Milowai Condominium

Cultural Impact Assessment

I. Introduction

At the request of Chris Hart & Partners, Inc., researcher and writer Jill Engledow prepared this Cultural Impact Assessment of the property occupied by Milowai Condominium at 50 Hauʻoli Street, TMK (2) 3-8-014:022.

This 1.24-acre property is a condominum at the west end of Hauʻoli Street, just outside the east breakwater of Māʻalaea Small Boat Harbor. It faces south on a low bluff supported by a stone seawall. It is flanked on either side by other condominiums. The proposed action that requires this Cultural Impact Assessment is an application for a Chapter 343 Final Environmental Assessment to repair an existing seawall. Without repair, the wall would eventually collapse and the edge of the property would be eroded by the sea. Also required are Special Management Area and shoreline setback variance permits because the work is within the shoreline setback.

II. Report Methodology/Resource Materials Reviewed

Sources sited in archival research are listed in the attached bibliography. Additional searches included the Internet and the indexes of a variety of books on Hawaiian culture and history which were searched for the word "Māʻalaea," and for "Waikapū," the *ahupuaʻa* in which Māʻalaea is located. A number of commonly used texts about Hawaiian history included no specific references to Māʻalaea and very few to the surrounding area. Engledow also conducted interviews with individuals familiar with the history of Māʻalaea.

III. Study Area Description

The Milowai condominium is located in Māʻalaea, a seashore community on the southwest shore of Maui. A low-key resort community, Māʻalaea encompasses a mix of local and tourist residences and facilities. These include the Māʻalaea Small Boat Harbor, retail shops, the Maui Ocean Center aquarium, and a row of condominiums on Hauʻoli Street which house visitors and permanent residents. Single-family houses are set along the cliff on the Lahaina side of the harbor. At the east end of Hauʻoli Street is Haycraft Beach Park, a favorite camping site for local families. Some fishing takes place off the shoreline near the park. The harbor provides anchorage for a number of fishing boats as well as tour boats. Māʻalaea is famous for its surfing waves.

IV. Study Area History

Māʻalaea is part of the land division called Waikapū, which originates in one of four valleys created by streams known as *Nā Wai Eha*—The Four Waters. Those famous streams carved the steep ridges and gullies of four valleys—Waikapū, ʻĪao, Waiehu and Waiheʻe—through the West Maui volcano, transporting the mountain's core material and depositing it in an alluvial plain 13 km long. (Kyselka: 28, 36) The soil of this plain accumulated thickly near the mountain, spreading more thinly across the Isthmus formed when lava from Haleakalā pooled against West Maui. Over thousands of years, as glaciers grew in other parts of the world and sea levels dropped, broad stretches of coral reef were exposed and broken down to sand. Trade winds blew the sand onto the isthmus and formed it into ridges. (Hazlett: 136)

The Waikapū district covers approximately half of the isthmus known as Kamaʻomaʻo, reaching the south shore and including the shoreline from near Māʻalaea to Kīhei Pūkoʻa. According to approximate boundary lines on a 1954 USGS map, the northern mauka boundary passes near the south end of Wailuku Heights and follows a line slanting down to a point near the bottom of modern-day Waiko Road. (Fig. 1) From there it turns sharply east, descending in a somewhat curved line to Kīhei. The eastern boundary line of the district meets the ocean at Kīhei Pūkoʻa, at the eastern end of the wetlands known as Kealia Pond.

Between the shore and the valley was Puʻu Hele, a cinder cone formed late in the history of the West Maui volcano. According to legend, Puʻu Hele was one of a pair of *moʻo* (lizards), the husband of nearby Puʻu-o-kali. Their child, Puʻu-o-inaina, was placed on Kahoʻolawe and later was a lover of Pele's sweetheart, Lohiau, according to *Place Names of Hawaii*. (Pukui: 203) Once 20 meters in height, Puʻu Hele was considered an essential stop on a trip around the island, according to Theodore Kelsey. "You cannot claim a circuit of Maui unless after you have been all around, you circle the hill above Puʻu-hele, then climb to the top and proclaim, ʻUapuni o Maui iaʻuʻ." (Sterling: 94)

Puʻu Hele now is a hole in the ground, deeper than it once was tall. Its cinders were mined to make road beds, beginning in World War II, when the Navy built Naval Air Station Puʻunēnē. (Kyselka: 38 and Ashdown: 59) Today, what appears to be the remnants of the cinder cone's edges may be seen along Honoapiʻilani Highway just mauka of the South Kīhei Road intersection.

Two traditional sayings, or *ʻōlelo noʻeau,* referred to this area, and both have to do with its famous winds. "Ka makani kokololio o Waikapū, *The gusty wind of Waikapū,"* is referred to in the song "Inikinikimālie" by James Kahale. Another is "Pā kamakani o ka Moaʻe, hele ka lepo o Kahoʻolawe i Māʻalaea, *When the Moaʻe wind blows, the dust of Kahoʻolawe goes toward Māʻalaea."* (Pukui: 2580)

Mā‘alaea has been a landing point for centuries. Stories say the chief Kihaapi‘ilani landed here on his return to Maui after he had fled to Lāna‘i following a fight with his brother Lonoapi‘ilani. Kihaapi‘ilani and his wife supposedly met people with bundles “going down makai to the shore to trade some food” at “Kamā‘alaea,” another name for Mā‘alaea. (Sterling: 21) The name Mā‘alaea may be a contraction of Maka-‘alaea, which means “ocherous earth beginning,” a reference to ‘alaea, a red clay commonly used for coloring sea salt. (Pukui: 137) Other place names found on old maps include Kalae‘ia, Palalau and Kanaio. (Clark 1980: 51)

Mā‘alaea also was a landing place for the bones of Kekaulike, who had died at a place up the coast in the Kula district. “Then, fearing the arrival of Alapai bent on war, the chiefs cut the flesh from the bones of Kekaulike in order to lighten the load in carrying the body to Iao [for burial]. Placing the remains on a canoe, they sailed and landed at Kapoli,” then went by land to the burial place. (Kamakau: 70) Kapoli, “the bosom,” is a spring that is said to have been located behind Buzz's Wharf Restaurant. (Clark 1980: 51)

After Kamehameha conquered Maui in 1795, the district of Waikapū was given to Ke‘eaumoku, one of the “four Kona chiefs” who had been his main supporters. When Ke‘eaumoku died in 1804 it went to his son, Kahekili Ke‘eaumoku, and on his death in 1824 to Kuakini, then to Leleiohoku in 1844. (Kame‘eleihiwa: 106) During the Great Māhele of 1848, some Land Commission Awards (LCA) were granted in Kama‘alaea. According to records in the county property tax office, the Mā‘alaea Beach Lots on which the Milowai Condominium stands were a portion of grant 3152.

One product of the area was salt. In an entry dated Feb. 1, 1817, an early voyager describes arriving at “Mackerey (Mā‘alaea) Bay; here we lay until the 6th, and took on board a great quantity of hogs, salt, and vegetables. This bay is very deep and wide and nearly divides the island, there being but a narrow neck of land and very low, keeping the two parts of the island together. There is good anchorage; and the only danger arises from the trade winds, which blows so strong at times as to drive ships out of the bay with two anchors down; it lies N.E. and S.W. and is well sheltered from every other wind. The neck of land is so low, and the land so high on each side, that the N.E. trade comes through like a hurricane. On this neck of land are their principal salt-pans, where they make a most excellent salt.” (Corney, in Sterling: 70) Contemporary visitors to Mā‘alaea would find this description of the wind fitting; as the Hawaiian proverb says, it is often extremely gusty.

Much of the region of Waikapū was converted for agriculture during the mid-1800s, with sugar cane as the primary crop. Henry Cornwell, along with his brother-in-law James Louzada, founded the Waikapū Plantation, beginning with land Louzada acquired in 1862 and adding most of the *ahupua‘a* of Waikapū in 1875. Much of the land of Waikapū was part of the one-twentieth of all unappropriated public lands set aside to produce income for school purposes by a law established in 1850. “During the next few years considerable acreage was sold to procure money for educational purposes.” (Wist: 60) In 1875, the Board of Education sold at auction the “Land known as the Ahupuaa of Waikapu, saving grants hitherto made within the said ahupuaa, or sales by the Board of

Education," to Henry Cornwell. Cornwell later sold to Claus Spreckels and others the part known as Waikapū Commons.

Waikapū Sugar Plantation fell under the control of the Wailuku Sugar Company in1894. While sugarcane (now belonging to Hawaiian & Commercial Sugar Co.) still grows to within yards of the subject parcel, this land directly on the seashore would have been more ocean oriented than agricultural in ancient times, though Handy suggests that sweet potatoes might have been a common crop.

"On the south side of western Maui the flat coastal plain all the way from Kihei and Maalaea to Honokahua, in old Hawaiian times, must have supported many fishing settlements and isolated fishermen's houses, where sweet potatoes were grown in the sandy soil or red *lepo* near the shore. For fishing, this coast is the most favorable on Maui, and although a considerable amount of taro was grown, I think it reasonable to suppose that the large fishing population which presumably inhabited this leeward coast ate more sweet potatoes than taro with their fish." (Handy: 159, 160)

Perhaps because it was a convenient landing spot, and because of the rich resources of the sea, Mā'alaea apparently was well populated in pre-contact times, but most remains of early human habitation have been destroyed in historic times, after Winslow M. Walker recorded his findings in a survey of the area in the 1920s. "For about two miles west of Maalaea village to McGregor's point, house and shelter sites can be found in great numbers above the road. At least forty-five were noted. The shelters are low walled semi-circular or oval enclosures built against some large rock or group of rocks. Shells and pebbles are found around the sites." (Walker: 78) "One of the most interesting koas found was the one near the ancient village on the slopes above Maalaea Bay. It has the shape of a horseshoe 8 1/2 feet long. . . . This is the only koa site on West Maui which can be recognized with any certainty though doubtless there were many more which have now been destroyed." (Walker: 103) A quarter-mile from the village of Mā'alaea at the base of the foothills of the West Maui Mountains, Walker found "a large walled heiau in good condition despite its occupation by cattle." (Walker: 105)

In the mid-20th century, these were destroyed, according to Inez Ashdown: "I had set aside forty eight house sites, a *heiau* and a *ko'a* shaped like a horseshoe during the time I was Commissioner of Historic Sites on Maui. While I was working at Fort Armstrong in Honolulu, for the U.S. Signal Corps, the lessee allowed construction men to remove that village at Ma'alaea and it now forms the breakwater in the bay. Only the Pohaku Piko and Pohaku Pa'akai remain where they were placed by the late Hollis Hardy, who saved them. They stand by Ka-poli spring to the rear of the restaurant called Buzz's." (Ashdown: 59) The stones now are on the lawn at the front of Buzz's; the spring was not visible on a field trip to the site in July 2012.

Mā'alaea was the site of Maui's first commercial airport. "In late 1929 Interisland Airways (which later became Hawaiian Airlines), Hawaiian Commercial & Sugar, and the Kahului Railroad cooperated in building a paved airstrip near Mā'alaea," but the airport closed in 1938-39. It was troubled by high winds, was too close to the West Maui Mountains and was inadequate for the larger airplanes that had come into use.

(Blackford: 171-172) In 1940, electric lines reach Mā‘alaea, which had 15 customers. (Blackford: 142) In May 1944, rehearsals for the assault on Saipan were held at Mā‘alaea Bay and Kaho‘olawe. (Speakman: 134) The Fourth and Fifth Marine Divisions also used the area for joint ship-to-shore rehearsals and amphibious landing practice before the 1945 battle of Iwo Jima. (Allen: 190) The Mā‘alaea shoreline, like other parts of the Maui coastline, was fenced with barbed wire during World War II. (Crockett: 7/11/12)

A landing area for interisland ships until 1906, the Mā‘alaea wharf was destroyed by an August 1906 tsunami, leading to the end of its use as an interisland harbor. (Clark: 52) A new wharf at McGregor's Landing, up the coast, became the anchorage for interisland steamers. According to *The Maui News*, a tsunami in August 1930 wiped out the remnants of the old wharf and several small craft. For years, Mā‘alaea had served as a landing place for Japanese fishermen who had “built up a little colony” around the old wharf, the paper said. (*The Maui News*, Aug. 14, 1930)

The small fishing community was served by the Mā‘alaea Store, a landmark for decades. In 1946, James Uno Sr. arrived on Maui from California to help relatives with the store and ended up buying it. He married Mā‘alaea girl Grace Miyamoto, and through their hard work the store flourished. In 2005, Mrs. Uno and her three children finally closed the store. (*The Maui News,* Feb. 2, 2005) In 2012, new owners were renovating and planning to reopen it.

Next door to the store is the Mā‘alaea Ebisu Kotohira Jinsaha. “Ebisu is one of the seven lucky deities and the guardian god of fisherman and merchants; *kotohira* means 'fishermen'; and *jinsha* means 'shrine.' This traditional Shinto fishing shrine on the shore of Mā‘alaea Small Boat Harbor was originally located on the site of the Maui Ocean Center.

“The present *jinsha* was completed in 1999 and is a replica of the original shrine built in 1914 by Reverend Masaho Matsumura. Reverend Torako Arine, the caretaker of the Mā‘alaea Ebisu Kothira Jinsha and the Maui Jinsha in Wailuku, conducted the first service in the new shoreline shrine in January 2000. Fishermen believe that by honoring Ebisu they will have good luck at sea and a safe return home. Although the shrine is Shinto, the congregation is now multicultural and includes commercial and recreational fishermen, surfers, and other people of the sea.” (Clark 2007: 49, 50)

The current protected Small Boat Harbor facilities were first developed by territorial officials in 1952 and improved in 1955 and 1959. In 1968 Congress approved a federal plan for additional alterations, and the Maui County Council called for converting nearby Kealia Pond into a marina. Maui's fledgling environmental movement succeeded in having plans for the harbor and the area scaled back in the 1970s. Many feared that harbor improvements would destroy the famous surfing wave at Mā‘alaea. In 1989, Congress appropriated funds to reconfigure and increase the size of the harbor to lessen the tidal surge, reduce navigational hazards at the entrance and increase the number of berths. The Army Corps of Engineers proposed to build a new breakwater, redesign the

entrance and more than double the number of slips. Surfers and environmentalists opposed the plan; the Waterfront Restaurant, then on the ground floor at the Milowai, was the site of a meeting at which the Sierra Club and the National Surfrider Foundation met to organize opposition to the plan. (Blackford: 204-206)

After many years of discussion, the harbor redesign project was called off in May 2012. "Federal and state agencies are ending a decades-long project that would have expanded Mā‘alaea Small Boat Harbor, citing costs as well as opposition from community groups that maintained that the proposals would fail to protect the harbor from surges while destroying acres of coral and affecting the 'Freight Train' surf break.

"The decision to terminate the project was announced Friday by the U.S. Army Corps of Engineers and the state Department of Land and Natural Resources Division of Boating and Ocean Recreation." (*The Maui News,* May 6, 2012)

Condominiums like the Milowai are built on land purchased in small parcels by local families in the 1940s and 1950s. As was the case all along the Kīhei coastline, the development of Mā‘alaea would be carried out individually, by families or *hui*—groups who got together to finance the purchase of property—rather than as part of a comprehensive resort development like Kā‘anapali or Wailea. Some of these families used their parcels for beach recreation in the years before condominiums were built. One of them was the Robert Bruce family, who bought a lot there in 1942. The Bruces' daughter, Lesley, remembers spending weekends and vacation time there, where the family had a basic "shack" with a shower, toilet, changing room and a grill. Ms. Bruce remembered paddling an outrigger canoe down to the Uno store to buy milk.

Ms. Bruce also remembers Mā‘alaea having wells, Hawaiian ruins and ranch land, and waterways ran into the ocean. She said swimmers can see where the waterways flowed because in those places the reef does not grow. She said the area was famous for seaweed and "we used to pick up fabulous shells there."

The subject property was owned by Wendell and Myrtle Crockett. Their son, attorney William Crockett, remembers going down to Mā‘alaea to vacation in the summer time. In about 1960, his parents built a house and began to live there. Before that they had used a construction shed moved from Wailuku for a holiday shelter. There was just a dirt track off the Wailuku-Mā‘alaea road to their lot at that time, and the family used kerosene lanterns. There was a beautiful sandy beach where the harbor is now; the beach disappeared when the breakwater was put in on the Lahaina side. The second breakwater was put in during the early 1960s. Aku boats used to anchor outside, while smaller sampans anchored close to shore. There was no pier at that time.

Mr. Crockett said his father put in the seawall proposed for repair long before the family leased its land for the building of the Milowai condominium, which was finished in November 1975. He may have put it up because waves splashed up onto the property during high surf. Mr. Crockett is not sure exactly when the wall was erected—it might have been even before the Lahaina-side breakwater was put in—but it was definitely

before the east breakwater was put in next to the subject property, and before his parents built their house, about 1960. The shoreline was rocky in front of the Crockett property; the sandy beach was on the Lahaina side of the harbor. Mr. Crockett thinks his father probably put in the seawall in the early 1950s, because it was not there in 1948 when he came home from the Army and was up when he got back from law school in 1956. Mr. Crockett said there's more sand now on the little corner between the breakwater and the seawall than there used to be, and sand has accreted on the Lahaina side of the breakwater also.

Mā‘alaea was slated to become a much larger community, with landowners C. Brewer and Alexander & Baldwin designating about 1,170 acres for development of homes, a golf course and parks. Included in the Kīhei-Mākena plan of 1998, these projects were controversial, and they have since been removed from the plan. (Blackford: 206)

V. Cultural Resources, Practices, and Beliefs

The historical evidence available indicates that this area was settled in precontact times, but the village on the hills above was abandoned at some unknown time a century or more ago. There do not appear to be any sacred sites that would be affected by the proposed project. Because the coastline has been so heavily developed, little of the old style of life is extant, and with the landscape mostly made up of introduced plants, it is unlikely anyone is attempting to gather native plants here.

The chief cultural resource would seem to be the oceanfront upon which the condominium is set and the sea life beneath the cliff which is to be repaired. The ocean in this area once supported abundant seaweed, but that apparently has declined over the years. The late *limu* expert Dr. Isabella Aiona Abbott brought students on field trips from Maui Community College to monitor seaweed in Mā‘alaea harbor and reportedly attributed its decline to pesticide runoff. (*The Maui News,* Oct. 10, 2010)

Access to the ocean is through the nearby small boat harbor, at a beach access path down the street from the Milowai or from Haycraft Beach Park on the eastern end of the condominiums that line Hau‘oli Street.

VI. Oral Interviews

Methodology, Procedures, and Interviewee Biographical/Organizational Information

A letter briefly outlining the development plans was sent to one organization whose jurisdiction includes knowledge of the area, the Central Maui Hawaiian Civic Club, asking for input on this report. A legal ad in *The Maui News* requested information from anyone with knowledge of cultural practices around this parcel; no replies were received. The author also contacted several individuals with knowledge of the area, ranging from a Sierra Club representative to longtime residents to fishermen. Some were contacted by phone, and some received emails with copies of the photo collage in Fig. 3. Individuals contacted included Foster Ampong, a member of the Aha Moku o Maui Council for the

Wailuku District; the Aha Moku Council engages with government on the state, county and federal levels to come up with policies that sustain the land, using wholistic resource management practices based on those of ancient times. Another was Hōkūao Pellegrino, a Hawaiian scholar and practitioner who is a member of a Waikapū family. There was either no response or no comment on the possibility of cultural impacts from this project, except from Lesley Bruce, whose family has lived on Maui for decades and who is quoted in the section above on history.

"All of those sea walls at Mā'alaea are very problematical," Ms. Bruce said, recalling her childhood days, when there was much more sand along the Mā'alaea harbor area. "The ocean is rising; there's a very clear difference in the ocean at Mā'alaea, especially now that the harbor killed all the critters and the natural process and the way the currents in the ocean itself work. All those buildings should not have been built when they zoned it in 1972 (or '76). I said to the planning director who made that change, you know, this is not going to work, all those buildings should have been built *mauka* of the road. The 701 plan was a mistake, to put 'skyscrapers' on the shore, and now they're endangered by collapsing seawalls." (The 701 plan was the Kīhei Civic Development Plan, partly funded by the federal government under the provision of Section 701 of the Housign Act of 1954.)

VII. Confidential Information Withheld/Conflicts in Information or Data

There was no confidential information withheld and no conflicts in information or data.

VIII. Conclusion

Comments by Lesley Bruce express the conundrum faced by property owners along much of Maui's developed coastline. Zoning and building decisions of a half-century ago were made without the benefit of current understanding of the problems caused by hardening of the shoreline. Nor did builders of that time realize that ocean levels would rise and islands would shrink as the waves eat away at their borders. Property owners now must attempt to maintain their *makai* boundaries to protect their land and buildings while doing the least possible harm to the environment.

"In a traditional Hawaiian context, nature and culture are one and the same, there is no division between the two," Hawaiian cultural expert Kepā Maly wrote in his 2003 report on native fishing practices, *Ka Hana Lawai'a A Me Nā Ko'a O Na Kai 'Ewalu.* (Maly: 15) In this instance, the primary cultural asset involved is a natural resource: the ocean that fronts the Milowai Condominium property. To avoid negative impacts on this natural resource, any repair work done on the bluff overlooking this oceanfront should be done with care to ensure that excavated materials, concrete and other debris do not contaminate the shoreline or the immediate ocean area.

Because this section of coastline has long been developed, and the ocean is easily accessed from either the harbor, nearby beach access path or Haycraft Beach Park, no cultural access would be affected by the repair work. There do not appear to be any other

Hawaiian or non-Hawaiian gathering, practices, protocols or access issues regarding this site or the proposed repair work, and therefore no impacts on offshore or terrestrial cultural resources are expected to occur as a result of the proposed action.

References for Milowai Cultural Impact Assessment

Ainsworth (Bartholomew), Gail. *The Index to the Maui News,* 1900-1932. Wailuku: Maui Historical Society, 1985.
—*The Index to the Maui News,* 1933-1950. Wailuku: Maui Historical Society, 1991.
—*The Index to the Maui News,* 1951-1973. Wailuku: Maui Historical Society, 2010.
—*Maui Remembers: A Local History.* Honolulu: Mutual Publishing, 1994.

Alexander, W.D. *1885 Hawaiian Government Survey Map.* Brought up to date in 1903 by John M. Donn.

Allen, Gwenfread. *Hawaii's War Years, 1941-1945.* Honolulu: University of Hawai‘i Press, 1950.

Ampong, Foster. Email communication, July 11, 2012.

Ashdown, Inez MacPhee. *Ke Alaloa o Maui.* Wailuku: Kama‘āina Historians, 1971.

Bruce, Lesley. Personal communication, June 18 and July 7, 2012.

Clark, John R.K. *The Beaches of Maui County.* Honolulu: University of Hawai‘i Press, 1980.
—*Guardian of the Sea: Jizo in Hawaii.* Honolulu: University of Hawai‘i Press, 2007

Crockett, William. Personal communication, June 19 and July 11, 1012.
Cummings, Speakman. *Mowee.* Honolulu: Revised edition. Mutual Publishing, 2001.

Handy, E.S.C. *The Hawaiian Planter.* Honolulu: Bishop Museum Press, 1940.

Hazlett, Richard W. and Donald W. Hyndman. *Roadside Geology of Hawai‘i.* Missoula, Montana: Mountain Press Publishing Company, 1996.

Kamakau, Samuel Mānaiakalani. *Ruling Chiefs of Hawaii.* Revised edition. Honolulu: Kamehameha Schools/Bishop Estate, 1992.

Kame`eleihiwa, Lilikalā. *Native Land and Foreign Desires: Pehea Lā E Pono Ai?* Honolulu: Bishop Museum Press. 1992.

Kyselka, Will and Ray Lanterman. *Maui: How It Came to Be.* Honolulu: University of Hawai‘i Press, 1980.

