DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU FEB 23 2009
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

DAVID K. TANOUE
ACTING DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

2005/ED-26(AA)

January 29, 2009

'09 FEB 10 A11:06
RECEIVED

The Honorable Katherine Puana Kealoha, Director
Office of Environmental Quality Control
State of Hawaii
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813

Dear Ms. Kealoha:

Subject: Chapter 343, Hawaii Revised Statutes
Environmental Assessment (EA)/Determination
Finding of No Significant Impact

Landowner/Applicant:	Gregory B. Michaels
Agent:	Analytical Planning Consultants, Inc.
Location:	68-689 Farrington Highway - Mokuleia
Tax Map Key:	6-8-10: 21
Request:	Shoreline Setback Variance
Proposal:	To retain a reinforced concrete seawall and other structures within the shoreline setback.
Determination:	A Finding of No Significant Impact is Issued

Attached and incorporated by reference is the Final EA prepared by the applicant for the project. Based on the significance criteria outlined in Title 11, Chapter 200, Hawaii Administrative Rules, we have determined that preparation of an Environmental Impact Statement is not required.

We have enclosed a completed OEQC Bulletin Publication Form and two (2) copies of the Final EA. If you have any questions, please contact Ann Asaumi of our staff at 768-8020.

Very truly yours,

David K. Tanoue, Acting Director
Department of Planning and Permitting

DKT:cs
Encls.

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FINAL ENVIRONMENTAL ASSESSMENT

SHORELINE SETBACK VARIANCE

TMK: 6-8-10: 021
68-689 Farrington Highway
Mokuleia, Oahu, Hawaii

ACCEPTING AUTHORITY:

City and County of Honolulu
Department of Planning and Permitting

PREPARED BY:

Analytical Planning Consultants, Inc.

January, 2009

OEQC BULLETIN PUBLICATION FORM

(Follow instructions on other side)

1. Project Name: Shoreline Setback Variance for Improvements at 68-683 Farrington Highway, Hawaii

   Type of Document *(circle one)*: **Draft EA**, (Final EA), EIS prep notice, draft EIS, final EIS, NEPA
   check if applicable: __X__ revised document _____ supplemental document
   Legal Authority: Chapter 343 HRS
   Agency determination: Anticipated FONSI

Applicable sections:

___	Use of state or county lands or funds	___	Use of land in the Waikiki district
___	Use of conservation district lands	___	Amendment to county general plan
X	Use of shoreline area	___	Reclassification of conservation lands
___	Use of historic site or district	___	Construction or modification of helicopter facilities

2. Island: Oahu
   Judicial District: Honolulu
   Tax Map Key Number: (1) 6-8-10: 021

3. Applicant or applicant agency:
   Mr. Greg Michaels
   Address: 27515 Enterprise Circle West
   Temecula, CA 92590
   Contact: Greg Michaels Phone: (951) 693-1880

Note for EAs: When the applicant is a state or county agency, the applicant agency and approving agency are the same.

4. Approving Agency (EAs) or Accepting Authority (EISs):
   City and County of Honolulu, Department of Planning and Permitting
   Address: 650 South King Street
   Honolulu, Hawaii 96813
   Contact: Henry Eng, FAICP, Director Phone: 808-523-4432

5. Consultant: Analytical Planning Consultants, Inc.
   Address: 928 Nuuanu Avenue Suite 502
   Honolulu, Hawaii 96817
   Contact: Don Clegg, President Phone: 808-536-5695

6. Public Comment Deadline: _____

7. Permits required prior to implementation: Shoreline Setback Variance, Building Permits
   Zoning Adjustment

8. Project Summary (name of file): Michaels Shoreline Setback Variance

9. Public Library Copy: _____(not required for final EAs)

10. This form was prepared by Lauri Clegg Phone: 808-536-5695

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List of Figures

Appendices

1. GENERAL INFORMATION

After-the-fact approval is being sought for construction of a modified vertical seawall structure that was constructed across the shoreline frontage of the subject property around 1969 and other miscellaneous structures located within the shoreline setback area. The structures were built without City approvals, including a Shoreline Setback Variance (ROH 1992 Chapter 23) and a Building Permit (ROH 1990 Chapter 18). Pursuant to the Revised Ordinances of Honolulu Chapter 23, Shoreline Setbacks, a Shoreline Setback Variance will be required and will be submitted pending issuance of a Finding of No Significant Impact (FONSI). The EA has been prepared incompliance with the Environmental Impact Statement (EIS) regulations of Chapter 343, Hawaii Revised Statutes.

A. Project: Shoreline Setback Variance

B. Owner/Applicant:
Mr. Gregory Michaels
Mailing address: 27515 Enterprise Circle West
Temecula, CA 92590

C. Accepting Agency:
City and County of Honolulu
Department of Planning and Permitting

D. Agent:
Analytical Planning Consultants Inc
Mr. Donald Clegg, President
928 Nuuanu Avenue
Honolulu, HI 96817
Phone: 536-5695 Fax: 599-1553

E. Property Profile:

Location:	68-689 Farrington Highway
TMK:	6-8-10: 021
Land Area:	Total 9,326 SF
	Erosion 2,898 SF
	Net 6,428 SF
Present Use:	Single Family Residential
State Land Use District:	Urban
Zoning:	R-5 Residential
Sustainable Communities Plan	North Shore/Rural Residential
Special District:	No
Special Management Area:	Yes
Flood Zone:	FIRM Zone AE

F. Agencies Consulted:

- City and County of Honolulu, Department of Planning and Permitting
- State Bureau of Conveyances
- State Department of Accounting & General Services (Survey Division)
- State Department of Land and Natural Resources/Office of Conservation and Coastal Lands/State Historic Preservation Division
- State Office of Environmental Quality Control
- Sierra Club
- State of Hawaii Office of Hawaiian Affairs
- Department of the Army
- State Land Use Commission
- Oahu Civil Defense
- University of Hawaii Environmental Center

G. Anticipated Determination Finding of No Significant Impact (FONSI)

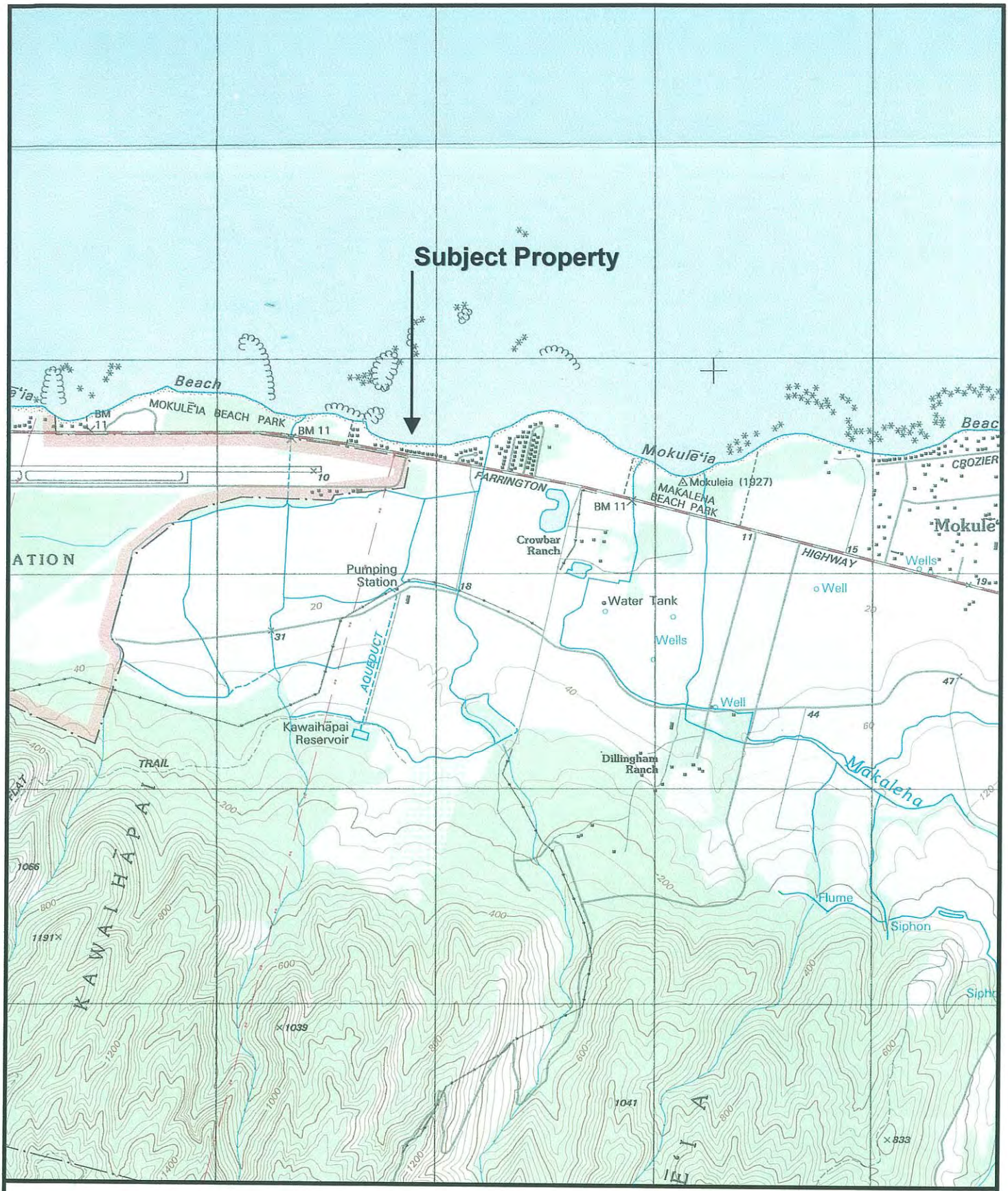
2. LOCATION AND GENERAL DESCRIPTION OF THE SUBJECT PROPERTY

2.1 Site Description and Background

The subject property, TMK 6-8-10: 021, is located at 68-689 Farrington Highway on the northwest coast of Oahu. The subject property is located between two single family residences on either side. The makai side of the highway along this stretch of Mokuleia is almost completely developed with single-family houses. A general location map for the subject property is shown in **Figure 1** and a Tax Key Map identifying the property is shown in **Figure 2.**

The subject property is located near the middle of an embayment that stretches between Mokuleia Beach Colony to the east and the Episcopal Church Camp to the west. The project site faces north and is subject to seasonal storm damage associated with large winter surf. Based on historical aerial photos of the Mokuleia coastline taken between 1949-1996, there has been a loss of shoreline due to erosion activity since the lots were first subdivided in 1960. Erosion of the lot area was noted by the City and County of Honolulu Real Property Tax Office as of the mid 1960's. The 1989 report *Oahu Shoreline Study – Data on Beach Changes* prepared by Sea Engineering, Inc. for the City and County of Honolulu's Department of Land Utilization documents a landward recession of the vegetation line since 1949 for the area immediately in the vicinity of the subject property. The landward recession totaled between 10 to 18 feet over the 39 year study period. Since the late 1960's a variety of shoreline structures have been constructed along the ocean frontage of the adjoining properties to the east and west to help stabilize the retreating shoreline. The State Land Use Commission in its letter dated December 9, 2005 confirms that the parcel has been subject to erosion and that the approximately 2,989 square feet of the land that has eroded and is currently submerged is located in the State Conservation District. It defers to the City and County of Honolulu regarding the application for the Shoreline Setback Variance.

The subject property was purchased in May 2004 by Mr. Greg Michaels. The recorded lot area to which the owner holds title is 9,326 square feet. After subtracting the eroded seaward portion of 2,898 square feet, the net area of the lot is 6,428 square feet. Vegetation on the site consists of yard grass and various residential landscaping materials. The topography of the lot is flat as is evident in the site photos in **Figure 3A; Figure 3** is a photo key map.



NORTH

0 1000 2000

SCALE IN FEET

Source USGS 1998

Figure 1
LOCATION MAP

Michaels, 68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

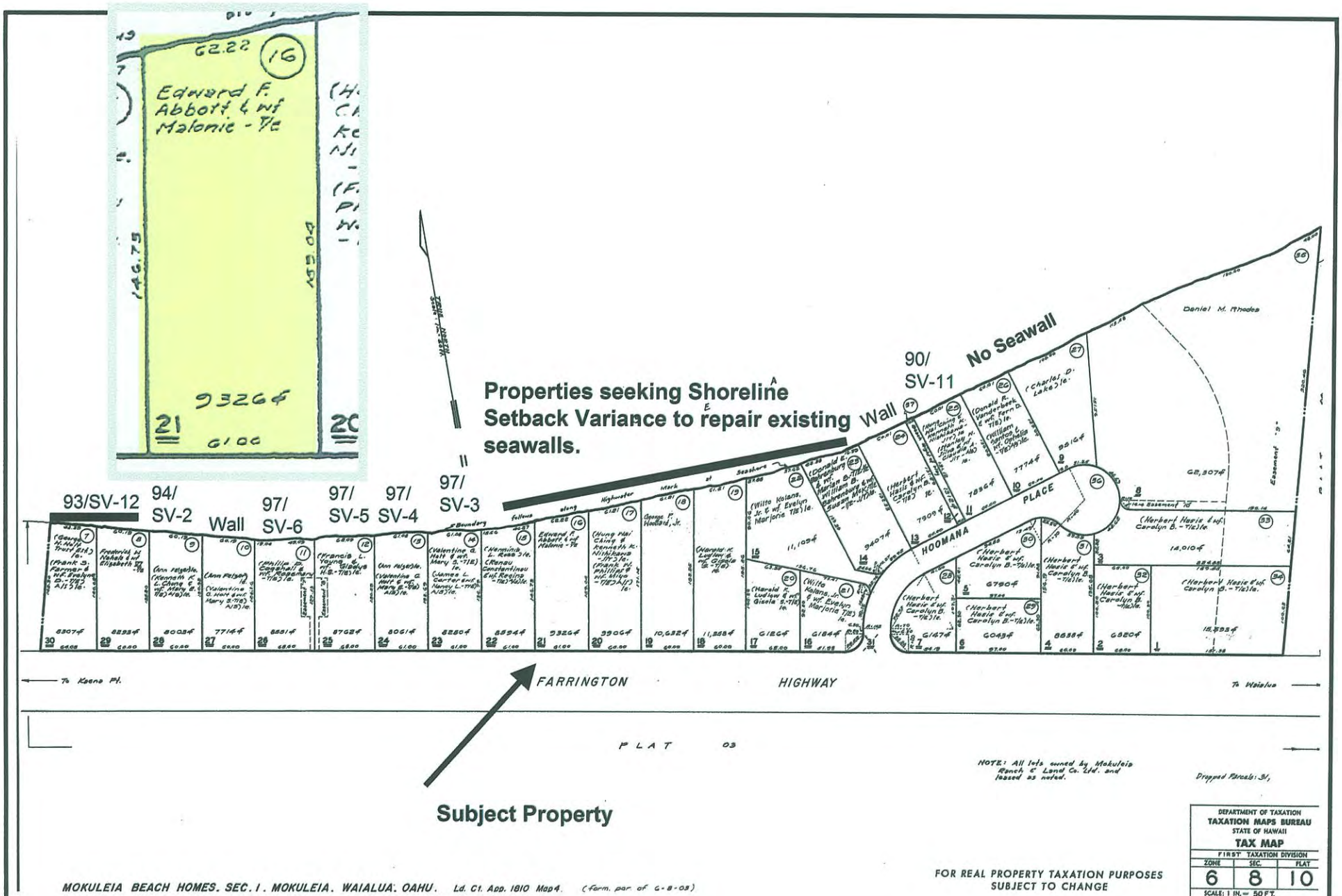
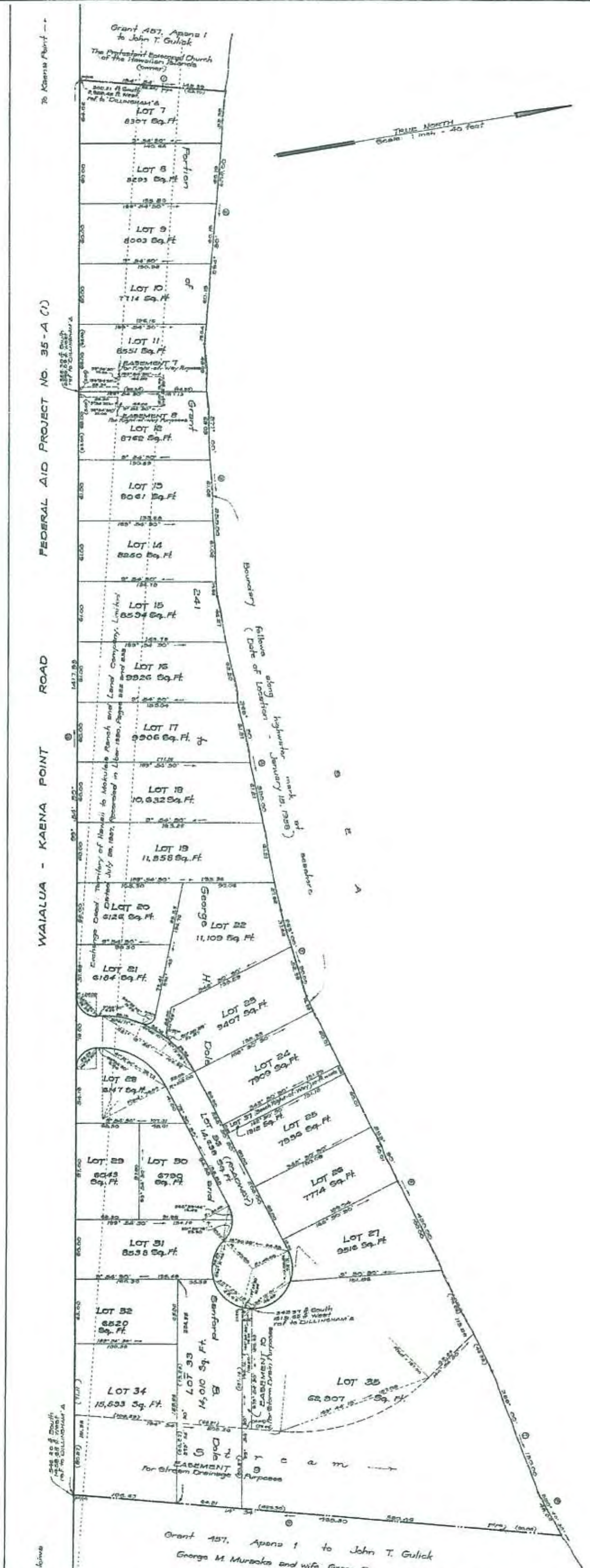


Figure 2

PROJECT VICINITY TMK MAP

68-681 Farrington Highway, Mokuleia, Oahu, Hawaii



NOTE:
Figures shown ⓒ indicate number of course in description.
Owners of adjoining land as shown on plan are from records in the Taxation Maps Bureau.
Azimuths as shown are based on Government Survey Trig. Station "DILLINGHAM" meridian.

NOTE: AREA OF EASEMENTS:
Easement 7 - 882 Sq. Ft.
Easement 8 - 832 Sq. Ft.
Easement 9 - 47,182 Sq. Ft.
Easement 10 - 1307 Sq. Ft.

LAND COURT

STATE OF HAWAII

Map with Application 1810

MOKULEIA RANCH AND LAND COMPANY, LIMITED - APPLICANT

Land situated at
MOKULEIA, AUKU, KEALIA AND KAENA
WAIALUA, OAHU, STATE OF HAWAII

DIVIDED INTO LOTS 1 TO 58, INCLUSIVE
AND
EASEMENTS 1 TO 12, INCLUSIVE
(See Maps 1, 2, 3 and 4)

LOTS 7 TO 37 INCLUSIVE
(Map 4)

Land situated on the North side of Waialua-Kaena Point Road
Federal Aid Project No. 35-A (1)
AT MOKULEIA, WAIALUA, OAHU, STATE OF HAWAII

Being a portion of Grant 241 to George H. Dole and Sanford B. Dole and a portion of the land conveyed by the Territory of Hawaii to Mokuleia Ranch and Land Company, Limited by Exchange Deed, dated July 28, 1937 and recorded in Liber 1330, Pages 222 and 233
Being also the whole of Lots 1 to 31, inclusive of Mokuleia Beach Homes - Section 1, File Plan 882

AREA = 7.428 ACRES

SUBJECT, HOWEVER, to Easements 7, 8, 9 and 10.

Easement 7 for right-of-way purposes over and across Lot 11;
Easement 8 for right-of-way purposes over and across Lot 12;
Easement 9 for stream drainage purposes over and across Lots 34, 33 and 35
Easement 10 for storm drain purposes over and across Lots 33 and 35

This map is from an actual survey on the ground made under the direct supervision of the undersigned between December 4, 1957 and September 13, 1960 and may be checked by the State Surveyor with our Field Books 1079, 1095 and 1187, calculation folders and worksheets 5870.

R. M. TOWILL CORPORATION

235 Merchant St.
Honolulu, Hawaii
September 13, 1960

By:
Registered Professional Surveyor
Certificate Number 259

MOKULEIA RANCH AND LAND COMPANY, LIMITED - APPLICANT

By:
Its Attorney

I hereby certify that Decree of Registration dated February 13, 1963 and numbered 1952 has issued to MOKULEIA RANCH AND LAND COMPANY, LIMITED, as to LOTS 7 to 37, inclusive only, and that Owner's Certificate of Title No. 119,117 has been transcribed therefrom.
Honolulu, Hawaii
February 15, 1963

Registrar of the Land Court

I hereby certify that the survey description and map hereon has been examined and checked as to form and mathematical correctness and the monuments marking the boundaries of the land sought to be registered have been checked on the ground and found to be in accord, however, the boundaries are subject to the Decision and Decree of the Judge of the Land Court.
Honolulu, Hawaii
July 6, 1962

State Land Surveyor

Filed November 15, 1960
Assistant Registrar

MAP 4 1810 A 11

Tax Map Key: 6-8-03:10

36" × 42" = 10.50 Sq. Ft.