Maly, Kepā and Onaona Maly. *Ka Hana Lawai`ia A Me Nã Ko`a O Na Kai `Ewalu. Vol. 1*. Prepared for the Nature Conservancy, Honolulu, Hawaii, 2003.

Pukui, Mary Kawena. *`Ōlelo Noe`au: Hawaiian Proverbs and Poetical Sayings.* Honolulu: Bishop Museum Press, 1983.

Pukui, Mary Kawena, Samuel Elbert, Esther Mo`okini. *Place Names of Hawai`i.* Honolulu: The University Press of Hawai`i, 1974.

Sterling, Elspeth P. *Sites of Maui.* Honolulu: Bishop Museum Press, 1998.

The Maui News. Wailuku: Maui Publishing Company, 1900-2012.

Walker, Winslow M. *Archaeology of Maui.* Draft report archived at Maui Historical Society, Wailuku.

Wist, Benjamin O. *A Century of Public Education in Hawaii.* Honolulu: The Hawaii Educational Review, 1940.

Appendix

AFFIDAVIT OF PUBLICATION

STATE OF HAWAII,
County of Maui. } ss.

Rhonda M. Kurohara being duly sworn deposes and says,that she is in Advertising Sales of the Maui Publishing Co., Ltd., publishers of THE MAUI NEWS, a newspaper published in Wailuku, County of Maui, State of Hawaii; that the ordered publication as to Information Wanted for Cultural Impact Assessment

of which the annexed is a true and correct printed notice, was published 2 times in THE MAUI NEWS, aforesaid, commencing on the 28th day of June, 2012, and ending on the 29th day of June, 2012, (both days inclusive), to-wit: on June 28, 29, 2012

and that affiant is not a party to or in any way interested in the above entitled matter.

This 1 page Information Wanted, dated June 28, 29, 2012, was subscribed and sworn to before me this 29th day of June, 2012, in the Second Circuit of the State of Hawaii, by Rhonda M. Kurohara

Notary Public, Second Judicial Circuit, State of Hawaii
BETTY E. UEHARA
My Commission expires 09-26-15

BETTY E. UEHARA NOTARY PUBLIC No. 83-344 STATE OF HAWAII

Information Wanted for Cultural Impact Assessment

Maui Island Press requests information on cultural resources or activities on or near this parcel in Maalaea, Maui: TMK (2) 3-8-014:022 Please contact MIP within 15 days at (808) 242-5459

(MN: June 28, 29, 2012)

Ad published in The Maui New seeking information on subject parcel.

APPENDIX I
SMX 2012/0087 APPROVAL LETTER

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI

DEPARTMENT OF PLANNING

RECEIVED
SEP 25 2012
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning
CC. Brett
11/028

SPECIAL MANAGEMENT AREA ASSESSMENT/EXEMPTION FORM (SM5)

Project Name:	**MILOWAI MA'ALAEA AOAO SHORELINE PROTECTION PROJECT (LIMITED TO USE OF BEACH QUALITY SAND TO REPAIR GAPS BEHIND EXISTING SEAWALL AS A TEMPORARY SAFETY MEASURE.)**
Proposed Development:	**Shoreline Protection Project/Ma'alaea**
SMA App. No:	**SMX 2012/0087**
Project Address:	**50 Hauoli Street, Wailuku Hawaii**
Tax Map Key:	**(2) 3-8-014:022-0000**
Applicant:	**Chris Hart & Partners, Inc.**
Owner:	**Sandhills Gang Partners**

The proposed activity is determined to be:

_x_ 6. Repair, maintenance, or interior alterations to existing structures;

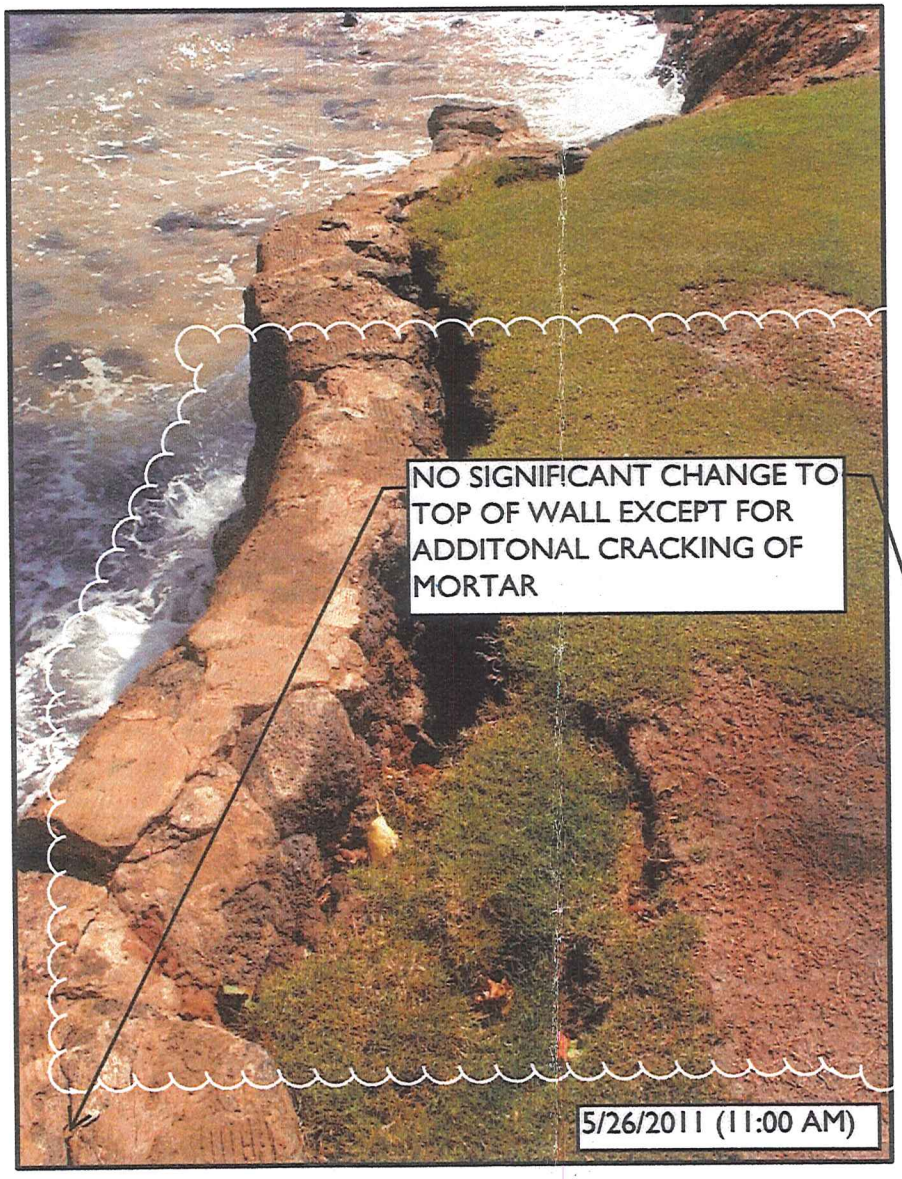
Per Section 22, Chapter 205A of the Hawaii Revised Statutes as amended, the rules of the Planning Commission of Maui County, and the Department of Planning's SMA Assessment; the proposed activity has been determined not to be a development and is exempt from the applicable requirements of Chapter 205A.

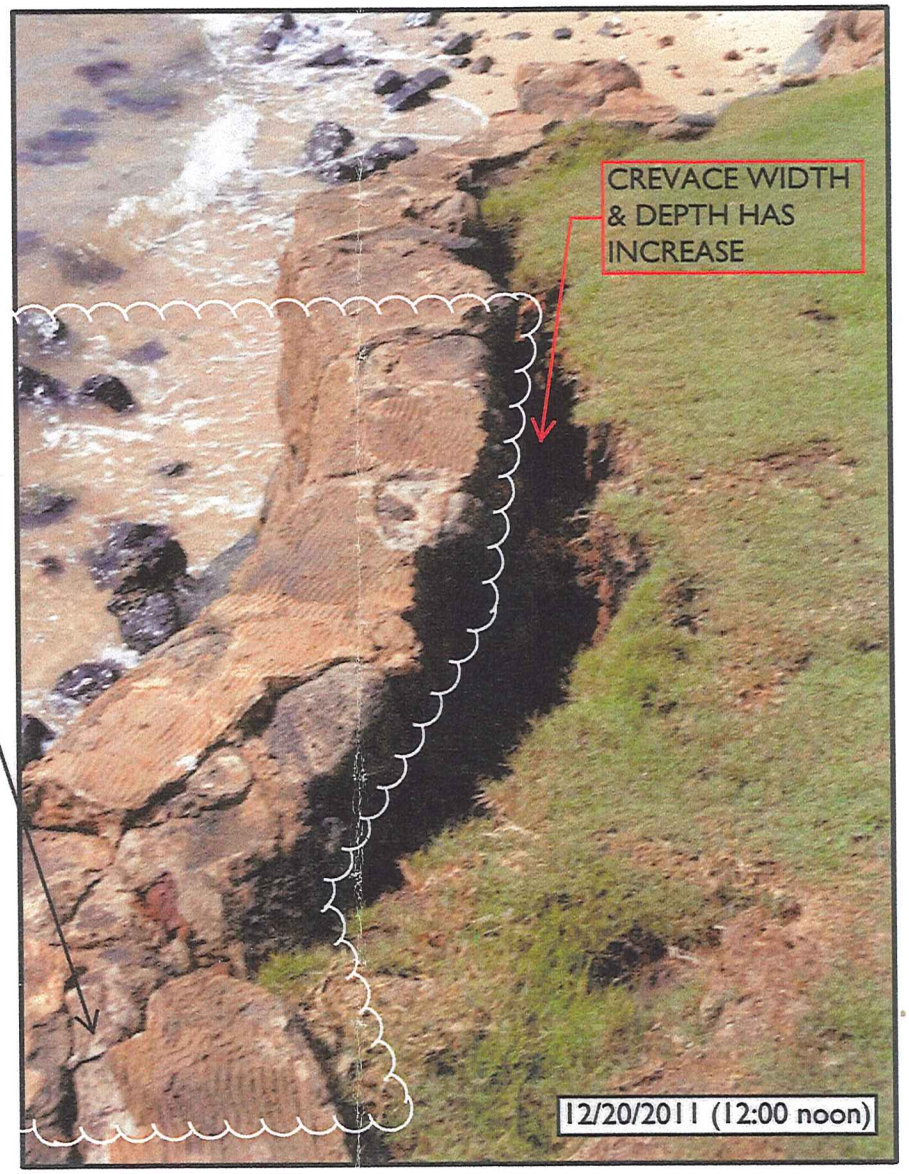
Comments/Remarks: Beach quality sand will be used as mitigation for the project. Staff Planners Jim Buika and Anna Benesovska conducted a site visit on June 28, 2012 to understand the project. This is a short-term health and safety measure since children and fisherman use this seawall next to Ma'alaea Harbor to fish and swim. **A Flood Development Permit is required. JAB**

Reviewed by: JAB (Planner's Initials) Date: 09/20/12 Permit No.: **SM5 2012/0302**

Approved by: Clayton I. Yoshida Date: 9/20/12
CLAYTON I. YOSHIDA, AICP, Planning Program Administrator
for WILLIAM SPENCE, Planning Director

James A. Buika, Staff Planner (PDF)
ZAED (PDF)
Chris Hart & Partners, Inc. (Original)
CZM (SMX)
Project File
General File
WRS:CIY:JAB:cr
K:\WP_DOCS\PLANNING\SM5\2012\0302_MilowaiMa'alaea\SM5_MilowaiShoreProtectionwithSand.doc


NO SIGNIFICANT CHANGE TO TOP OF WALL EXCEPT FOR ADDITONAL CRACKING OF MORTAR
5/26/2011 (11:00 AM)


CREVACE WIDTH & DEPTH HAS INCREASE
12/20/2011 (12:00 noon)

APPENDIX J
LIST OF PROPERTY OWNERS WITHIN 500 FEET
WITH MAP

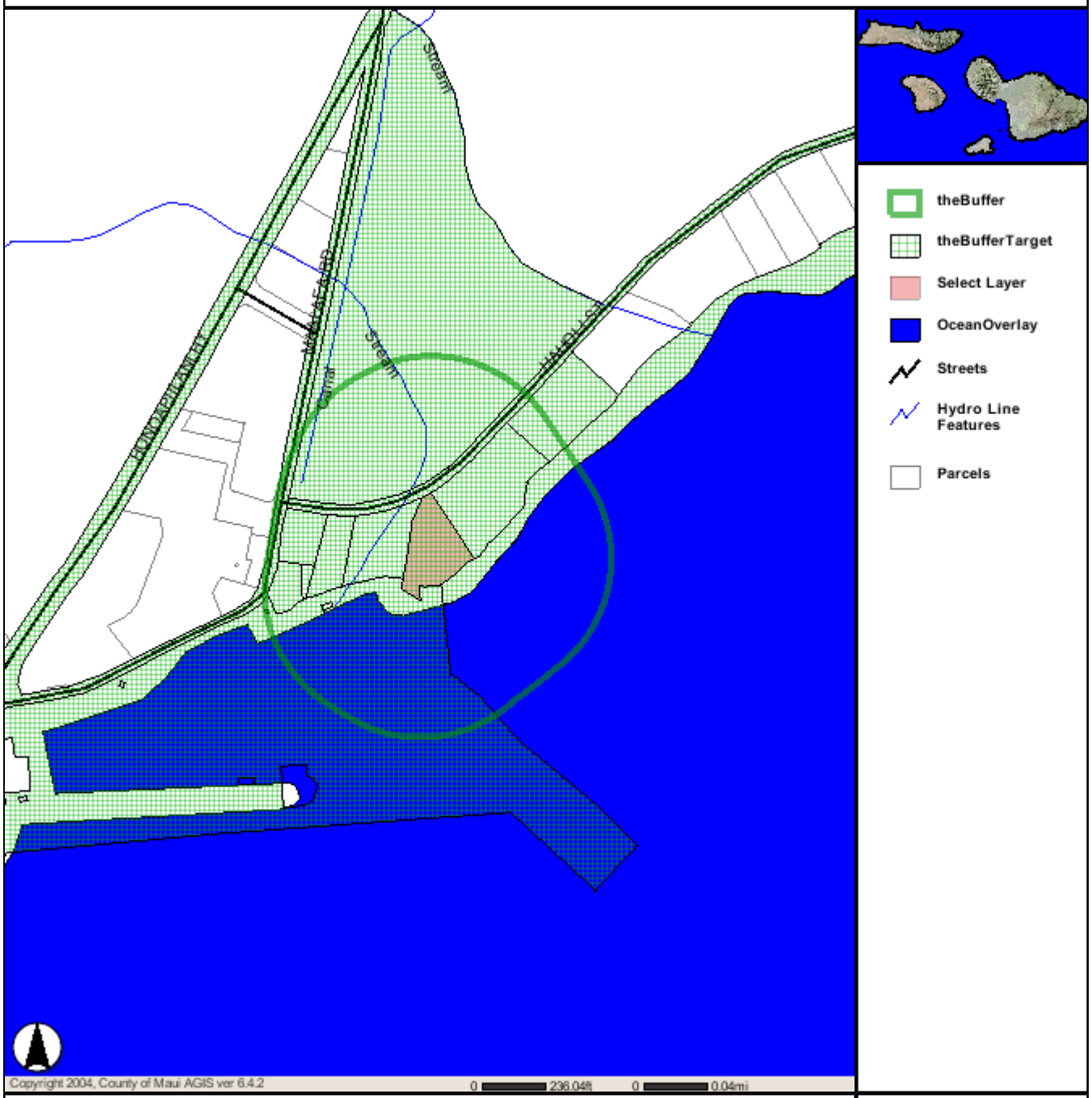
TMK	OWNER	C/O	ADDRESS	CITY & ZIP	COUNTRY
238005017	A & B - HAWAII INC		PO BOX 156	KAHULUI HI 96732	
238014016	ANDERSON,MERLE EDWARD TR		100 HAUOLI ST APT #206	WAILUKU HI 96793	
238014016	ARCTIC FIELD SERVICES, LLC		151 CENTRAL ST	FRAMINGHAM MA 01701	
238014016	ASTLEY,STEVEN A		140 GLACIER PEAK DR	CAMANO ISLAND WA 98282	
238014016	BAKER,SHIRLEY SMITH		298 LAKESHORE DR	MANISTEE MI 49660	
238014016	BENATOVICH,DEANNA		105 EHIKU LP H-106	KIHEI HI 96753	
238014016	BRAININ/MARTIN TRUST	MARTIN,GREG/BRAININ,SUSAN TTEES	14370 QUAKER HILLS CROSS RD	NEVADA CITY CA 95959 9567	
238014016	CARREL,FAMILY 1992 TRUST	CARREL,WELTON L ETAL	10693 ARAPAHO DR	REDDING CA 96003	
238014016	CHENG,I-MING/HSIU-LI TRUST		PO BOX 722	DIABLO CA 94528	
238014016	CHOW,LEONARD Y T & BETTY TR	C/O CHOW,LEONARD Y T TRS ETAL	4517 S FENNY LN	BOISE ID 83709	
238014016	COOK,IRVIN PEHR JR	COOK,IRVIN PEHR TRS	1414 WOLVERINE ST	ANCHORAGE AK 99504 2561	
238014016	DEPRIEST,SCOTT A		6041 44TH AVENUE SW	SEATTLE WA 98136	
238014016	EVERETT,BETTE G TRUST		100 HAUOLI ST #107	WAILUKU HI 96793	
238014016	FLYNN,MARYANNE		1250 ELDORA RD	NEDERLAND CO 80466	
238014016	FRITTS, R E		2222 ROCKWELL	RIVERSIDE CA 92506	
238014016	GEP TRUST	GARY PERRON	21 CHRISTIE EST	HEATH S.W. CALGARY ALBERTA T3H 2Z5	CANADA
238014016	HARDY,ALLAN PATRICK		100 HAUOLI ST APT #204	WAILUKU HI 96793	
238014016	HARR,RICHARD & DIANE TRUST	HARR,RICHARD/DIANE TTEES	1288 NORTH SHORE RD	LAKE OSWEGO OR 97034	
238014016	HARTSHORN,RANDOLPH L.		100 HAUOLI ST #202	WAILUKU HI 96793	
238014016	HOUSTON,KEITH BRADLEY		BOX 6, SITE 14 RR8 LCD 8	CALGARY T2J2T9	CANADA
238014016	JANIS,HARVEY S REVOC LIVING TRUST		100 HAUOLI RD #404	WAILUKU HI 96793	
238014016	JANIS,LOIS A TRUST		100 HAUOLI ST 401	WAILUKU HI 96793	
238014016	JOHNSON,BRADLEY D TR		3223 CROW CANYON RD STE 375	SAN RAMON CA 94583	
238014016	JOHNSON,BRUCE W TRUST		312 ALAMAHA ST #G	KAHULUI HI 96732	
238014016	JOHNSON,BRUCE WAYNE		312 ALAMAHA ST UNIT G	KAHULUI HI 96732	
238014016	JOHNSON,RICHARD HOLLIS		4789 COUNTY 44 BLVD	NERSTRAND MN 55053	
238014016	KOSLOSKEY,CHRISTIAN		100 HAUOLI ST UNIT 308	WAILUKU HI 96793	
238014016	LAULOA MAALAEA - CONDO MASTER		CONDO MASTER		
238014016	LEVERENZ,KEITH C		316 FARM HOUSE RD	NORTH HERO VT 05474	
238014016	LEVERENZ,KEITH C		PO BOX 56	NORTH HERO VT 05474	
238014016	LIEBHOLD,FAMILY TRUST	LIEBHOLD,MICHAEL N/BONITA L TRS	10 DURHAM RD	WOODSIDE CA 94062	
238014016	MARAN,GARY P		100 HAUOLI ST UNIT 207	WAILUKU HI 96793	
238014016	MCKEON,FAMILY REV TRUST	MCKEON,A RYAN/SHARON S	100 HAUOLI ST #103	WAILUKU HI 96793	
238014016	MCMORROW,FAMILY 2000 TR	MCMORROW,DONALD JR/JUDITH ANN TRS	4952 SWINDON PL	NEWARK CA 94560	
238014016	MORSE,BRUCE H		802 MAALAHI ST	WAILUKU HI 96793	
238014016	MORSE,DOROTHY E	MAALAEA KAI ENTERPRISES INC	BOX 15546562	SIOUX FALLS SD 57186	
238014016	MUNNS,FAMILY TRUST	MR & MRS DONALD E MUNNS	P O BOX 803	ANDERSON CA 96007	
238014016	NALUNALU LLC	ATTN: LARS BJORNSON	30510 IVYWOOD TRAIL	STACY MN 55079 9236	
238014016	OGASAWARA,YASUHITO		100 HAUOLI ST APT #306	WAILUKU HI 96793	
238014016	QUIGLEY,REBECCA		4789 COUNTY 44 BLVD	NERSTRAND MN 55053	
238014016	RAFSON,GERALD JAMES		1912 GILMORE TRAIL	FAIRBANKS AK 99712	
238014016	RIVAS-GOODWIN,CHRISTINE T		100 HAUOLI RD #208	WAILUKU HI 96793	
238014016	ROSENBAUM,THOMAS C		PO BOX 571	CAPTAIN COOK HI 96704	
238014016	ROWE,J MICHAEL	ROWE,J MICHAEL ETAL	7710 WOODMONT AVE., APT. 206	BETHESDA MD 20814	
238014016	ROYER,THOMAS C		100 HAUOLI ST APT 412	WAILUKU HI 96793	
238014016	SADER NEVADA TRUST	C/O SADER TRUST ATTN: R SADER	8600 TECHNOLOGY WAY STE 101	RENO NV 89521	
238014016	SMITH,RICK M SR		1815 NW 59TH AVE	GIG HARBOR WA 98335	
238014016	SVENDSEN,SANDRA MARIE TR		100 HAUOLI ST APT #101	WAILUKU HI 96793	
238014016	SWANSON,NEIL DWAYNE		100 HAUOLI ST #105	WAILUKU HI 96793	
238014016	WEEKE FAMILY TRUST		51 IMPERIAL CT	LAKE OZARK MO 65049	
238014016	WHITE,JOHN EDWARD		5846 NORTH DALSPRINGS AVE	BOISE ID 83713	
238014016	WOMACK FAMILY TRUST		3 WINGED FORT DR	NOVATO CA 94949	
238014021	BECK,HAROLD A		70 HAUOLI ST APT 415	WAILUKU HI 96793	
238014021	BLUE ISLE GROUP LLC		1580 SCOTCH PINE DR	PRESCOTT AZ 86303	
238014021	BRAUN,PATRICIA J		5360 OXFORD CT	ATWATER CA 95301	
238014021	BRENNAN,NANCY R TRUST		206 ROYCROFT AVE A	LONG BEACH CA 90803	
238014021	CARR FAMILY TRUST	C/O CARR,DUDLEY/LINDA TTEES	70 HAUOLI ST #301	WAILUKU HI 96793	
238014021	CEBO,TONKO		320 EAST PINE AVE	WILDWOOD NJ 08260	
238014021	CHULYAN CORPORATION		17200 NE 40TH ST	VANCOUVER WA 98682 5600	
238014021	CLARK,TODD WELLESLEY		19814 CANPOM CT	REDDING CA 96003 7704	
238014021	COMER,LISA ANN		704 ALULIKE ST	KIHEI HI 96753	
238014021	COOPER,MICHAEL A		1541 N SINALOA AVE	PASADENA CA 91104	
238014021	CULLER,LARRY W		12761 BOITANO RD	GROVELAND CA 95321	
238014021	DAVIS FAMILY TRUST		1440 S ORANGE SPC 57	EL CAJON CA 92020	
238014021	DAVIS,FAMILY TRUST		1440 S ORANGE 57	EL CAJON CA 92020	
238014021	DONALD,WILLIAM ALFRED		70 HAUOLI ST #219	WAILUKU HI 96793	

238014021	FAGER,DANIEL N		PO BOX 3074	KIRKLAND WA 98083	
238014021	FAGER,DANIEL NOFZIGER		PO BOX 323	MOSIER OR 97040	
238014021	FRITZ,ROBERT JOHN		11804 SE 204TH ST	KENT WA 98031 1611	
238014021	FUCHS,SHERRY C		2900 S PARK AVE	SPRINGFIELD IL 62704	
238014021	GANN-TORREY TRUST		1214 PILCHUCK PL FI	FOX ISLAND WA 98333	
238014021	GREENE,ROGER N		70 HAUOLI RD #209	WAILUKU HI 96793	
238014021	GRUBLER, EMMA SUE		P O BOX 12676	LAHAINA HI 96761	
238014021	HAMASAKI, EDWARD N TRS ETAL		777 MAKIKI ST	WAILUKU HI 96793	
238014021	HASKINS,ROBERT L/LINDA N TRUST		70 HAUOLI RD UNIT 217	WAILUKU HI 96793	
238014021	HELLER,DONALD & JOYCE TR		1220 2ND ST	COLUMBIA CITY OR 97018	
238014021	HOFFMAN,DAVID		1312 KILOU ST	WAILUKU HI 96793	
238014021	HOFFMANN, EDWARD J TRS ETAL		2103 SHETLAND RD	BARRINGTON IL 60010	
238014021	HOLLAND,DENNIS PATRICK		3933 MAALAEA BAY PL	WAILUKU HI 96793	
238014021	JOHNSON,CLARENCE A		5320 195TH AVE E	BONNEY LAKE WA 98391	
238014021	KASDORF,BARRY JAY		9194 BINNS RD	COLDSTREAM, BC V1B 3B7	CANADA
238014021	KELLEY TRUST	C/O STEFFEN,FREDERICK	16404 14TH ST NE	SNOHOMISH WA 98290	
238014021	KLEIN,MURRAY DAVID	MURRAY DAVID & CHRISTINE KLEIN	9716 141ST ST	EDMONTON, ALBERTA T5N 2M7	CANADA
238014021	LANGER FAMILY TRUST	C/O CHARLES LANGER	14795 SW BELL RD	SHERWOOD OR 97140 9052	
238014021	LAPINSKI,STEWART		70 HAUOLI ST 120	WAILUKU HI 96793	
238014021	LEI-Z-DAYS	LAGERBLADE,ROBERT L	218 - 3RD STREET	PORT BYRON IL 61275	
238014021	LEI-Z-II	C/O R LAGERBLADE	218 3RD ST	PORT BYRON IL 61275	
238014021	LEI-Z-MAUI LLC	STANLEY/WKARIN EGE	P O BOX 847	BOTHELL WA 98041	
238014021	LOCKWOOD,MARA		2430 S KIHEI RD 319	KIHEI HI 96753	
238014021	LYM,JOHN CORNELL		37 N 3203 E	IDAHO FALLS ID 83401 5135	
238014021	MACCOLL,MAURICE & ANNE TRUST		PO BOX 3661	NAPA CA 94558	
238014021	MADDEN,TODD M		PO BOX 454	LAHAINA HI 96767	
238014021	MAY,MICHAEL L		2885 KANANI ST	LIHUE HI 96766 1626	
238014021	MCALEER,VERN L		70 HAUOLI ST APT 101	WAILUKU HI 96793	
238014021	MCCLURE,JAY WILLIAM TRUST		70 HAUOLI ST #117	WAILUKU HI 96793	
238014021	MCGRATH PROPERTIES VI LLC	SUZANNE MCGRATH-KITAMURA	PO BOX 2907	WAILUKU HI 96793	
238014021	MEEKER,TODD ALLEN		1022 EL VAGO ST	LA CANADA FLINTRIDGE CA 91011	
238014021	MURRAY, PAUL P/PATRICIA E		2810 STRAND	HERMOSA BEACH CA 90254	
238014021	OCTAGON ENTERPRISES	C/O THOMAS P. GASPAR	4542 TULLY ROAD	HUGHSON CA 95326	
238014021	OLSON,BARBARA C		3499 ALPINE LILY DR	LAS VEGAS NV 89141	
238014021	OVEROLD,ROBERTA J		P O BOX 1453	WAILUKU HI 96793	
238014021	PAULOO,JOAN B		4067 HARDWICK ST #407	LAKEWOOD CA 90712 2324	
238014021	PEDRETTI,MARY		535 FUCHSIA DR	BENICIA CA 94510	
238014021	PENSCO TRUST COMPANY, CUSTODIAN	GREENE,PETER L/CHAN,LORI Y	1 BURNETT AVE NORTH UNIT 6	SAN FRANCISCO CA 94131	
238014021	PETERSON,BRIEN S	C/O M/M BRIEN PETERSON	85 WILDWOOD BEACH RD	SAINT PAUL MN 55115	
238014021	PROKUSKI, ELNORA SURVIVOR TR		2560 KEKAA DR #L101	LAHAINA HI 96761	
238014021	RANDALL-YOUNG,GWEN M		439 VILLAGE DR	ALBERTA T8A 4K1	CANADA
238014021	REYNOLDS,BILLIE JEROME	REYNOLDS,BILLIE JEROME/NANCY ANN	1623 E GREENVILLE DR	WEST COVINA CA 91791 3526	
238014021	RICHMOND,RICHARD & SANDRA TR	MR & MRS RICHARD L RICHMOND	16719 163RD PL SE	RENTON WA 98058 8273	
238014021	RIEBLING TRUST		70 HAUOLI ST #407	WAILUKU HI 96793	
238014021	ROBCO ENTERPRISES LTD	LILY LEE	57-5221 OAKMOUNT CRES	BURNABY, B.C. V5H 4R4	CANADA
238014021	SALAZAR,THALIA DIANE REV LVG TRUST		PO BOX 631550	LANAI CITY HI 96763	
238014021	SALSE,JOHN ROBERT REVOC LIVING TRUST		70 HAUOLI ST #413	WAILUKU HI 96793	
238014021	SIECHEN,KAREN OLSON		70 HAUOLI ST #303	WAILUKU HI 96793	
238014021	SINCLAIRE,LAURA	C/O LAURA SINCLAIRE ETAL	1547 PALOS VERDES MALL #128	WALNUT CREEK CA 94596	
238014021	SMITH,RICHARD		456 YOKUTS DR	LODI CA 95240	
238014021	SMITH,STEVEN RUSSELL		4725 MERLE HAY RD, STE 200	DES MOINES IA 50322 1983	
238014021	SMITH-THEODORE,DAWN		462 COLD CANYON RD	CALABASAS CA 91302	
238014021	STACKMAN,WAYNE A	C/O CHOPPE, WILLIAM	604 COTTONWOOD DR	MODESTO CA 95356	
238014021	STEHLE,FRED H		BOX 701	ARMSTRONG, BC V0E 1B0	CANADA
238014021	STOTKA, ROBERT D/LYNNETTE R		4983 MILDEN RD	MARTINEZ CA 94553	
238014021	SUNSHINE INVESTMENTS		4377 RENDEZVOUS CIRCLE	ANCHORAGE AK 99504	
238014021	SWITZER,PHILIP J		1236 GLACIER VIEW LN	ESTES PARK CO 80517	
238014021	TAKENAKA,SHOJI		70 HAUOLI RD APT #210	WAILUKU HI 96793	
238014021	THEODORE,DEAN		462 COLD CANYON RD	CALABASAS CA 91302	
238014021	THEODORE,DEAN A		462 COLD CANYON RD	CALABASAS CA 91302	
238014021	UNDERWOOD,MARITAL TRUST	C/O CAROLYN KILLEEN	10765 HARBOTTLE DR	RENO NV 89511	
238014021	VANHOY, ROBERT JR/CHRISTINE		10556 LARRY WAY	CUPERTINO CA 95014	
238014021	VANTREASE,JEROLD LEE		PO BOX 1730	HOMER AK 99603	
238014021	WELAKAHAO PROPERTIES LLC		PO BOX 843	KIHEI HI 96753	
238014021	WHITING,KIM A & JONI D TRUST	WHITING,KIM A/JONI D CO-TRS	70 HAUOLI ST #206	WAILUKU HI 96793	
238014021	WILSON,NOMA TRUST		70 HAUOLI ST #302	WAILUKU HI 96793	
238014021	ZARLEY,SANDRA SUE		70 HAUOLI ST #402	WAILUKU HI 96793	

238014022	AOAO MILOWAI-MAALAEA	C/O HAWAIIANA MANAGEMENT - MAUI	140 HOOHANA ST STE 210	KAHULUI HI 96732	
238014022	ARMACOST,RONALD R		1222 S STARR LANE	LIBERTY LAKE WA 99019	
238014022	BENGTSSON FAMILY TRUST		P O BOX 7434	CARMEL CA 93921	
238014022	BERNAL,JERRY		1358 OAKLAND RD #8	SAN JOSE CA 95112	
238014022	BITONTI,MARIO/ANNE MARIE REV LIV TRUST		2623 L KULA RD	KULA HI 96790	
238014022	CAMPBELL,KEITH S TRUST	CAMPBELL,KEITH S TTEE C/O MAUI PRINTING CO	345 E AHULIU WAY	WAILUKU HI 96793 3301	
238014022	CLENCHY,CAREY QUINN	C/O CAREY CLENCHY, ET AL	2202 BROADVIEW RD N W	CALGARY AB T2N 3J2	CANADA
238014022	CONLON,EDWARD L JR		50 HAUOLI ST #401	WAILUKU HI 96793	
238014022	CONLON-KEMP,CHRISTINE G		50 HAUOLI ST #310	WAILUKU HI 96793	
238014022	CONLON-KEMP,CHRISTINE G	CONLON-KEMP,CHRISTINE G	50 HAUOLI ST #310	WAILUKU HI 96793	
238014022	DUSCKETT FAMILY TRUST		3 MIRINO DR	MISSION VIEJO CA 92692	
238014022	ENEVOLD,ROSE TRUST	ENEVOLD,ROSE TRS	50 HAOULI RD #402	WAILUKU HI 96793	
238014022	FISH,GARY R		101 BARBERRY LN	SAN RAMON CA 94582	
238014022	FORNADLEY,CURTIS ALAN		337 CALLE MAYOR	REDONDO BEACH CA 90277	
238014022	GESS,RONALD JULIAN		P O BOX 785	LAHAINA HI 96761	
238014022	HAILEY,TIM		P O BOX 11468	ZEPHYR COVE NV 89448	
238014022	HEISTER,LORA		8909 EAMES AVE	NORTHRIDGE CA 91324	
238014022	HEMBREE,H MACK		3753 MISSION AVE STE 111	OCEANSIDE CA 92058	
238014022	JOHNSON,VIRGINIA R		50 HAUOLI ST 211	WAILUKU HI 96793 9540	
238014022	KIMBALL,DONALD L 1997 TRUST		299 MOTTSVILLE LN	GARDNERVILLE NV 89460	
238014022	KOSLOSKEY,CHRISTIAN		37 BOSTON POST RD	WATERFORD CT 06385	
238014022	KOSLOSKEY,CHRISTIAN		50 HAUOLI RD #206	WAILUKU HI 96793	
238014022	KOSLOSKEY,CHRISTIAN		50 HAUOLI ST #205	WAILUKU HI 96793	
238014022	LFLP LCC		2265 HOONEE PL #110	HONOLULU HI 96819	
238014022	MELLO,JAMES S		570 E SPRING ST	NAPA CA 94559	
238014022	MILOWAI 101 LLC		8580 LA MESA BLVD #105	LA MESA CA 91941	
238014022	MOORE,WILLIAM G REVOC TRUST DTD 6/1/94	MOORE,LEONA W TRUSTEE	PO BOX 1873	KIHEI HI 96753	
238014022	NORMAN,JOHN HILDING		PO BOX 210144	AUKE BAY AK 99821	
238014022	OREN,STEVEN A & EMILY P TRUST		7072 CATLEN WAY	SACRAMENTO CA 95831	
238014022	POTOPOWITZ,BARBARA		50 HAUOLI RD UNIT 304	WAILUKU HI 96793	
238014022	ROMER,ANDREAS		50 HAUOLI ST #407	WAILUKU HI 96793	
238014022	SCOTT, BRIAN C ETAL		80 MALTA DR	SAN FRANCISCO CA 94131	
238014022	SHINER,SHIRLEY LOVING TRUST		3846 W JARLATH ST	LINCOLNWOOD IL 60712	
238014022	SLEMKO,MICHAEL JOHN		16024 AGINCOURT DR	HUNTERSVILLE NC 28078	
238014022	SMITH'S OF MAUI INC	DBA THE WATERFRONT REST	50 HAUOLI ST	WAILUKU HI 96793	
238014022	SMITH,RICK		50 HAUOLI ST 201	WAILUKU HI 96793	
238014022	SMITH,RICK ALAN	C/O WATERFRONT RESTAURANT	50 HAUOLI ST	WAILUKU HI 96793 9542	
238014022	SUGAR BEACH PROPERTIES LLC		5868 A-1 WESTHEIMER, PMB 130	HOUSTON TX 77057	
238014022	VACCARO,WILLIAM V		234 REGENCY DR	FISHKILL NY 12524	
238014022	VAUGHAN,JOHN		4309 NE 60TH ST	VANCOUVER WA 98661	
238014022	WASHINGTON TRUST BANK	HAMILTON, THOMAS D	PO BOX 14686	SPOKANE WA 99214	
238014022	WOOD,ROBERT J		50 HAUOLI ST UNIT 102	WAILUKU HI 96793	
238014022	ZARLEY,SANDRA SUE TRUST		70 HAUOLI ST, #402	WAILUKU HI 96793	
238014022	ZEITHAMMEL,GRETCHEN G		50 HAUOLI ST, APT 106	WAILUKU HI 96793 9513	
238014024	CHRISTIAN FAMILY 2002 TRUST	CHRISTIAN,CHARLES & NORMA TTEES	2064 MAIDU WAY	GOLD RIVER CA 95670	
238014024	DAVID P TING & SONS INC		53 LUNALILO ST	WAILUKU HI 96793	
238014024	DAVID P TING AND SONS INC		53 LUNALILO ST	WAILUKU HI 96793	
238014024	ELDAM,JOSEPH		4082 PIER POINT	DISCOVERY BAY CA 94505	
238014024	FAY,MEREDITH A		14 LIO POELE DR	KIHEI HI 96753	
238014024	FAY,MEREDITH A REVOC LIVING TRUST	FAY,MEREDITH A TTEE	14 LIO POELE PL	KIHEI HI 96753	
238014024	FEREIRA TRUST		287 VIA CIMA CT	DANVILLE CA 94526	
238014024	FOX,TED		30 HAUOLI ST UNIT 408	WAILUKU HI 96793	
238014024	FRIESEN,ALLAN/CAROLINE TRUST		6318 W BIG SKY DR	POST FALLS ID 83854	
238014024	GOLDMAN,JOEL		173 MINTUM ST	PORT EWEN NY 12466	
238014024	GRIMES,JACK A		1622 S CALIFORNIA AVE	WEST COVINA CA 91790	
238014024	HAYMAN/STROHMEIER,JO-ANN		30 HAUOLI RD UNIT 405	WAILUKU HI 96793	
238014024	HUPP,NINA L		30 HAUOLI RD UNIT 411	WAILUKU HI 96793	
238014024	ISAACSON,ELEANOR D TRUST		30 HAUOLI ST APT 307	WAILUKU HI 96793 9509	
238014024	ISAACSON,TED R		PO BOX 66	KULA HI 96790	
238014024	JANIS,LOIS A TRUST		100 HAUOLI ST #401	WAILUKU HI 96793	
238014024	JOHNSON,NORMAN		30 HAUOLI ST #306	WAILUKU HI 96793	
238014024	JOHNSON,NORMAN MARTIN		30 HAUOLI RD #407	WAILUKU HI 96793	
238014024	KAHALA VACATION RENTALS LLC		335 HOOHANA ST STE #B	KAHULUI HI 96732	
238014024	KERSHAW,JOHN W		65 HALILI LN #10D	KIHEI HI 96753	
238014024	KLINGLER,DONNA J TRUST		5199 PARKSIDE DR	MASON OH 45040	
238014024	KOHLER,MEERA		12800 HUFFMAN CIR	ANCHORAGE AK 99516 2624	
238014024	KOZLOWSKI,PAMELA A		1022 PINSON FORK DR	SPRING TX 77379	

238014024	LEITH,LAWRENCE A		PO BOX 546	SHERIDAN OR 97378	
238014024	LYDIATT,BARRIE JAMES	LYDIATT,BARRIE/JANET	6 ETON TERRACE	ST ALBERT, AB T8N 5K5	CANADA
238014024	M & W ASSOCIATES		1001 BISHOP ST STE 2450	HONOLULU HI 96813	
238014024	MCKAY,JEANNE C		8416 STARLILY CT	ELK GROVE CA 95758	
238014024	MILLS,GLEN		715 S KIHEI RD #243	KIHEI HI 96753	
238014024	PHILLIPS,THOMAS LESLIE		830 FIELD ST	LAKEWOOD CO 80215	
238014024	QUIGLEY,REBECCA S		30 HAUOLI ST #406	WAILUKU HI 96793	
238014024	REYNOLDS,FAMILY TR OF 1992	ATTN: REYNOLDS,PAUL/DIANA TTEES	30 HAUOLI ST UNIT 106	WAILUKU HI 96793	
238014024	RICHARDSON,FAMILY TRUST 1998	MR & MRS JAMES RICHARDSON	2075 MARLETTE AVE	RENO NV 89503	
238014024	RIKARD,MICHAEL D		500 ROYALTON DR	LAS VEGAS NV 89144	
238014024	RUIZ,LARRY R		30 HAUOLI ST APT 209	WAILUKU HI 96793	
238014024	SAEKS,JEFFREY		30 HAUOLI ST APT 102	WAILUKU HI 96793	
238014024	SHIEBLER,CHRISTOPHER ABBOTT		GENERAL DELIVERY	DANA POINT CA 92629	
238014024	TIBBLES,JOHN R		7333 MILLER RD	ANACORTES WA 98221	
238014024	TING DAVID P & SONS INC		53 LUNALILO ST	WAILUKU HI 96793	
238014024	TRAIL,MARILYN L		18131 LANGLOIS RD UNIT E39	DESERT HOT SPRINGS CA 92241	
238014024	VAUGHAN,JOHN WILLIAM	VAUGHAN,JOHN W/TRACI S	P O BOX 1141	VANCOUVER WA 98666 1141	
238014024	WOLF,WILLIAM GUNNER		PO BOX 2510	OLYMPIC VALLEY CA 96146	
238014024	WONG,ABBY JANIS		811 S KIHEI RD #4A	KIHEI HI 96753	
238014024	WUERCH,JAYNE LORRAINE		20818 SNAG ISLAND DR	LAKE TAPPS WA 98391	
238014024	XENOS,ALICE		30 HAUOLI RD APT #207	WAILUKU HI 96793	
238014024	XENOS,ALICE	C/O HAWAII PREMIER INVESTMENTS	150 HAUOLI ST, APT 314	WAILUKU HI 96793	
238014024	XENOS,NICHOLAS J		P O BOX 731	LEVERETT MA 01054	
238014026	A P KOBAYASHI FAMILY LIMITED PTNSHP	C/O PAUL KOBAYASHI	3532 LELEHUNE PL	HONOLULU HI 96822	
238014026	BASTIAN,GEORGE GEOFFREY		1 SANDPIPER CT	SEASIDE CA 93955	
238014026	BOYLE,PATRICK A		20 HAUOLI ST UNIT 308	WAILUKU HI 96793	
238014026	CHANG,RYAN		583 KAMOKU ST APT 2105	HONOLULU HI 96826 5232	
238014026	CHAR,KENNETH F C MARITAL TR		656 ONAHA ST	HONOLULU HI 96816	
238014026	ENDO,DAVID		20 HAUOLI ST UNIT 205	WAILUKU HI 96793	
238014026	HAYNES,DAVID JOHN SR		20 HAUOLI ST APT 213	WAILUKU HI 96793	
238014026	ING,PATRICK & TASAKA-ING,CINDY TRUST		527 IIWI WAY	WAILUKU HI 96793	
238014026	ING,PATRICK L/CINDY H REVOC LIVING TRUST		527 IIWI WAY	WAILUKU HI 96793	
238014026	ING,PATRICK L/CINDY H TRUST		1721 WILI PA LOOP APT #103	WAILUKU HI 96793	
238014026	KAWACHI,GUY ASAO		20 HAUOLI ST UNIT 316	WAILUKU HI 96793	
238014026	KIM,KYUNG-HO		20 HAUOLI ST #304	WAILUKU HI 96793	
238014026	KNECHT,MARILYN REVOC TRUST		20 HAUOLI ST #302	WAILUKU HI 96793	
238014026	LONDON,JADINE Y C TRUST		1309 MCCULLY ST	HONOLULU HI 96826	
238014026	LUBNIK,MICHAEL WAYNE		20 HAUOLI ST #201	WAILUKU HI 96793	
238014026	LUKE,HERBERT		810 MINERT RD	WALNUT CREEK CA 94598	
238014026	LUNE,ALONN		20 HAUOLI ST #310	WAILUKU HI 96793	
238014026	LYNX,BRIAN A		P O BOX 12293	LAHAINA HI 96761 7293	
238014026	MORRIS,BETTY J TRUST		20 HAUOLI ST #211	WAILUKU HI 96793	
238014026	OKADA,JULIE S		582 STABLE RD	PAIA HI 96779	
238014026	PERRY,CHRISTINE LOUISE		40 KULALANI DR	KULA HI 96790	
238014026	PIAZZA,ALEXANDER		4238 GOLDEN OAK CT	DANVILLE CA 94506	
238014026	POLYNESIAN INVESTMENT COMPANY LTD		2390 AINA LANI PL	HONOLULU HI 96822	
238014026	ROBERTS,JERALD R.		20 HAUOLI ST 305	WAILUKU HI 96793	
238014026	SANDERSON,SANDRA LEIGH		P O BOX 562	PACIFICA CA 94044	
238014026	SEEGER,SARA SUMIE	C/O SEEGER-NELSON,SARA	3274 WILSHIRE DR	REDDING CA 96002	
238014026	STENSRUD,JOHN R		W289 N3212 LOST CREEK CT	PEWAUKEE WI 53072 3301	
238014026	U S BANK NATIONAL ASSOC, TTEE	C/O BAC HOME LOANS SERVICING LP	7105 CORPORATE DR, MS:PTX-B-35	PLANO TX 75024	
238014026	UEMATSU,BETTY ANN TRUST		32205 VIA BARRIDA	SAN JUAN CAPISTRANO CA 92675	
238014026	ULDRICKS,JEFFREY L		6445 BUCKEYE LN	GRANITE BAY CA 95746	
238014026	VAN GENDEREN,WARREN		PO BOX 985	JACKSON WY 83001 0985	
238014026	WATANABE,MASAICHI TRUST		45-216 MOKULELE DR	KANEOHE HI 96744	
238014026	WENDT,STEPHEN MERLE		102 CANDLELIGHT DR	KENAI AK 99611	
238014026	WILLIAMS,LORETTA M		20 HAUOLI RD UNIT 204	WAILUKU HI 96793	
238014026	WILLIAMS,LORETTA M		20 HAUOLI ST APT 204	WAILUKU HI 96793	
238014026	WILSON,RONALD FRANCIS JR		P O BOX 1147	KIHEI HI 96753	
238014026	WOLFORD,JASON		PO BOX 10098	LAHAINA HI 96761	
238014026	WOLFORD,THOMAS C		630 NORTH 7TH ST	ALLENTOWN PA 18102	
238014026	WOLOSHUK,MARK R		18660 LAUREL DR	LIVONIA MI 48152	
238014026	WOLOSHUK,MARTHA M		16330 CRESCENT	SOUTHFIELD MI 48076	
238014026	YEE WARREN Y J/PATRICIA A		2007 ROUND TOP DR	HONOLULU HI 96822	
238014026	YEE,DERON K S TRUST		2956 KALOALUIKI ST APT B	HONOLULU HI 96822 1663	
238014026	YEE,WILBERT Y K TR		393 LIHOLIHO ST	WAILUKU HI 96793	

Map Title



Refer to the Accela GIS Administrators Guide for instructions on how to set the disclaimer text displayed in this area.