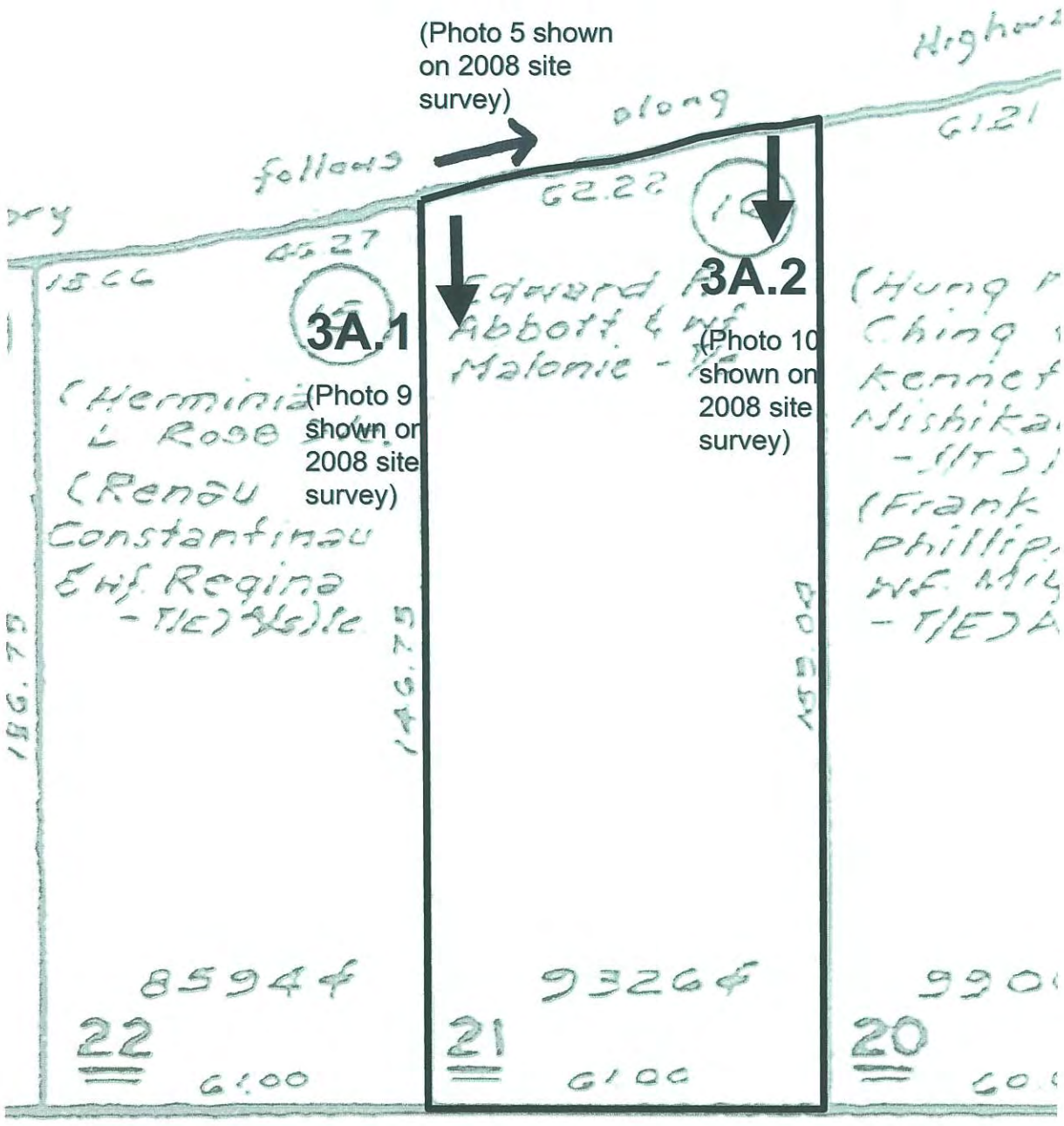


Figure 3

PHOTO KEY MAP

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

3A.1

(Photo 9 shown on 2008 site survey)

3A.2

(Photo 10 shown on 2008 site survey)

Figure 3A

TMK: 6-8-101:021

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

Figure 3A.3

(Photo 5 shown on 2008 site survey)

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

JOHN P. WH[illegible]
DIRECTOR

86/SI-3 (PR)

May 12, 1986

Mr. Gary N. Pardy
68-683 Farrington Highway
Waialua, Hawaii 96791

Dear Mr. Pardy:

Shoreline Setback Determination

Thank you for your letter of April 25, 1986 requesting a determination as to whether a 40-foot or a 20-foot shoreline setback applies to your property (Tax Map Key 6-8-10: 19).

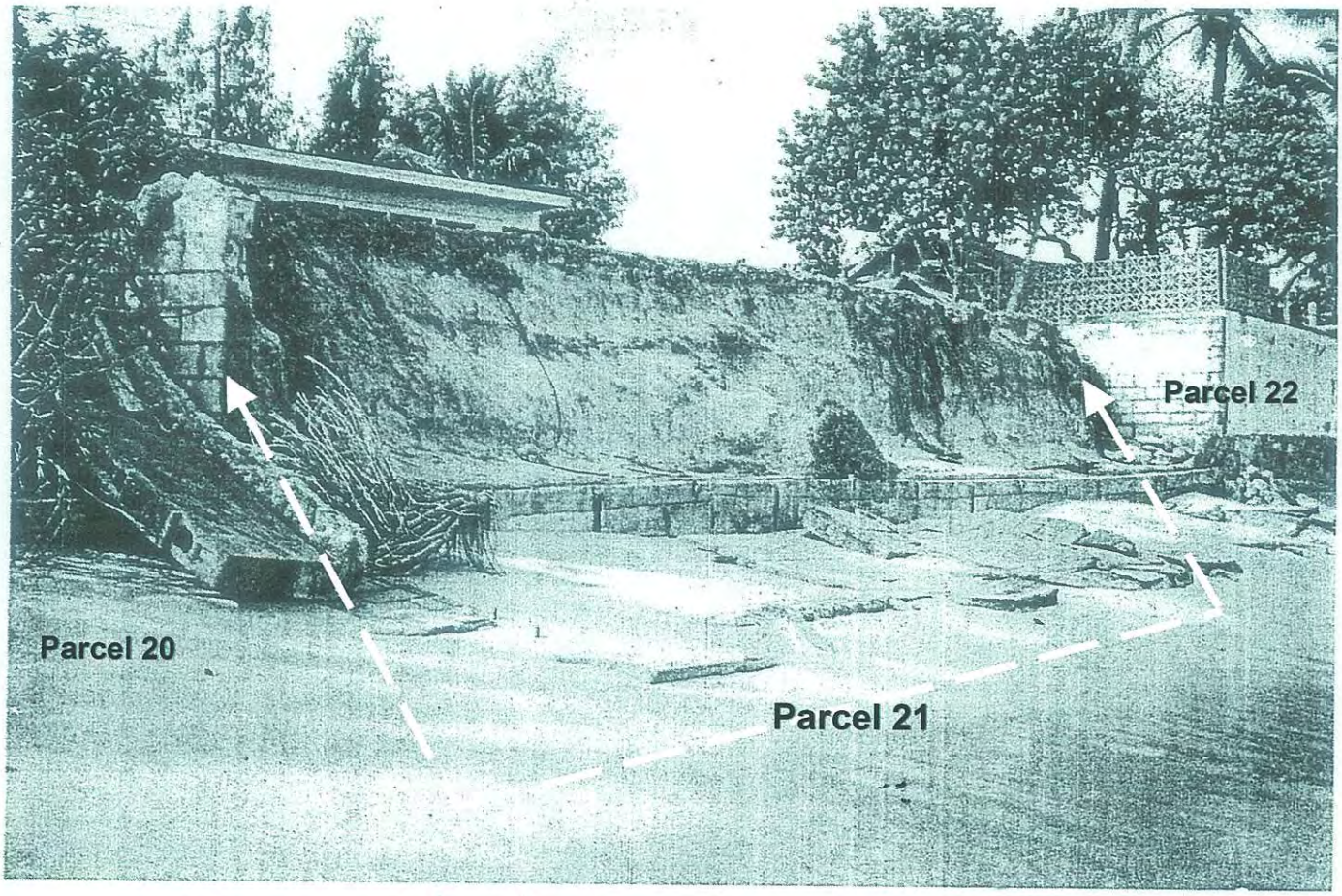
The attachments you provided with your letter have established that nearly 3000 square feet (SF) of land was eroded from your property and a seawall built prior to the adoption of the Shoreline Setback Rules of the City and County of Honolulu in 1971.

Upon further review of the information you provided, we have determined that when the 40-foot shoreline setback and all other required setbacks are applied to your lot, the buildable area of the parcel is reduced to less than 50 percent of the lot area.

Therefore, we find that, as stated in Rule 9 of the Shoreline Setback Rules and Regulations of the City and County of Honolulu, a 20-foot shoreline setback applies to your parcel.

In addition, we are waiving the need for an instrument survey under the provisions of Rule 10 of the Shoreline Setback Rules and Regulations. As shown on your plan, the fence extension is 30 feet from the shoreline and therefore clearly outside the shoreline setback. Our field measurements verify the dimensions shown on your plan.

Figure 5
1986 CITY DEPT OF LAND UTILIZATION LETTER – PARCEL 21 SHORELINE SETBACK DETERMINATION
68-689 Farrington Highway, Mokuleia, Oahu, Hawaii



6-8-10: 21 10-21-91

Source: DPP Files

Figure 6

OCTOBER 1991 CilTY PHOTO TMK: 6-8-10: 021

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

The existing house was constructed in 1960 per Building Permit No. 172529 dated September 1960 and in 1972 an extension to the master bedroom and family room were added per Building Permit No. 573 (**Appendix A).** In the early 1960's that area was referenced by TMK: 6-8-3: (*parcel number*) before it was further subdivided to today's Plat Number of 10 (TMK 6-8-10). The dimensions of the house as shown on the July 14, 1961 Real Property Tax Record Card (**Appendix B)** match the current footprint of the house. The Card also has a 1973 notation showing the master bedroom addition. The house is a permitted non-conforming structure which is set back more than 20 feet from the face of the existing seawall.

Prior to 1992, the shoreline setback was 20 feet for lots whose buildable area was reduced to less than 50% after applying the 40 foot shoreline setback and all other yard setback requirements. Mr. Michaels' lot meets those criteria – calculations are provided in **Appendix E.** The approximately 420 square foot concrete lanai on the west side of the addition is located 20-feet landward of the seaward face of the seawall. As there are no building permits nor evidence to collaborate that the slab was constructed legally and placed prior to 1992, it does not have nonconforming status and requires a Shoreline Setback Variance in order to be retained.

The tax map shows that the makai boundary of all the properties in this embayment is in line with each other on a gently curing arc. From the photographic evidence available, it appears that the original seawalls were constructed using very large concrete blocks for foundation along this line/arc. The City took a photograph of the subject property in October of 1991 which shows the original seawalls collapsed (including the subject property) (**Figure 6**). It appears that, over time, these seawalls have been replaced and/or repaired and strengthened and the original foundations left to support the walls. The walls that were repaired and strengthened remained on the original foundations. For those walls which were reconstructed, it appears that the walls were placed slightly landward of the original foundation making the base of the wall look as if it has been extended makai, when in fact the foundations have remained in place and the re-constructed seawalls re-built landward. In these cases, the original foundations remain. This is the case with portions of the subject seawall.

In 1996, the City again took photographs of the property (**Figure 7**). Sometime after October 1991, a new seawall and concrete stairs were apparently built without a building permit and without a shoreline setback variance. That seawall is the seawall that exists on the property today. The concrete stairs straddle the property line of the subject parcel and Parcel 20 to the east.

Additional Background Information: The Findings of Fact for the after-the-fact Shoreline Setback Variance for parcels 27-30 (93/SV-12), located north of the subject parcel, references an aerial photograph of the area dated April 22, 1967 on file at the City which shows no shore protection structures and the vegetation line ranging from 0-20 feet away from the dwellings. Seawalls appear to have been built along this embayment some time after 1967. Records at the Real Property Tax Office reference damage to existing walls and dwellings along the embayment during high surf in 1970. It is speculated that the construction of seawalls along the shoreline took place after this damage. The 1993 report also references Department slides and photographs of the area, taken from 1982 through 1991 which display walls in the sand area along the shoreline for 16 residential lots east of the Episcopal Church Camp, including the subject lot. No building permits are on file for construction of these seawalls; however, after-the-fact Shoreline Setback Variances and building permits have been issued for 9 of the properties since 1990. The Mokuleia Beach Colony (TMK 6-8-09: 001) has an approximately 350-foot long seawall, with an approved shoreline setback variance. The historical photos on file at the DPP also indicate that over the years walls have been destroyed by storm waves and reconstructed at increasing heights. The applicant is seeking after-the-fact approval of a Shoreline Setback Variance for the structures located within the shoreline setback as has been done for the other 9 properties along this portion of Mokuleia Beach.

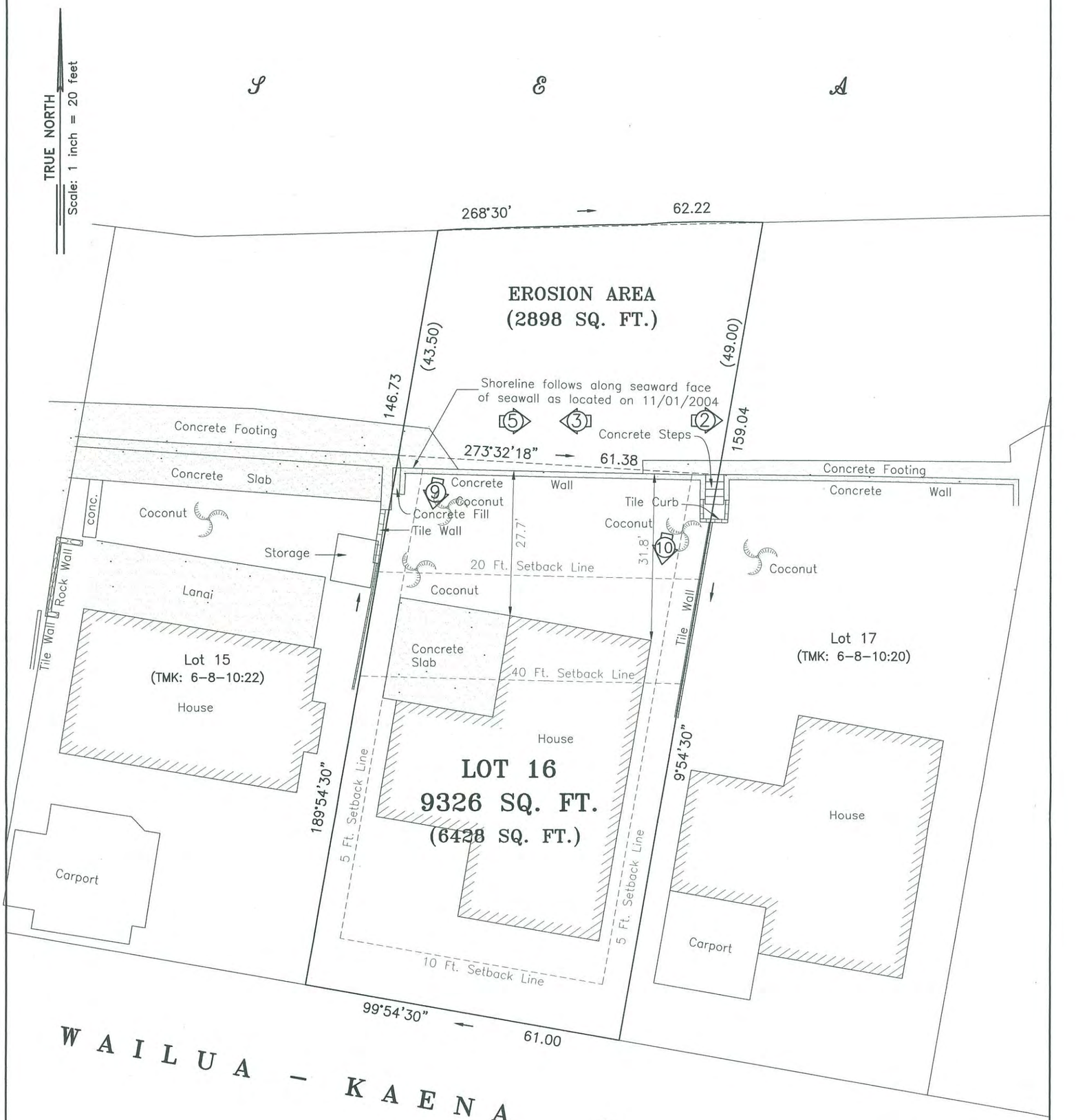
2.2 Proposed Action

The applicant received a Notice of Violation in July 2004 for the existing seawall located within the shoreline setback area and fill. According to the owner, the yard was tilled before grass was laid down. According to the owner, this may have appeared to have been fill, but it was the sandy soil already on the property. The applicant is seeking approval for an after-the-fact Shoreline Setback Variance for the following structures:

1. The seawall, stairs, and return portions of the seawall that are located along the side property lines;
2. Concrete slab patio area (420 SF) adjacent to the house.

The applicant will apply for a zoning adjustment to permit the wall to exceed the maximum permitted height for safety and topological reasons or a height variance. This will be determined during processing of the Shoreline Setback Variance. Without the seawall, erosion would immediately and significantly impact the shoreline frontage thereby threatening the existing residential structure. As noted earlier, this embayment along the Mokuleia coastline has a history of documented chronic erosion. **Appendix C** contains a full size copy of the shoreline survey/site plan and the 1973 certified shoreline.

A certified shoreline was obtained for the subject property in 1973 which shows the shoreline to be approximately in the same location along the face of the wall. Prior to obtaining after-the fact building permits for the structures located within the shoreline setback area, the applicant will be required to obtain a certified shoreline from the State of Hawaii Department of Land and Natural Resources. As per Section 13-222-7(a)(14) Hawaii Administrative Rules, an application for shoreline certification cannot be accepted by the State of Hawaii Department of Land and Natural Resources until the illegal shoreline protection structure has been approved by the appropriate governmental agencies, i.e. by obtaining a Shoreline Setback Variance.
This Environmental Assessment is the first step in obtaining this approval. The Department of Accounting and General Services Survey Division in their review of the shoreline survey will determine whether the certified shoreline will be placed at the base of the previous footings or at the face of the wall and any encroachments will be determined at that time.



SHORELINE SURVEY MAP

LOT 16

as shown on Map 4
of Land Court Application 1810

Mokuleia, Waialua, Oahu, Hawaii
Tax Map Key: 6-8-10:21
Scale: 1 inch = 20 feet
Date: July 6, 2005
Revised: June 9, 2008

Owner: Mr. Greg Michaels
Mailing Address: 27515 Enterprise Circle South
Temecula, CA 92590

JAIME F. ALIMBOYOGUEN
LICENSED PROFESSIONAL LAND SURVEYOR
No. 8216
HAWAII, U.S.A.

exp. 4/30/10

This work was prepared by me
or under my direct supervision.

GRAPHIC SCALE

10 0 10 20 40 80

(IN FEET)

1 inch = 20 feet

NOTES:
1. Only improvements shown were located.
2. Denotes number and direction of photographs.

2.3 Technical Characteristics

The existing seawall is a reinforced concrete wall with a top elevation of about +10.5'MSL. The seawall, which spans a width of 61.38 feet across the makai side of the property, has a return wall along the west property line and has a return wall and stairway over the east property line. **Figure 9** is the as-built plan prepared by Hida Okamoto & Associates, Inc. with a site plan, elevation, section and typical wall detail drawings. The seawall is comprised of poured reinforced concrete. Built into the wall are 3-inch tile drains about 5 feet off center set in crushed rock wrapped in filter fabric. Backfill is estimated at 28 cubic yards. Life expectancy for the sea wall is estimated at 30 years.

When the wall was reconstructed the original foundation was left to provide additional support and to protect the foundation of the wall from scouring as the elevation of the fronting beach was lowered by continuing erosion. Granting of the Shoreline Setback Variance will allow the property owner to maintain and repair the seawall as needed, otherwise overtime, portions of the wall could collapse should the footings be undermined by wave action. Any mitigation would involve securing the footings to prevent undermining by wave action. The seawall ties into seawalls on both the east and west sides of the subject property. The adjacent seawalls located on parcels 22 and 20 were originally constructed in the 1970's without building permits and the owners are in the process of obtaining an after-the-fact shoreline setback variance.

2.4 Economic and Social Characteristics

No new construction is proposed, therefore no economic or social impacts are anticipated.

2.5 Cultural and Historic Characteristics

The single family residential property is not used for cultural practices. The property has been disturbed since 1960 when the single family residence and related improvements were initially constructed. No new construction is proposed, therefore no disturbance to the property is proposed. The Mokuleia shoreline is very active with Native Hawaiians and the general public accessing the beach for recreation and traditional gathering, Public access to the shoreline is located about 500 feet east of the subject property via a City-owned public right-of-way TMK: 6-8-10: 012 and minimal lateral access is available depending on the tides.

2.6 Environmental Characteristics

The subject property is located near the middle of an embayment that stretches between Mokuleia Beach Colony to the east and the Episcopal Church Camp to the west. The project site faces north and is subject to seasonal storm damage associated with large winter surf. In the 1960's and 70's there was sand mining along this stretch of the bay; and, according to official reports, major erosion occurred during 1967 to 1971 from significant storm wave damage. Many of the seawalls along this embayment were built in response to the 1967/1971 period of storm wave damage and chronic erosion and there has been a seawall along the shoreline of this property for over 30 years.. The subject property has had a seawall in place for likely over 35 years as can be seen in Figure 8's aerial photograph, even though the current seawall was built around 1991/1992 after the seawall was destroyed by wave action. The subject seawall ties into seawalls on both sides of the subject property. Please see Section 4 and the Coastal Engineering Assessment in **Appendix D** for a more detailed discussion of environmental characteristics.

The subject property does not contain unique or endangered plant or animal species

3. ENVIRONMENTAL SETTING

3.1 General Description

The project area is a developed residential strip fronting the ocean with single-family homes along the shore. Many of these houses were constructed in the early 1960's. The State's Land Use designation is Urban and the City and County of Honolulu's zoning is R-5 Residential. All of the shoreline lots in the vicinity of the subject property have existing seawalls or revetments to provide shoreline erosion protection.

3.2 Soils

The soils for the subject property are of the Jaucas sand series. Slopes range from 0 to 25 percent and the permeability is moderate to rapid. Runoff is considered to be very slow to medium and the erosion hazard is slight to moderate. (U.S. Department of Agriculture, 1972).

3.3 Flood Characteristics

The Federal Emergency Management Agency (FEMA), Flood Insurance Rate Maps (FIRM), labels the shoreline in the project area as Zone AE with a regulatory flood elevation of +12 feet MSL. The Zone AE designation indicates that the site is not subject to high velocity tsunami flow. Because the height of the seawall is lower than the base flood elevation of 12 feet, the seawall will have little or no effect on the flood characteristics. The project site is also located within the tsunami evacuation zone as determined by the Oahu Civil Defense.

3.4 Marine Flora and Fauna

There are no known endangered species either land or aquatic flora or fauna, in the vicinity of the subject property. The following information about the marine flora and fauna in the vicinity of the project area is taken from the *Hawaii Coral Reef Inventory, Island of Oahu* (AECOS, 1979): "Off the east end of Dillingham Air Field, Montipora flabellata is very abundant, with Porites lobata and Pocillopora meandrina are common. Turbinaria ornata and Asparagopsis taxiformis are the most abundant algae, with Galaxaura less common. Schools of Heniochus diphreutes, Chromis verator, Decapterus macarellus, and Acanthurus dussumieri are abundant in the vicinity of sand channels crossing the limestone bottom, the margins of which provide vertical relief. Green sea turtles (Chelonia mydas) are present."