APPENDIX K
SHORELINE ENCROACHMENT LETTER DATED
DECEMBER 4, 2012 &
LETTER FROM THE ARMY DATED JANUARY 31, 2013

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
COMPTROLLER

MARIA E. ZIELINSKI
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810-0119

Response refer to:
Ma-231(12)
MA-527

December 4, 2012

Mr. Bruce R. Lee
Newcomer-Lee Land Surveyors, Inc.
1498 Lower Main Street, Suite "D"
Wailuku, Hawai'i 96793

Dear Mr. Lee

Subject: Shoreline Certification Application
Milowai Condominium
TMK 3-8-14: 22
Ma'alaea, Maui, Hawai'i

This shoreline was inspected on the ground on October 1, 2012 and as a result, a portion of the shoreline was determined to further mauka than delineated on the map. Several encroachments were also identified along the shoreline. Before we can proceed, DLNR's Hawaii Administrative Rules require:

1. 13-222-10(b): Revise the shoreline (map and photos) as delineated in red on the enclosed map. The shoreline for certification purposes for Ma'alaea Boat Harbor is at the mouth of the harbor and therefore the portion of the shoreline within the harbor will not be included in the certified shoreline for the subject property.

2. 13-222-19: Resolve encroachments of drainage pipes, CRM seawall, and rock revetment on State land. Please contact the Maui District Branch of the Department of Land and Natural Resources Land Division at 984-8103 to resolve these encroachments.

After completion of the above, please submit a minimum of seven (7) copies of the revised map (including a minimum of two (2) photo index maps), three (3) copies of the revised photos, and confirmation of the resolution of the encroachments so the certification process can be completed.

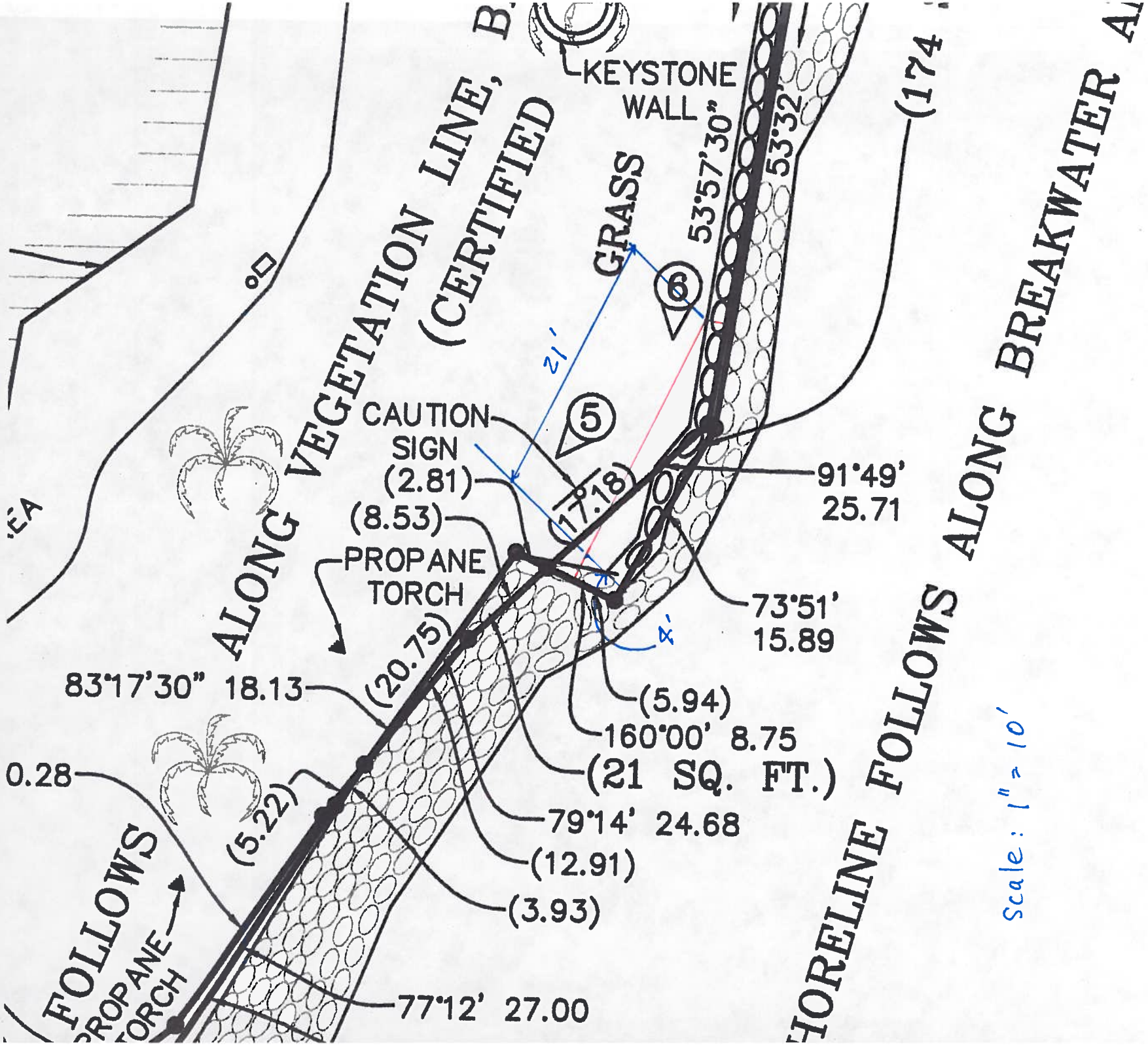
Should you have any questions on this application, please call me at 586-0390.

Very truly yours,

REID K. SIAROT
State Land Surveyor

Enclosure

cc: Maui District Land Office, DLNR
Andy Bohlander
Ian Hirokawa


KEYSTONE WALL
GRASS
53°57'30"
53°32'
(174
ALONG VEGETATION LINE, B
(CERTIFIED
ALONG BREAKWATER A
HORELINE FOLLOWS
FOLLOWS
PROPANE TORCH
PROPANE TORCH
CAUTION SIGN
(2.81)
(8.53)
(17.18)
(20.75)
(5.22)
(5.94)
(12.91)
(3.93)
(21 SQ. FT.)
91°49' 25.71
73°51' 15.89
160°00' 8.75
79°14' 24.68
83°17'30" 18.13
0.28
77°12' 27.00
21'
4'
6
5
Scale: 1" = 10'

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

REPLY TO
ATTENTION OF:

January 31, 2013

RECEIVED
FEB 04 2013
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

CC: Brett 11/028

Regulatory Branch

POH-2012-00090

Chris Hart & Partners, INC.
Attn: Christopher Hart, ALSA President
115 N. Market St
Wailuku, HI 96793

PERMIT REQUIRED

Dear Mr. Hart:

We have received your request dated March 21, 2012, for the Department of the Army to review and comment on the early consultation letter for the proposed Seawall Improvement Project at the Milowai Ma'alaea Residential Condominium, TMK: (2) 3-8-014:022, Ma'alaea, Maui, Hawaii. We have assigned the project the reference number **POH-2012-00090**. Please cite this reference number in any correspondence with us concerning this project. We have completed our review of the submitted document and have the following comments:

Section 10 of the Rivers and Harbors Act of 1899 (Section 10) requires that a Department of the Army (DA) permit be obtained from the U.S. Army Corps of Engineers (Corps) prior to undertaking any construction, dredging, and other activities occurring in, over, or under navigable waters of the U.S. For tidal waters, the shoreward limit of the Corps' jurisdiction extends to the Mean High Water Mark.

Section 404 of the Clean Water Act (Section 404) of 1972 (33 U.S.C. 1344) requires that a DA permit be obtained for the **discharge, or placement, of dredge and/or fill material** into waters of the U.S., including wetlands. Fill material may be temporary or permanent and often includes, but is not limited to, rock, sand, concrete, and sandbags. For tidally influenced waters, in the absence of adjacent wetlands, the shoreward limit of the Corps jurisdiction extends to the High Tide Line, which in Hawaii may be approximated by reference to the Mean Higher High Water Mark. For non-tidal waters, the lateral limits of the Corps' jurisdiction extend to the **Ordinary High Water Mark** or the approved delineated boundary of any adjacent wetlands.

The Pacific Ocean is considered a navigable water of the U.S. and therefore subject to Corps jurisdiction under Section 10. According to the submitted document, the project will involve maintenance of the seawall and excavation and fill behind the wall to eliminate sinkholes. If any of the proposed work will occur waterward of the Mean Higher High Water Mark, a permit will be required under Section 10. Also note that a Section 401 water quality certification from the

State of Hawaii Department of Health will be required for any discharges of fill material. You may contact DOH directly to discuss their permit application requirements.

As you finalize your EA, select a preferred alternative and develop more detailed engineering and construction plans for the proposed project, the Corps recommends you take all appropriate and practicable steps to avoid and minimize impacts to waters of the United States. If you determine your preferred alternative will result in the discharge of dredged and/or fill material into the Pacific Ocean or any other waters of the United States, you should contact our office for a pre-application consultation or submit the required pre-construction notification information to our office so the Corps can verify whether the project complies with the terms and conditions of our nationwide permits. For additional DA permit information, please visit our website at http://www.poh.usace.army.mil/EC-R/EC-R.htm.

Thank you for the opportunity to review and comment on the proposed project. We look forward to working with you on this project as well as any future projects. Should you have any questions, please contact Emilee Stevens, at (808) 835-4310 or via email at Emilee.R.Stevens@usace.army.mil.

Sincerely,

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

APPENDIX L

DRAFT ENVIRONMENTAL ASSESSMENT COMMENT LETTERS WITH RESPONSES

13/2429

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

LORRIN W. PANG, M.D., M.P.H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, HAWAII 96793

May 6, 2013

Mr. William R. Spence
Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Attention: Anna Benesovska

Dear Mr. Spence:

Subject:	**Milowai Ma`alaea Seawall Repair Project**
Applicant:	**Milowai Ma`alaea AOAO, Christine Conlon-Kemp, Director**
Permit No.:	**(SM1 2012/0008) (SSV 2012/0004) (EA2012/0006)**
TMK:	**(2) 3-8-014:022**
Project Location:	**50 Hauoli Street, Wailuku, Maui, Hawaii**
Project Description:	**Existing Seawall Repair**

Thank you for the opportunity to review this project. We have the following comments to offer:

1. National Pollutant Discharge Elimination System (NPDES) permit coverage and a Section 401 Water Qualification Certification (WQC) may be required. The Clean Water Branch should be contacted at 808 586-4309.

2. The Army Corp of Engineers should be contacted at (808) 438-9258 to identify whether a Federal license or permit is required for this project.

3. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules (HAR), Chapter 11-46, "Community Noise Control." A noise permit may be required and should be obtained before the commencement of work. The Indoor & Radiological Health Branch should be contacted at 808 586-4700.

It is strongly recommended that the Standard Comments found at the Department's website: http://hawaii.gov/health/environmental/env-planning/landuse/landuse.html be reviewed, and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please call me at 808 984-8230 or E-mail me at patricia.kitkowski@doh.hawaii.gov.

Sincerely,

Patti Kitkowski

Patti Kitkowski
District Environmental Health Program Chief

c EPO

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

June 27, 2013

Ms. Patti Kitkowski
District Environmental Health Program Chief
Dept. of Health
Maui District Health Office
54. High St.
Wailuku, HI 96793-2102

Dear Ms. Kitkowski,

RE: Comment letter for the Proposed Seawall Repair Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022 (SM1 2012/0008, SSV 2012/0004, EA 2012/0006)

Thank you for your letter of May 6, 2013. The following responses to your numerated comments are provided;

1. The Applicant will contact the Clean Water Branch to determine if a National Pollutant Discharge Elimination System (NPDES) permit is necessary for the proposed seawall repairs.

2. The Applicant will contact the ARMY Corp of Engineers to identify if a Federal license or permit is required for this project.

3. The construction phase of the project will comply with allowable noise levels as set forth in Hawaii Administrative Rules (HAR), Chapter 11-46, "Community Noise Control." The Applicant will contact the Indoor and Radiological Health Branch to determine if a noise permit is required.

4. In addition we have reviewed the Standard Comments found at the department's website.

115 N. Market Street, Wailuku, Maui, Hawaii 96793-1717 • Ph 808-242-1955 • Fax 808-242-1956
www.chpmaui.com

Thank you again and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC. Mr. Bob Wood, Milowai
Project File 11-028

ALAN M ARAKAWA
Mayor

WILLIAM R SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI

DEPARTMENT OF PLANNING

OOH-EPC
RECEIVED
'13 APR 23 P7:30

TRANSMITTAL

April 18, 2013

	STATE AGENCIES
X	DAGS
X	DBEDT
X	Dept of Health, Honolulu
X	Dept of Health, Maui (2 Hard Copies)
X	DLNR-Land, Maui
X	DLNR-OCCL
X	DLNR – Aquatic Resources
X	DLNR-SHPD (1 Hard Copy)
X	Office of Hawaiian Affairs
X	Office of Planning

	COUNTY AGENCIES
X	Dept of Public Works (3 Hard Copies)
X	Dept of Environmental Management (2 Hard Copies)
	FEDERAL AGENCIES
X	U. S. Fish & Wildlife
X	U.S. Army Corp. of Engineers (1 Hard Copy)

PROJECT:	**MILOWAI MA'ALAEA SEAWALL REPAIR PROJECT**
APPLICANT:	**Milowai Ma'alaea AOAO, Christine Conlon-Kemp, Director**
STREET ADDRESS:	**50 Hauoli Street, Ma'alaea, Maui, Hawaii**
PROJECT DESCRIPTION:	**Existing seawall repair**
TMK:	**(2) 3-8-014:022**
PERMIT NO.:	**(SM1 2012/0008) (SSV 2012/0004) (EA 2012/0006)**

TRANSMITTED TO YOU ARE THE FOLLOWING:

X	Application(s)

THESE ARE TRANSMITTED AS CHECKED BELOW:

X	For your Comment and Recommendation

Please submit your comments directly to me by **May 22, 2013**. A comment box is also provided to further assist you. If no comment, please sign the "No Comment" box below and return. Thank you for your cooperation. For additional clarification, please contact me at anna.benesovska@mauicounty.gov or at (808) 463-3867.

Sincerely,

ANNA BENESOVSKA
Staff Planner

Attachment
xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Anna Benesovska, Staff Planner (PDF)
Project File
General File

AB:nt
K:\WP_DOCS\PLANNING\SM1\2012\0008_MilowaiMa'alaea\AgencyTransmittal.doc

13-040

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
MAIN LINE (808) 270-7735; FACSIMILE (808) 270-7634
CURRENT DIVISION (808) 270-8205, LONG RANGE DIVISION (808) 270-7214; ZONING DIVISION (808) 270-7253

NO COMMENT			
Commenting Agency:	Environmental Planning Office	Phone:	586-4337
Signed:		Dated:	4/23/2013
Print Name:	Laura McIntyre	Title:	EPO Manager

COMMENT/RECOMMENDATION BOX			
Commenting Agency:		Phone:	
Signed:		Dated:	
Print Name:		Title:	

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

June 21, 2013

Ms. Laura Leialoha Phillips McIntyre, AICP
Environmental Planning Office Manager
State of Hawaii, Dept. of Health
Environmental Health Administration
P.O. Box 3378
Honolulu, HI 96801-3378

Dear Ms. Leialoha Phillips McIntyre,

RE: Comment letter for the Proposed Seawall Repair Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022 (SM1 2012/0008, SSV 2012/0004, EA 2012/0006)

Thank you for your response of April 23, 2013 indicating that the Environmental Planning Office has no comment on the proposed project.

Please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC. Mr. Bob Wood, Milowai
Project File 11-028

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www.chpmaui.com

OFFICE OF PLANNING
STATE OF HAWAII

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

NEIL ABERCROMBIE
GOVERNOR

JESSE K. SOUKI
DIRECTOR
OFFICE OF PLANNING

Telephone: (808) 587-2846
Fax: (808) 587-2824
Web: http://hawaii.gov/dbedt/op/

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

Ref. No. P-13972

April 30, 2013

'13 MAY -2 P1:44

Ms. Anna Benesovska, Staff Planner
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Ms. Benesovska:

Subject: Consolidated Environment Assessment, Special Management Area, and Shoreline Setback Variance Applications for Milowai Maalaea Seawall Repair Project (SM1 2012/0008, SSV2012/0004), Maalaea, Tax Map Key: (2)3-8-014: 022, Maui, Hawaii

Thank you for the opportunity to provide comments on the consolidated Environment Assessment, Special Management Area, and Shoreline Setback Variance Applications for Milowai Maalaea Seawall Repair Project in Maalaea, Maui, Hawaii at Tax Map Key: (2)3-8-014: 022.

The Office of Planning has reviewed the consolidated applications and has the following comments to offer:

1. In accordance with the information provided by the applicant, the proposed action involves the repair of an existing seawall, which is about 180 feet long and rises to a height of 4 to 6 feet above the shoreline. The proposed repair does not include any new actions or features that are incompatible with the shoreline as it currently appears. We suggest the impact assessment on **Scenic and Open Space Resources**, pages 18 and 34, be clarified as, "The proposed seawall repair work will not alter <u>the existing</u> public views to and along the shoreline."

2. As noted in the letter of response dated May 3, 2012, to the Hawaiian Homes Commission, the consolidated Environment Assessment, Special Management Area, and Shoreline Setback Variance Applications should include discussion of mitigation measures to maintain and enhance public access to and along the shoreline associated with the proposed seawall repairs.

3. The alternatives to seawall repair should consider climate change adaptation priority guidelines enacted by Act 286, Session Laws of Hawaii 2012, to meet the objectives

and policies of reducing hazard to life and property from coastal hazards, including storm waves and shoreline erosion.

4. Pursuant to Hawaii Revised Statues §205A-71, any lighting/lamp posts and lighting control for the proposed action shall be cut-off luminaries to ensure that lighting is not directed to travel across property boundaries toward the shoreline and ocean waters.

Should you have questions or require clarification, please do not hesitate to contact Leo Asuncion, Coastal Zone Management Program Manager, at (808) 587-2875.

Sincerely,

Jesse K. Souki
Director

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

January 22, 2014

Mr. Jesse K. Souki, Director
State of Hawaii, DBEDT
Office of Planning
235 South Beretania Street, 6th Floor
Honolulu, HI 96813

Dear Mr. Souki,

RE: Reply to Comments on the Proposed Seawall Repair Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014: 022. (SM1 2012/0008, SSV 2012/0004, EA 2012/0006)

Thank you for your letter of April 30, 2013 (See Attached). Responses to your numerated comments are provided as follows:

Comment 1. *In accordance with the information provided by the applicant, the proposed action involves the repair of an existing seawall, which is about 180 feet long and rises to a height of 4 to 6 feet above the shoreline. The proposed repair does not include any new actions or features that are incompatible with the shoreline as it currently appears. We suggest the impact assessment on Scenic and Open Space Resources, pages 18 and 34, be clarified as, "The proposed seawall repair work will not alter the existing public views to and along the shoreline."*

Response 1. The Applicant has revised the Final EA to clarify that the proposed seawall repair work will not alter the existing public views to and along the shoreline on pages 17 and 33 of the Final EA.

Comment 2. *As noted in the letter of response dated May 3, 2012, to the Hawaiian Homes Commission, the consolidated Environment Assessment, Special Management Area, and Shoreline Setback Variance Applications should include discussion of mitigation measures to maintain and enhance public access to and along the shoreline associated with the proposed seawall repairs.*

Response 2. In an effort to enhance lateral shoreline access the Milowai is proposing to provide directional signage to identify a public access pathway along the

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shoreline. An example of the direction signage is attached. (**See attached:** Exhibit 6 "Signage Example")

Comment 3. *The alternatives to seawall repair should consider climate change adaptation priority guidelines enacted by Act 286, Session Laws of Hawaii 20 12, to meet the objectives and policies of reducing hazard to life and property from coastal hazards, including storm waves and shoreline erosion.*

Response 3. The Applicant has reviewed the climate change adaptation priority guidelines enacted by Act 286, Session Laws of Hawaii 2012 HRS Chapter 226, Part III Climate Change Priority Guidelines and has analyzed the priority guidelines in the alternatives section of the Final EA.

The anticipated impact of climate change relative to this seawall repair project is sea level rise, which will have adverse effects on all shoreline communities, our economies, and our natural and cultural resources. The proposed repair work will reduce the hazard of shoreline erosion that will ultimately threaten the Milowai residential building.

Comment 4. *Pursuant to Hawaii Revised Statues S205A-71, any lighting lamp posts and lighting control for the proposed action shall be cut-off luminaries to ensure that lighting is not directed to travel across property boundaries toward the shoreline and ocean waters.*

Response 4. The proposed seawall repair work does not include installation the of lighting. The proposed work scope is in compliance with Hawaii Revised Statues S250A-71.

Thank you for your comments. Please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely,

Jordan E. Hart, President

ENCLOSURES: (2)

1. April 30, 2013 letter from State Office of Planning
2. Exhibit 6 "Signage Example"

CC. Mr. Bob Wood, Milowai
Project File 11-028

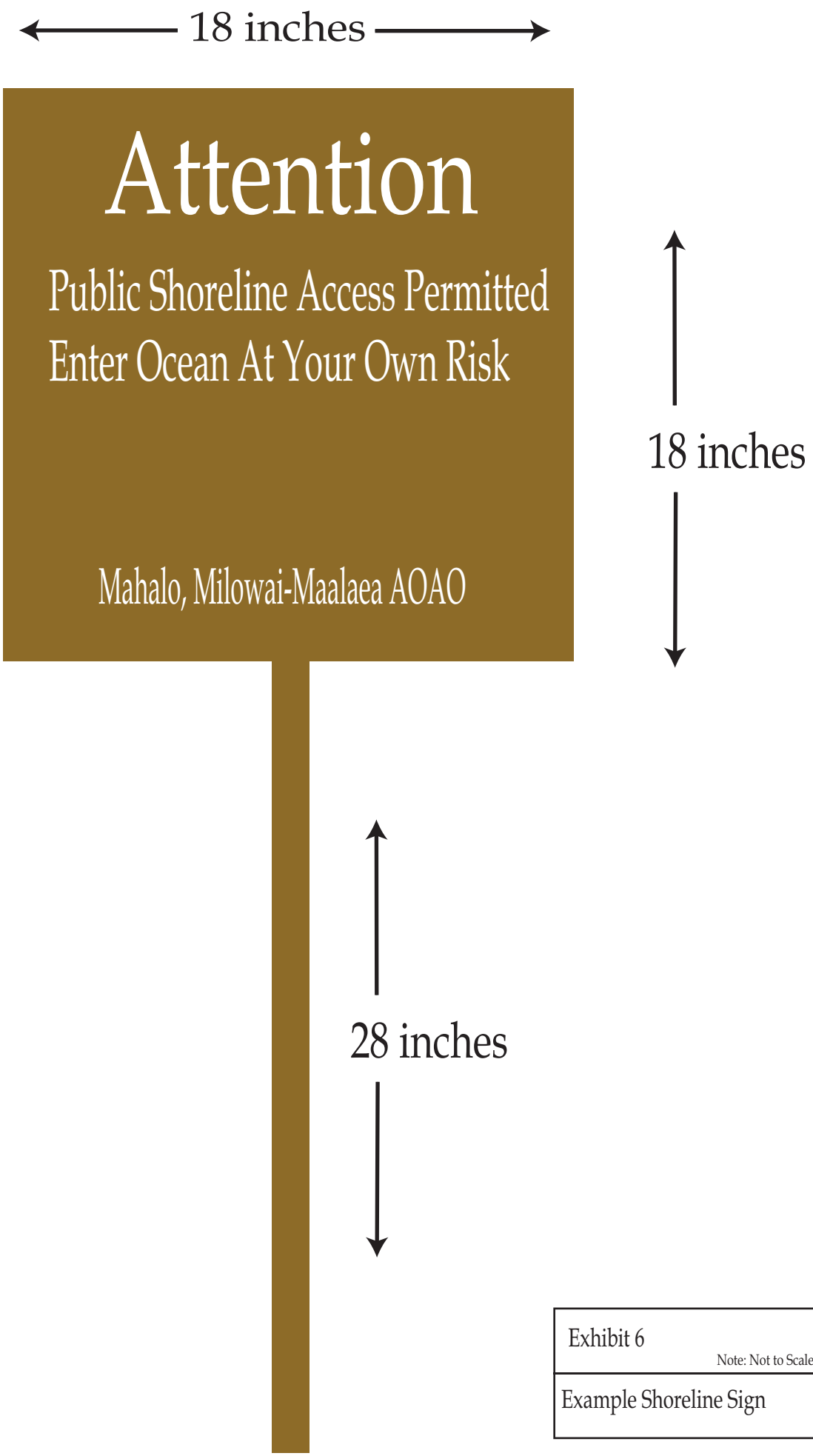

Exhibit 6

Note: Not to Scale

Example Shoreline Sign

CHRIS HART & PARTNERS, INC.

3/2227

NEIL ABERCROMBIE
GOVERNOR

DEAN H. SEKI
COMPTROLLER

MARIA E. ZIELINSKI
DEPUTY COMPTROLLER

STATE OF HAWAI'I
DEPARTMENT OF ACCOUNTING AN[redacted]RVICES
P.O. BOX 119, HONOLULU, HAWAI'I 96810[redacted]

Response refer to:
Ma-090(13)

April 23, 2013 APR 25 P2:51

MEMORANDUM

TO: William R. Spence, Director
Department of Planning, County of Maui

ATTN: Anna Benesovska, Staff Planner

FROM: Reid K. Siarot, State Land Surveyor
DAGS, Survey Division

SUBJECT: Milowai Maalaea Seawall Repair Project
Applicant: Milowai Maalaea AOAO, Christine Conlon-Kemp, Director
Permit No.: SM1 2012/0008, SSV 2012/0004, EA 2012/0006
TMK: 3-8-14: 22

The subject proposal has been reviewed and confirmed that no Government Survey Triangulation Stations or Benchmarks are affected. Survey has no objections to the proposed project.

Should you have any questions, please call me at 586-0390

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

June 21, 2013

Mr. Reid K. Siarot, State Land Surveyor
State of Hawaii
Department of Accounting and General Services
Survey Division
P.O. Box 119
Honolulu, HI 96810-0119

Dear Mr. Siarot,

RE: Comment letter for the Proposed Seawall Repair Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022 (SM1 2012/0008, SSV 2012/0004, EA 2012/0006)

Thank you for your letter of April 23, 2013 indicating that Survey has no objections to the proposed project.

Please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC. Mr. Bob Wood, Milowai
Project File 11-028

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NEIL ABERCROMBIE
GOVERNOR OF HAWAII

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

ESTHER KIA'AINA
FIRST DEPUTY

WILLIAM M. TAM
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

CC: Brett, Raymond & Jordan

DLNR.OCCL.BR

Correspondence: MA-13-148

14/028

MAY 21 2013
RECEIVED
MAY 22 2013
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

Anna Benesovska, Staff Planner
Department of Planning, County of Maui
250 South High Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Benesovska,

SUBJECT: Comments on The Draft Environmental Assessment (EA) Seawall Repair at the Milowai Maalaea Condominiums at 50 Hauoli Street, Maalaea Village, Maui, Hawaii 96793, TMK (2) 3-8-014:022.

The Department of Land and Natural Resources (DLNR), Office of Conservation and Coastal Lands (OCCL) has reviewed the April 2013 Draft Environmental Assessment (Draft EA) for proposed Seawall Repairs at the Milowai Maalaea Condominiums at 50 Hauoli Street, Maalaea Village, Maui, Hawaii 96793, TMK (2) 3-8-014:022. Chris Hart and Partners, Inc. on behalf of the Milowai Maalaea AOAO (the Applicant) is proposing repairs to an existing seawall fronting the shoreline of the subject property.

The subject property and adjacent properties fronting the shoreline at Maalaea Bay are armored by seawalls and revetments. From the images provided by the Applicant, there is little or no usable beach fronting the seawalls at the Milowai Condominiums, except for a pocket beach within the Maalaea small boat harbor. A western portion of the concrete reinforced rubble masonry seawall is cracking due to wave action and settling of the base of the wall. Fissures and sink holes have developed at the back of the seawall due the progressive wall failure.

The Applicant is proposing repairs to the seawall by excavating behind the seawall and filling voids in the wall with pressure injected urethane foam and grout. From the Applicant's Description of the Proposed Action in the Draft EA, it appears that all work with be conducted from the landward side of the seawall, within the County's jurisdiction. The repair work will not result in significant changes to the overall design or function of the existing seawall. Therefore, authorization will not be required from DLNR for the repair work as proposed.

OCCL has conducted a thorough review of the Draft EA and finds the document complete, overall. However, OCCL has one comment on technical aspects of the Draft EA, which we feel should be addressed in the Final EA.

The Draft EA notes that "Best Management Practices (BMPs) will be implemented during the construction activities." However, only examples of BMPs to be used are provided in the Draft EA. OCCL suggests that the Applicant provide a complete plan for BMPs in the Final EA. In particular, OCCL is concerned about repair materials and sediment leaching from the seawall during repairs, which may be harmful to marine life and may lead to increased turbidity and diminished nearshore water quality.

Thank you for the opportunity to comment on the Draft EA for this project. Please contact Sea Grant Extension Agent Brad Romine at OCCL, at 587-0049 or Bradley.M.Romine@Hawaii.gov, should you have any questions.

Sincerely,

SAMUEL J. LEMMO, Administrator
Office of Conservation and Coastal Lands

CC: Chris Hart & Partners, Inc.

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

June 21, 2013

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

Dear Mr. Lemmo:

RE: Comment letter for the Proposed Seawall Repair Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022 (SM1 2012/0008, SSV 2012/0004, EA 2012/0006)

Thank you for your letter of May 21, 2013. The Applicant will provide a complete plan for Best Management Practices (BMP) in the Final EA. The BMP's will address the OCCL concern about repair materials and sediments leaching from the seawall during construction.

Thank you again, and please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC. Mr. Bob Wood, Milowai
Project File 11-028

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AGENCY TRANSMITTAL RESPONSE e-FORM

FOR DEPARTMENT OF PLANNING, COUNTY OF MAUI

April 22, 2013

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED
13 JUN -7 P5:17

AGENCY NAME	Department of Environmental Mgmt.	PHONE: 270-8230
PROJECT:	Milowai Maalaea Seawall Repair Project	
APPLICANT:	Milowai Maalaea AOAO , Christine Conlon-Kemp,Director	
PERMIT NO:	(SM1 2012/0008) (SSV 2012/0004) (EA 2012/0006	
TMK:	(2) 3-8-014:022	
STREET ADDRESS:	50 Hauoli Street, Maalaea, Maui Hawaii	
PROJECT DESCRIPTION:	Existing seawall repair	
SECURITY CODE:		

☐ COMMENTS/RECOMMENDATIONS ☒ NO COMMENTS

WASTEWATER RECLAMATION DIVISION COMMENTS

☒ COMMENTS/RECOMMENDATIONS ☐ NO COMMENTS

SOLID WASTE DIVISION COMMENTS

Include a plan for the disposal/recycling of the wall to be replaced.

Signed:		
Print Name:	Michael M. Miyamoto, Deputy Director	Date

ALAN M. ARAKAWA
Mayor

DAVID C. GOODE
Director

ROWENA M. DAGDAG-ANDAYA
Deputy Director

RALPH M. NAGAMINE, L.S., P.E.
Development Services Administration

CARY YAMASHITA, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS
DEVELOPMENT SERVICES ADMINISTRATION
250 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

DEPT OF PLANNING
COUNTY OF MAUI
RECEIVED

'13 MAY -1 P2:31

April 30, 2013

MEMO TO: WILL SPENCE, PLANNING DIRECTOR

FROM: DAVID C. GOODE, DIRECTOR OF PUBLIC WORKS

SUBJECT: ENVIRONMENTAL ASSESSMENT, SPECIAL MANAGEMENT AREA PERMIT AND SHORELINE SETBACK VARIANCE APPLICATIONS FOR MILOWAI MAALAEA SEAWALL REPAIR PROJECT
TMK: (2) 3-8-014:022 SM1 2012/0008; SSV 2012/0004; EA 2012/0006

We reviewed the subject application and have no comments at this time.

If you have any questions regarding this memorandum, please call Rowena M. Dagdag-Andaya at 270-7845.

DCG:RDA:ls
S:\LUCA\CZM\milowai_maalaea_seawall_repair_sm1_ssv_ea_38014022_ls.wpd

c Highways Division
Engineering Division

CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

June 21, 2013

Mr. David Goode, Director
Department of Public Works
Development Services Administration
200 S. High St.
Wailuku, HI 96793

Dear Mr. Goode,

RE: Comment letter for the Proposed Seawall Repair Project at the Milowai Ma'alaea Residential Condominium located in Ma'alaea, Maui, Hawaii at TMK: (2) 3-8-014:022 (SM1 2012/0008, SSV 2012/0004, EA 2012/0006)

Thank you for your letter of April 30, 2013 indicating that the Department of Public Work, Development Services Administration, has no comments at this time.

Please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Jordan E. Hart, President

CC. Mr. Bob Wood, Milowai
Project File 11-028

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www.chpmaui.com

ALAN M. ARAKAWA
Mayor

WILLIAM R. SPENCE
Director

MICHELE CHOUTEAU McLEAN
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

RECEIVED
JUN 06 2013
CHRIS HART & PARTNERS, INC.
Landscape Architecture and Planning

CC: Brett + Jordan
11/02 8

June 3, 2013

Mr. Brett Davis
Chris Hart & Partners, Inc.
115 North Market Street
Wailuku, Hawaii 96793

Dear Mr. Davis:

SUBJECT: COMMENTS FROM THE MAUI PLANNING COMMISSION ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED MILOWAI MA'ALAEA SEAWALL REPAIR PROJECT, LOCATED AT 50 HAUOLI STREET, WAILUKU, MAUI, HAWAII; TMK: (2) 3-8-014:022 (SM1 2012/0008) (SSV 2012/0004) (EA 2012/0006)

The Department of Planning (Department) received the subject Draft Environmental Assessment (EA) application, Shoreline Setback Variance (SSV) application and Special Management Area (SMA) Use Permit application on November 5, 2012 and subsequent revision dated February 2013. The EA is triggered as it involves repair of an existing nonconforming structure damaged by coastal hazards within the Shoreline Setback Area, at the approximate shoreline, requiring a SSV under the *Shoreline Rules for the Maui Planning Commission, Chapter 12-203* (Shoreline Rules). All structures and activities in the Shoreline Setback Area are subject to the restrictions provided for in the Shoreline Rules.

At its regular meeting on May 28, 2013, the Maui Planning Commission (Commission) reviewed the Draft EA, dated "February, 2013" for the above referenced project. Based upon those discussions and questions to the Applicant and Applicant's representatives, the Commission's eight (8) requests for additional information are listed below. Please include information on the following questions and topics, including sub-points (a-d) in the Final EA:

1. The Commission expressed concerns about the longevity and durability of the current proposed preferred alternative and requested that a slanted revetment alterative be explored in more depth. The Commission speculated that a slanted revetment similar to the one implemented at Mahana Kaanapali would offer better protection from coastal hazards, while potentially restoring sandy beach to the shoreline fronting the condominium. The Commission suggested that the Applicant conduct a site visit to the Mahana at Kaanapali to observe the existing revetment, although it may now be entirely covered by beach sand;

a. Provide information on implementation of slanted revetment at the subject location. What would be the impact of the slanted revetment on coastal processes and could it potentially capture and retain beach sand?

b. Compare resiliency to wave energy between the current proposed solution and the slanted revetment alternative.

c. Provide cost comparison between the current proposed solution and the slanted revetment alternative.

d. Provide information on the type of boulders to be used in the slanted revetment alternative and how they would compare with the boulders used in the neighboring revetment.

2. The Commission is further interested in more information explaining the current proposed alternative's durability and longevity:

a. Provide more information on how the current preferred alternative strengthens the seawall at its substrate level offering stronger foundation and long term protection from coastal hazards.

b. Provide more information about the materials to be injected into the failing seawall including a provision of samples during the Final EA Commission hearing, if at all possible.

c. Provide information on how the current preferred alternative is designed to withstand any potential hydrostatic pressure caused by potential mauka run-off and the existing drainage patterns.

3. Provide historic information regarding the existence of beaches in this area prior to construction of the subject sea wall. If there was a beach in the past, what did it look like? Please include photographs, if possible;

4. The Commission requested that a lateral beach access be formally re-established in form of a path or otherwise implemented as part of the slanted revetment alternative. Further, more information should be provided on the location of the nearest beach access points;

5. The Commission echoed the Department of Land and Natural Resources (DLNR) comment requesting inclusion of detailed Best Management Practices into the Final EA document and specifically asked that the Applicant demonstrates that no construction-related materials will be allowed to seep into the ocean;

6. Provide information on the volume of the existing (pre-project) run-off and whether it is currently being retained on-site. Explore how the current preferred alternative and the slanted revetment alternative would affect run-off volumes and drainage patterns and whether any additional run-off mitigations are being considered;

7. Provide wave height and wave period information on page 19 and page 20 of the August 2012, Coastal Engineering Report, Appendix D; and

8. Provide consistent valuation information for the sea-wall repair throughout the document.

Thank you for your cooperation. If additional clarification is required, please contact Staff Planner Anna Benesovska at anna.benesovska@mauicounty.gov or at (808) 463-3867.

Sincerely,

WILLIAM SPENCE
Planning Director

xc: Clayton I. Yoshida, AICP, Planning Program Administrator (PDF)
Joseph W. Alueta, Acting Planning Program Administrator (PDF)
Anna Benesovska, Staff Planner (PDF)
Jordan E. Hart, Chris Hart & Partners, Inc.
Project File
General File

WRS:AB:aj
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CHRIS HART
& PARTNERS, INC.
Landscape Architecture
City & Regional Planning

March 14, 2014

Mr. William Spence, Director
County of Maui, Department of Planning
250 South High Street
Wailuku, HI 96793

Dear Mr. Spence,

RE: Response to Maui Planning Commission Comments on the Proposed Seawall Repair Project at the Milowai Residential Condominium located in Maalaea, Maui, Hawaii at TMK: (2) 3-8-014:022 (SM1 2012-0008), (SSV 2012-0004), (EA 2012-0006).

Thank you for your letter of June 3, 2013 documenting comments received from the Maui Planning Commission. Chirs Hart & Partners, Inc. (CH&P) is happy to provide responses to your numerated comments as follows:

Comment 1. *The Commission expressed concerns about the longevity and durability of the current proposed preferred alternative and requested that a slanted revetment alterative be explored in more depth. The Commission speculated that a slanted revetment similar to the one implemented at Mahana Kaanapali would offer better protection from coastal hazards, while potentially restoring sandy beach to the shoreline fronting the condominium. The Commission suggested that the Applicant conduct a site visit to the Mahana at Kaanapali to observe the existing revetment, although it may now be entirely covered by beach sand;*

> **Reply 1.** CH&P conducted a site visit at Mahana Kaanapali to observe the existing revetment. As shown in the attached photos the revetment is completely covered with sand at the southern end of the property; however the revetment is exposed at the northern end of the property (**See**: Exhibit 1, "Mahana Site Photos").

Comment 1a. *Provide information on implementation of slanted revetment at the subject location. What would be the impact of the slanted revetment on coastal processes and could it potentially capture and retain beach sand?*

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www.chpmaui.com

Reply 1a. In consultation with the project's Coastal Engineer, Sea Engineering, Inc., there is no anticipated increased benefit of constructing a revetment over repair of the existing seawall at the Milowai.

While a revetment is a less reflective structure that can be more conducive to sand accretion in some conditions; the lack of sand fronting the Milowai is primarily due to the impact of the Maalaea harbor breakwater. The effects of the existence and proximity of the harbor breakwater is not likely to be improved by the choice of shore protection.

The implementation of a sloping rock revetment at the Milowai would require approximately 20 feet to construct and therefore result in a significant loss of private land. If a sloping revetment was constructed the remaining lawn would range from approximately 23 feet near the Milowai main structure to as little as 3 feet near the swimming pool. The expanded scope of soil exposure increases the risk of soil erosion into the ocean during the construction phase (**See**: Exhibit 1a, "Shoreline Plan").

A sloping revetment would require construction of a portion of the revetment on state land, in the ocean. This would require additional, intensive review and approval by the State of Hawaii, Department of Land & Natural Resources, and the Army Corps of Engineers.

Finally, the majority of the existing seawall fronting the Milowai remains intact and continues to provide protection to existing structures. The proposed preferred alternative of in place repair to the existing seawall is the least disruptive option when compared with the demolition and removal of the existing seawall, expanded excavation process, importation of boulders and the use of machinery for the placement of the boulders for a new sloping revetment.

Comment 1b. *Compare resiliency to wave energy between the current proposed solution and the slanted revetment alternative.*

Reply 1b. A revetment is a less reflective structure and can absorb wave energy more effectively than a vertical seawall. However a revetment at the Milowai is not recommended because of the significant footprint and the inevitable need to construct part of the structure on State land, as well as the continued value of portions of the existing structure referenced above.

CH&P has consulted with Sea Engineering on the existing revetment at the Mahana Kaanapali, and the potential application of this structure at the Milowai in Maalaea. Sea Engineering indicated that differences in the amount of sand existing, proximity to the Maalaea Harbor Breakwall and other site specific conditions are not expected to yield the same results in the separate locations.

Comment 1c. *Provide cost comparison between the current proposed solution and the slanted revetment alternative.*

Reply 1c. It was estimated by the Milowai's Structural Engineer that the proposed seawall repair work with labor included will cost approximately $400,000.00 dollars. It was estimated by the Milowai's Coastal Engineer that a sloping rock revetment could cost approximately $540,000.00 - $600,000.00 dollars.

Note: the revetment cost estimated does not include the cost of private land loss discussed in item "A1" above, or the acquisition of a 55 year lease for the use of State Land makai of the shoreline.

Comment 1d. *Provide information on the type of boulders to be used in the slanted revetment alternative and how they would compare with the boulders used in the neighboring revetment.*

Reply 1d. Basalt is the type of stone used for rubble mound structures in Hawaii, including the neighboring revetment. The sloping rock revetment alternative would utilize basalt stone of similar diameter and weight as the neighboring revetment.

Comment 2a. *Provide more information on how the current preferred alternative strengthens the seawall at its substrate level offering stronger foundation and long term protection from coastal hazards.*

Reply 2a. The primary procedure for strengthening and stabilizing the substrate supporting the seawall involves the injection, under pressure, of a hydrophobic polyurethane grout (de neef Cut PURe) into the gravel sand material beneath the seawall.

The hydrophobic polyurethane grout (HPG) is designed to fill large voids in rock fissures, gravel and sand layers and cracks and joints in concrete structures. The HPG is capable of migrating into the pore structure of very fine material and, when injected with pressure, will follow the path of least resistance, filling voids as small as the thickness of a hair. Once the HPG can no longer penetrate it continues to expand against the limits of the confined space(s) and compress within itself, forming a dense, closed cell foam, bonded to the surround sand, gravel and rocks. The cured foam achieves compressive strengths between 1800 and 4000 psi depending on density of the soil material it is injected into. It is feasible to inject the HPG to depths of 2 feet or more below the seawall base, depending on porosity of the material. Where hard monolithic rock occurs, the grout will not penetrate, but it is also not necessary. The grout can also be

injected into the seawall itself, a process which will fill voids between mortar and rock and sealing cracks through which water can pass. The final foam/rock/gravel/sand mass becomes a monolithic substrate bonded together and strengthened by the presence of the HPG injection process. The process would continue from one location to another along the length of the seawall until all loose substrate material is reinforced. Following application, the reinforced substrate would no longer be susceptible to erosion from scouring of loose material beneath the wall, as it will extend to approximately 24 inches below sea level at low tide and effectively prevent movement of water through the soil structure supporting the wall.

In addition to the injection of foam grout below the wall, the proposed reinforcement method involves pneumatically applying a layer of reinforced concrete to the back side of the seawall after an excavation is completed to expose the base of the wall from the landward side. This blanket of reinforced concrete adhered to the back of the stone and mortar wall will serve to provide it with greater longitudinal structural continuity that, when combined with the reinforced foundation substrate, should serve to prevent future localized settlement of the seawall and resulting deterioration of the mortar and stone portion. (**See**: Exhibit 2, "Seawall section drawing")

Comment 2b. *Provide more information about the materials to be injected into the failing seawall including a provision of samples during the Final EA Commission hearing, if at all possible.*

Reply 2b. The proposed material name as mentioned above is "Cut PURe" which is a hydrophobic (water repelling) polyurethane grout. Depending on ambient temperature and amount of accelerator used the grout will harden quickly to a rigid closed cell foam that is resistant to most organic solvents, mild acids, alkali, petroleum and micro-organisms. A study by the Swedish National Testing and Research Institute has determined the expected longevity of Cut PURe to be 110 years in an alkaline environment. The product is phthalate free and NSF/ANSI 61 approved and is unregulated for transport, with no HAZMAT shipping restrictions. When in contact with water it reacts immediately to form foam particles ranging in size from a popcorn kernel to a silver-dollar without effecting surrounding water. No work *makai* of the shoreline is proposed by the Project scope; however, if grout material comes in contact with water, particles will float to the surface and can be confined by a floating a barrier and gathered with a scoop net.

The primary ingredient in Cut PURe is "4,4' Diphenylmethane Diisocyanate "(MDI). A document titled Concise International Chemical Assessment Document 27 (CICAD 27) published as part of the International Program on Chemical Safety addresses a variety topic regarding the toxicity and

environmental aspects of MDI (extracted pages are included (**See**: Exhibit 3, "Concise International Chemical Assessment Document 27") and the Effects Evaluation section indicates no impact in aquatic conditions owing to its reaction with water forming predominantly insoluble solid polyurea (foam). The document provides data indicating that MDI has no impacts on organisms and the aquatic environment.

Samples of Cut PURe injected onto molds, filled with sand, and injected into molds filled with gravel will be provided by the Project structural engineer for examination by the Maui Planning Department and Maui Planning Commission.