3.5 Water Quality

Nearshore waters are classified as "A" by the Department of Health. No major point sources discharge into these waters, but coastal waters are subject to turbidity following periods of heavy rain when sediments are washed from the land. These effects become less more westward of Kaiaka Bay.

3.6 Public Access, Coastal Use and Recreational Resources

A public right-of-way (TMK: 6-8-10: 012) owned by the City and County of Honolulu is located east of the subject property. Mokuleia Beach Park, about 4,000 feet west of the subject property, also provides public access to Mokuleia Beach.

The shoreline along Mokuleia Beach is light to moderately used by fisherman typically where there is a broader sandy beach and mostly commonly pole fishing is used to catch ulua, papio, oio, goatfish, and other reef species. Some throw-netting also occurs and some people have been observed walking out on the shallow reef headland, presumably fishing. There is a more limited amount of spear-fishing and trapping. There is no "dry beach" fronting the subject property and the sandy beach is relatively narrow, especially depending on the tidal and wave conditions. The area is also used by some for recreational diving, but more in the vicinity of Kaiahulu Bay.

The City's Mokuleia Beach Park provides camp sites for those who obtain permits. Swimming along Mokuleia Beach is relatively safe during calm seas, but dangerous currents can develop especially during heavy surf. In some areas, swimming is not very good because of the rocky bottom and the usually turbid waters.

At the time that the individual lots were created in 1960, there was no publicly mandated requirement for lateral access along the shoreline and the property boundaries were formed at the highwater mark. Due to the natural process of erosion along this embayment, approximately 25% of the lot area has eroded and a portion of the property is underwater. As such, any previously existing public lateral access, which would have been beyond the property boundary is no longer available. This natural process has limited the amount of sandy beach fronting the property and during high tide there is no beach area. Recreational resources are available depending on seasonal tides.

3.7 Archaeological and Cultural Resources

The project site is located in the Mokuleia ahupuaa. The Hawaiian land division, known as an ahupuaa, generally runs from the top of the mountains to the edge of the coral reef in the sea. The Kolea fishing shrine, now destroyed, is documented in the *Sites of Oahu* as being located far east of the project site, in the vicinity of the Mokuleia Polo field. (Sterling, Bishop Museum Press) The subject property has been previously disturbed by the construction of the seawall and single family dwelling improvements. The subject property does not contain any known archaeological or historic sites. No new construction is proposed.

The proposed action will have no effect on traditional cultural practices. On-shore and off-shore fishing along the embayment occurs now and will continue to take place if the proposed action is approved. The State of Hawaii Department of Land and Natural Resources State Historic Preservation Division is unable to offer concurrence on the project because the project site is located in an area where there is a moderate to high potential for historically significant sites, including Native Hawaiian burials and/or habitation sites, to be located beneath the ground surface and the wall was constructed prior to their review. If additional construction or renovation plans should be considered in the future and should significant archaeological features be uncovered, the applicant will be responsible for contacting the Department of Land and Natural Resources, State Historic Preservation Division in accordance with applicable regulations.

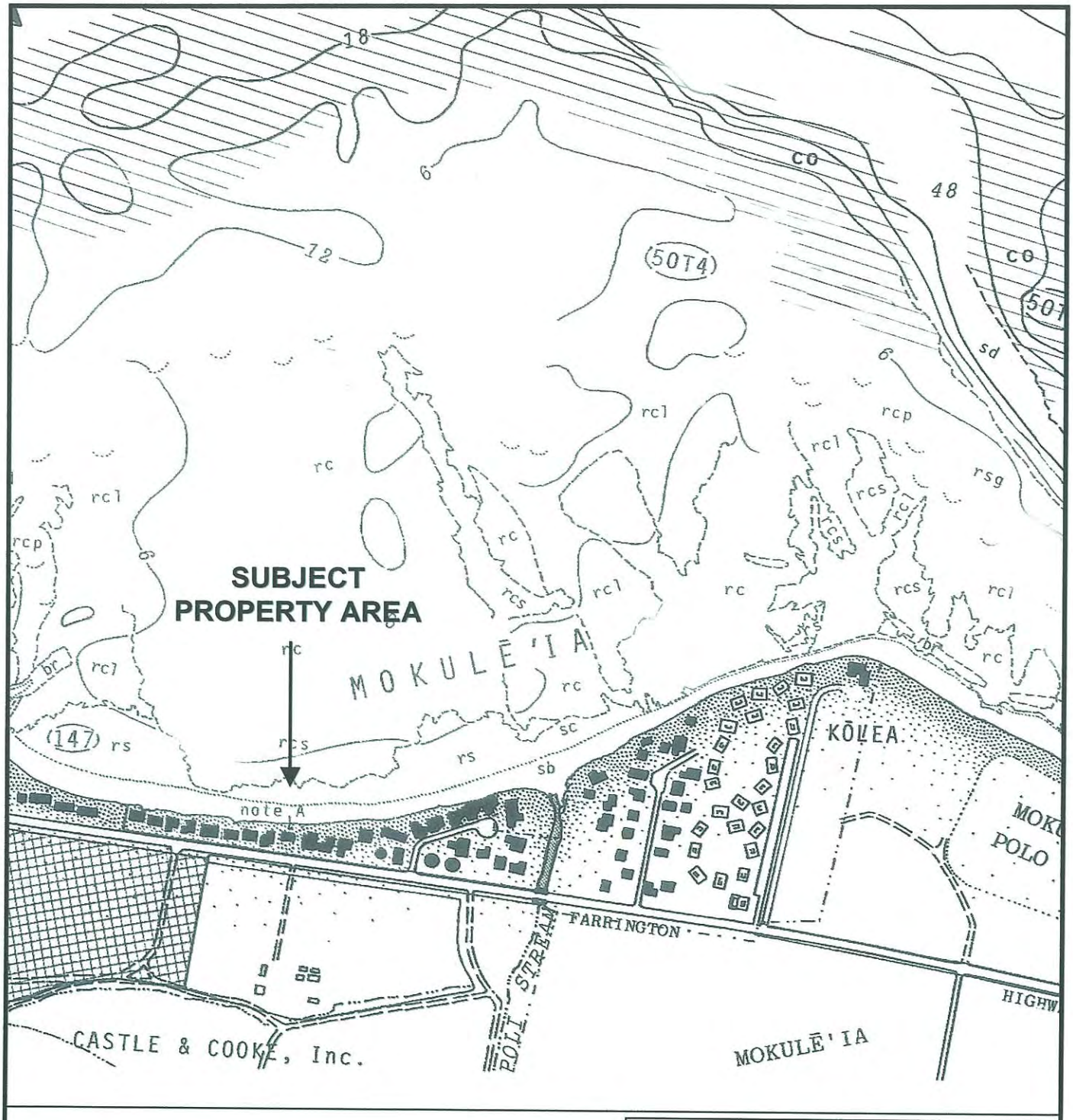
3.8 Applicable Land Use Considerations

Chapter 205, Hawaii Revised Statutes (HRS) promulgates the State Land Use Law. The State of Hawaii Land Use Commission (LUC) classifies all land into four districts: Urban, Conservation, Agriculture, and Rural. The LUC has noted that the fast portion of the subject parcel is within the State Urban District; and, that the approximately 2,989 square feet of the land, which has eroded and is currently submerged, is located within the State Land Use Conservation District pursuant to HAR 15-15-20(6). As the shoreline protection structure lies within the Urban District the LUC defers to the County jurisdiction. Section 13-22-7(a)(141) OF THE Hawaii Administrative Rules (HAR) requires government approval where the shoreline is located at the base of a manmade structure. Prior to obtaining after-the-fact building permits for the structures located within the shoreline setback area, the applicant is required to obtain a certified shoreline from the State of Hawaii Department of Land and Natural Resources. The Department of Accounting and General Services Survey Division in their review of the Shoreline survey will locate placement of the certified shoreline and any foundation encroachments will be determined by the DLNR Office of Conservation and Coastal Lands in their review of the project. A previous certified shoreline was issued for the property in 1973.

The Coastal Zone Management (CZM) Program is promulgated by Chapter 205A, HRS. Through the CZM Program, each county is required to establish Special Management Areas (Chapter 25) and Shoreline Setbacks (Chapter 23). The affected property lies within the SMA and has been determined to have a "grandfathered" 20-foot shoreline setback. The application for an after-the-fact variance for the existing seawall involves no new construction; therefore, no Special Management Area Use Permit is required.

Chapter 23 has as its purpose to protect and preserve the natural shoreline; public pedestrian access laterally along the shoreline; and open space along the shoreline. Reduction of beach area has been an ongoing problem since the residential subdivision was created in 1960. Prior to construction of the seawall, the property lost 25% of its lot area to erosion from wave action along the shore as the natural shoreline changed. Depending on the seasonal tides people can transit the area fronting the wall for recreational purposes and approval of the shoreline setback variance will not diminish any existing lateral access. Scenic vistas and view planes from and along the Mokuleia coastline and from the near-shore waters are enjoyed by residents. All of the residential properties along this area have similar shoreline protection structures in place and the subject seawall maintains a consistent appearance. The seawalls are located on private property and no public open space or scenic views are impacted.

Provisions of the Land Use Ordinance of the City and County of Honolulu regulate the utilization of land in a manner intended to encourage orderly development in accordance with adopted land use policies. The project site is located in Mokuleia, Waialua within a rural residential designated area on the North Shore Sustainable Communities Plan (SCP) Land Use Map. (This designation is not a site-specific designation but is illustrative of land use policies stated in the text of the SCP.) Section 3.1 which discusses open space and the natural environment notes that open space preservation, which includes shoreline areas, is a key element for the North Shore and promotes effective management of these resources and deter land-based activities which contribute to their degradation. Section 3.1.32 contains guidelines pertaining to shoreline areas including:



LEGEND	
br	beachrock
rbs	hard bottom with sand pockets
rcl, rcp	consolidated limestone bottom
rc, rcs	complex reef (sand, rubble, hard & soft)
rs	hard bottom with sand pockets
rsg	consolidated grooved limestone with sand
sb	sand beach
sc, sd	sand bottom or patch; also in depths > 30 feet

Figure 10

SHORE AND NEARSHORE CHARACTERISTICS

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

- Protect nearshore coral reefs from damaging activities such as soil erosion.
- Discourage development or activities which result in beach loss.
- Maintain and expand public beach access to the shoreline and lateral shoreline access along the coast, especially in areas with high recreational or scenic value, including the shoreline along Sunset and Kawailoa where access to popular sandy beaches and surf spots are in demand.

Comment: According to the Coastal Engineering Report done by EKNA Services, the existing seawalls do not alter seasonal erosion/accretion patterns. The entire coastal reach has been experiencing net long-term erosion over the past 50 years. The area is not specifically noted as an area of high recreational or scenic value. In any case, the seawalls, which are on private property are not a barrier to lateral access along the beach.

4. COASTAL SETTING

4.1 General Description

The Mokuleia coastline stretches between Kaena Point to Kaiaka Bay at Haleiwa town on the northwest coast of Oahu. This area is characterized by low-lying platforms of fossil reef-rock that are elevated 3 to 6 feet above mean sea level (MSL). These platforms have been subjected to broad inter-tidal and sub-tidal wave abrasion which has carved into the Waimanalo-age limestone. The coastline contains isolated sandy beaches between breaks in the rocky bench. These beaches widen towards Mokuleia and connect with small offshore sand fields. The wave energy and bioerosion are high at the shoreline in this area as is evidenced by the modern intertidal cuts into the elevated limestone. (Fletcher, 2002)

4.2 Shoreline Characteristics

EKNA Services, Inc. was contracted to prepare a Coastal Engineering Assessment of the potential impact of the subject seawall on existing coastal processes along this Mokuleia shoreline area. EKNA Services, Inc. also prepared in 2004 a Coastal Engineering Assessment of two existing seawalls (TMK: 6-8-9: 010 and 011) for two properties located along the same embayment about 1,300 feet east of the subject property. The 2004 Assessment Report contains a large amount of information that is relevant to the subject property, i.e. information about coastal processes, alternative shore protection measures, and potential littoral impacts. As recommended by EKNA Services, Inc., the entire 2004 Assessment Report is in **Appendix D** to provide costal engineering information in support of the shoreline setback variance for the subject property. In addition to the 2004 Assessment Report, EKNA Services, Inc. prepared on April 5, 2005 a letter report (**Appendix D**) to provide additional information specific to the subject parcel.

The following information is taken from the EKNA Services, Inc. 2004 and 2005 Coastal Engineering Assessment (**Appendix D**). The subject property lies on the Mokuleia coast, characterized as an undulating coastal reach containing numerous embayed coral sand beach systems. The subject property is near the middle of one such embayment located near the east end of Dillingham Airfield. This particular embayment is formed between two prominent reef "headleads", which are shallow reef formations that protrude seaward from shore. The reef headland which bound the eastern end of this embayment fronts the Mokuleia Beach Colony, just west of the Mokuleia Polo Grounds. The subject property is also west side of the Mokuleia Beach Colony. **Figure 11** shows the general shoreline and nearshore physical characteristics.

The shoreline fronting this area is a narrow beach underlain with reef limestone that extends seaward as a variable depth reef platform. This area is exposed to winter North Pacific swell and the predominant tradewind waves. Shallow fringing reefs protect the shoreline from moderate tradewind wave energy. However, during large winter swell conditions and high water levels, erosion of the narrow beach and wave runup and overtopping of the beach cause erosion damage and flooding to unprotected backshore areas and dwellings. Numerous property owners along this coastal reach have constructed shore protection to prevent further storm wave runup damage to their dwellings. The subject property owner wants to retain the exiting seawall and related improvements to prevent future erosion and wave runup damage to the dwelling and property.

During an April 2004 site visit to the east end of the embayment by EKNA Services, Inc., reef headlands were not bared, but were noticeably shallower than the reef fronting the central portion of the embayment. Breaking wave activity was evident across the entire bay-front. While not observable from shore, a review of aerial photos shows calm areas between breaker zones that indicate the deeper "channels" through the reefs fronting the embayment.

A site visit to the subject property was conducted on April 2, 2005 during low tide (0.1'MLLW), moderate North Pacific swell conditions (3 to 5 foot surf) and strong tradewinds. The base of the wall was subject to wave runup at the time of the site visit. Breaking wave activity was evident across the entire bay-front.

The subject seawall ties into concrete seawalls on both sides of the subject property. A public right-of-way (ROW) is located about 400 feet to the east of the subject property. Properties further eastward of the ROW to the Poli Stream mouth are protected with structures, and properties westward of the ROW within the embayment are protected by seawall – about 1,000 linear feet or so. There is no "dry beach" fronting the seawalls extending westward within the embayment. **Figure 3A** contains photos which depict the condition of the shoreline in the vicinity of the subject property.

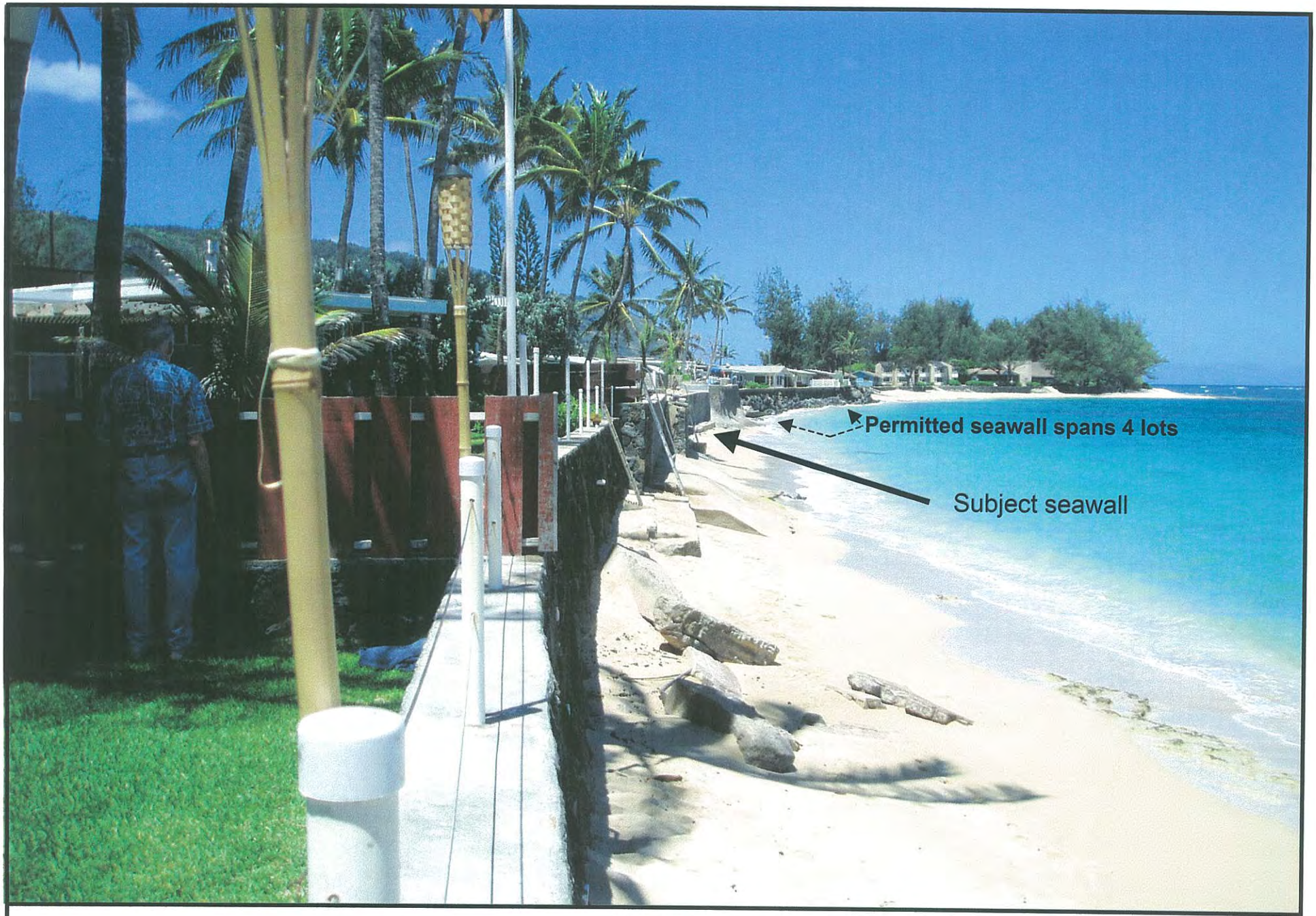
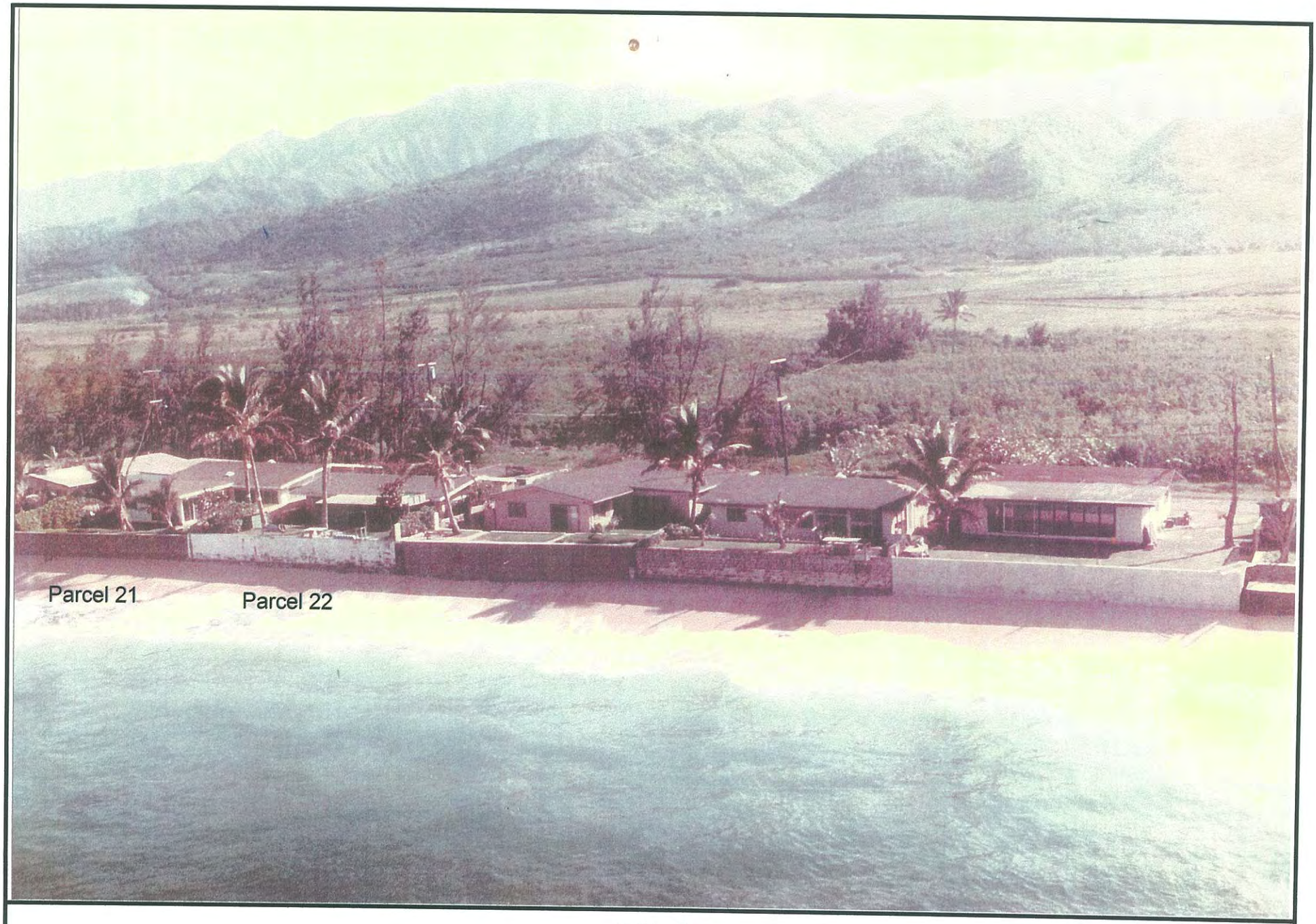


Figure 11

EXISTING CONTINUOUS SEAWALLS ALONG EMBAYMENT

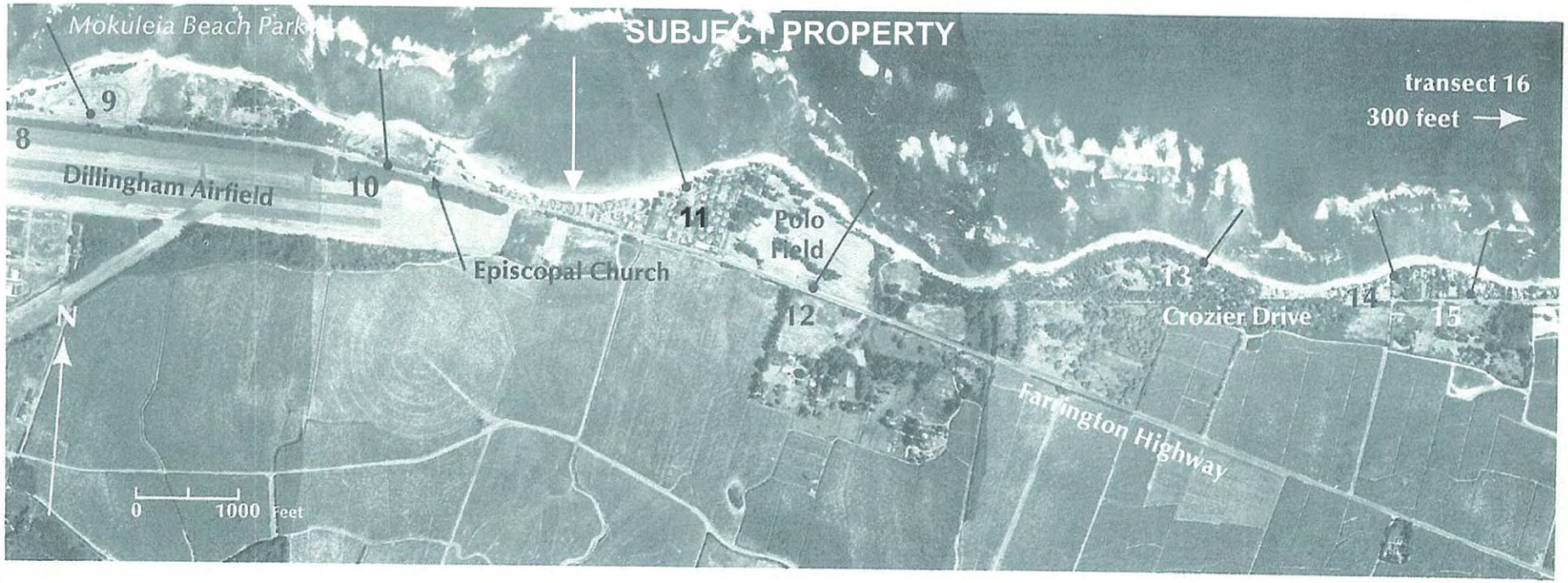
Taken from TMK: 6-8-10: 014, Mokuleia, Oahu, Hawaii



1968

Subject Parcel is TMK: 6-8-10: 021

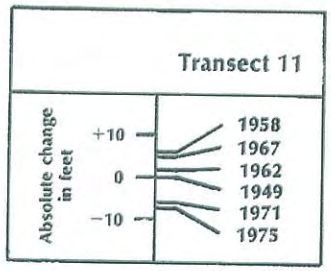
68-689 Farrington Highway, Mokuleia, Oahu, Hawaii



Photomap 2. Mokuleia Beach (Middle Section)

Photographs by Air Survey Hawaii: March 1971

Absolute change is the change in the position of the vegetation line compared to the earliest or base year.