Comment 2c. *Provide information on how the current preferred alternative is designed to withstand any potential hydrostatic pressure caused by potential mauka run-off and the existing' drainage patterns.*

Reply 2c. The current proposed solution is designed to accumulate any water build-up behind the wall in a continuous layer of sand and gravel wrapped in a geotechnical filter fabric placed behind the concrete blanket wall. The porosity of the sand and gravel material will cause water buildup to seep down behind the concrete wall and be discharged by gravity flow through weep holes added through the original seawall. The 3-inch PVC pipe weep holes will be located at the base of the wall, passing from the sand/gravel drainage gallery, through the concrete blanket wall to the seaward surface of the original stone and mortar seawall. Hydrostatic pressures will not be allowed to occur, as the water that would produce them will be eliminated through the weep holes in the repaired wall. In addition the existing drainage patterns occurring at the project site are not directed towards the existing seawall, instead drainage flows to the draiangeway and outputs inside of the Maalaea Harbor breakwall. (**See**: Exhibit 2, "Seawall section drawing").

Comment 3. *Provide historic information regarding the existence of beaches in this area prior to construction of the subject sea wall. If there was a beach in the past, what did it look like? Please include photographs, if possible;*

Reply 3. CH&P obtained historical aerial photographs of the Maalaea area from the UH school of Ocean and Earth Science and Technology, Coastal Geography group. A sand beach existed at the project site in 1949. The beach is no longer evident in aerial photographs dated 1960, 1975, 1987, and 1997.

The construction of the Maalaea Harbor in the 1950's is believed to have caused a change in natural sand migration which has resulted in a reduction of sand deposits in Maalaea bay. (**See**: Exhibits 4a-e, "Maui Ortho-rectified Historical Shoreline Mosaics")

Comment 4. *The Commission requested that a lateral beach access be formally re-established in form of a path or otherwise implemented as part of the slanted revetment alternative. Further, more information should be provided on the location of the nearest beach access points;*

Reply 4. Hauoli Street has two (2) formalized *mauka* to *makai* public shoreline access points. The first is located between the Maalaea Kai and the Lauloa condominiums. The second is Haycraft Park, which is located at the end of Hauoli Street.

An additional shoreline access is available at the southeast corner of the Maalaea Harbor, approximately 245 feet form the nearest Milowai property line.

It is our understanding that the public uses two (2) additional locations to access the shoreline across private property. The first is in front of the Tradewinds Deli at the Maalaea Mermaid condominium. The second is a dedicated drainage easement located between the Yacht Marina condominium and the project site (**See:** Exhibit 5, "Shoreline Access Photographs").

As seen from the historical photographs the Milowai no longer has a sand beach fronting the property while a small sand beach inside the harbor has been formed following the harbor break wall construction in the 1950's. The Milowai has never had a formal pathway established on its property, laterally along the shoreline.

In an effort to enhance lateral shoreline access the Milowai is proposing to provide directional signage to identify a public access pathway along the shoreline. An example of the direction signage is attached. (**See:** Exhibit 6., "Example Shoreline Sign")

Comment 5. *The Commission echoed the Department of Land and Natural Resources (DLNR) comment requesting inclusion of detailed Best Management Practices into the Final EA document and specifically asked that the Applicant demonstrates that no construction-related materials will be allowed to seep into the ocean;*

Reply 5. The Applicant has included the following list of BMP's in the Final EA.

- An effective turbidity barrier (e.g. silt curtain) shall be deployed as necessary to isolate the construction activity, to avoid degradation of marine waters and prevent migration of fine material and suspended solids during the construction operations. Barriers shall extend to the ocean bottom and be weighed down. The barriers shall remain in place during construction and until post-construction water quality monitoring results show water quality inside the barrier to be equivalent to ambient conditions as shown by control stations outside of the turbidity barriers.

- Excavated material that is stockpiled on-site will be contained by barrier systems to prevent run-off into marine waters.

- Fueling of equipment shall take place away from the water. Fuels, oils and waste materials shall be properly contained and not be allowed to leak, leach or otherwise enter marine waters. The Contractor shall have established procedures for immediate clean up of fuel or oil spills.

- The contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface or marine waters. Shoreline construction activities shall cease when ocean conditions become severe enough that containment devices (i.e. silt curtains) become ineffective. Environmental resources outside the immediate area of material removal shall be protected.

- A dust control program will be implemented, and wind blown sand and dust shall be prevented from blowing.

- Material delivery and storage shall take place in designated areas.

- The work shall be completed in accordance with all applicable State and County health and safety regulations.

- Concrete truck wash water shall be contained in pits or other containment devices provided with impermeable liners for evaporative dissipation. Spoil shall be disposed of at an appropriate landfill site.

- Stockpiled material for use or reuse in construction shall not be co-mingled with concrete truck wash water, equipment wash down effluent or other spoil.

Comment 6*. Provide information on the volume of the existing (pre-project) run-off and whether it is currently being retained on-site. Explore how the current preferred alternative and the slanted revetment alternative would affect run-off volumes and drainage patterns and whether any additional run-off mitigations are being considered;*

Reply 6. The preferred alternative scope of work is to repair the existing seawall in place. There is no further construction and or increase in impervious surface proposed.

The existing run-off at the Milowai resulting from a 50-year storm is 3.83 cfs. The existing drainage pattern at the property centers on the drainage swale and easement at the western edge of the property. Run-off is conveyed from *mauka*

A&B land (HC&S fields), across Hauoli Street, through the drainage easement and into the Maalaea Harbor. Runoff generated by the Milowai is collected in onsite catch basins and conveyed into the same drainage easement and ultimately into the Maalaea Harbor. The preferred alternative and the sloping rock revetment alternative would generate no increase in run-off volumes, therefore the drainage patterns would be unchanged for either alternative.

***Comment** 7. Provide wave height and wave period information on page 19 and page 20 of the August 2012, Coastal Engineering Report, Appendix D; and*

Reply 7. The wave height and wave period information graphics are attached and will be printed in the Final EA. (**See:** Exhibit 7 "Wave information graphics")

***Comment** 8. Provide consistent valuation information for the sea-wall repair throughout the document.*

Reply 8. The project valuation change to the application form has been made in the Final EA.

Thank you again, please feel free to call me or Mr. Brett Davis at (808) 242-1955 should you have any questions.

Sincerely yours,

Jordan E. Hart, President

ENCLOSURES (12)

Exhibit 1, "Mahana Site Photos"
Exhibit 1a, "Shoreline Plan"
Exhibit 2, "Seawall section drawing"
Exhibit 3, "Concise International Chemical Assessment Document 27"
Exhibits 4a-e, "Maui Ortho-rectified Historical Shoreline Mosaics"
Exhibit 5, "Shoreline Access Photographs"
Exhibit 6, "Example Shoreline Sign"
Exhibit 7, "Wave information graphics"

Cc. Mr. Bob Wood, Milowai
Project File 11-028

View of Shoreline looking north. The revetment is under the sand and naupaka plants.

View of a portion of the exposed revetment with boulders and deterioated sand bags.

View of Shoreline looking south with exposed revetment boulders.

View of Shoreline looking towards Mahana. The lawn above the revetment has begun to erode and a wooden wall has been constructed with temporary fencing above.

View of revetment with exposed boulders, sand bags and drainage pipe.

Exhibit 1	CHRIS HART & PARTNERS, INC.
Mahana Site Photos	

Photos taken 10.13.2013

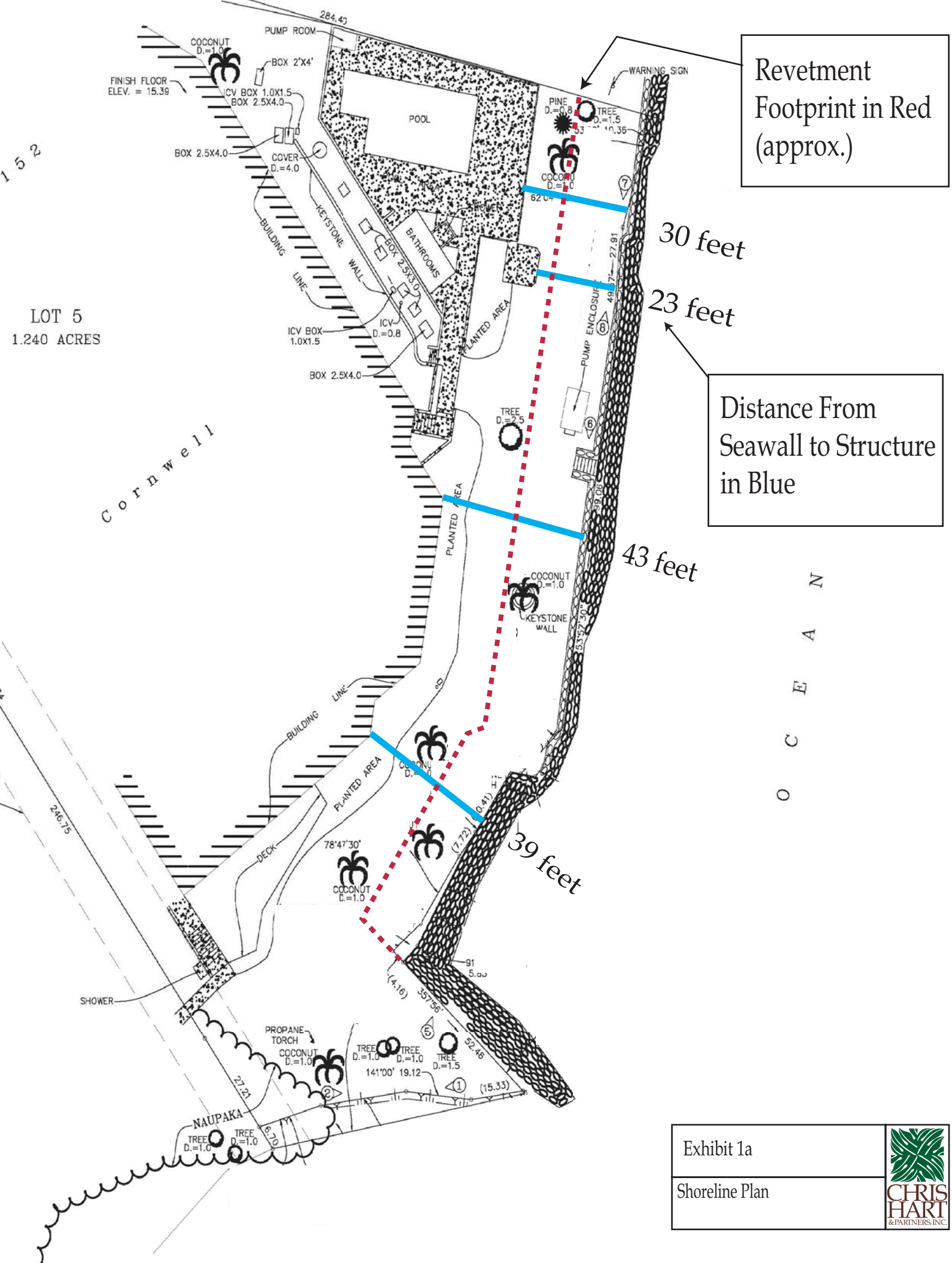
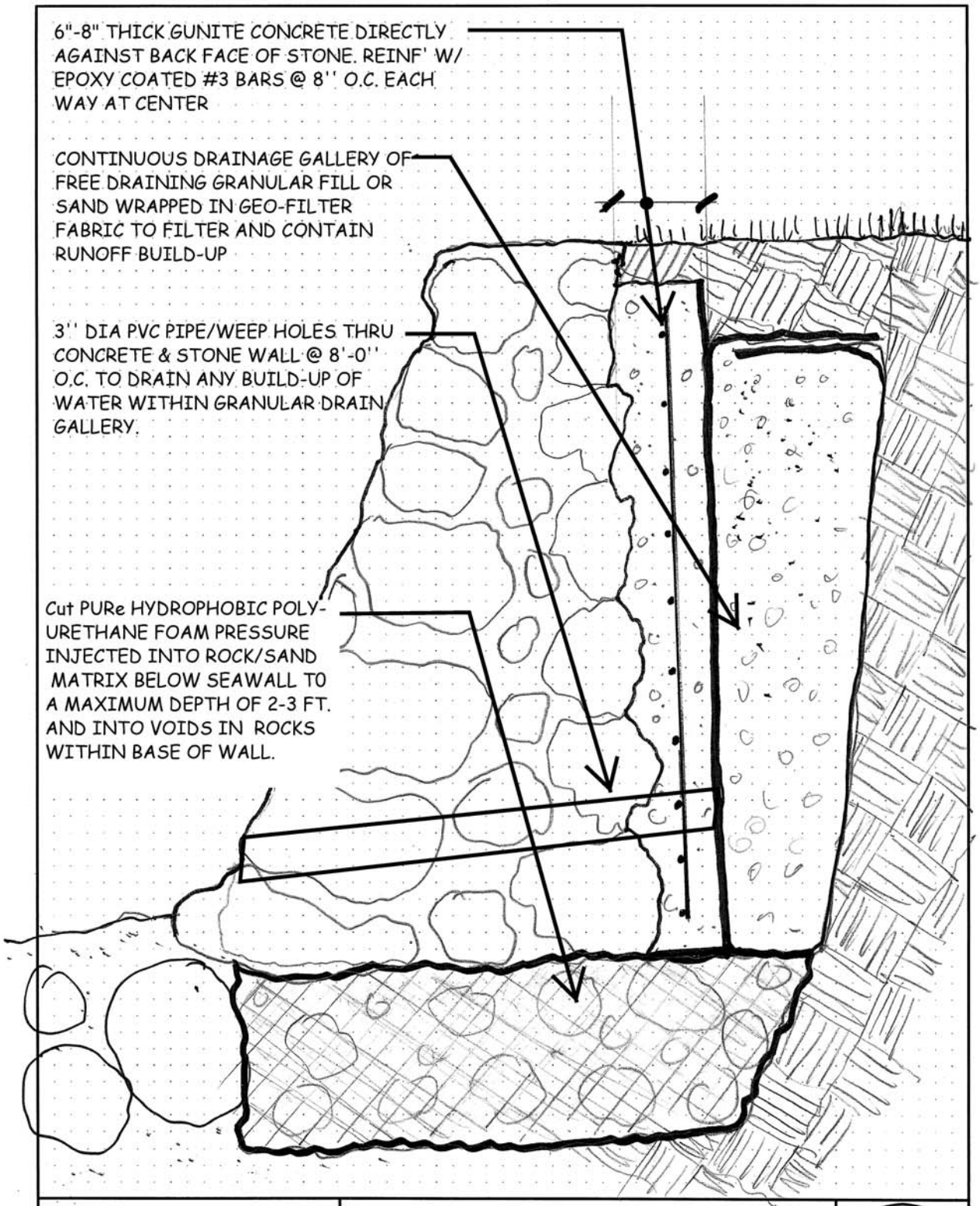


Exhibit 1a	CHRIS HART & PARTNERS, INC.
Shoreline Plan	



Walter Vorfeld & Associates CONSULTING STRUCTURAL ENGINEERS 10 Ulana Street Makawao, Maui, Hi 96768 (808)572-3535	MILOWAI SEAWALL MILOWAI RESORT MAALAEA, HAWAII Job No: 201120 DATE: 6/25/2012	SD-1

Exhibit 2	CHRIS HART & PARTNERS, INC.
Seawall section drawing	

FOREWORD

Concise International Chemical Assessment Documents (CICADs) are the latest in a family of publications from the International Programme on Chemical Safety (IPCS) — a cooperative programme of the World Health Organization (WHO), the International Labour Organization (ILO), and the United Nations Environment Programme (UNEP). CICADs join the Environmental Health Criteria documents (EHCs) as authoritative documents on the risk assessment of chemicals.

CICADs are concise documents that provide summaries of the relevant scientific information concerning the potential effects of chemicals upon human health and/or the environment. They are based on selected national or regional evaluation documents or on existing EHCs. Before acceptance for publication as CICADs by IPCS, these documents undergo extensive peer review by internationally selected experts to ensure their completeness, accuracy in the way in which the original data are represented, and the validity of the conclusions drawn.

The primary objective of CICADs is characterization of hazard and dose–response from exposure to a chemical. CICADs are not a summary of all available data on a particular chemical; rather, they include only that information considered critical for characterization of the risk posed by the chemical. The critical studies are, however, presented in sufficient detail to support the conclusions drawn. For additional information, the reader should consult the identified source documents upon which the CICAD has been based.

Risks to human health and the environment will vary considerably depending upon the type and extent of exposure. Responsible authorities are strongly encouraged to characterize risk on the basis of locally measured or predicted exposure scenarios. To assist the reader, examples of exposure estimation and risk characterization are provided in CICADs, whenever possible. These examples cannot be considered as representing all possible exposure situations, but are provided as guidance only. The reader is referred to EHC 170[1] for advice on the derivation of health-based tolerable intakes or guidance values.

[1] International Programme on Chemical Safety (1994) *Assessing human health risks of chemicals: derivation of guidance values for health-based exposure limits.* Geneva, World Health Organization (Environmental Health Criteria 170).

While every effort is made to ensure that CICADs represent the current status of knowledge, new information is being developed constantly. Unless otherwise stated, CICADs are based on a search of the scientific literature to the date shown in the executive summary. In the event that a reader becomes aware of new information that would change the conclusions drawn in a CICAD, the reader is requested to contact IPCS to inform it of the new information.

Procedures

The flow chart shows the procedures followed to produce a CICAD. These procedures are designed to take advantage of the expertise that exists around the world — expertise that is required to produce the high-quality evaluations of toxicological, exposure, and other data that are necessary for assessing risks to human health and/or the environment.

The first draft is based on an existing national, regional, or international review. Authors of the first draft are usually, but not necessarily, from the institution that developed the original review. A standard outline has been developed to encourage consistency in form. The first draft undergoes primary review by IPCS to ensure that it meets the specified criteria for CICADs.

The second stage involves international peer review by scientists known for their particular expertise and by scientists selected from an international roster compiled by IPCS through recommendations from IPCS national Contact Points and from IPCS Participating Institutions. Adequate time is allowed for the selected experts to undertake a thorough review. Authors are required to take reviewers' comments into account and revise their draft, if necessary. The resulting second draft is submitted to a Final Review Board together with the reviewers' comments.

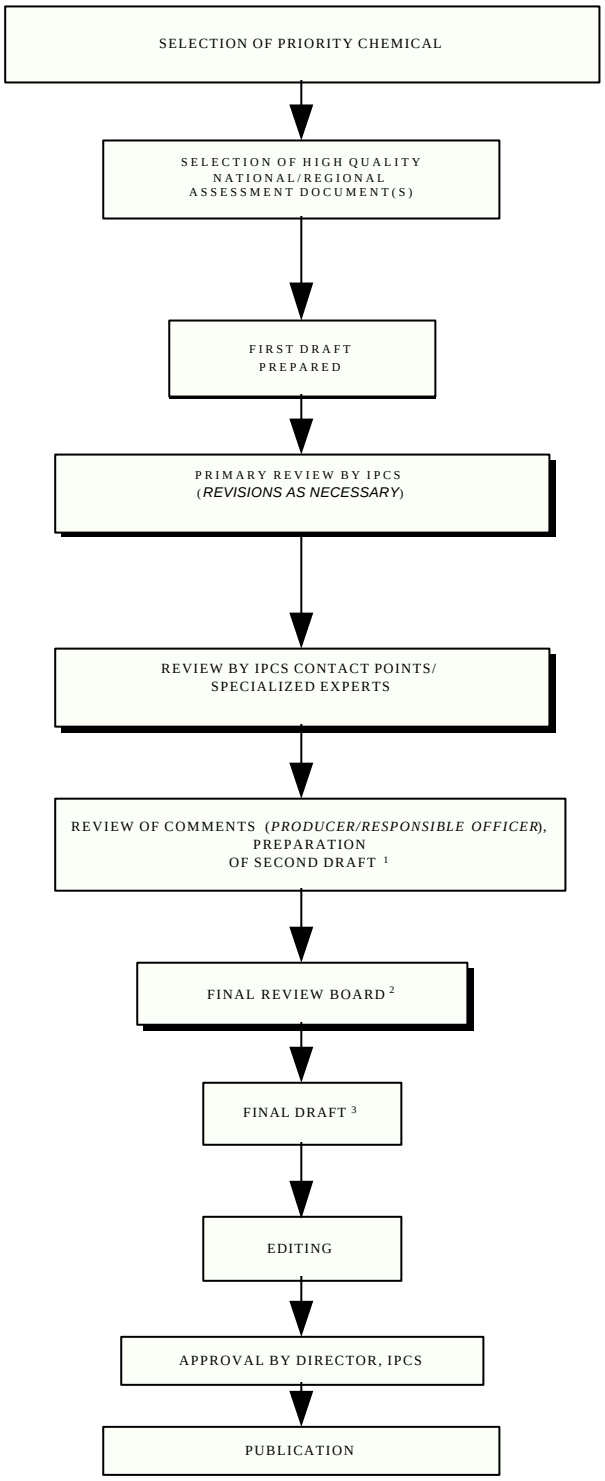
The CICAD Final Review Board has several important functions:

- to ensure that each CICAD has been subjected to an appropriate and thorough peer review;
- to verify that the peer reviewers' comments have been addressed appropriately;
- to provide guidance to those responsible for the preparation of CICADs on how to resolve any remaining issues if, in the opinion of the Board, the author has not adequately addressed all comments of the reviewers; and
- to approve CICADs as international assessments.

Board members serve in their personal capacity, not as representatives of any organization, government, or

Exhibit 3
Concise International Chemical Assessment Document 27
CHRIS HART & PARTNERS, INC.

CICAD PREPARATION FLOW CHART



1 Taking into account the comments from reviewers.
2 The second draft of documents is submitted to the Final Review Board together with the reviewers' comments.
3 Includes any revisions requested by the Final Review Board.

industry. They are selected because of their expertise in human and environmental toxicology or because of their experience in the regulation of chemicals. Boards are chosen according to the range of expertise required for a meeting and the need for balanced geographic representation.

Board members, authors, reviewers, consultants, and advisers who participate in the preparation of a CICAD are required to declare any real or potential conflict of interest in relation to the subjects under discussion at any stage of the process. Representatives of nongovernmental organizations may be invited to observe the proceedings of the Final Review Board. Observers may participate in Board discussions only at the invitation of the Chairperson, and they may not participate in the final decision-making process.

1. EXECUTIVE SUMMARY

This CICAD on diphenylmethane diisocyanate (MDI) was prepared by the National Institute of Health Sciences, Japan, in collaboration with the National Center for Environmental Assessment, US Environmental Protection Agency (EPA). The CICAD was based principally on the reviews of the Japan Society for Occupational Health (JSOH, 1994) and the US EPA (1998) for the toxicological evaluation and the European Union (EU, 1999) for the environmental assessment. It should be noted that the EU document is still an unapproved draft and that the information presented in the environmental sections is based mainly on unpublished studies. The literature up to November 1998 was searched using MEDLINE to identify any new information relevant to the assessment. The preparation and peer review of the source documents are described in Appendix 1. Information on the peer review of this CICAD is presented in Appendix 2. This CICAD was approved as an international assessment at a meeting of the Final Review Board, held in Stockholm, Sweden, on 25–28 May 1999. Participants at the Final Review Board meeting are listed in Appendix 3. The International Chemical Safety Card (ICSC 0298) for MDI, produced by the International Programme on Chemical Safety (IPCS, 1993), has also been reproduced in this document.

Diphenylmethane diisocyanate (MDI) is the generic name of a product used in industrial settings. Polymeric MDI (PMDI), the primary technical/commercial form of MDI, is actually a mixture that contains 25–80% monomeric 4,4'-MDI as well as oligomers containing 3–6 rings and other minor isomers, such as the 2,2'-isomer. The exact composition of PMDI varies with the manufacturer.