SOURCE: *Beach Changes on Oahu as Revealed by Aerial Photographs*, 1981, Dennis Hwang

Figure 12

MOKULEIA BEACH LOSS AS REVEALED B HISTORIC AERIAL PHOTOGRAPH

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

Table 2 - Central Mokuleia Beach. Changes in the Vegetation Line in Feet.

Observation Period	Transect Number								
	8	9	10	11	12	13	14	15	16
Sep 28, 1949 - Nov 01, 1958	*	-6	4	6	-4	*	1	-15	-4
Nov 01, 1958 - Aug 22, 1962	*	-1	-5	-4	3	-6[2]	7	28	20
Aug 22, 1962 - Apr 22, 1967	*	8	7	3	-3	-7	-2	-8	-9
Apr 22, 1967 - Mar 17, 1971	-2	-3	-8	-12	-5	-2	7	-1	*
Mar 17, 1971 - Apr 11, 1975	-1	-2	-8	-1[1]	-7	2	-3	5	2[3]
Apr 11, 1975 - Aug 06, 1979	12	9	-1	*	8	1	-4	-8	1
Aug 06, 1979 - Feb 03, 1988	-22	-26	-7	*	-7	-4	-5	20	-1
Net Change - Vegetation Line	-13	-21	-18	-8	-15	-16	1	21	9
Range - Vegetation Line	22	26	24	14	16	16	13	36	20

** No Data*
[1] To Seawall
[2] Change from 1949 to 1962
[3] Change from 1967 to 1975
Net change is the total change in the position of a beach index line between the earliest and most recent observation year.
Range is the difference between the observed extremes in the position of a beach index line.
Transect locations and historical data from Hwang, Table 2.

Figure 13
MOKULEIA BEACH - CHANGES IN VEGETATION LINE
68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

Note: It appears that, over time, seawalls in the area have been replaced and/or repaired and strengthened and the original foundations left to support the walls. The walls that were repaired and strengthened remained on the original foundations. For those walls which were reconstructed, it appears that the walls were placed slightly landward of the original foundation making the base of the wall look as if it has been extended makai, when in fact the foundations have remained in place and the re-constructed seawalls re-built landward. In these cases, the original foundations remain. This is the case with the subject property.

4.3 Existing Shoreline Structures

All of the residential lots on both sides of the subject property along this embayment have existing seawalls or revetments to provide shoreline erosion protection **(Figure 12)**. Many of these shoreline protection structures were likely built in the 1970's and 1980's due to chronic erosion. As further evidence of the longstanding seawalls along this embayment, in 1986 the owner of Parcel 19 received written confirmation from the City's Department of Land Utilization that the seawall on Parcel 19 (just 2 lots east of the subject property) was "built prior to the adoption of the Shoreline Setback Rules of the City and County of Honolulu in 1971" (**Figure 5**). While almost all of the shoreline protection structures that were built over 20 to 30 years ago were built without building permits, many have subsequently obtained after-the-fact Shoreline Setback Variances and building permits from the City and County of Honolulu. The adjacent seawall to the west of the subject property, which fronts four (4) contiguous parcels, was built in 1998 under the approval of a shoreline setback variance to replace old seawalls. The seawalls on Parcel 22 to the west and on Parcels 19, 18, 15 and 14 the east of the subject property are also in the process of submitting shoreline setback variance applications to the City.

4.4 Shoreline History

Historical aerial photographs depict the significant loss of shoreline along the Mokuleia coast. The subject property has lost to erosion approximately 2,898 square feet or almost 31 percent of the property's total 9,326 square feet. An area between 43 to 49 linear feet deep is now located seaward of the 2004 shoreline survey.

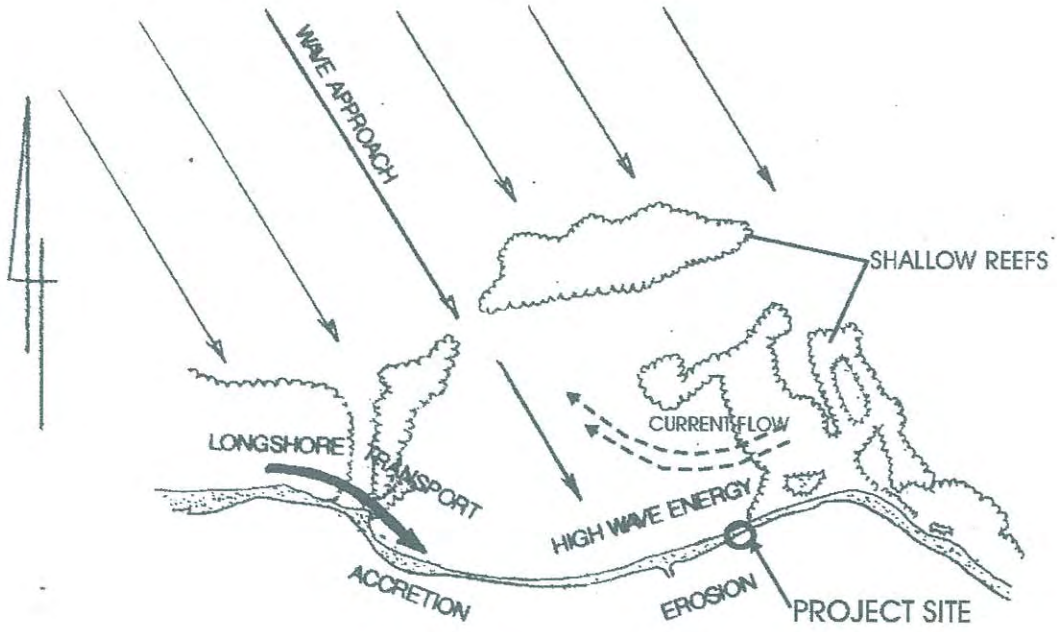
The report *Beach Changes on Oahu as Revealed by Aerial Photographs* (Hwang, 1981), documents the characteristics of the "middle section" of Mokuleia Beach, which includes the subject property. Hwang (1981) used historical aerial photograph analysis to assess shoreline changes on Oahu, based on movement of the vegetation line. **Figure 13** shows the location of transects where data were collected as shown in **Figure 14**. The subject property is located between Transect 10 and 11. During the 25-year period between 1949 and 1975 the subject

embayment area experienced an erosion loss of between 10 to 8 feet (Transect 10 and 11 respectively). According to Hwang's report, major erosion occurred during 1967 to 1971 due to significant storm wave damage – this time frame is consistent with residents' testimony regarding when all of the seawalls along this embayment were originally built. Many of the homes along this stretch of coastline are less than 20 feet from the edge of the vegetation line or an existing seawall. These homes, like the project site, would be impacted by any erosion that would reduce the natural buffer zone significantly.

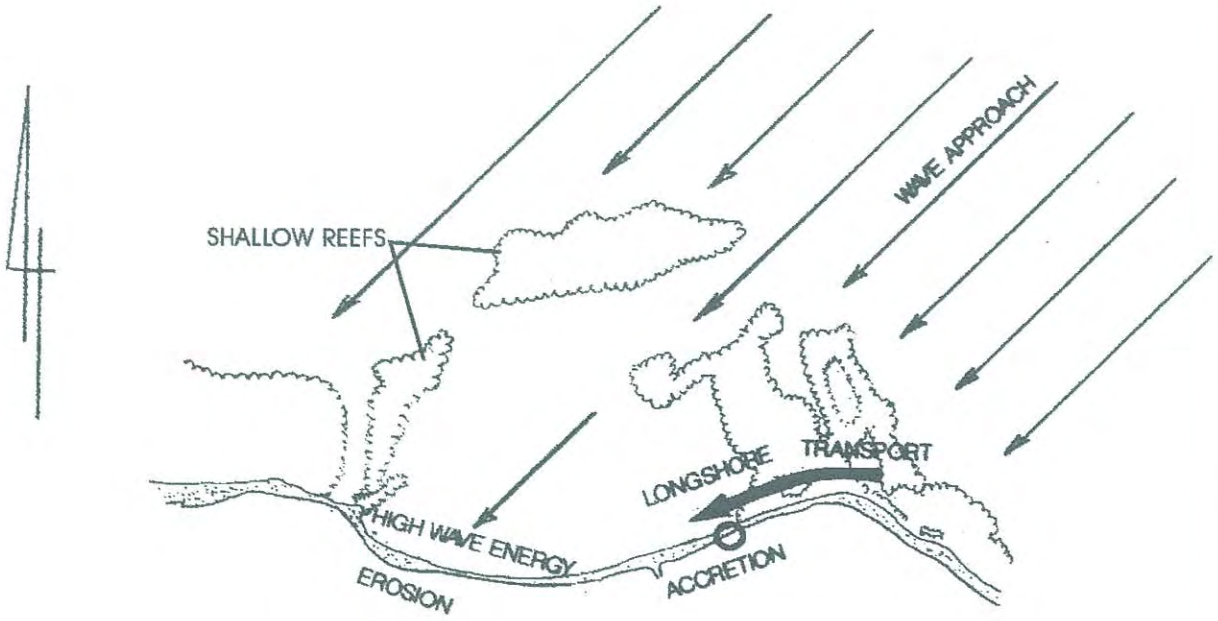
In 1989, Sea Engineering Inc. prepared for the City's Department of Land Utilization (DLU) the *Oahu Shoreline Study – Data on Beach Changes*, which was similar to and an extension of the 1981 Hwang study. The report concluded that landward recession of the vegetation line since 1949 has continued. Data were collected only for Transect 10 which showed an additional erosion loss of 8 more feet. The total loss at Transect 10 between 1949 and 1988 totaled 18 feet. As such, a number of vertical seawall structures have developed along the 3,000 foot long embayment between the Episcopal Camp and the Mokuleia Beach Colony. The following are excerpts taken from the 1989 Oahu Shoreline Study which relate to this embayment.

The following are excerpts taken from the 1989 *Oahu Shoreline Study* completed for the City's Department of Land Utilization which relate to this embayment.

> *This is a small embayment, 3,000 feet long, that is completely developed. Polipoli Stream discharges in the center of embayment. The shoreline from the Episcopal Camp to the stream is lined with shore protection structures, except for the four lots just west of the stream. The unprotected houses have only a few feet of vegetation between them and the beach.*
>
> *The structures are generally vertical seawalls of varying heights and types. At the west end, particularly, the walls protrude varying distances out onto the beach.*
>
> *Given the extent of the existing seawalls and the proximity of the unprotected houses to the waterline, shore protection should be allowed throughout this area.* ***The shore protection structure of choice will probably be a vertical seawall, since there is little room for sloping revetments.*** *The DLU should ensure that the design is adequate and that the alignment matches the surrounding areas.*
>
> *At present, there is lateral access along this beach, at least during some seasons, but if erosion continues, this will be lost.*



WINTER NORTHWEST SWELL CONDITIONS



SUMMER NORTHEAST TRADEWIND CONDITIONS

Source: EKNA Services, Inc.

Figure 14

SAND TRANSPORT FIGURES

68-689 Farrington Highway, Mokuleia, Oahu, Hawaii

The above description and management recommendations are consistent with the findings of the EKNA engineering assessment for the subject property. Given the established pattern of shoreline protection, an individual lot owner has no choice but to protect his property with a vertical seawall structure similar to the existing seawall structure along the ocean frontage of the subject property.

4.5 Coastal Processes and Sand Transport

The following information is taken from the EKNA Services, Inc. 2004 and 2005 Coastal Engineering Assessment (**Appendix D**). It is apparent that during high tide, wave runup reaches the base of the existing seawall. During storms and large winter swell conditions, wave runup and overtopping of the beach likely causes flooding and sand transport into the properties that are not protect by seawalls. The owner of the subject property has also experienced sand deposited into the rear yard and significant amount of wave runup and water have overtopped the wall and ocean water has been deposited in the rear yard.

This coastal reach is exposed to winter North Pacific swell and predominant tradewind generated waves. It is apparent that during high tide, wave uprush reaches the base of the existing seawall. During storms and large winter swell conditions, wave runup and overtopping of the beach likely causes flooding and sand transport into properties that are not protected by seawalls.

According to the 2005 EKNA Services assessment, the erosion that is occurring along this span of costal reach can be described as "passive" erosion (in contrast to "active" erosion which induced or accelerated by shore protection structures). Passive erosion proceeds independent of the type of shore protection constructed.

The subject property is sheltered from deepwater wave energy due to the shallow reefs that surround the embayment. These reefs dissipate nearly all wave energy during typical tradewind generated wave conditions. The wave energy that can reach the shoreline is limited by the water depths over the reefs and the channels through the reef. During large swell activity, waves breaking over the reefs can cause a rise in water level known as wave setup. The increased water levels allow more wave energy to be transmitted over the reef. Thus, wave activity at the shoreline is greatest during large swell or storm wave conditions and during high tides. The conditions that promote wave overtopping problems for unprotected parcels – those without seawalls – occur during large winter swell activity. Typical tradewind waves are not capable of causing appreciable wave setup and very little tradewind-generated wave energy reaches this shoreline reach.

Normally along an exposed coastal reach, wave energy is the primary factor that drives nearshore currents in the surf zone. Waves approaching the shore at an angle will induce longshore currents and transport of beach material alongshore in the direction of breaking waves. However, the shallow reefs surrounding the site considerably alter the deepwater wave characteristics within this embayment, resulting in possibly complex patterns of waves approaching along this shoreline.

According to a prior report by EKNA Services for the Mokuleia area, residents have noted that shoreline currents within this embayment flow towards the west during high winter swell activity, which may be hydraulically driven due to the bathymetric contours within the embayment rather than wave-driven. Water that accumulates within this embayment during large swell or storm wave activity seeks to flow towards the deeper water depth areas on the west side of the embayment, or areas of hydraulically least resistance. Thus, the water drains towards deeper areas within the embayment and those deeper water depths exist on the west side of the embayment.

The shallow reef structure offshore of the eastern headland – closer to the Mokuleia Beach Colony – is broader and extends furthers in the embayment than the shallow reef structure offshore of the western headland. The configuration of the shallow reef structure and the presence of an apparent "channel" through the offshore reef near the western end of the embayment, along with hydraulically-driven circulation, are probably the basis for the westerly-flowing shoreline current that residents have noted.

If the shoreline flows are strong, they have the potential to carry wave-suspended shoreline sediments offshore into the deeper reaches of the embayment and seaward of the surrounding reef as the shore-parallel flows are diverted seaward through openings in the shallow reef. These sediments may be deposited in water depths too deep for normal wave activity to return it to the beach. This means that the history of long-term erosion of this coastline is evidence that such permanent loss of beach material occurs.

While net long-term erosion is evident, residents also indicated that seasonal fluctuation of beach width occurs. There is a pattern of erosion along the eastern part of the embayment during the winter and restoration of the beach width during the summer. The opposite occurs for the western shoreline where there is a pattern of erosion during the summer and restoration during the winter. **Figure 14** depicts the probable seasonal transport processes. Because water depths in the central part of the embayment are too deep for sediments to move back to shore, the seasonal fluctuation of beach width is presumably due to longshore transport of sediments from the shoreline and shallow nearshore areas around the headlands.

For this coastal area, and for most coastal areas in the state, the general trend is toward continued long-term erosion. There is no evidence that the long-term erosion trend along this coastal reach will reverse in the future.

4.6 Potential Littoral Impacts

The following information is taken from the EKNA Services 2005 letter reports for the subject properties, which states the existing seawall and others along this coastal reach, have no effect on the existing littoral processes at this site. The subject seawall is functionally consistent with existing seawalls along this coastal reach. This entire coastal reach has been experiencing net long-term erosion over the past 50 years. There is a continuing high risk of erosion and flooding damage due to overtopping waves to unprotected properties.

While the subject seawall does not affect longshore sediment transport processes, there may be some concern that cross-shore transport may be affected because of wave reflection from the near-vertical impermeable face of the seawall. It has been a generally held presumption that the more reflective the structure, the greater the potential for adverse impacts by discouraging sand accumulation in front of the structure.

However, given the fact that beach and shoreline erosion is continuing to occur along this coastline and elsewhere along this coastline where there are no shore protection structures, it can be concluded that the long-term erosion trend is a natural process that will certainly not be reversed simply by constructing sloping porous-surfaced shore protection structures. According to the EKNA 2004 Report, in fact, studies sponsored by the U.S. Army Corps of Engineers have found no significant difference in impact to the beach fronting a sloping rip-rap revetment and an adjacent vertical concrete seawall. EKNA Services, Inc. has conducted field studies on Kauai that showed seasonal beach accretion – increase in beach width – occurred in front of a near-vertical seawall as well as on an adjacent unprotected beach.

The erosion that is occurring along the Mokuleia shoreline can be described as "passive" erosion. It is not "active" erosion, which is induced or accelerated by shore protection structures. Passive erosion designates the process that occurs when a protective structure is built along an already eroding shoreline and erosion continues to occur. Passive erosion proceeds independent of the type of shore protection constructed. The unprotected shoreline adjacent to a protective structure will continue to erode and will eventually migrate landward beyond the protection structure. This is the most common result of shoreline hardening in Hawaii, and is the probable long-term consequence of the existing seawalls at Mokuleia.

4.7 Coastal Hazards

The *Atlas of Natural Hazards in the Hawaiian Coastal Zone (2002)* rates the "overall hazard assessment" along the Kaena Point coast from "moderate (4) at Kaena point to high (6) along the low-lying sandy beaches of Camp Erdman and Mokuleia Beach, where the coastal slope is lowest and chronic erosion is diminishing Mokuleia's sandy beach". Tsunami and stream flooding are other concerns in this area. They are ranked high along the lower slopes between Camp Erdman and Mokuleia.

The hazards of high wave action throughout this region of the North Shore is rated as high. This northwestern tip of Oahu is also subject to Kona storms, high tradewinds and hurricanes. The storm hazard is ranked moderate for the eastern portion of this coast (including the vicinity of the project area) where it become a bit more sheltered from hurricane and Kona storm energy, as compared to the western portion towards Kaena Point. The *Atlas*, rates the erosion hazard as high along the isolated sandy beaches of Camp Erdman and Mokuleia, whereas erosion hazard becomes more moderate along Kaena Point's hard limestone shoreline where it is rocky.

5. ALTERNATIVES CONSIDERED

The EKNA April 2005 letter report for the subject property states that EKNA's prior April 2004 report for two other properties that are also located along Mokuleia Bay should be referenced in its entirety. The 2004 report is contained in **Appendix D.** The 2004 EKNA report discusses in detail various alternatives to after-the-fact approval of an existing seawall at Mokuleia Bay.

The EKNA April 2005 letter report specifically for the subject property appears at the front of **Appendix D.** It states that removal of the existing seawall and replacing it with a different type of shore protection measure does not provide any significant benefit. Seawalls exist on both sides of the subject property. Also, removing the seawall without constructing replacement shore protection would result in the immediate loss of least 50 feet of property as the shoreline attempts to achieve a stable slope. The adjacent properties would also be impacted as their existing seawalls become flanked.

5.1 Sloping Revetment

Replacing the seawall with a sloping revetment structure is not a viable option because of the extremely limited land area – approximately 25 feet - between the house and the existing seawall. There is insufficient space on the property to construct a sloping revetment. Since the revetment toe would be in line with the existing adjacent seawalls, the top of the revetment slope would be located about 20 feet landward of the adjacent seawalls, and could not be constructed without removing or relocating the dwelling and constructing flank walls to protect the adjacent properties. It would also be significantly visually incompatible with the adjacent vertical seawalls. Additionally, replacing the seawall with a sloping revetment structure will not improve the existing shoreline access and will not halt the ongoing erosion along this coast.

5.2 Sand Bags

While large geotextile sand bags have been used as temporary erosion control in several areas, including Lankikai, use of the bags has drawbacks. The bags are prone to damage from storm wave attack and vandalism, require frequent and continual maintenance, and cannot be considered a permanent protection measure. The large sand bags are solid, hard building materials when fully filled, and a sand bag revetment structure is more reflective than a rock revetment. Another potential concern is that bags that are under water become very slippery due to algal growth, and therefore pose a safety problem in terms of people walking across them.

5.3 Beach Restoration

The State of Hawaii Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) is developing a comprehensive coastal lands policy that strives to mitigate negative impacts to the coastal system from shore protection structures by encouraging alternatives to the construction of seawalls and revetments. In the foreseeable future, the DLNR will implement new, proactive and sustainable shoreline management practices in accordance with the objectives and policies that pertain to Hawaii's beaches, which are a State public resource protected by the State Constitution and Haw3aii Revised Statute 205A and 183C. Policies for the protection and preservation of Oahu's natural shoreline and sandy beaches are further promulgated by the Revised Ordinances of Honolulu Chapter 23.

Beach and dune restoration with sand nourishment can slow coastal erosion and restore lost beah areas. The recent Kuhio Beach restoration project involved the replacement of 10,000 cubic yards of reclaimed sand from nearshore deposits. The project, which was executed between November 27, 2006 and January 6, 2007,cost approximately $475,000 and was funded by the DLNR – Land Development Fund (DLNR, 2007). In March 2000, approximately 10,000 to 12,000 cubic yards of dredged sand from Kaelupulu Stream in Kailua was used in a demonstration project to renourish south Lanikai Beach (Shapiro 2000). A news release pertaining to the project indicated that it "provided about half of the total amount that will be needed to more fully nourish south Lanikai Beach" (DLNR 2000). It is not know when another beach nourishment project would be accomplished for south Lanikai Beach since adequate funds and sources of sand would first need to be secured.

Soft shore protection measures are not feasible from the perspective of a single landowner because they require resources and coordination on a large-scale. Beach restoration must occur along numerous residential properties in order to be effective. In addition to the challenges of finding suitable sand and navigating the permitting process, a successful beach nourishment project may require coordination and cooperation among a group of homeowners who maintain a long-term commitment to undertake sand replenishment on a periodic basis. It is likely that a groin or offshore breakwater structure would also need to be constructed to prevent sand from being quickly redistributed by wave energy. Due to intense storm wave activity on the north shore these solutions do not appear to be practical. Beach replenishment may be the best long-term solution, but these measures are beyond the capacity of the applicant who is simply trying to permit a seawall that has been in existence for more than 30 years in order to protect his property from further damage.

5.4 No Action

This alternative is not viable because it implies that no action would be taken to resolve the illegal seawall. The applicant would incur continuous civil fees owned to the City and County of Honolulu for the shoreline setback violation. The engineer has estimated that the existing seawall could last as long as 30 years but at the same time it is not possible to predict storm wave action for the north shore of Oahu. Granting of the Shoreline Setback Variance is the means for legalizing the existing seawall under ROH Chapter 23 and would provide a means for the owner to legally repair the wall but it is no guarantee that the structure will be permanent. However, in general, a legal structures is more likely to be repaired in accordance with building code regulations than an illegal structure.

5.5 Removal of the Existing Seawall.

Removal of the existing seawall, which is functioning as a retaining wall, is not a viable alternative because it would result in immediate loss of at least 50 feet of property as the shoreline attempts to achieve a stable slope. With the house only 25 feet away from the existing wall, the house would be destroyed if the seawall was removed. removal of the existing seawall along 61 feet of coastline would not release enough sand to restore a beach in an area where the entire shoreline has been armored and would hasten erosion of the applicant's parcel. Areas behind existing shoreline structures on adjacent properties may eventually erode if the applicant's seawall are removed.

6. PROJECT IMPACTS

Potential impacts are addressed in terms of how proposed action relates to the thirteen criteria below. Chapter 200 of Title 11, Administrative Rules of the State Department of Health establishes criteria for determining whether an action may have a significant impact on the environment (11-220-12).

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

The subject property lies along an eroded sandy shoreline. No new construction is proposed. The subject property does not contain any significant flora or fauna. No known cultural resources are located on the property. No impacts to natural or cultural resources are anticipated due to the proposed action. The application is for an after-the-fact shoreline setback variance which involves no construction activities and no irrevocable commitment, loss or destruction of resources.

2. Curtails the range of beneficial uses of the environment;

There is no impact on public access to the shoreline. A City-owned public right-of-way (TMK: 6-8-10: 012) is located three parcels east of the subject property. There will be no impacts on fishing or ocean use due to the proposed action. The existing seawall configuration and related improvements do not curtail the beneficial use of the environment. The property is zoned residential and is committed to private residential use. The existing seawall and others along this coastal reach have no effect on the existing littoral processes at this site. However, when a protective structure is built along an eroding shoreline and erosion continues, the result will be loss of beach fronting the wall and is the probable long-term consequence of the existing seawalls at Mokuleia. Loss of beach could impact shoreline recreational activities including on and off-shore fishing. On the other hand, removal of the seawall would result in immediate loss of at least 50 feet of property as the shoreline attempts to achieve a stable slope (EKNA 2006). The existing seawall protects the property from further erosion and maintains the owner's beneficial use of the property.

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

Chapter 343, HRS requires environmental assessment for any use within a shoreline area as defined in section 205A-41. It is the policy of Chapter 205A to discourage all shoreline hardening that may affect access to, or the configuration of our island beaches. However, the existing seawall is consistent with the longstanding history of government decisions that approved shore protection structure along this stretch of the Mokuleia coastline in order to protect the rights of homeowners. The eight (8) adjacent properties to the west of the applicant's property have all received shoreline setback variance approvals and building permits (1993/1997) for their respective seawalls. These issues have been discussed at length with the DLNR and there is no simple answer or statewide policy that has been implemented.

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;**

The economic and social welfare, and cultural practices of the community or State are not affected by the existing seawall and related improvements or the proposed action to seek after-the-fact approval. No new construction is proposed.

5. **Substantially affects public health;**

There are no public health concerns relating to the existing seawall and related improvements. No new construction is proposed.

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

There are no anticipated secondary impacts to population or public facilities. No new construction is proposed. The proposed action does not impact public services or facilities.

7. **Involves a substantial degradation of environmental quality;**

The existing seawall prevents further erosion of the applicant's property and therefore minimizes the potential for runoff entering the ocean. The subject seawall ties into concrete seawalls on both sides of the subject property. Historical aerial photographs and studies depict the significant loss of shoreline along the Mokuleia coast since 1949. The subject property has lost to erosion approximately 30 percent of the property's total area. The majority of homes have vertical seawalls or some form of shore protection along this embayment.

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

No new construction is proposed. The adjacent properties are developed as residential properties. All the residential properties along this embayment experienced loss of 25-30 % of property lot area due to wave action and erosion prior to construction of the seawalls between 1967-70. Nine of the properties have undergone environmental review in order to obtain after-the-fact shoreline setback variances to legalize the existing seawalls. There has been no determination of significant cumulative impact by the approving government agency. The process of obtaining the after-the-fact shoreline setback variance for the subject property will not result in any significant cumulative impact and does not involve a commitment for larger actions. As such, a Finding Of No Significant Impact is being requested. There is no commitment for a larger action; the subject property will remain single family residential.

9. **Substantially affects a rare, threatened, or endangered species, or its habitat;**

The project site has been previously disturbed and developed when the single family residence and improvements were constructed. There are no known endangered, threatened, or rare plants or animal species at or near the subject property.

10. **Detrimentally affects air or water quality or ambient noise levels;**

No new construction is proposed. The existing seawall and related improvements do not detrimentally affect air or water quality or ambient noise levels.

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

The property is located in Flood Hazard Zone AE, with a base flood elevation of twelve feet, and the tsunami evacuation zone. The seawall protects the property from further erosion and protects the house structure from wave energy, wave run-up and overtopping. The existing seawall is not expected to increase the flood hazard for the surrounding properties or the subject property. Because the height of the seawall is lower than the base flood elevation of 12 feet, the seawall will have little or no effect on the flood characteristics. Any tsunami which would breach the wall would most likely cause damage to both the wall and property.

12. Substantially affects scenic vistas and view planes identified in county or state plans or studies; or

The 1987 Coastal View Study designates Mokuleia Beach Park as a "significant stationary view". The project site is located over 4,000 feet east of Mokuleia Beach Park. The Study also designates Farrington Highway as a "coastal roadway with intermittent coastal views". Views of the shoreline and subject property's rear yard are not possible from Farrington Highway due to the existing private residential structures, garages, fences and hedges lining the Highway. Scenic vistas and view plans from and along the coastline and from the near-shore waters are enjoyed by residents. All of the residential properties along this area have similar shoreline protection structures in place and the subject seawall maintains a consistent appearance. No scenic views are impacted.

13. Requires substantial energy consumption.

Not applicable.

6.1 Summary of Unavoidable Adverse Environmental Impacts

Construction of the original seawalls in the late 60's or early 1970's may have prevented the erosion of coastal land behind the shoreline structures but, combined with other factors such as sea-level rise, may have refocused erosion that can contribute to beach loss. Allowing the applicant's seawall to remain in place prevents property losses due to erosion and wave damage, however, the structures may be impounding a substrate beach quality sand that would naturally nourish a healthy beach. Efforts to restore the beach in southern Lanikai where, as is the case along this shoreline, the entire shoreline has been armored for many years, the sand supply has decreased, and the State public resource has been severely compromised for several decades would require the removal of many contiguous armaments along the affected coastline. Removal of the existing seawall along 61 feet of coastline would not release enough sand to restore a beach in an area where the entire shoreline has been armored and would hasten erosion of the applicant's parcel. Areas behind existing shoreline structures on adjacent properties may eventually erode if the applicant's seawall is removed. Maintaining status quo by allowing the applicant's existing shoreline protection structure to remain in place is not expected to create any new significant adverse impact on littoral processes along the shoreline.

6.2 Finding and Reasons Supporting Anticipated Determination

The significance criteria of Title 11 Chapter 200-12 HAR have been applied and it is proposed that the proposed action to approve the after-the-fact shoreline setback variance for the existing seawall and related improvements will not have a significant effect on the immediate or surrounding environment and that an Environmental Impact Statement will not be required. Based upon this Environmental Assessment document and the evaluation of the determination, it is recommended that a Finding of No Significant Impact (FONSI) be issued for the proposed action.

7. MITIGATION MEASURES

As indicated in Section 6.0 Project Impacts, the proposed action would cause no significant short-term or long-term impacts to recreational, biological or scenic resources. The Coastal Engineering Assessment states that the existing seawall has no effect on the existing littoral processes at this site, it does not alter seasonal erosion/accretion patterns, and does not affect lateral access along the beach. No mitigation measures are proposed.

8. REQUIRED APPROVALS, AGENCY AND PUBLIC CONSULTATION AND REVIEW

8.1 Required Approvals

The project will require the following:

- Shoreline Setback Variance pursuant to Chapter 23, Revised Ordinances of Honolulu
- After-the-fact Building Permit from the City and County of Honolulu
- Height waiver for the existing seawall

8.2 Shoreline Setback Variance

The applicant will need to submit an application for an after-the-fact Shoreline Setback Variance for the following primary structures.

1. The seawall, stairs, and return portions of the seawall that are located along the side property lines;
2. Concrete slab patio area (420 SF) adjacent to the house.

As set forth in the Revised Ordinances of Honolulu (ROH) Section 23-1.8(b)(3), the variance application will contain the three tests of hardship that the landowner will incur if he is not allowed to retain the structures

(1) **The applicant will be deprived of reasonable use of the land.**

All 16 residential properties along this coastline are protected with similar structures to prevent the effects of shoreline erosion and wave damage that would otherwise occur due to North Pacific swell events. Previous erosion from wave action had already substantially diminished the property area prior to construction of the shoreline protection structure. It is reasonable to assume that property losses will occur if the applicant is required to remove the illegal seawall structures that have been in place since 1969. Granting of the Shoreline Setback Variance is the means for legalizing the existing seawall under ROH Chapter 23 and would provide a means for the owner to legally repair the wall should a severe storm event undermine and collapse an unconsolidated shoreline, thereby creating a public hazard on the beach. Any other action would deprive the applicant of reasonable use of his property.

(2) **The applicant's proposal is due to unique circumstances and does not draw into question the reasonableness of ROH Chapter 23 and the shoreline setback rules.**

The beach fronting the property began to be narrowed since the original subdivision in 1960. The original seawall was constructed without building permits prior to the implementation of the shoreline setback rules and subsequently repaired in response to wave damage. Chapter 23 allows shoreline protection structures that have received a shoreline setback variance on the basis that the structure does not adversely affect beach processes, public access along the shoreline or shoreline open space. Retreat of the shoreline along this stretch of coast has been in existence prior to the building of the first seawall; and, would most likely continue without the shoreline protection structure. People can transit the area fronting the walls for recreational purposes at low tide and the open space and view planes are not impacted by the existence of the seawall. It is also a policy of Chapter 23 to reduce hazards to property from coastal flooding and retreat of the shoreline; and, as the wall has been in existence for almost 40 years and is connected to a series of seawalls protecting the residential properties along the embayment, it is reasonable to allow the wall to remain and to allow it to be repaired as needed in accordance with government regulations

(3) The proposal is the practical alternative which conforms to the purpose of the shoreline setback regulations

The applicant concurs that while the preferable alternatives would be to redesign the wall to include a sloped revetment and/or engage in a program of beach restoration, the proposal to retain the existing seawall is the only practical solution. To demolish and reconstruct the wall would unduly impact beach processes and beach restoration is beyond the scope of a single landowner. Legalization of the existing shoreline protection structure, so that it can be repaired as necessary, is the best alternative given the history of erosion and wave action for this portion of the north shore of Oahu.

These criteria and any specific engineering solutions will be expanded on in the application for the Shoreline Setback Variance and will include a request and justification to retain other minor structures.

8.3 Preparation of the Final Environmental Assessment

The following agencies were consulted during the preparation of the Draft Environmental Assessment (DEA):

- City and County of Honolulu, Department of Planning and Permitting
- State Bureau of Conveyances
- State Department of Accounting & General Services (Survey Division)
- State Department of Land and Natural Resources/Office of Conservation and Coastal Lands/State Historic Preservation Division
- State Office of Environmental Quality Control
- Sierra Club
- State of Hawaii Office of Hawaiian Affairs
- Department of the Army
- State Land Use Commission
- Oahu Civil Defense
- University of Hawaii Environmental Center

8.2 Comments and Responses on the Draft Environmental Assessment

The Final EA contains the following comment and response letters on the Draft Environmental Assessment.

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4432 • FAX: (808) 527-6743
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MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2005/ED-26(AM)

December 22, 2005

Mr. Donald Clegg
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Clegg:

Re: Chapter 343, Hawaii Revised Statutes (HRS)
Draft Environmental Assessment (DEA)
Project Name : Michaels Shoreline Setback Variance
File No. : 2005/ED-26
Location : 68-689 Farrington Highway - Mokuleia
Tax Map Key : 6-8-10: 21

In accordance with the procedural provisions of Chapter 343, Hawaii Revised Statutes (HRS), all comment letters received during the 30-day public comment period, which began with the initial publication of a notice of availability of the DEA in The Environmental Notice on November 23, 2005, require a response addressed directly to the commenter. The final environmental assessment must include all comment letters and responses to the letters, as well as appropriately revised text. Herewith, for your information and appropriate action are comments from the State Office of Environmental Quality Control, State Department of Land and Natural Resources and State Land Use Commission.

In addition, enclosed herein are the Department of Planning and Permitting's comments on the DEA.

1. Section 1, General Information, page 3: This section should indicate that the Environmental Assessment (EA) has been prepared in compliance with the Environmental Impact Statement (EIS) regulations of Chapter 343, Hawaii Revised Statutes.

2. Section 2.1, Site Description and Background, page 9: This section mentions that it is not known when the 420 square-feet concrete slab adjacent to the master bedroom addition was poured. However, in Section 2.3, Technical Characteristics on page 14, the DEA states that the concrete slab was poured before 1992. Is there any evidence (e.g., building permit, photographs) to indicate when the slab was installed? Also, is there any

documentation (i.e., department letter) to show that a reduced shoreline setback was granted for the subject property when the concrete slab was installed? If no such evidence or documentation is available, then a Shoreline Setback Variance will be required to retain the concrete slab.

3. Section 2.1, Site Description and Background, page 9: Does the subdivision have any relevance on the location of the existing structures on the property? Please include the approved subdivision map as an exhibit in the Final Environmental Assessment (FEA).

4. Section 2.2, Proposed Action, page 14 and Section 8.1, Required Approvals, page 39: Clarify the height of the existing seawall. The typical wall detail on Sheet C-1 does not show the "original large concrete blocks" which is described in Section 2.1 on page 9 and shown in Figure 3A. Furthermore, based on the typical wall detail, it appears that the seawall does not qualify for a height waiver, as the distance between the top of the wall and the finished grade appears to be greater than six (6) inches. A Zoning Variance may be required for the retaining wall containing fill (seawall). Please show all existing and finished grades and dimension the distance between the finished grade and the top of the seawall. Clarify (e.g., provide scaled drawings) the height of the tile curb at the right side of the applicant's property (not on the adjacent property). How much backfill (i.e., cubic yards) was utilized for the existing seawall?

   Provide scaled cross-section and elevation drawings of the tile wall on the right side of the property.

5. Section 2.2, Proposed Action, page 14: Please clarify which survey the "certified" shoreline is based on in the drawing on Sheet C-1, specifically Section A-A and Typical Wall Detail (i.e., 1973 certified shoreline survey). Did the State Department of Land and Natural Resources certify the previous seawall at the concrete block foundation or at the face of the seawall? Please include a copy of the January 8, 1973 certified shoreline survey in the FEA. Pursuant to Section 13-222-7 of the Hawaii Administrative Rules adopted on December 13, 2002, a certified shoreline survey cannot be obtained for this parcel without the approval of a Shoreline Setback Variance for the existing illegal seawall.

6. Section 2.3, Technical Characteristics, page 14. The DEA notes that the applicant's seawall ties into concrete seawalls on either side of the subject property. Discuss the statuses of the adjoining seawalls (e.g., nonconforming, illegal). We note in Section 4.3, Existing Shoreline Structures on page 23 that the homeowner of Parcel 22 is in the process of obtaining a Shoreline Setback Variance for their seawall.

7. Section 2.6, Environmental Characteristics, page 17: This section references an aerial photograph (Figure 8) of a previous seawall on the subject property, but no such photograph could be found. Please include this photograph in the FEA.

8. Section 3, Environmental Setting: Inasmuch as preservation of open space along the shoreline is a primary objective of the Shoreline Setback Ordinance (Section 23-1.2(a)), discuss the impacts of the seawall on open space, visual impacts (lateral views of coastline as well as views of the coastline from Farrington Highway), and lateral beach access impacts. Discuss the project's impacts on scenic vistas as noted in the City and County's Coastal View Study.

9. Appendix D, letter dated August 25, 2005 from EKNA Services, Inc., page 45: Can the conclusion be made that the environmental conditions at Tax Map Keys: 6-8-9: 10 and 11 are the same for the applicant's property?

10. The DEA should address the guidelines contained in Sections 3.1 and 3.2 "Shoreline Areas" of the North Shore Sustainable Communities Plan.

11. The Shoreline Setback Variance application must address the criteria for granting a variance contained in Section 23-1.8, ROH and how the three standards of hardship are met by all proposals.

In response to the State Office of Environmental Quality Control's comments dated November 23, 2005 on the subject DEA, we note that copies of the DEA were sent to both the U.H. Environmental Center and the State Department of Land and Natural Resources.

Should you have any questions, please contact Ann Matsumura of our staff at 523-4077.

Very truly yours,

for Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:am
Encls.

cc: Gregory Michaels
Office of Environmental Quality Control

doc409588

apc

PHONE (BUS): (808) 536-5695
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ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

July 15, 2008

Mr. Henry Eng, FAICP, Director
City & County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, HI 96813

ATTN: Ann Matsumura

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-26 (am)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway – Mokuleia
Tax Map Key 6-8-010:021

Dear Mr. Eng:

Thank you for your comment letter dated December 22, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. All information requested has been included in the FEA as necessary. We respectfully offer the following responses:

1. The requested information has been included in the FEA.

2. As there are no building permits nor evidence to collaborate that the slab was constructed legally and placed prior to 1992, it does not have nonconforming status and requires Shoreline Setback Variance in order to be retained. This information has been included in the FEA.

3. The information regarding the original subdivision was included to justify the need for the seawall and to document that the area has experienced erosion of property prior to construction of the seawall. APC was unable to locate the subdivision map, however Land Court Application 1810 Map 4 dated 9/13/60 showing the subject parcel has been included with Figure 2.

4. There are some concrete blocks in front of the existing seawall which are the remnants of the foundation for a previous seawall on the property which was reconstructed makai of the existing seawall. They provide additional support for the walls and have not been included on the as-built plans as they are not connected to the subject seawall. The applicant will apply for either a zoning adjustment to permit the wall to exceed the maximum permitted height for safety and topological reasons or a height variance. This will be determined during processing of the Shoreline Setback Variance.

   The estimated amount of fill has been verified by Hida,Okamoto & Associates and is noted on the revised plans as well as scaled elevations of the tile wall on the east side of the property.

5. The shoreline was located and certified for the subject property by the State Land Surveyor on 1/8/73 at would appear to be the face of the previous seawall. The map has been enclosed as an exhibit. As clarified in the FEA, it appears that, over time, seawalls along the embayment have been replaced and/or repaired and strengthened. The walls that were repaired and strengthened remained on the original foundations. For those walls which were reconstructed, it appears that the new walls were placed slightly landward of the original foundation making the base of the wall look as if it has been extended makai, when in fact the foundations have remained in place and the re-constructed seawalls re-built landward. In these cases, the original foundations remain as is the case with the subject property.

6. The adjacent seawalls located on parcels 22 and 20 were constructed in 1970 without building permits and the owners are in the process of obtaining after-the-fact shoreline setback variance.

7. APC was unable to locate the reference to an aerial photo of a previous seawall on the subject property in Section 2.6; as such, no photo has been included.

8. A discussion of open space has been added to Section 3.8 Applicable Land Use Considerations.

9. The EKNA Coastal Engineering Assessment, that is included in the DEA and which was done for two parcels on Laau Paina Place, was a study of the general shoreline characteristics and coastal processes for this embayment. This assessment served as the background to the site specific information that was provided.

10. A discussion of the guidelines contained in the North Shore Sustainable Communities Plan has been added to Section 3.8 Applicable Land Use Considerations.

11. Criteria and justification for a Shoreline Setback Variance have been added to the FEA Section 8 Required Approvals.

Thank you again for your consideration and review of the Draft Environmental Assessment. We appreciate the time you have given to determining the scope of the project and are requesting the Department of Planning and Permitting to issue a Finding of No Significant Impact (FONSI). If you have any questions or require additional information, please contact myself or Lauri Clegg at 536-5695.