Monomeric 4,4'-MDI is a white to pale yellow solid at room temperature, with a molecular weight of 250. It has a boiling point of >300 °C at 101.3 kPa, a melting point of 39–43 °C, and a vapour pressure of <1 mPa at 20 °C. It has a transient existence in water; thus, its water solubility is only notional. However, monomeric MDI is soluble in octane, benzene, and kerosene. PMDI is a dark reddish brown liquid with an indefinite melting point around 0 °C and a vapour pressure of <1 mPa at 20 °C. MDI is highly reactive in the environment or when taken up by organisms and is rapidly hydrolysed to form 4,4'-methylenedianiline (MDA), which reacts with excess MDI to yield insoluble oligoureas and polyureas.

MDI is used for polyurethane elastomers (rollers, packing, rubber vibration insulators, synthetic leather, etc.), spandex fibres, and rubber shoe soles. PMDI is used to make rigid and flexible foam, foundry resin sand binders, and heat insulating material. The total annual global production of MDI and PMDI was about 1.2 million tonnes in 1991, 1.5 million tonnes in 1993, 1.78 million tonnes in 1994, and 1.95 million tonnes in 1996.

After the appropriate collection of the aerosol form by impingers, bubbles, or filters, high-performance liquid chromatography (HPLC) is used for the analysis of MDI and PMDI. Detection limits of HPLC for MDI and PMDI, which vary depending on the sampling methodology, can be below 0.01 mg/m^3. Free and acetylated MDA are identified in nearly all studies after strongly hydrolysing conditions. These conditions will also form MDA from conjugated MDI. A new method has recently become available for determining the composition of complex mixtures of airborne isocyanates and related compounds formed during the thermal decomposition of polyurethane by derivatization of isocyanates with dibutylamine.

Under normal circumstances, exposure of the general public to MDI is likely only from releases to the atmosphere. High exposures in ambient environments are rare. Where spillage is to soil or water, MDI has a transient existence due to its reaction with the water to produce predominantly insoluble polyureas. MDA concentrations formed in the environment by the reaction of MDI with water are always low. A pond study provides evidence that MDI accumulation through the aquatic food chain is extremely unlikely, as might be expected considering its very low solubility and high reactivity in aqueous solution. The information on occupational exposure is limited; in different industries, 8-h time-weighted average exposures in excess of 50 µg/m^3 have been reported to occur infrequently.

There is very limited information on the toxicokinetics of MDI. Once absorbed, it appears to be predominantly conjugated to protein. With respect to inhalation exposure, only limited studies using rats are available. An inhalation exposure study using radiolabelled MDI indicates that some form or portion of MDI is distributed throughout the body, predominantly in the lungs, muscle, kidneys, and digestive tract. The faecal and urinary elimination of MDI and its metabolites over 4 days was 57% and 13% of the recovered radioactivity, respectively. Less than 1% of the radioactivity was recovered from the major organs, although 23% of the administered dose was recovered in the carcass. In urine, small amounts of free and acetylated MDA were identified.

Studies of workers have identified free MDA, acetylated MDA, and adducts of both with haemoglobin

or albumin in urine and blood. These studies suggest that plasma acid-hydrolysable MDA may be a useful biomarker of long-term exposure to MDI. The half-life of acid-hydrolysable MDA in the urine of a worker exposed to PMDI was 70–80 h, and in serum, 21 days.

MDI is not acutely toxic to laboratory mammals. Animal data provide clear evidence of skin and respiratory sensitization due to MDI. Humoral as well as cellular immunity may be involved in the pathogenesis of hypersensitivity due to isocyanates. Severe respiratory distress and a significant decrease in body weight gain were observed in male and female rats exposed to PMDI aerosol at a concentration of 13.6 mg/m^3 for 6 h per day, 5 days per week, over a period of 2 weeks, with much less severe signs of respiratory distress and only slightly reduced body weight gain in male rats at 4.9 mg/m^3. Based on a marginal increase in lung to body weight ratio at higher doses, it was concluded that 2.2 mg/m^3, which was the lowest dose level examined, was a no-observed-adverse-effect level (NOAEL).

In a 2-year chronic inhalation toxicity/carcinogenicity study, rats that were exposed to PMDI aerosol at concentrations of 0, 0.19, 0.98, or 6.03 mg/m^3 showed changes in the respiratory tract. Pulmonary adenocarcinoma observed in one case was considered as insufficient to identify PMDI as an animal carcinogen; however, *in situ* generation of MDA, which is a known animal carcinogen via drinking-water, could be responsible for the effect. Basal cell hyperplasia in the olfactory epithelium detected at 0.98 and 6.03 mg/m^3 was judged a non-carcinogenic critical end-point. The non-neoplastic information in this study suggests a NOAEL of 0.19 mg/m^3 and a lowest-observed-adverse-effect level (LOAEL) of 0.98 mg/m^3.

Both positive and negative results were obtained when monomeric MDI dissolved in dimethyl sulfoxide (DMSO) was tested *in vitro* with *Salmonella typhimurium*. However, because of the known interaction of DMSO with MDI to yield MDA and possibly other reaction products, these positive results should not be construed as meaningful for human health risk assessment.

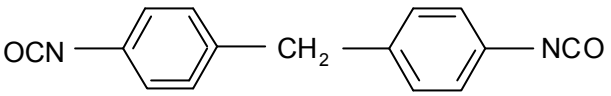
Exposure of gravid Wistar rats to monomeric MDI resulted in an increased incidence of asymmetric sternebrae in fetuses at 9 mg/m^3; however, as the increase was within the limits of biological variability, the NOAEL for developmental toxicity in this study was estimated to be 9 mg/m^3. In another study in which rats were exposed to PMDI, the NOAEL for maternal and fetal toxicity was estimated to be 4 mg/m^3, based on the finding of premature deaths of pregnant females and statistically significant decreases in placental and fetal weights at 12 mg/m^3. There have been no studies that have examined the effect of polymeric or monomeric MDI on reproductive parameters.

The health end-points of most concern are occupationally induced asthma, hypersensitivity pneumonitis, and inflammatory upper respiratory tract diseases through inhalation of polymeric or monomeric MDI. Although not yet well understood, humoral as well as cellular immunological reactions appear to be involved in the allergic reactions. Case reports as well as epidemiological studies have described MDI as a cause of occupational dermatitis, skin sensitization, and asthma. Although limited in various ways, a cohort study and a retrospective study showed no significant association with cancer morbidity. There are no data available for oral exposure, but it is unlikely that humans are exposed to MDI by the oral route.

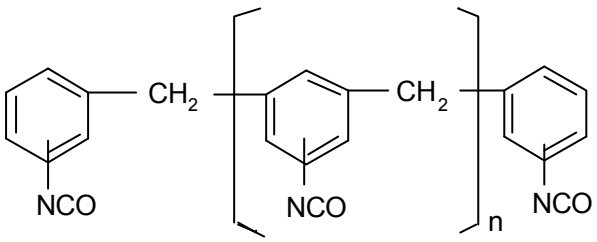
MDI did not show toxicities to fish, aquatic invertebrates, algae, or microorganisms under any acute or long-term exposure testing conditions. However, results of aquatic tests are not meaningful because of MDI's virtual insolubility in water. Similarly, a few tests on terrestrial organisms did not show any effects under the testing conditions. Available data show that there is no need for concern regarding the effects of MDI on organisms in the environment, although more detailed information regarding the formation of MDA in the environment and its effects on organisms is required before any firm conclusions can be drawn.

2. IDENTITY AND PHYSICAL/CHEMICAL PROPERTIES

MDI is the generic name of a product used in industrial settings. PMDI, the primary technical/commercial form of MDI, is actually a mixture that contains 25–80% monomeric 4,4'-MDI as well as oligomers containing 3–6 rings and other minor isomers, such as the 2,2'-isomer. This composition renders the material semisolid and suitable for aerosol generation. The composition of PMDI varies with the manufacturer and use. The range of variation reflects variations from various sources of information, i.e., from a German review (DFG, 1997), US Toxicological Review (US EPA, 1998), and the EU draft document (EU, 1999). Figure 1 gives chemical structures of 4,4'-MDI and PMDI, and Table 1 provides Chemical Abstracts Service (CAS) registry numbers of several MDI isomers and PMDI.



Chemical structure of MDI



Chemical structure of PMDI

Figure 1: Chemical structure of 4,4'-MDI and PMDI.

Table 1: Isomers and polymers of MDI.

Name	CAS registry number
4,4'-MDI	101-68-8
2,4'-MDI	5873-54-1
2,2'-MDI	2536-05-2
non-isomer-specific MDI	26447-40-5
PMDI	9016-87-9

Monomeric 4,4'-MDI is a white to pale yellow solid at room temperature, with a molecular weight of 250.26. It has a boiling point of >300 °C at 101.3 kPa, a melting point of 39–43 °C (capillary method) or 40 °C (differential scanning calorimetry or DSC method) (Kelly et al., 1997), and a vapour pressure of <1 mPa at 20 °C (DFG, 1997). It has a transient existence in water; thus, its water solubility is only notional. However, monomeric MDI is soluble in octane, benzene, and kerosene (Chemical Society of Japan, 1989). The conversion factor for MDI is as follows: 1 ppm = 10.4 mg/m^3. Additional properties for MDI are presented in the International Chemical Safety Card (ICSC 0298) reproduced in this document.

PMDI is a dark reddish brown viscous liquid with an indefinite melting point around 0 °C and a vapour pressure of <1 mPa at 20 °C (DFG, 1997).

PMDI is the form produced commercially from aniline and formaldehyde using hydrochloric acid as catalyst. This condensation reaction produces MDA and a complex mixture of polyamines, which are phosgenated to obtain a methylene diphenyl diisocyanate mixture. 4,4'-MDI can be obtained by purifying the diphenylmethane diisocyanate mixture.

3. ANALYTICAL METHODS

Because commercial applications using PMDI generate aerosols (Dharmarajan, 1979), traditional techniques that have been successfully used to measure isocyanate vapours (e.g., the Marcali and paper tape colorimetric methods) are generally not suitable for quantitative measurements of MDI in air. The strengths and limitations of impingers, bubbles, and filters with respect to collection and detection of both MDI aerosols and vapours have been discussed by Streicher et al. (1994). When pure monomeric MDI was heated under laboratory conditions, a 0.5-µm pore size filter blocked more than 87% of the MDI from entering an impinger.

Usually HPLC is used for the analysis of MDI and PMDI (NIOSH, 1985; IARC, 1986; Spanne et al., 1996; Tinnerberg et al., 1997). Detection limits of HPLC for MDI and PMDI, which vary depending on the sampling methodology, can be below 0.01 mg/m^3.

Complex mixtures of airborne isocyanates and related compounds formed during the thermal decomposition of polyurethane were analysed by derivatization of isocyanates in impinger flasks containing dibutylamine with formation of urea derivatives. Derivatives were analysed by reverse-phase liquid chromatography with mass spectrometry or with ultraviolet (UV) detection. The detection limit of MDI with UV detection was 0.5–0.8 µg/m^3 for a 15-litre air sample, and that with mass spectrometry (instrumental detection limit) was 4 fmol of the MDI derivative (Spanne et al., 1996; Tinnerberg et al., 1997).

4. SOURCES OF HUMAN AND ENVIRONMENTAL EXPOSURE

MDI is used for polyurethane elastomers (rollers, packing, rubber vibration insulators, synthetic leather, etc.), spandex fibres, and rubber shoe soles. PMDI is used to make rigid and flexible foam, foundry resin sand binders, and heat insulating material. The total annual global production of MDI and PMDI was about 1.2 million tonnes in 1991, 1.5 million tonnes in 1993, 1.78 million tonnes in 1994, and 1.95 million tonnes in 1996 (Chemical Week, 1998). In Japan, 0.20–0.27 million

tonnes were produced in 1992–1996 (Chemical Daily, 1997).

MDI is usually present in workplace air as vapour, but some aerosol may also co-exist, depending on the type of operation (DFG, 1997). In such atmospheres, exposure may be to unreacted MDI or to a mixture of MDI and polyols, reactants used to convert MDI to polyurethane foams. The range of particle size will vary with the application, and the method of sampling and analysis should be suited to the workplace requirement.

The extent to which MDI, in either monomeric or polymeric form, disperses in air beyond the point of release and exposes general populations is not known.

5. ENVIRONMENTAL TRANSPORT, DISTRIBUTION, AND TRANSFORMATION

The complex nature of MDI composition and reactions in the environment often makes interpretation difficult.

The observed or likely fates of MDI in air, water, and soil have been described by Brochhagen & Keller (1983) and Gilbert (1988). More recently, comprehensive studies on the behaviour of MDI in the aquatic environment have been carried out by Yakabe et al. (1994) and Heimbach et al. (1996).

5.1 Water

When MDI is added to water, its NCO groups react readily with OH groups of the water to form mixtures of diisocyanates and amines, which then readily react with more MDI to produce inert, solid, insoluble polyurea (EU, 1999). The hydrolysis of isocyanates in aqueous solution is rapid; a half-life of 20 s has been measured for phenyl isocyanate (Castro et al., 1985). However, the subsequent reaction of the formed amine with further isocyanate, to produce a urea, is even faster (Hegarty et al., 1975).

Yakabe et al. (1994) studied the fate of PMDI in water under two conditions — namely, vigorous stirring and static conditions, which simulate two scenarios of accidental spills of PMDI. PMDI used in experiments is complex and composed of 5–6 major constituents having 2–4 aromatic rings. When MDI comes into contact with water, it does not disperse readily, but forms globules or solid masses, which react at their surface. Under such heterogeneous conditions, the disappearance of PMDI shows zero-order kinetics. Production of water-soluble MDA increases gradually with time, and the MDA reaches a nearly constant concentration after 16 h; the amount of MDA formed is less than 0.5% of the nominal concentration of PMDI initially added, and the major products of PMDI breakdown are solid, insoluble polyureas. The polyureas formed from MDI appear to be stable to chemical attack, as would be expected from its insolubility and the stability of ureas.

Support for the chemical stability of MDI is given in one study in which the polyurea formed from the reaction of PMDI with water was stirred at 40 °C in aqueous buffer solutions for 14 days. No soluble products (dissolved organic carbon or MDA) were detected (Yakabe et al., 1994).

A further potential breakdown product of MDI in water is an oligourea. An oligourea was synthesized from 4,4'-MDI and 4,4'-MDA and shown to be mainly diurea. It was insoluble in water and found to be not inherently biodegradable (Yakabe et al., 1994).

In the study by Heimbach et al. (1996), up to 10 g of PMDI was added per litre of water into artificial outdoor ponds, simulating accidental pollution of a pond. Three ponds contained groundwater, above natural lake sediment, to which caged rainbow trout (*Oncorhynchus mykiss*) were added. Following equilibration, PMDI was added to part of the sediment of two ponds at dosages of 1 and 10 g/litre. The third pond served as an untreated control. Water chemistry, MDI and MDA concentrations, and populations and diversity of different trophic levels were monitored over 112 days. The concentrations of MDI and MDA were monitored in the three compartments (water, fish, and sediment) over the duration of the study. No MDI or MDA was detected in the water (detection limits 4 and 10 µg/litre, respectively) or in the fish (detection limits 0.5 and 1.4 mg/kg, respectively). The study provides evidence that MDI accumulation through the aquatic food chain is extremely unlikely, as might be expected considering the very low solubility and high reactivity of MDI in aqueous solution.

5.2 Soil

MDI may come into contact with soil after accidental spillage during transportation or storage.

5.3 Air

The atmospheric concentration of MDI arising from a release is naturally low on account of MDI's very low volatility. It is expected that airborne MDI will have a rather short half-life as a consequence of ready degradation to inorganic compounds by hydroxyl radicals present in the troposphere.

carcinogenicity. The published studies have a number of limitations (e.g., short duration of exposure, concomitant exposure to other substances), which result in low power to detect cancer occurrence in target organs of interest. The finding of placental transfer of MDI and its degradation product from pregnant rats exposed to aerosol to fetuses demands further study on its relevance to human risk assessment.

11.1.2 Criteria for setting tolerable intakes or guidance values for MDI

An example of a guidance value calculation is given in the US EPA's Integrated Risk Information System (IRIS) (see www.epa.gov/iris for details). The Benchmark Concentration (BMC) analysis described therein is based on the finding of an increase in basal cell hyperplasia in the olfactory epithelium in the chronic inhalation study with male Wistar rats (Reuzel et al., 1990, 1994a). However, it should be noted that this guidance value may not protect against occupational sensitization.

The value considered most appropriate as a basis for development of a tolerable concentration (TC) in air is the lower 95% confidence limit on the BMC at the 10% risk level (BMC_{10}) using the Reuzel et al. (1990, 1994a) data set. The BMC_{10} is first converted to a human equivalent concentration (HEC) by application of the Regional Dose Deposited Ratio (RDDR) calculated using a computer program provided in US EPA (1994). The RDDR adjusts for dosimetric differences between laboratory animals and humans by applying normalizing factors to various areas of the respiratory tract.

Once the BMC_{10} (0.14 mg/m^3) is derived from the Reuzel et al. (1990, 1994a) data set by BMC analysis, it is multiplied by the RDDR (0.453). The resulting value, 0.06 mg/m^3, is the BMC_{10} (HEC). Three uncertainty factors are applied to the BMC_{10} (HEC) — 10 for intraindividual variation (including the possibility of genetic predisposition), $10^{1/2}$ for the lack of reproductive data, and $10^{1/2}$ for interspecies variation — to derive a human TC of 6×10^{-4} mg/m^3.

11.1.3 Sample risk characterization

There are no adequate data available to serve as a basis for estimating risk of occupational asthma. The example given here is a pragmatic approach to reduce occupational exposure to the minimum possible, because a threshold for this effect cannot be established.

In the German study evaluating lung decrement, significant reversible adverse effects on lung function were observed in persons exposed to MDI concentrations above 0.2 mg/m^3. When MDI concentrations were kept largely below this concentration, significant changes in lung spirometry were no longer seen, although the incidence of respiratory symptoms was increased significantly. Such disorders were still observed, but no more frequently than in the group at concentrations below 0.05 mg/m^3. Because of these observations, 0.05 mg/m^3 was established as the MAK (the maximum concentration in the German workplace) value for MDI, to be reasonably practicable under workplace conditions, and there is a continuing remit to reduce exposure levels as far as reasonably practicable with technology that is currently available.

11.2 Evaluation of environmental effects

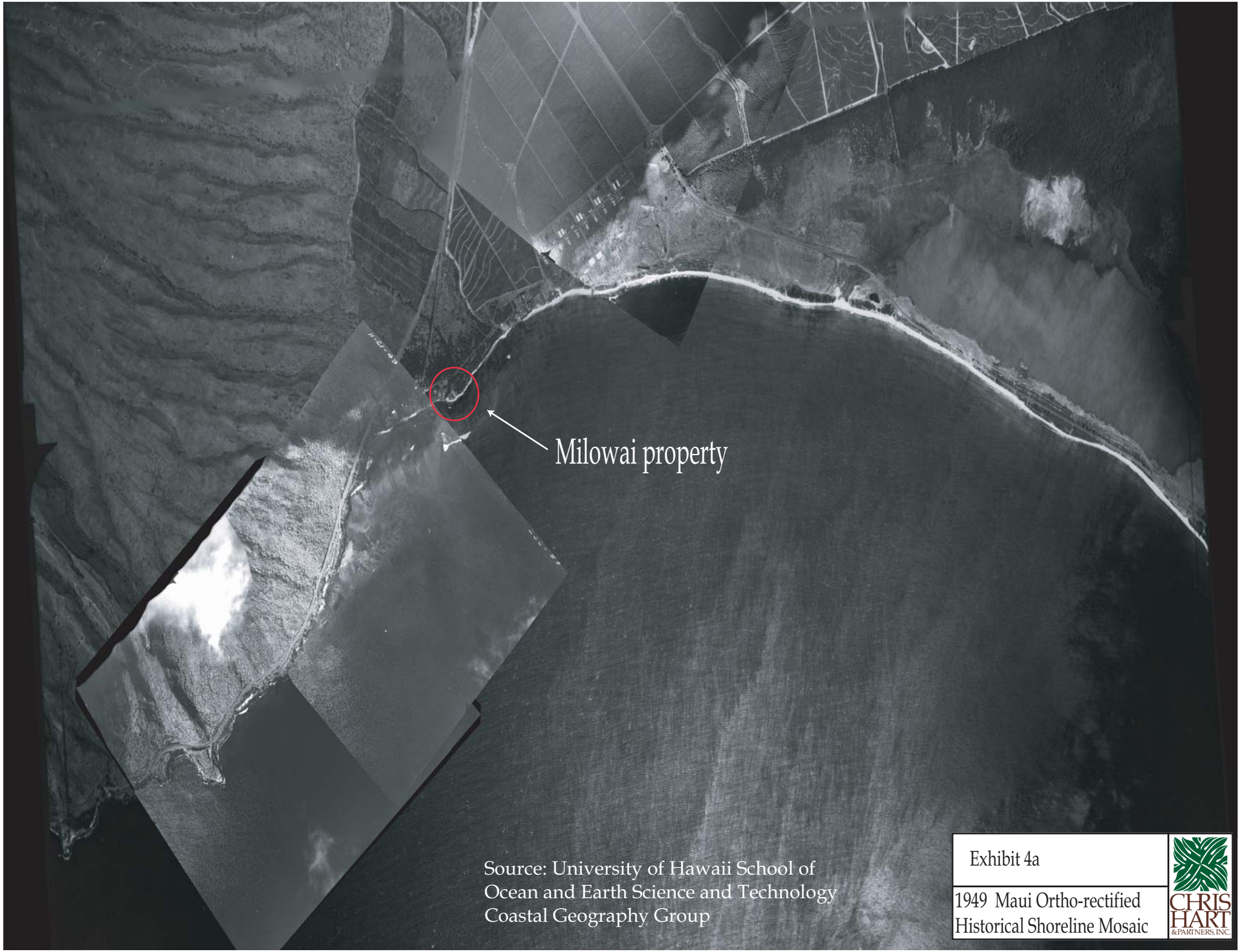
Under normal circumstances, exposure is likely only from releases to the atmosphere. High exposures involving MDI in ambient environments are expected to be rare. Where spillage is to soil or water, MDI has a transient existence due to its reaction with the water to produce predominantly insoluble polyureas. MDA may be formed only as a minor reaction product and will thus be present at low concentrations. The pond study provides evidence that MDI accumulation through the aquatic food chain is extremely unlikely, as might be expected considering the very low solubility and high reactivity of MDI in aqueous solution.

Available data show that there is no need for concern regarding the effects of MDI on organisms in the environment, although more detailed information regarding the effects of minute amounts of MDA formed in the environment on organisms is required before any firm conclusions can be drawn.

12. PREVIOUS EVALUATIONS BY INTERNATIONAL BODIES

IARC (1999) concluded that there is *inadequate evidence* for the carcinogenicity of monomeric or polymeric MDI in humans and *limited evidence* for the carcinogenicity of a mixture containing monomeric and polymeric MDI in experimental animals. Its overall evaluation was that MDI (industrial preparation) is *not classifiable as to its carcinogenicity to humans (Group 3)*.

For MDA, IARC (1986) concluded that there were *no data* in humans and *sufficient evidence for carcinogenicity* in animals. Its overall evaluation was that MDA was *possibly carcinogenic to humans (Group 2B)*.