Sincerely,

for Lauri Clegg

Donald Clegg
President

Isaac Moriwake
223 S. King St. 4th Fl.
Honolulu, HI 96813
(808) 599-2436 x13

December 23, 2005

Donald Clegg
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OEQC
Leiopapa A. Kamehameha Bldg.
235 S. Beretania St., Suite 702
Honolulu, HI 96813

Re: Michaels After-the-Fact Seawall, Mokule`ia (HRS 343 DEA)

Dear Sirs and Madams:

I am the Chair of the O`ahu Group of the Sierra Club and member of the Citizens to Save Our Beaches. Review of the draft environmental assessment (DEA) for this after-the-fact seawall reveals various inadequacies and points of concern. We would appreciate it if the agency and/or applicant's consultant could follow up with further analysis and answers to the questions below in its final EA, or more appropriately, a revised draft EA.

Initially, since this seawall and others in the vicinity were illegally built, much has been learned about the harmful impacts of coastal hardening such as seawalls on the natural, public beach. The agency ought to take a very hard look whether, in this better informed day and age, our government regulators should be allowing seawalls to persist, which everyone knows would all but ensure the loss of the beach. Just because the seawall exists does not mean that this agency should approve it. Other agencies have taken a more enlightened approach; see, e.g., Morgan v. Kaua`i Planning Department, 104 Haw. 173 (2004), where the Kaua`i planning department ordered a seawall removed.

More specifically, we are aware of examples of shoreline landowners who had seawalls destroyed during extremely high surf events (e.g., Hurricane Iwa) and were not allowed to rebuild the seawalls, but rather were directed to use other protective measures. We request that the agency and/or the applicant's consultant provide detailed explanation why landowners who follow the law are not allowed to rebuild, while others who unilaterally and illegally rebuild are allowed to apply for after-the-fact approvals, apparently without any consequences.

Apart from the substantive questions of the propriety of seawalls in general and in this case, the DEA needs more detailed and thoughtful analysis to meet the law's requirements. At minimum, the following issues should be addressed:

(1) The DEA emphasizes this lot is one of numerous others along this coastline, some of which are concurrently applying for after-the-fact approval of seawalls. Indeed, it appears that the same consultant is handling these present applications, and that this DEA is a virtual carbon copy of the ones accompanying the other applications. This raises serious concerns of segmentation of actions and impacts. Please specify how many other seawalls are present in the area (number and length) and how many total applications are pending. Please also make clear the potential impacts of this seawall, not only standing alone, but also together with the others concurrently applying for approvals, as well as all the other seawalls along this coastline. This concept is called cumulative impact analysis and is expressly required by law.

(2) Please specifically address the potential cumulative impacts of the seawalls on this coastline on surrounding beach areas, including the public beach parks on either side of this coastline (Mokuleia and Makaleha). It is widely understood that coastal hardening deflects wave energy and causes erosion elsewhere. Could these seawalls cause long-term erosion of the surrounding beaches?

(3) If analysis of these cumulative impacts indicate that these seawalls currently under application "may" have a significant impact together with all the other seawalls in the area, then by law these applicants should jointly prepare a full EIS examining these impacts.

(4) The DEA states that this shoreline has a "history of chronic erosion." Please discuss whether there is a difference in erosion rates between this area developed with seawalls, and the beaches on either side of this area, and whether the shoreline hardening accounts for this difference.

(5) The DEA claims that the seawalls have not contributed to erosion and asserts that the erosion is "passive" and not affected by coastal hardening (this, despite claims that if the seawall is removed, erosion would "immediately and significantly" impact the shoreline). This concept appears to be novel and is not referenced in various recognized reports. Dennis Hwang's recent Hawaii Coastal Hazard Mitigation Guidebook (2005), for example, maintains that coastal hardening "are directly related to where structures are placed along the shoreline" (p. 7). Please provide authority for this concept of "passive erosion."

(6) Please provide more thorough analysis of the potential impacts and discussion of the factors for determining "significance" of the impacts. For example:

(a) The DEA does not discuss potential loss of lateral access from physical presence of the structure in the wave impact area and from erosion of the beach, but simply mentions public access in perpendicular terms. This omission is all the more conspicuous given that the DEA cites a report stating that "if erosion continues, [lateral access] will be lost." Please discuss potential impacts on lateral access.

(b) The DEA does not discuss the potential of seawalls exacerbating erosion under any of the applicable factors, e.g., "irrevocable an irrevocable commitment to loss or destruction of any natural . . . resource," "secondary impacts." Please address this concern.

(c) Under the factor of "conflicts with the state's long-term policies," the DEA simply cites a "long-standing history" of government approvals. Please discuss the existence and applicability of any policies regarding preservation of public beaches and access and the now-disfavored practice of coastal hardening.

(d) Please discuss these potential impacts from a cumulative point of view, as discussed above.

(7) Please provide more thorough analysis of the alternatives and mitigation, so that the agency can make a reasoned decision on these issues. For example, the new Hwang report recommends beach restoration instead of seawalls, but the DEA summarily concludes this is too expensive, without any details or bases for reasoned comparison. Similarly conclusory analysis is provided regarding other measures such as sand bags. For example, sand bags are described as more reflective than seawalls when fully filled, which begs the question, why not use partially filled sandbags? Finally, it is very hard to believe that in this enlightened day and age, absolutely no mitigative measures are available to alleviate beach loss. Please be more complete in this analysis.

(8) Since the waves rush against the seawalls, it would appear that the shoreline is located further mauka of the seawall, and that the seawall is located on public (state) land. State law is clear that the shoreline is not a fixed boundary, but shifts over time in line with natural conditions. Please respond to this issue. Please also discuss whether the opinions of the relevant DLNR staff, including Office of Coastal Conservation Land, has been actively solicited in the preparation of this DEA.

If you could address the above concerns in any subsequent EA, we would greatly appreciate it. As the saying goes, "an ounce of prevention is worth a pound of cure." This rings particularly true in the context of seawalls, where the very existence of our public beaches is at stake, as well as in the context of the EIS law, where thorough, honest analysis helps to inform sound agency decision-making and prevent controversy regarding the process. Please feel free to contact me if you have any questions.

Very truly yours,

Isaac Moriwake

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc
ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

July 15, 2008

Mr. Isaac Moriwake
223 S. King Street 4th Floor
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment (DEA)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway – Mokuleia
Tax Map Key 6-8-010:021

Dear Mr. Moriwake:

Thank you for your comment letter dated December 23, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. Since the comment letters were received on the DEA, Analytical Planning Consultants has been in consultation with the DPP as to how to proceed with the project. At this time, we respectfully offer the following responses to your letter. Appropriate sections of the final EA have been expanded or revised to reflect this information as required.

1. The EA has disclosed the proposed action in its entirety and does not include a future phase. As such, there is no segmentation of actions and impacts. Regarding other seawalls in the area, historical slides and photographs of the area, taken from 1982 through 1991 display walls in the sand area along the subject shoreline area for 16 residential lots east of the Episcopal Church Camp, including the subject lot. After-the-fact Shoreline Setback Variances and building permits have been issued for 9 of the properties. Parcels 27-28 applied for and received variances in 1990 and parcels 23-26 applied for and received variances in 1997. Additionally, the Mokuleia Beach Colony (TMK 6-8-09: 001) has an approximately 350-foot long seawall, with an approved shoreline setback variance.

   In 2004, the owners of parcels 14, 15, & 18-22 were sited for construction of seawalls without a shoreline setback variance and are in the process of applying for the necessary after-the-fact government permits to legalize the walls which have been in place for more than 30 years. The process of obtaining the after-the-fact shoreline setback variance will not result in any cumulative impact and does not involve a commitment for larger actions. Legalizing the existing subject seawall will allow the owner to maintain and repair the wall as needed for safety of the beach and property.

2. Regarding long-term erosion in the area, the Coastal Engineering Assessment done by EKNA Services, states that the existing seawalls do not alter seasonal erosion/accretion patterns. The entire coastal reach has been experiencing net long-term erosion over the past 50 years. As beach and shoreline erosion is continuing to occur along this coastline and elsewhere where there are no shore protection structures, it can be concluded that the long-term erosion trend is a natural process.

3. Chapter 343, HRS requires that an environmental assessment address cumulative impact. All the residential properties along this embayment experienced loss of 25-30 % of property lot area due to wave action and erosion prior to construction of the seawalls between 1967-70. Nine of the properties have undergone environmental review in order to obtain after-the-fact shoreline setback variances to legalize the existing seawalls. There has been no determination of significant cumulative impact by the approving government agency. The process of obtaining the after-the-fact shoreline setback variance for the subject property will not result in any significant cumulative impact and does not involve a commitment for larger actions. As such, a Finding Of No Significant Impact is being requested.

4. There are aerial photos for this section of the coastline dating back to 1949. The presence of the vertical seawalls does not indicate direct evidence of accelerated shoreline retreat due to the seawall structure on this property. The beach has retreated at an average of one foot per year since 1949. This rate of retreat applies to the 20-30 years before the subject seawalls were built. It is clear that the current situation is a constant reflection of energy and scouring of sand from the area fronting the seawall.

   If the trend of shoreline retreat was allowed to continue at this property, the beach would have continued to retreat at a rate of approximately one foot per year and this property would now be eliminated and Farrington Highway would be threatened by shoreline erosion.

5. As explained in the Coastal Engineering Assessment prepared by EKNA Services, even within the scientific community, controversy exists on whether seawalls are adverse and promote erosion. The erosion that is occurring along Mokuleia shoreline is "passive" (in contrast to "active" which is induced or accelerated by shore protection structures). Historically, the entire coastal reach has been experiencing net long-term erosion over the past 50 years. The report concludes that the existing seawall and others along this coastal reach have no effect on the existing littoral processes at this site. Any erosion that may be occurring is due to the scouring of sand from the area fronting the seawall.

6. (a) Reduction of beach area has been an ongoing problem along this section of beach since the residential subdivision was created in 1960. Prior to construction of the seawall the property lost 25% of its lot area to erosion

from wave action along the shore. The beach along the entire section of Mokuleia could be considered very narrow. Depending on the seasonal tides people can transit the area fronting the wall for recreational purposes. Approval of the shoreline setback variance will not diminish existing lateral access.

(b) The application is for an after-the-fact shoreline setback variance which involves no construction activities and no irrevocable commitment, loss or destruction of resources.

(c) Section 6.0.1 has been expanded to include the following information: Chapter 343, HRS requires environmental assessment for any use within a shoreline area as defined in section 205A-41. It is the policy of Chapter 205A to discourage all shoreline hardening that may affect access to, or the configuration of our island beaches. The construction of vertical seawalls appears to have aggravated shoreline erosion and loss of beach access in the area, and in this sense, the proposal to retain the existing seawall conflicts with these long-term environmental policies or goals or guidelines of the State of Hawaii. However, the existing seawall is consistent with the longstanding history of government decisions that approved shore protection structure along this stretch of the Mokuleia coastline in order to protect the rights of homeowners. The eight (8) adjacent properties to the west of the applicant's property have all received shoreline setback variance approvals and building permits (1993/1997) for their respective seawalls. These issues have been discussed at length with the DLNR and there is no simple answer or statewide policy that has been implemented.

7. Section 5 Alternatives has been expanded to include beach restoration and no action.

8. Determination of the certified shoreline is determined by the Department of Land and Natural Resources. Typically the DLNR the shoreline is established at the face of a vertical seawall structure.

Thank you again for your comments on the DEA. If you have any questions or require further clarification, please contact myself or Lauri Clegg at 536-5695.

Sincerely,

Lauri Clegg
for
Donald Clegg
President

LINDA LINGLE
GOVERNOR OF HAWAII

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

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

ROBERT K. MASUDA
DEPUTY DIRECTOR

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

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

December 20, 2006

LD-NAV
MICHALES

RECEIVED
'05 DEC 22 A7:17
DEPT OF PLAN AND PERMITTING
CITY & COUNTY OF HONOLULU

Honorable Henry Eng, FAICP, Director
Department of Planning and Permitting
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Eng:

SUBJECT: File No.: (1) 6-8-010: 019
Document: Draft Environmental Assessment
Application: Shoreline Setback Variance Application
Purpose: Existing Seawall
Applicant: Greg Michales

Thank you for the opportunity to review and comment on the subject matter.

Please be informed that all shoreline certifications are valid for a period of one year from the date of certification.

We have no record of a valid or expired shoreline certification for the subject property.

Presently, according to Hawaii Administrative Rules Chapter 13-222-7(b)(14), if the shoreline is located at base of manmade structure(s), documents supporting structure(s) approved by government agencies or exemption must be submitted with application for a shoreline certification.

We have transmitted the Draft Environmental Assessment to the Office of Conservation and Coastal Land (OCCL) for their review and comment. OCCL will respond by separate cover letter.

If you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at (808) 587-0384.

Very truly yours,

RUSSELL Y. TSUJI
Administrator

C: ODLO
OCCL w/attach

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc
ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

May 29, 2008

Mr. Russell Y. Tsuji, Administrator
State of Hawaii
Department of Land and Natural Resources
Post Office Box 621
Honolulu, HI 96809

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-26 (am)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway– Mokuleia
Tax Map Key 6-8-010:021

Dear Mr. Tsuji:

Thank you for your comment letter dated December 20, 2006 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We acknowledge your comment there is no record of a valid or expired shoreline certification for the subject property. It is understood that any application for a certified shoreline which involves a shoreline protection structure must be accompanied by documentation that verifies that the seawall has been approved by government agencies.

Thank you again for your comments on the DEA. If you have any questions or require further clarification, please contact myself or Lauri Clegg at 536-5695.

Sincerely,

Donald Clegg
President

LINDA LINGLE
GOVERNOR

ANTHONY J.H. CHING
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, Hawaii 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

December 9, 2005

Mr. Henry Eng, FAICP, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Eng:

Subject: Draft Environmental Assessment Comments
Shoreline Setback Variance
Applicant: Gregory B. Michaels
TMK No.: 6-8-010: 021

We have reviewed the subject application for the request forwarded by your correspondence dated November 9, 2005, and confirm that the fast portion of subject parcel is within the State Land Use Urban District. However, we note that the parcel has been subject to erosion and approximately 2,989 square feet of the land has eroded and is currently submerged. Pursuant to §15-15-20(6), Hawaii Administrative Rules, the portion of the subject parcel, which has eroded and is submerged, is located in the State Land Use Conservation District.

Given the location, scope, and nature of the proposed activity, the State Land Use Commission defers to the judgment of the City and County of Honolulu regarding other matters in the application. We have no further comments to offer at this time.

Thank you for the opportunity to comment on the subject application. Please do not hesitate to contact Max Rogers of my office at 587-3822 if you have any questions or need clarification.

Sincerely,

ANTHONY J. H. CHING
Executive Officer

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

May 29, 2008

Mr. Orlando Davidson
Executive Officer
State of Hawaii Department of Economic Development & Tourism
Land Use Commission
P.O. Box 2359
Honolulu, HI 96804-2359

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-26 (am)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway– Mokuleia
Tax Map Key 6-8-010:021

Dear Mr. Davidson:

Thank you for your comment letter dated December 9, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We acknowledge your comment that the fast portion of the subject parcel is within the State Urban District and that the approximately 2,989 square feet of the land which has eroded and is currently submerged is located within the State Land Use Conservation District pursuant to HAR 15-15-20(6). As the shoreline protection structure lies within the Urban District the LUC will defer to the County jurisdiction.

Sincerely,

Donald Clegg
President

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

RECEIVED
'05 DEC 15 P4:25
DEPT OF PLANNING AND PERMITTING
CITY & COUNTY OF HONOLULU

REPLY TO ATTENTION OF
Regulatory Branch

December 14, 2005
POH-2005-617

Mr. Henry Eng
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Eng:

This responds to your request (letter dated November 9, 2005) for comments for a draft Environmental Assessment (dEA) prepared for a retaining seawall and other structures within the 200 foot shoreline setback located at 68-689 Farrington Highway, Mokule'ia, O'ahu Island, Hawaii (TMK: (1) 6-8-10: 21). We have reviewed the information you provided under the Corp's authority to issue Department of the Army (DA) permits pursuant to Section 10 of the Rivers and Harbors Act (RHA) of 1899 (33 USC 403) and Section 404 of the Clean Water Act (CWA) of 1977.

Since no work is being proposed for the seawall a DA permit is not required. However, any individual or entity proposing to conduct future repairs, modifications, or removal work to the seawall that may likely involve or cause the discharge of dredge or fill material in to waters of the U.S. will require a DA permit. Please advise the parcel owner to contact this office to obtain a determination of DA permit requirements.

Should you have any questions, you may contact Ms. Lolly Silva at (808) 438-7023, fax at (808) 438-4060, or email at *Laurene.L.Silva@usace.army.mil*. Please reference the above file number in future correspondence.

Sincerely,

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

Copy furnished:

State of Hawaii, Department of Land and Natural Resources, P.O. Box 621, Honolulu, HI 96809
Office of Planning, Coastal Zone Management Program, P.O. Box 2359, Honolulu, HI 96804
Clean Water Branch, Department of Health, P.O. Box 3378, Honolulu, HI 96801

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc
ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

May 29, 2008

Mr. George P. Young, P.E.
Department of the Army
Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, HI 96858-5440

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-26 (am)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway– Mokuleia
Tax Map Key 6-8-010:021

Dear Mr. Young:

Thank you for your comment letter dated December 14, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We acknowledge that the proposed action to obtain and after-the-fact setback variance for the seawall will not require a Department of the Army (DA) permit.

As suggested in your letter, the applicant will contact your office for a determination upon consideration of any future maintenance, modification, or removal work to the seawall.

Sincerely,

Donald Clegg
President

LINDA LINGLE
GOVERNOR OF HAWAII

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

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

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

March 15, 2006

LOG NO: 2006.0690
DOC NO: 0603AJ09
Archaeology

Mr. Henry Eng
Department of Planning and Permitting
City & County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawai'i 96813

Dear Mr. Eng:

SUBJECT: **Chapter 6E-42 Historic Preservation Review [Private]–**
Draft Environmental Assessment for Shoreline Setback Variance
68-689 Farrington Highway Landowner: Mr. Gregory Michaels
Mokulē'ia Ahupua'a, Waialua District, Island of O'ahu
TMK (1) 6-8-010:021

Thank you for the opportunity to comment on the aforementioned project. According to your cover letter and attached Draft Environmental Assessment (DEA), the applicant (Mr. Michaels) seeks approval for an after-the-fact Shoreline Setback Variance and after-the-fact building permits for the existing seawall and stairs, portions of the seawall that extend along the side property lines, and an additional wall present on the eastern property line. A height waiver is also being sought for the seawall because it exceeds six feet in height.

Given the physiographic location of this parcel, there is a moderate to high potential for historically-significant sites, including Native Hawaiian burials and/or habitation sites, to be located beneath the ground surface. We are unable to find a date of construction for the original seawall in the DEA. However, the current features described above were constructed sometime after October 1991. If we had been afforded the opportunity to comment on the permits regarding the construction of these features, we would have required some form of proactive mitigation (*e.g.*, an archaeological inventory survey and/or archaeological monitoring during the construction), depending on the exact nature of the proposed undertaking. For these reasons, we are unable to offer our concurrence for these after-the-fact requests.

Thank for requesting our input on this proposal. Please call Mr. Adam Johnson at 808-692-8015 if you have any questions about this letter.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

AJ:cmm

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc
ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

May 29, 2008

Ms. Nancy McMahon, Acting Branch Chief
State of Hawaii Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd. Room 555
Kapolei, Hawaii 96707

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-26 (am)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway– Mokuleia
Tax Map Key 6-8-010:021

Dear Ms. McMahon:

Thank you for your comment letter dated March 15, 2006 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We respectfully offer the following responses:

Your comments will be included in the FEA. For clarification, there is no government documentation of the original construction of the seawalls along the embayment of the Mokuleia Beach Homes subdivision; however, they were believed to have been originally constructed in the 1970's after extensive wave damage to properties in the area. Any later repairs utilized the original foundations. No adverse impacts to historic or archeological resources are known to have occurred from construction or repair of the seawalls. Retention of the existing seawall will involve no subsurface disturbance. Should repairs involving subsurface disturbance be undertaken in the future, the State Historic Preservation Division will be contacted for guidance.

Thank you again for your comments on the DEA. If you have any questions or require further clarification, please contact myself or Lauri Clegg at 536-5695.

Sincerely,

Donald Clegg

Donald Clegg
President

808 586 4186 OFC ENVIRONMENTAL

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

RECEIVED
'05 NOV 23 A8:54
DEPT OF PLAN AND PERMIT CITY & COUNTY OF

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

November 23, 2005

Henry Eng
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Attn: Ann Matsumura

Dear Mr. Eng:

Subject: Draft Environmental Assessment (EA), **Michaels Seawall & Shoreline Setback Variance, Mokuleia**

We have the following comments to offer:

Beach protection: How does this project comply with state and county policies on beach protection?

Figures: Section 4.6 refers to Figure 15, which is missing from the draft EA. Figure 5, a May 1986 letter from the former Department of Land Utilization, is not reproduced in its entirety. Please correct these items in the final EA.

Consultations: If you received any correspondence during the pre-consultation phase include copies in the final EA. During the EA review period be sure to consult with the UH Environmental Center and DLNR's Office of Conservation and Coastal Lands.

If you have any questions call Nancy Heinrich at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

c: Donald Clegg

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc
ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

May 29, 2008

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

Subject: Draft Environmental Assessment (DEA)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington HIghway – Mokuleia
Tax Map Key 6-8-010:021

Dear Ms. Kealoha:

Thank you for your comment letter dated November 23, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We respectfully offer the following responses:

1. The comment regarding compliance with state and county beach protection policies has been noted and we will continue to take these policies into consideration and apply them to the final EA document.

2. The FEA has been reviewed for accuracy and consistency of all figures and exhibits.

3. The UH Environmental Center and DLNR's Office of Conservation and Coastal Lands were given the opportunity to comment on the project by the DPP during the EA review period.

Thank you again for your comments on the DEA. If you have any questions or require further clarification, please contact myself or Lauri Clegg at 536-5695.

Sincerely,

Donald Clegg
President

PHONE (808) 594-1888
FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
711 KAPI'OLANI BOULEVARD, SUITE 500
HONOLULU, HAWAI'I 96813

HRD05/2128

January 13, 2006

Henry Eng, FAICP
Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

RE: Request for review and comment on Shoreline Setback Variance, with included Draft Environmental Assessment, for Gregory Michaels to retain a reinforced concrete seawall and other structures within the shoreline setback, 68-689 Farrington Highway, Mokuleia, O'ahu; TMK: 6-8-010:021

Dear Henry Eng,

The Office of Hawaiian Affairs (OHA) is in receipt of your November 9, 2005, request for comments on the above-referenced proposal, which would allow Greg Michaels, at 68-689 Farrington Highway, to maintain an existing concrete seawall and stairs. We apologize for our delayed response.

Because no improvements are requested, the seawall and stairs were built before the property was purchased by the current owner, and the area has experienced – and continues to experience – chronic coastal erosion, with many existing and abutting seawalls along the same coastline, OHA has no comments at this time. Thank you, however, for updating OHA on the status of this seawall.

Thank you, also, for the opportunity to comment. If you have further questions or concerns, please contact Heidi Guth at (808) 594-1962 or e-mail her at heidig@oha.org.