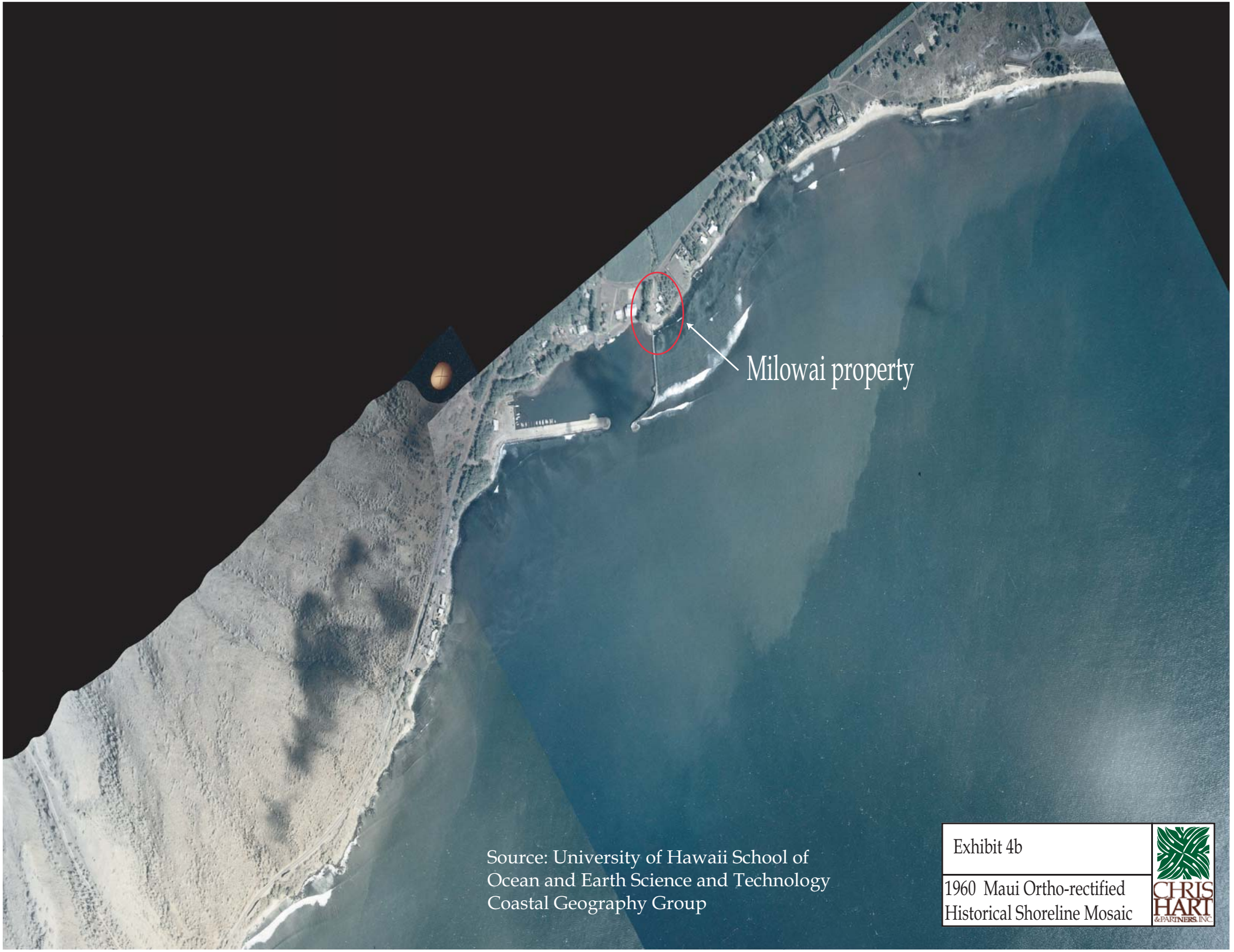


Source: University of Hawaii School of Ocean and Earth Science and Technology Coastal Geography Group

Exhibit 4a

1949 Maui Ortho-rectified Historical Shoreline Mosaic

CHRIS HART & PARTNERS, INC.

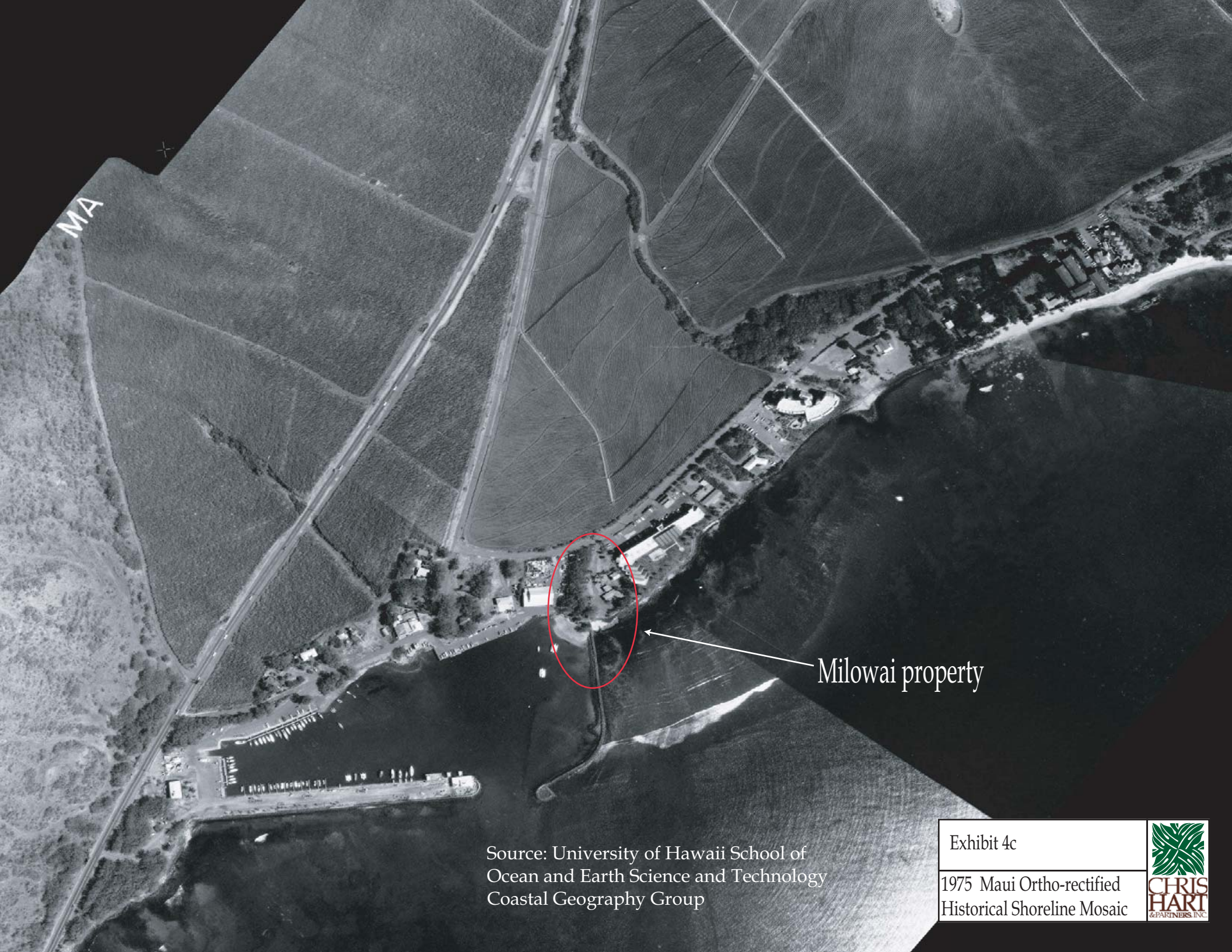


Source: University of Hawaii School of Ocean and Earth Science and Technology Coastal Geography Group

Exhibit 4b

1960 Maui Ortho-rectified Historical Shoreline Mosaic

CHRIS HART & PARTNERS, INC.

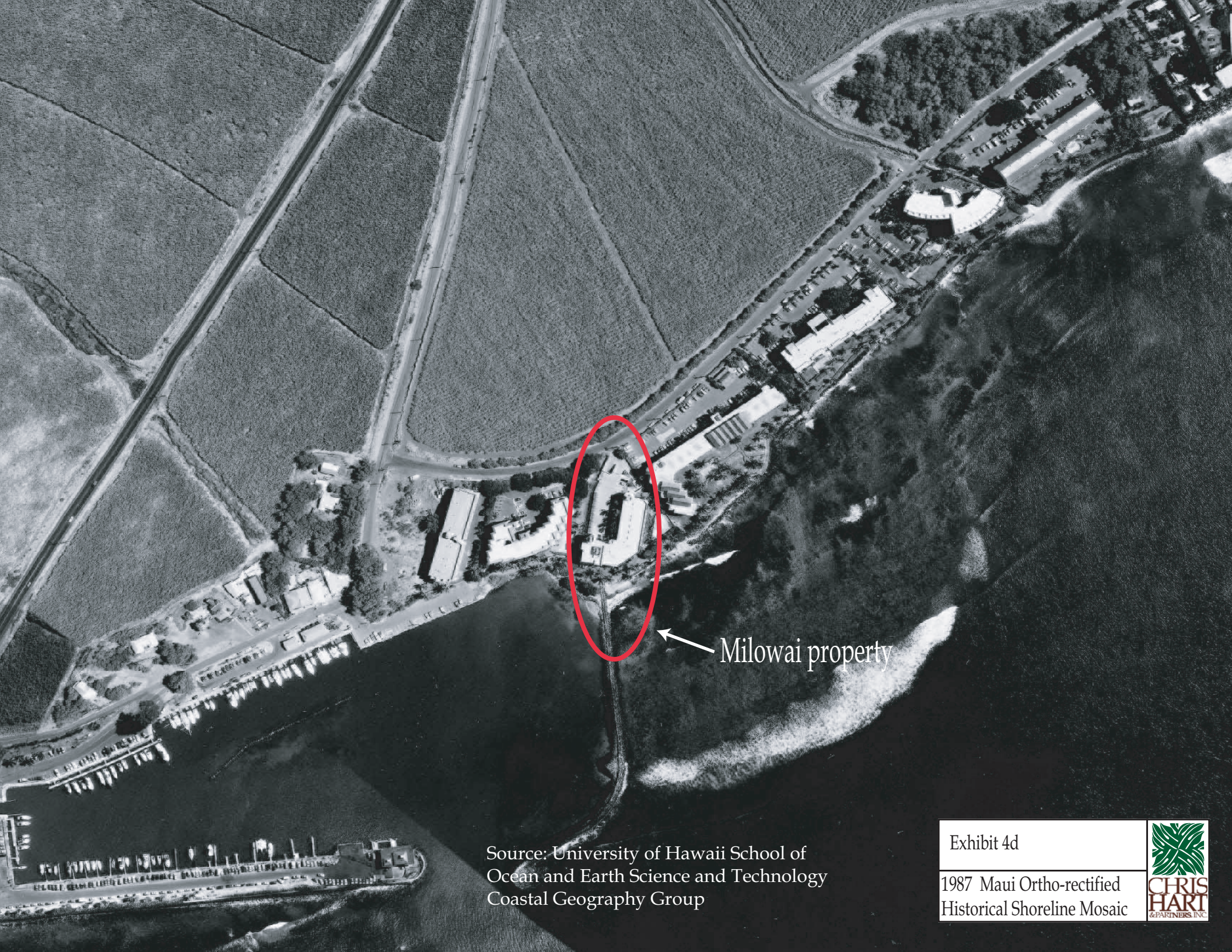


Source: University of Hawaii School of Ocean and Earth Science and Technology Coastal Geography Group

Exhibit 4c

1975 Maui Ortho-rectified Historical Shoreline Mosaic

CHRIS HART & PARTNERS, INC.



Source: University of Hawaii School of Ocean and Earth Science and Technology Coastal Geography Group

Exhibit 4d

1987 Maui Ortho-rectified Historical Shoreline Mosaic

CHRIS HART & PARTNERS, INC.

Source: University of Hawaii School of Ocean and Earth Science and Technology Coastal Geography Group

Exhibit 4e

1997 Maui Ortho-rectified Historical Shoreline Mosaic

CHRIS HART & PARTNERS, INC.

Public shoreline access #124 located between the "Lauloa" & "Maalaea Kai" Condominiums.

Public Shoreline access with parking located at Haycraft Park.

View of drainage easement between the "Milowai" & "Yacht Marina" Condominiums. This draiange easement is used for accessing the harbor.

View of "Maalaea Mermaid" Condominiums to the left. Pedestrians have been seen accessing the harbor area through the parking lot.

All Photos taken from Hauoli Street on 9/4/2013

Exhibit 5	CHRIS HART & PARTNERS, INC.
Shoreline Access Photographs	

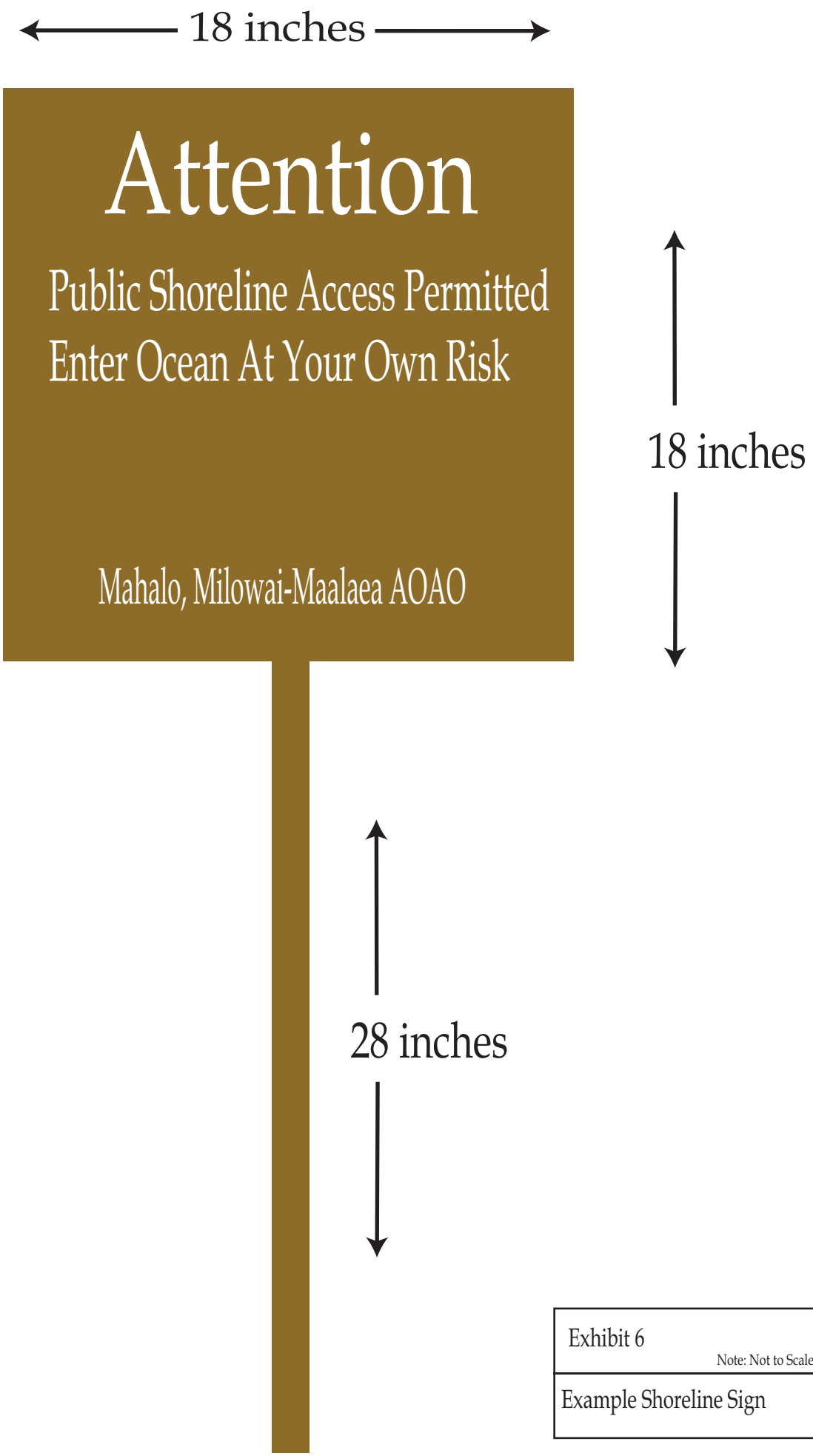


Exhibit 6

Note: Not to Scale

Example Shoreline Sign

CHRIS HART & PARTNERS, INC.

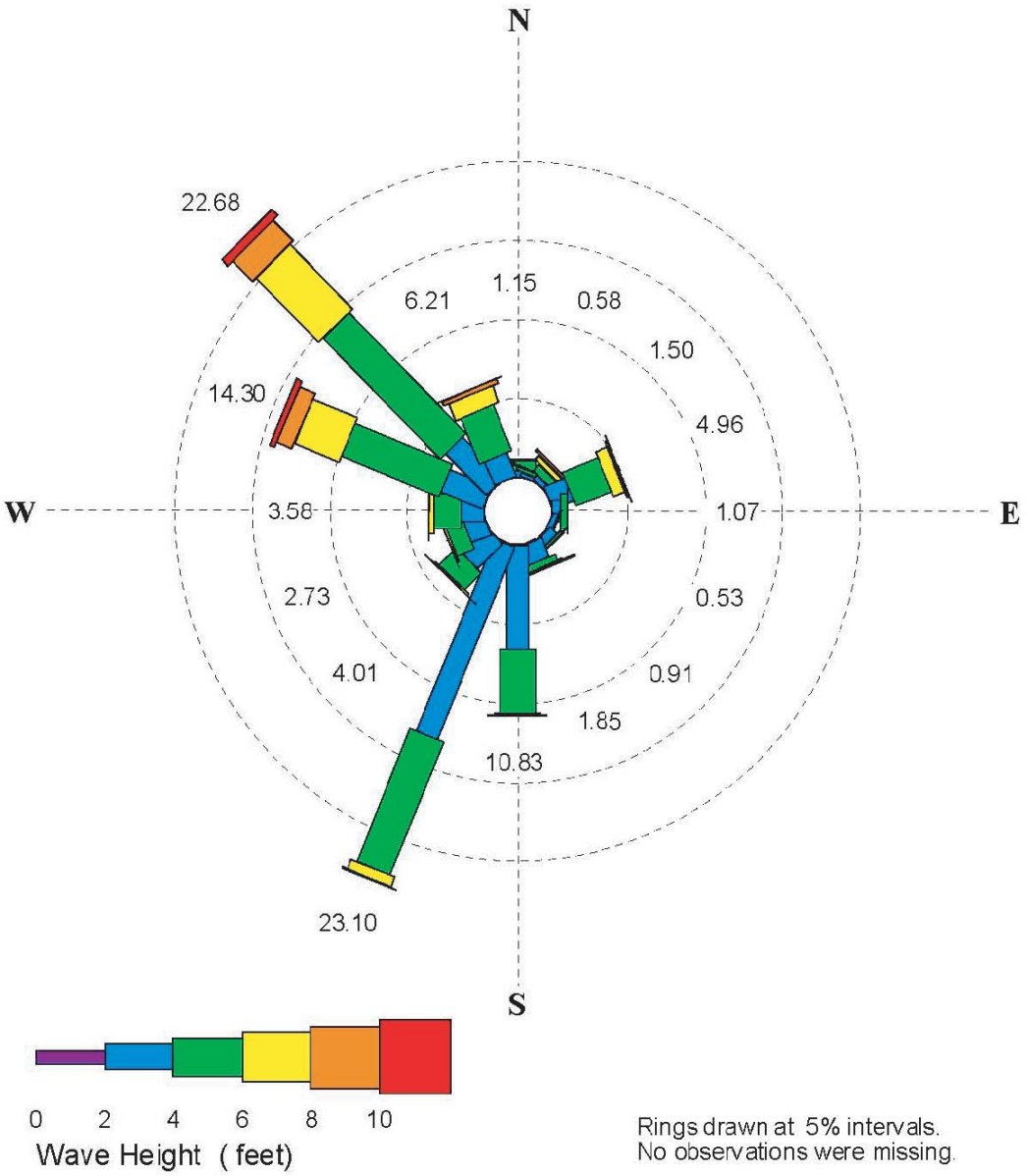


Figure 3-3. Wave Height Rose Plot for WIS Station 114

Exhibit 7

Wave information graphics

CHRIS HART & PARTNERS, INC.

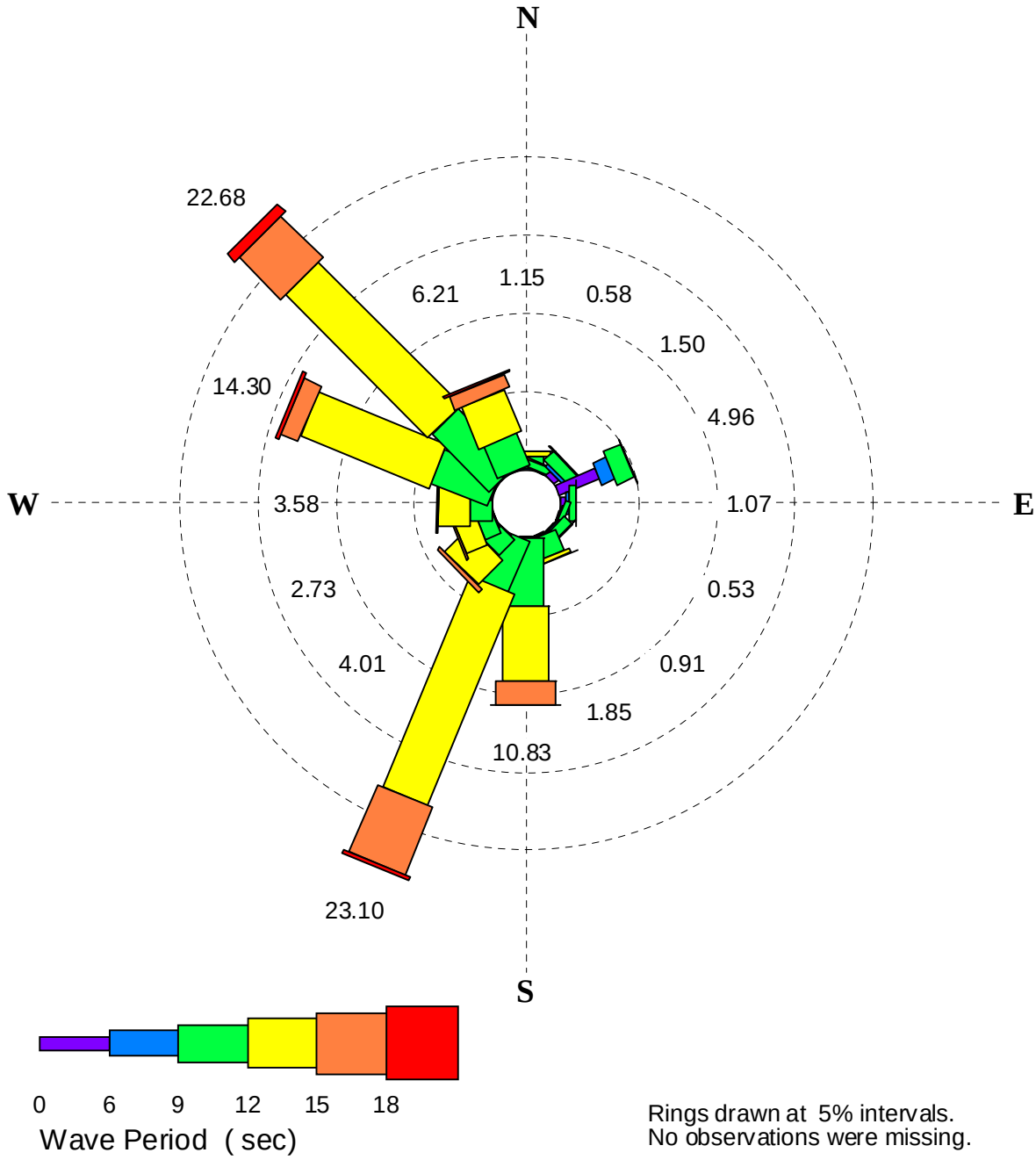


Figure 3-4. Wave Period Rose Plot for WIS Station 114

CHRIS HART
& PARTNERS, INC.

LANDSCAPE ARCHITECTURE & LAND USE PLANNING