Sincerely,

Clyde W. Nāmu'o
Administrator

CC: Gregory Michaels
27515 Enterprise Circle West
Temecula, CA 92590

Donald Clegg
President
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue
Honolulu, HI 96817

PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

apc
ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

May 29, 2008

Mr. Clyde W. Namu'o
State of Hawaii Office of Hawaiian Affairs
711 Kapiolani Blvd, Suite 500
Honolulu, HI 96813

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-26 (am)
Shoreline Setback Variance for Existing Seawall - Michaels
68-689 Farrington Highway– Mokuleia
Tax Map Key 6-8-010:021

Dear Mr. Namu'o:

Thank you for your comment letter dated January 13, 2006 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We acknowledge your comment that because the seawall and stairs were built before the property was purchased by the current owner and the area has experienced - and continues to experience - chronic coastal erosion, with many existing and abutting seawalls along the same coastline, OHA has no comments at this time.

Thank you again for your comments on the DEA. If you have any questions or require further clarification, please contact myself or Lauri Clegg at 536-5695.

Sincerely,

Donald Clegg
President

9. REFERENCES

AECOS, Inc. 1979. *Oahu Coral Reef Inventory.* Prepared for the U.S. Army Corps of Engineers, Pacific Ocean Division, Fort Shafter, Hawaii.

AECOS, Inc. 1981. *Oahu Costal Zone Atlas – Representing the Hawaii Coral Reef Inventory, Island of Oahu.* Prepared for the Harbors Division, Department of Transportation, Honolulu, Hawaii.

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Hwang, Dennis. 1981. *Beach Changes on Oahu as Revealed by Aerial Photographs.* Prepared for the State of Hawaii Department of Planning and Economic Development by the Urban and Regional Planning Program and the Hawaii Institute of Geophysics, University of Hawaii.

Sea Engineering, Inc. 1989. *Oahu Shoreline Study. Part 1 – Data on Beach Changes and Part 2 – Management Strategies.* Prepared for the Department of Land Utilization, City and County of Honolulu.

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APPENDIX A

PERMIT NUMBER

SEE INSTRUCTIONS BELOW

172529

DEPARTMENT OF BUILDINGS
CITY AND COUNTY OF HONOLULU

APPLICATION AND BUILDING PERMIT

Fee Received

WRITE IN ALL INFORMATION	EST. VALUE	PERMIT FEE	CLASS OF CONSTRUCTION	NO. OF STORIES	ZONE	SEC.	PLAT	PARCEL / LOT NO.	DISTRICT
	$9,300.00	$30.90	UN	1	6	8	3	10	MOKULEIA

CHECK BOX OR WRITE IN IF NECESSARY	NEW BLDG.	EXIST. BLDG.	OTHER STRUCTURES	ADD.	ALTER.	REPAIR	OTHER WORK
	X		Attached Garage				
	FENCE WALL	RETAINING WALL		RECONSTR.	DEMOLITION		

APPLICATION IS HEREBY MADE FOR PERMIT TO DO WORK AS FOLLOWS: Model C

CLASSIFICATION OF OCCUPANCIES GROUP: I Dwlg

SHOW NUMBER OF UNITS	SINGLE FAMILY DWELLING	DUPLEX	APARTMENT	BUSINESS	INDUSTRIAL	PUBLIC	INSTITUTIONAL	STORAGE	MIXED
	1								

CLASSIFICATION OF CONSTRUCTION

CHECK PROPER BOX	FIRE PROOF TYPE I	SEMI FIRE PROOF TYPE II	HEAVY TIMBER TYPE III	NON COMBUSTIBLE TYPE IV (1)	UNPROTECTED METAL TYPE IV (N)	ORDINARY MASONRY TYPE V (1)	WOOD FRAME TYPE V (N)
					X		

FILL IN REQUIRED INFORMATION

PROPOSED ADDRESS Waialua & Kaena Point (NO.) (STREET) LOT AREA 9308 SQ. FT. USE DISTRICT RP

OVERALL DIMENSIONS 45'8" x 36' FLOOR AREA 1735 SQ. FT. NO. OF STORIES 1

BASEMENT None SQ. FT. TYPE OF FOUNDATION Concrete TYPE OF FLOOR Concrete

TYPE OF EXTERNAL WALLS Wood TYPE OF INTERNAL PARTITIONS Wood TYPE OF ROOF Built up 5 ply

CONNECTION TO SEWER CONNECTION TO CESSPOOL X

NO PART OF THIS BUILDING WILL BE NEARER THAN 7 FT. 0 INCHES TO NEAREST ADJOINING PROPERTY LINE AND NO PART OF THIS BUILDING WILL BE NEARER THAN FT. INCHES FROM 1ST STORY, NOR FT. INCHES FROM STORIES ABOVE THE 1ST FLOOR OF ANY BUILDING ON THE SAME LOT. NO EAVE, OVERHANG, OR OTHER PROJECTION WILL PROJECT MORE THAN 30" OF THE SPACE ADJOINING A PROPERTY LINE. UNDERSIDE OF FLOOR SILLS WILL BE AT LEAST 20 INCHES ABOVE HIGHEST PART OF AROUND CEMENT FLOOR SLABS OF BUILDINGS SHALL HAVE MARGINAL WALLS 24 INCHES BELOW GRADE WHERE REQUIRED.

NAMES AND ADDRESSES OF:

BUILDING OWNER Oahu Homes ADDRESS Liberty Bank Bldg.

GENERAL CONTRACTOR K.K. Nishikawa Inc. LICENSE NO. B-374 ADDRESS Waialua Home Rd.

PLAN MAKER Mid Pac. Lumber ADDRESS Kalani Street

PLUMBING SUB-CONTRACTOR Kahuku Plumbing

ELECTRICAL SUB-CONTRACTOR Stan's Electric

I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE ABOVE IS CORRECT AND AGREE TO COMPLY WITH ALL CITY AND COUNTY ORDINANCES AND STATE LAWS REGULATING BUILDING CONSTRUCTION.

DATE AND SIGN

SIGNATURE OF APPLICANT K.K. Nishikawa DATE 9/12 19 60

SIGNATURE OF OWNER OF BUILDING [signature]

APPLICANTS WILL NOT WRITE IN THIS PART OF FORM

PERMISSION IS HEREBY GIVEN TO DO THE ABOVE WORK ACCORDING TO THE CONDITIONS HEREON AND ACCORDING TO THE APPROVED PLANS AND SPECIFICATIONS PERTAINING THERETO, SUBJECT TO COMPLIANCE WITH ORDINANCES OF THE CITY AND COUNTY OF HONOLULU, STATE OF HAWAII. CONSTRUCTION TO BE COMPLETED ON OR ABOUT 19

DATE 9-14 19 60 APPROVED [signature] AGENT, BOARD OF HEALTH

DATE 19 APPROVED CHIEF ENGINEER, FIRE DEPARTMENT

DATE 9-14 19 60 APPROVED [signature] OR SUPERINTENDENT OF BUILDINGS

WARNING! PERMIT PLACARD MUST BE POSTED ON THE SITE OF THE WORK. BE SURE YOU ARE FULLY INFORMED ON BUILDING AND ZONING LAWS BEFORE BEGINNING YOUR WORK. PLANTING HEDGES, TREES OR CONSTRUCTING FENCES BEYOND LIMITS OF YOUR PROPERTY LINE IS FORBIDDEN BY LAW. (PENALTY OF $100.00 FINE AND/OR 30 DAYS IMPRISONMENT.)

PLANNING DEPARTMENT

DATE 9/9 19 60

ZONE (USE DISTRICT) RP SUB-DIVISION PENDING

SET BACK Zone ON MASTER PLAN

SUB-DIVISION FILED Yes COMMISSION REPORT

SUB-DIVISION APPROVED RECOMMENDATION

OFFICE INDEX COPY SIGNATURE [signature]

9/12/60

BUILDING DEPARTMENT
CITY AND COUNTY OF HONOLULU

BUILDING PERMIT APPLICATION

PERMIT NO. 573

APPLICANT FILL IN AREA BELOW

OWNER: Mr. Percy Douglas Cheape

OWNER'S ADDRESS: 68-[illegible] Farrington Highway

JOB ADDRESS: same as above

PLAN MAKER: RAM CORPORATION dba ALLIED BUILDERS SYSTEM

ADDRESS: 1127 North School Street

PROF. REG. NO.: TEL. NO.: 847-4044

CONTRACTOR: RAM CORPORATION dba ALLIED BUILDERS SYSTEM

ADDRESS: 1127 North School Street

STATE LIC. NO.: B-5068 TEL. NO.: 847-4044

WORK TO BE DONE

Master bedroom, family room, extended living room.

ESTIMATED VALUE OF WORK: $ 10,000.00

NATURE OF WORK

1 ☐ NEW BLDG. 5 ☐ ALTERATION 9 ☐ RETAINING WALL
2 ☐ FOUNDATION ONLY 6 ☐ REPAIR 10 ☐ OTHER
3 ☐ SHELL ONLY 7 ☐ DEMOLITION
4 ☐ ADDITION 8 ☐ FENCE

METHOD OF SEWAGE DISPOSAL

1 ☐ SEWER CONNECTION 2 ☐ AEROBIC UNIT 3 ☐ CESSPOOL
4 ☐ OTHER

PROPOSED USE:

I hereby acknowledge that I have read this application and state that the above is correct and agree to comply with all City and County ordinances and State laws regulating building construction.

SIGNATURE (OWNER OR AGENT): Harry T. Kamiya DATE: 12/15/72

NOTES TO APPLICANT:
Separate electrical, plumbing and sign permits shall be obtained as necessary.
Post permit placard on site of work.
This permit expires if work is not started within 90 days of date of issuance or if work is suspended or abandoned for 90 days. Violating any of the provisions of building code is punishable by fine of $300.00 and/or 90 day imprisonment.

FOR BUILDING DEPARTMENT USE

ZONE	SEC	PLAT	PARCEL	LOT NO.	LOT AREA
C	P	16	27	10	11305 SQ. FT.

OCCUPANCY GROUP: I-Div 4 DISTRICT: Makiki

ACCEPTED VALUE: $ 10,000.00 PERMIT FEE: $33.00 42.00

TYPE OF CONSTRUCTION		NO. OF STORIES		FIRE ZONE
MINIMUM	ACTUAL	EXISTING	FINAL	
V(N)	V(N)	1	1	3

FLOOR AREA (SQ. FT.)
EXISTING NEW 540 TOTAL

REMARKS: [illegible]

FOR PLANNING DEPARTMENT USE

LUI ____ FAR ____ PERMITTED AREA ____ AREA SHOWN ON PLAN ____

STRUCTURE CODE: ____ CENSUS TRACT–BLOCK NO.: ____

ZONE (USE DISTRICT): ____ SET BACK: ____

WORK WILL	ADD	DELETE
RESIDENTIAL UNITS	____ TOTAL	____ TOTAL
STUDIO	____ UNITS	____ UNITS
1 BEDROOM	____ UNITS	____ UNITS
2 BEDROOM	____ UNITS	____ UNITS
3 BEDROOMS	____ UNITS	____ UNITS
4 BEDROOMS AND OVER	____ UNITS	____ UNITS
HOTEL ROOMS	____ ROOMS	____ ROOMS
OFF-STREET PARKING SPACES	____ SPACES	____ SPACES
STORIES	____ STORIES	____ STORIES
BLDG. HEIGHT (FT.)	____ FT.	____ FT.
GROUND FLOOR AREA (SQ. FT.)	____ SQ. FT.	____ SQ. FT.

APPROVAL OF OTHER AGENCIES (ROUTE AS INDICATED)

✓	AGENCY	SIGNATURE	DATE
	CITY AND COUNTY		
	PLANNING DEPT.	[illegible]	11/[illegible]
	DIV. OF ENGINEERING		
	DRIVEWAY & LOT GRADING		
	HIGHWAY		
	DRAINAGE		
	DIVISION OF SEWERS		
	FIRE DEPT.		
	HON. REDEV. AGENCY		
	STATE OF HAWAII		
	HEALTH DEPT.		
	FIRE MARSHAL		
	LAND & NATURAL RESOURCES		
	HIGHWAYS DIVISION		
	DIV. OF INDUSTRIAL SAFETY		

Permission is hereby given to do above work according to conditions hereon and according to approved plans and specifications pertaining thereto, subject to compliance with ordinances and laws of City and County of Honolulu and State of Hawaii.

☐ This building shall not be occupied until a certificate of occupancy has been issued.

[illegible] Nishikawa
FOR DIRECTOR AND BUILDING SUPERINTENDENT DATE

OFFICE INFO COPY

FORM BSD-45 (11/70)

Area Calculations to Determine 20 foot setback vs. 40 foot setback

Property:TMK: 6-8-10: 21 Mr. Greg Michaels

1. LOT AREA

9,326			total lot area
(2,898)			loss due to erosion
	6,428	sf	lot area after erosion
6,428			lot area after erosion
50%			reduced by 50%
	3,214	sf	**50% of the lot area after erosion**

2. AREA TAKEN AWAY BY SETBACKS

	61			front yard width
x	10			front yard setback
		610	sf	
	61			rear yard width
x	40			TYPICAL 40 FOOT SHORELINE SETBACK
		2,455	sf	
	147			west side yard depth
x	5			side yard setback
		735	sf	
	159			east side yard depth
x	5			side yard setback
		795	sf	
		4,595		**Lot Area comprised of setbacks**

3. COMPARE AREA TAKEN BY SETBACKS vs. 50% OF LOT AFTER EROSION

The 4,595 square feet taken away by setbacks is greater than 50% of the lot area after accounting for erosion. Therefore, a 20 foot shoreline setback applied prior to 1992 when the shoreline setback rules were amended.

APPENDIX B

WNLOC

DESCRIPTION OF IMPROVEMENTS L-B

CARD ___ OF ___ CARDS			
ZONE	SEC.	PLAT	PARCEL
6	8	10	21

SURVEY BY Lum
DATE 7-14-61

13. USE TYPE & OCC.

	RENT.	HOME
1-FAM.	☐	☐
2-FAM.	☐	☐
APART.	☐	☐
MULTI.	☐	☐

14. UNITS & ROOMS
LIV. UNITS /
ROOMS (6) 8
STORIES /
BASEMENT

15. FOUND. & STEPS

	FD.	ST.
CONC.	☑	☑
H.T.	☐	☐
STONE	☐	☐
WD. P.	☐	☐
H.O.G.		

16. FRAME
WD-SW ☑ SWDB ☐ DW ☐
MASONRY ☐
STEEL ☐
REIN. CONC. ☐

17. EXTERIOR WALLS
T & G 1 X 8 R/cl
B & B
RUSTIC
BRICK
STONE/ROCK
HT
PLAS/STUCCO

18. ROOF DESIGN
GABLE ☑ HIP ☐
FLAT ☐ GAMB ☐

19. ROOF STRUCT
WOOD ✓
STEEL
CONC.

20. ROOFING
COMP.
BLT/UP ✓
SHING
SHAKES
METAL
TILE
RAIN GUTTERS ☐

21. FLR STRUCT.
WOOD JOISTS ☐
CONC. " ☐
STEEL " ☐
CONC. SLAB ☑

22. FLOORING

	LIV.	B/R	BTH	KIT.	OTHER
PINE					
HDWD					
CEM.					
TILE/Vin	✓	✓	✓	✓	

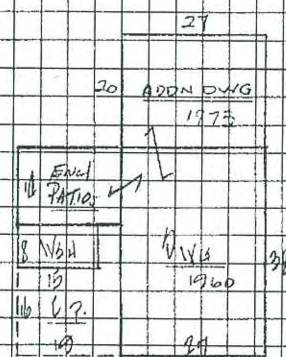
23. ELECTRICAL
FIXT. CH ☐ M ☑ GD ☐
OUTL. S/ST ☐ ST ☑ VG ☐
BUILT/IN OVEN ☑ STOVE ☑
VENT ☑ D/WR ☐

24. INTER. WALLS
TYPE 1 x 8
MAT. R/W

25. CEILING
CANEC ☑ PLAS ☐
PINE ☐ PLY ☐
Exposed

26. BATHROOMS
1 ☐ 1½ ☑
2 ☐ 2½ ☐
3 ☐

Sketch calculations:
~~Util~~
~~14 x 38 = 1026 ¢~~
C.P.
19 x 24 = 456 ¢
Patio
~~14 x 19 = 266 ¢~~
Dwg
27 x 38 = 1026
14 x 19 = 266
20 x 27 = 540
1832 ¢



27. MILLWORK
WINDOWS-D/H ___ DOORS-PANEL ___
SL. CS. ___ SOLID ___
PICTURE ___ SLID'G ✓
JALOUSIE ✓ CUSTOM ___
TRIM-PINE ___ CABINETS ___
HARDWD ___ SHELVES ___
METAL ___ VANITY(NO) ___

28. PLUMBING

ITEM	CH	MED	GD	VAL.	
5-UNIT		/		~~570~~	~~675~~
BATH TUB/s		1			
W.C.		20		~~113~~	~~133~~
BASIN		20		~~80~~	~~94~~
SH. STALL					
SINK					
LAUND.					
SUN HT.					
SUB TOTAL—PLUMBING				~~763~~	~~902~~

29. ADD'L IMPVT DETAILS

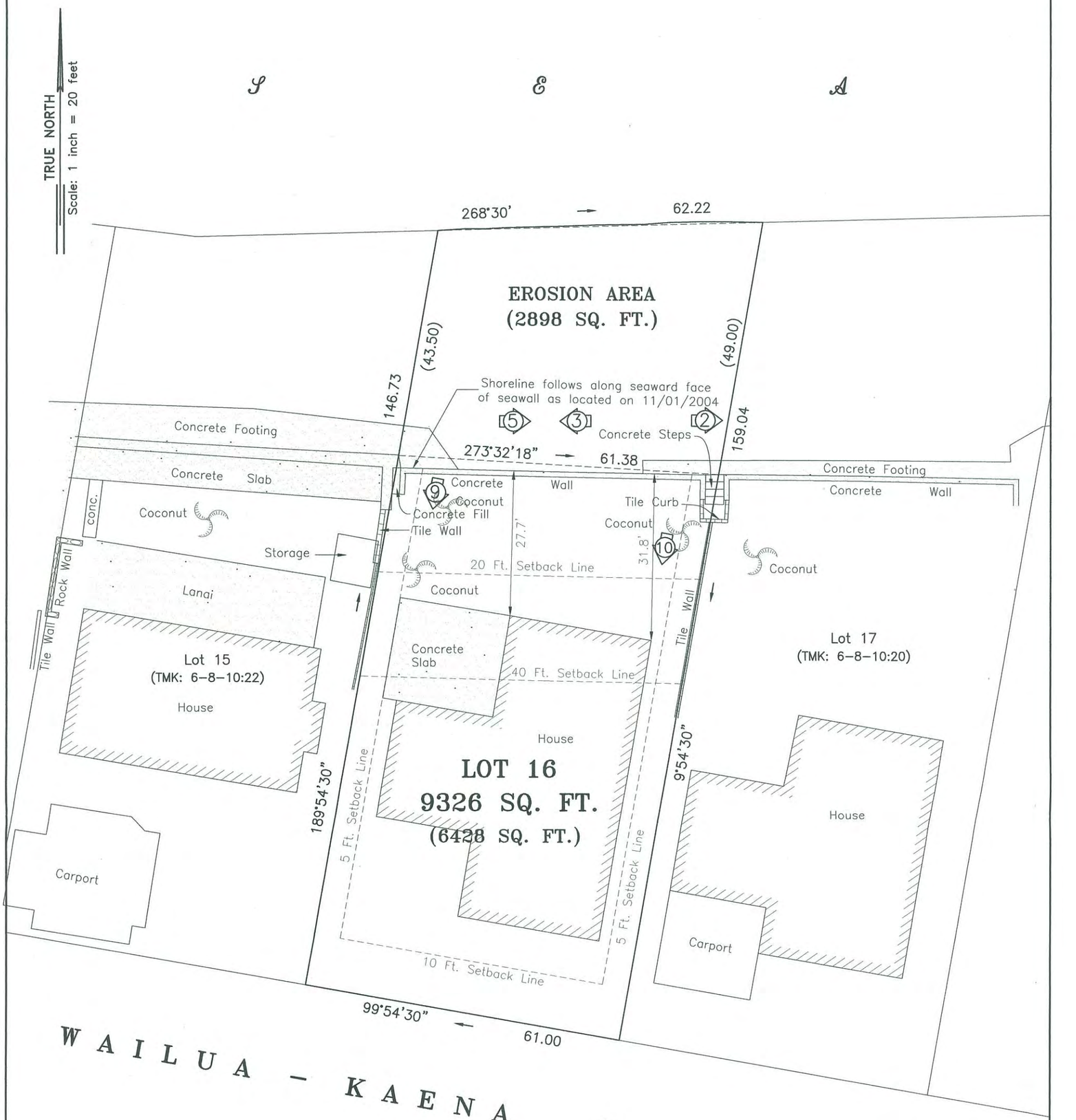
ITEM	RF	WL	FL	AREA ¢	CLS	2.0 VAL.	
Carport	5/4 / 3/6	Open	Bit	456	1.28	~~584~~	1176 / ~~689~~
~~Patio 75%~~		~~446~~	~~Ent~~	~~266~~	1.43 / 5.88	~~380~~	1564
B-INS				(MED)	.	~~189~~	~~223~~
SUB TOTAL DETAILS						~~1153~~ (964)	~~2476~~
TOTAL ITEMS 28 & 29						~~1916~~ (1727)	~~3378~~

30. ADD'L FLOOR DET.
2ND ☐ 3RD ☐ 4TH ☐

31. CONDITION
BETTER THAN AVER ___ %
AVERAGE (NOR. DEP) ☑
BELOW AVER ___ %

32. CLASSIFICATION
CLASS 11 S/CL 3
BY MV 113

APPENDIX C



SHORELINE SURVEY MAP

LOT 16

as shown on Map 4
of Land Court Application 1810

Mokuleia, Waialua, Oahu, Hawaii
Tax Map Key: 6-8-10:21
Scale: 1 inch = 20 feet
Date: July 6, 2005
Revised: June 9, 2008

Owner: Mr. Greg Michaels
Mailing Address: 27515 Enterprise Circle South
Temecula, CA 92590

JAIME F. ALIMBOYOGUEN
LICENSED PROFESSIONAL LAND SURVEYOR
No. 8216
HAWAII, U.S.A.

exp. 4/30/10

This work was prepared by me
or under my direct supervision.

GRAPHIC SCALE

10 0 10 20 40 80

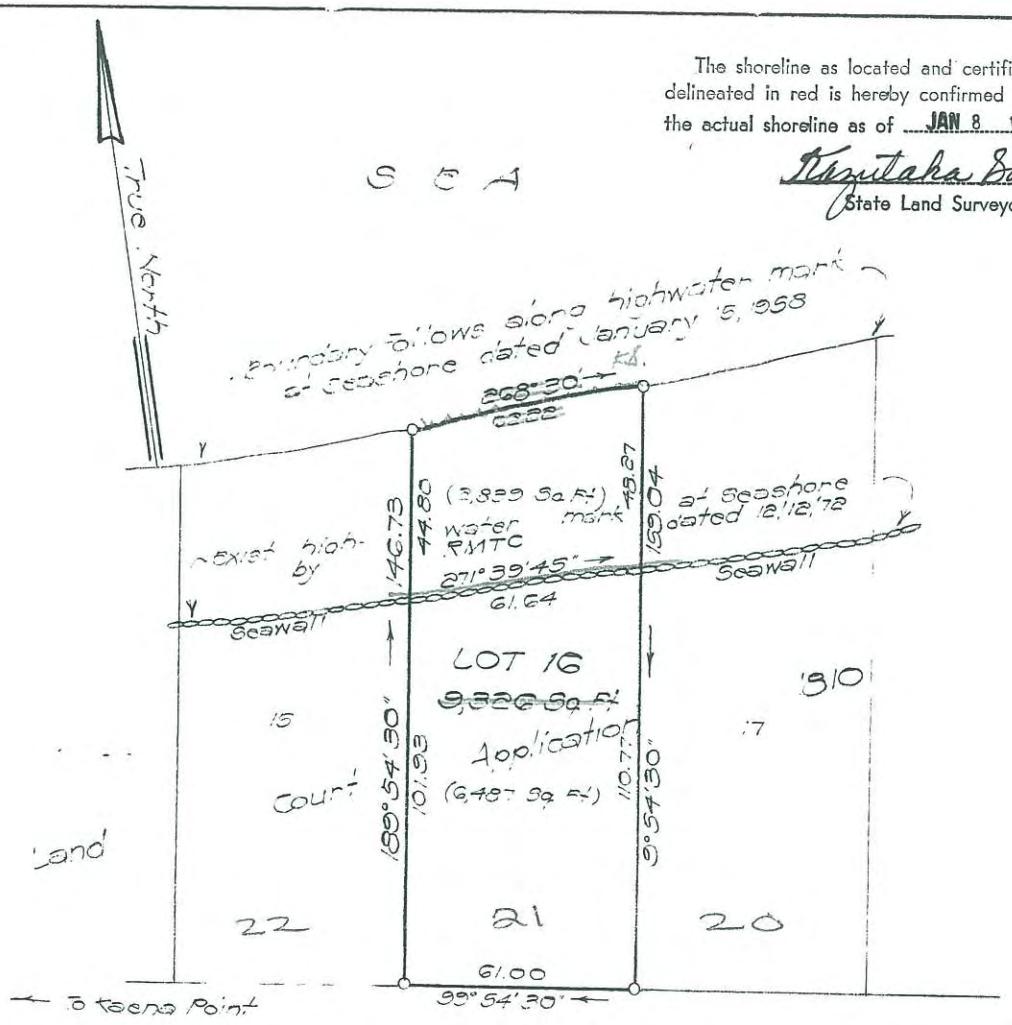
(IN FEET)

1 inch = 20 feet

NOTES:
1. Only improvements shown were located.
2. Denotes number and direction of photographs.

The shoreline as located and certified and delineated in red is hereby confirmed as being the actual shoreline as of JAN 8 1973

Kazutaka Baike
State Land Surveyor



SURVEY OFFICE COPY

Map Showing
Shoreline Location of Lot 16
Land Court Application 1810
At Mokuleia, Waialua, Oahu, Hawaii

Tax Map Key: 6-8-10-21

40 20 0 40 80
Scale in Feet

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Masami Tsujawa
REGISTERED PROFESSIONAL LAND SURVEYOR
CERTIFICATE NUMBER 281.

HONOLULU, HAWAII R.M. TOWILL CORPORATION 1600 KAPIOLANI BLVD

APPENDIX D

EKNA Services, Inc.

Engineers
and
Environmental
Consultants

Engineering
Planning
Surveys
Computer
Modeling

615 Piikoi Street
Suite 300
Honolulu, Hawai
96814-3139

Telephone:
(808) 591-8553
Facsimile:
(808) 593-8551

CN 2474-00F# May 17, 2005

Mr. Donald Clegg
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Subject: SSV for Existing Seawall
68-689 Farrington Highway, Mokuleia, Oahu
TMK: 6-8-10:21

Dear Mr. Clegg:

This letter provides a Coastal Engineering Assessment of the potential impact of the subject seawall on existing coastal processes along this Mokuleia shoreline area. EKNA Services, Inc. prepared a Coastal Engineering Assessment of Existing Seawalls (TMK:6-8-9:010 and 011) in April 2004, for two properties located about 1200 feet east of the subject parcel. This prior report contains a large amount of information that is relevant to the subject property - i.e., information about coastal processes, alternative shore protection measures, and potential littoral impacts. The purpose of this letter is to provide additional information specific to the subject parcel. I recommend that our prior report be included in entirety as an Appendix in the Environmental Assessment for the subject seawall to provide the required coastal engineering information to support the SSV application.

Existing Seawall

The existing seawall is a reinforced concrete wall with top elevation of about +10.5' Mean Sea Level (MSL). According to the as-built survey by Hida, Okamoto & Associates, Inc., the base of the wall is protected by an extended concrete footing, with a top-of-beach elevation of about 0.0 MSL (+1' Mean Lower Low Water (MLLW)). A site visit was conducted on April 2, 2005 during low tide (+0.1' MLLW), moderate North Pacific swell conditions (3-5 foot surf), and strong tradewinds. The base of the wall was subject to wave runup at the time of the site visit. Breaking wave activity was evident across the entire bayfront.

The subject seawall ties into concrete seawalls on both sides of the property. A public right-of-way (ROW) is situated six parcels (about 400 feet) to the east of the subject parcel. Properties eastward of the ROW to the stream mouth are protected with structures, and properties westward of the ROW within the embayment are protected by seawalls (about 1000 feet or so). There is no "dry beach" fronting the seawalls extending westward within the embayment. The attached photos depict the condition of the shoreline in the vicinity of the subject property. The

extended concrete footing at the base of the wall appears to have been placed to protect the foundation of the wall from scouring as the elevation of the fronting beach was lowered by continuing erosion. The seawalls along this reach show similar measures to protect their footings from becoming undermined.

Potential Littoral Impacts

The erosion that is occurring along this coastal reach can be described as "passive" erosion (in contrast to "active" erosion which is induced or accelerated by shore protection structures). When a protective structure is built along an eroding shoreline and erosion continues to occur, the result will be loss of beach in front of the shore protection structure as the water deepens and the shoreface profile migrates landward. This process is designated as passive erosion and is the result of fixing the position of the shoreline on an otherwise eroding stretch of coast. Passive erosion proceeds independent of the type of shore protection constructed. This is the most common result of shoreline hardening in Hawaii, and is the probable long-term consequence of the existing seawalls at Mokuleia.

Consideration of Alternatives

Removing the seawall (which is functioning as a retaining wall), without constructing replacement shore protection, would result in immediate loss of at least 50 feet of property as the shoreline attempts to achieve a stable slope. The adjacent properties would be impacted as their existing seawalls become flanked.

Removal of the existing seawall and replacing it with a different type of shore protection measure does not provide any significant benefit. Seawalls exist on both sides of the subject property. There is insufficient space on the property to construct a sloping revetment, as the dwelling is situated about 25 feet landward from the top of the seawall. Since the revetment toe would be in line with the existing adjacent seawalls, the top of the revetment slope would be located about 20 feet landward of the adjacent seawalls, and could not be constructed without removing or relocating the dwelling and constructing flank walls to protect the adjacent properties. Replacing the seawall with a sloping revetment structure will not improve the existing shoreline access and will not halt the ongoing erosion along this coast.

I trust that this letter addresses the coastal engineering issues concerning the subject seawall.

Very truly yours,

Elaine E. Tamaye
President

attachment

Coastal Engineering Assessment of Existing Seawalls at Mokuleia Oahu, Hawaii

TMK: 6-8-9:010 and 011

Prepared for:

Bruce Clements
68-003 Laau Paina Place
Waialua, Hawaii 96791

and

Michael Ells
68-001 Laau Paina Place
Waialua, Hawaii 96791

Prepared by:

EKNA Services, Inc.
615 Piikoi Street, Suite 300
Honolulu, Hawaii 96814
(EKNA Control No. 2439-00R#)

April 2004

1. LOCATION AND PROBLEM IDENTIFICATION

The project site is located along two (2) contiguous parcel shorefronts at Mokuleia, at 68-001 and 68-003 Laau Paina Place (TMK: 6-8-09:010 and 011). Figure 1 shows the general site location and Figure 2 provides the Tax Map Key.

Both properties are protected by existing seawalls, that were constructed because of ongoing long-term erosion along this shorefront. The seawalls were constructed without obtaining a building permit and Shoreline Setback Variance. In accordance with Ordinance No. 92-34 and the Shoreline Setback Rules and Regulations of the City and County of Honolulu, this coastal engineering assessment is prepared in support of an application for a Shoreline Setback Variance for the existing seawalls at the two subject parcels.

The shoreline fronting this site is a narrow beach underlain with reef limestone that extends seaward as a variable depth reef platform. The site is exposed to winter North Pacific swell and the predominant tradewind waves. Shallow fringing reefs protect the shoreline from moderate tradewind wave energy. However, during large winter swell conditions and high water levels, erosion of the narrow beach and wave runup and overtopping of the beach cause erosion damage and flooding to unprotected backshore areas and dwellings. Numerous property owners along this coastal reach have constructed shore protection to prevent further storm wave runup damage to their dwellings. The subject property owners desire to retain the seawalls to prevent future erosion and wave runup damage to their dwellings.

2. SHORELINE CHARACTERISTICS AND COASTAL PROCESSES

The project site lies on the Mokuleia coast, characterized as an undulating coastal reach containing numerous embayed coral sand beach systems. The project site is situated in one such embayment near the east end of the Dillingham Airfield. This particular embayment is formed between two prominent reef "headlands", which are shallow reef formations that protrude seaward from shore. The reef headland which bounds the eastern end of this embayment fronts the Mokuleia Beach Colony, just to the west of the Mokuleia Polo Grounds. The two subject parcels are on the west side of the Mokuleia Beach Colony.

A site visit was conducted on April 9, 2004 during a low tide (0.0 MLLW[1]), moderate North Pacific swell conditions (3-5 foot surf), and strong tradewinds. The reef headlands were not bared, but were noticeably shallower than the reef fronting the central portion of the embayment. Breaking wave activity was evident across the entire bayfront. While not observable from shore, a review of aerial photos shows calm areas between breaker zones that indicate the deeper "channels" through the reefs fronting the embayment.

Photo page-1 shows the approximately 350-foot long seawall fronting the Mokuleia Beach Colony on the east side of the project site. The narrow and steep beach fronting this parcel is a "wet" beach, meaning that during high tide, the wave uprush reaches the seawall. Photo page-2 shows the subject Parcel 10 curvilinear seawall that ties into the Mokuleia Beach Colony's seawall. Photo page-3 shows the subject Parcel 11 seawall that is largely obscured from sight by the naupaka vegetation. This seawall ties into Parcel 10's seawall on the east side, and extends landward along the western boundary of the parcel for about 20 feet. Debris fronting the subject Parcel 11 shorefront indicates that wave uprush during high tide frequently reaches the existing wall. A privately-owned right-of-way is adjacent to subject Parcel 11 (the right-of-way is jointly owned by the property owners on Laau Paina Place and is not open to the public).

Photo page-4 shows the parcels westward to the stream. The parcel on the west side of the right-of-way (Parcel 12) is obscured by naupaka vegetation, and the adjacent parcel (Parcel 13) is fronted by a CMU wall. The large parcel on the east side of the stream (Parcel 20) is unprotected. Photo page-5 shows the stream and adjacent shoreline reach to the west. The parcel on the west side of the stream mouth shows obvious erosion damage, and a nearly continuous line of seawalls protect the remaining shoreline within the embayment.

A 1995 shoreline survey[2] indicates that the top-of-wall elevation on Parcel 11 is about +10' MSL and the base of the wall (top of beach) is about +6.0 to +6.5' MSL. The adjacent Parcel 10 top-of-wall elevation is the same, however, the base of the wall is ½ to 1 foot lower (because of the narrower beach front). The top-of-beach elevation fronting the adjacent three parcels to the west is probably on the order of +8' to +9' MSL.

[1]Honolulu low tide was at noon at -0.2' MLLW, and high tide was at 8:07 pm at +2' MLLW. Based on corrections for Waialua Bay, low tide was estimated to occur at 10 am at the site. The site visit was conducted 09:00 - 09:30 am.

[2]Survey by DJNS Surveying & Mapping, Inc., performed January 18, 1995 and submitted for shoreline certification.

It is apparent that during high tide, wave uprush reaches the base of the existing seawalls. During storms and large winter swell conditions, wave runup and overtopping of the beach likely causes flooding and sand transport into the properties that are not protected by seawalls. There is no evidence that the existing seawalls are accelerating erosion problems at the site. There is no indication of excessive escarpment or landward retreat of the unprotected shoreline directly adjacent to the Parcel 11 seawall. The beach profile is uniform along this entire shoreline reach. These factors indicate that the existing seawalls have had no adverse effects on existing beach processes.

This coastal reach is exposed to winter North Pacific swell and predominant tradewind-generated waves. The shallow reefs which surround the embayment provide much sheltering of the project site from deepwater wave energy. These reefs dissipate nearly all wave energy during typical tradewind-generated wave conditions. During large winter swell activity, waves initially break on the surrounding reefs where most of their energy is spent. What little energy remains propagates to shore as reformed waves which break on the shoreline. The wave energy that can reach the shoreline is limited by the water depths over the reefs and the channels through the reef. Deeper water depths over the reefs allow greater transmission of wave energy. During large swell activity, waves breaking over the reefs can cause a rise in water level known as wave setup. The increased water levels allow more wave energy to be transmitted over the reef. Thus, wave activity at the shoreline is greatest during large swell or storm wave conditions and during high tides.

The super-elevation in water level during large swell activity will allow waves to attack the shoreline at higher elevations on the beach. This is also aggravated during high tide conditions. Thus, the conditions which promote wave overtopping problems for unprotected parcels occur during large winter swell activity, as confirmed by residents. Typical tradewind waves are not capable of causing appreciable wave setup and very little wave energy reaches this shoreline reach.

Normally along an exposed coastal reach, wave energy is the primary factor which drives nearshore currents in the surf zone. Waves approaching the shore at an angle will induce longshore currents and transport of beach material alongshore in the direction of breaking. The large winter North Pacific swell approaches this coastal reach from the northwesterly direction. Therefore, it may be expected that longshore currents and longshore transport during winter swell activity would be towards the easterly direction at the project site. However, the shallow reefs surrounding the site considerably alter the deepwater wave characteristics within the embayment, resulting in possibly complex patterns of wave approach along the shoreline. According to a prior report by the author, residents have noted that shoreline currents within the embayment flow towards the west during high

winter swell activity. This flow may be primarily hydraulically driven due to the bathymetric contours within the embayment rather than wave-driven. The water which accumulates within the embayment during large swell or storm wave activity seeks to flow towards areas of hydraulically least resistance. Thus, the water drains towards deeper areas within the embayment. Deeper water depths exist on the west side of the embayment.

The shallow reef structure offshore the eastern headland (fronting the project site) is broader and extends further into the embayment than the shallow reef structure offshore the western headland. This reef structure offshore the eastern headland appears to gradually deepen towards the stream mouth, at which point the reef structure becomes less distinct and the reef bottom is mottled with sand cover throughout the western half of the embayment. There is an apparent "channel" through the offshore reef near the western end of the embayment. Thus, it is postulated that during large winter swell activity, setup in water level due to breaking waves on the broad shallow reef areas on the eastern end of the embayment induces flows towards the deeper central and west portion of the embayment. The channel through the surrounding reef at the west end of the embayment then allows the water to escape seaward through the opening in the surf zone. This hydraulically-driven circulation is probably the basis for the westerly-flowing shoreline current that residents have noted.

If the shoreline flows are strong, they have the potential to carry wave-suspended shoreline sediments offshore into the deeper reaches of the embayment and seaward of the surrounding reef as the shore-parallel flows are diverted seaward through openings in the shallow reef. Such sediments may be deposited in water depths too deep for normal wave activity to return it to the beach. The history of long-term erosion of this coastline is evidence that such permanent loss of beach material occurs.

While net long-term erosion is evident, residents also indicated that seasonal fluctuation of beach width occurs. According to the residents, there is a pattern of erosion along the eastern part of the embayment during the winter, with restoration of the beach width during the summer. Conversely, for the shoreline reach towards the western part of the embayment, there is a pattern of erosion during the summer and restoration during the winter. Because water depths in the central part of the embayment are too deep for transmitted wave energy to move sediments back to shore, the seasonal fluctuation of beach width is presumably due to longshore transport of sediments from the shoreline and shallow nearshore areas around the headlands. Figure 3 depicts the probable seasonal transport processes.

During high winter northwest swell activity, a depression in the surrounding reef at the

northwestern end of the embayment can permit substantial wave energy to enter the embayment and attack the eastern shoreline reach, while the shallow reefs fronting the western headland shelter the adjacent westerly shoreline reach within the embayment. The direction of wave breaking on the shallow westerly reef, however, can transport sediments from the shallow reef and shoreline areas around the point and into the embayment.

During strong northeasterly tradewind wave conditions which can occur during the summer months, a depression in the surrounding reef at the northeastern end of the embayment can permit substantial wave energy to enter the embayment and attack the western shoreline reach, while the shallow reefs fronting the eastern headland shelter the adjacent easterly shoreline reach within the embayment. The direction of wave breaking on the shallow easterly reef, however, can transport sediments from the shallow reef and shoreline areas around the point and into the embayment.

For this coastal area, and for most coastal areas in the state, the general trend is toward continued long-term erosion. There is no evidence that the long-term erosion trend along this coastal reach will reverse in the future.

3. POTENTIAL LITTORAL IMPACTS

The existing seawalls have no effect on the existing littoral processes at this site. The seawalls are functionally consistent with existing seawalls along this coastal reach. The existing seawalls do not alter seasonal erosion/accretion patterns. There is no evidence that the seawalls have caused aggravated erosion to the adjacent unprotected parcels. This entire coastal reach has been experiencing net long-term erosion over the past 50 years. There is a continuing high risk of erosion and flooding damage due to overtopping waves to unprotected properties.

The seawalls do not affect lateral access along the beach. While the seawalls do not affect longshore sediment transport processes, there may be some concern that cross-shore transport may be affected because of wave reflection from the near-vertical impermeable face of the seawall. It is been a generally held presumption that the more reflective the structure, the greater the potential for adverse impacts by discouraging sand accumulation in front of the structure. However, given the fact that beach and shoreline erosion is continuing to occur along this coastline and elsewhere where there are no shore protection structures, it can be concluded that the long-term erosion trend is a natural process that will certainly not reverse simply by constructing shore protection structures with a sloping porous surface. In fact, long-term field studies by the University of California at Santa

Cruz[3], sponsored by the U.S. Army Corps of Engineers, found no significant difference in impact to the beach fronting a sloping rip-rap revetment and an adjacent vertical concrete seawall. Field studies conducted by EKNA Services, Inc. (formerly Edward K. Noda and Associates, Inc.) at Aliomanu, Kauai, also demonstrated that seasonal cross-shore transport is unaffected by an existing seawall. Monitoring of beach profiles over a four month period (July-October 1996) showed that seasonal beach accretion (increase in beach width) occurred in front of the near-vertical seawall as well as on the adjacent unprotected beach.

The erosion that is occurring along the Mokuleia shoreline can be described as "passive" erosion (in contrast to "active" erosion which is induced or accelerated by shore protection structures). When a protective structure is built along an eroding shoreline and erosion continues to occur, the unprotected shoreline adjacent to the structure will continue to erode and eventually migrate landward beyond the structure. The result will be loss of beach in front of the shore protection structure as the water deepens and the shoreface profile migrates landward. This process is designated as passive erosion and is the result of fixing the position of the shoreline on an otherwise eroding stretch of coast, and is independent of the type of shore protection constructed. This is the most common result of shoreline hardening in Hawaii, and is the probable long-term consequence of the existing seawalls at Mokuleia.

4. CONSIDERATION OF ALTERNATIVES

Removal of the existing seawalls is not a viable alternative, since the improvements presently existing on the parcels would be susceptible to erosion and wave damage. The

[3]Because increased development in coastal areas has led to increased "hardening" of shorelines in response to net long-term shoreline erosion, there is an increased concern of coastal planners to the potential impacts of seawalls and/or revetments on beaches and shorelines. Even within the scientific and engineering community, controversy exists on whether seawalls and/or revetments are adverse and promote erosion. Because of the lack of sufficient field data to objectively resolve the controversy, the U.S. Army Corps of Engineers sponsored studies, beginning in the later 1980s, to monitor beach response to seawalls and revetments at several study sites. The following references describe the results of the monitoring:

U.S. Army Engineer Waterways Experiment Station, Coastal Engineering Research Center, Coastal Engineering Technical Note, CETN III-46 (3/92), CETN III-57 (6/95).

Griggs, G.B., J.F. Tait, K. Scott, N. Plant (1991), "The Interaction of Seawalls and Beaches: Four Years of Field Monitoring, Monterey Bay, California", Proceedings Coastal Sediments '91.

Griggs, G.B., J.F. Tait, W. Corona (1994), "The Interaction of Seawalls and Beaches: Seven Years of Monitoring, Monterey Bay, California", Shore and Beach 62:21-28.

houses on both parcels are situated within about 15 feet at their closest point from the top of the seawalls. Replacing the seawalls with a sloping revetment structure is also not a viable option because of the limited land area between the building improvements and the existing seawalls. As well, there is no reason to expect that a revetment would halt the ongoing erosion along this coast.

Large geotextile bags filled with sand have been used as temporary erosion control measures at several coastal erosion hot spots over the past years, most notably the Lanikai area. Large bags such as SEAbags[4] have been used for emergency shore protection in Lanikai for the last 10 years. The bags are prone to damage from storm wave attack and vandalism, require frequent and continual maintenance, and cannot be considered a permanent protection measure. Sand bags are considered "environmentally benign" because the color and texture of the fabric blends in with the beach, and they can be easily removed by simply cutting the bags to release the sand contents. However, they are not "soft" structures in their as-built state. In fact, the large sand bags are solid, hard building materials when fully filled, and a sand bag revetment structure is more reflective than a rock revetment. Although the bag material is permeable (meaning that water will pass through the bag material), once the bags are filled and stacked to form a structure, the overall porosity (ratio of void space to hard surface) of the structure is very low on the time scale of wave impact. Therefore, because there are few voids between the stacked bags, wave energy is more readily reflected rather than dissipated within the structure slope as would be for a rock revetment. Another potential concern is that bags that are below the water line or within the tidal/swash zone become very slippery because of algal growth, and pose a safety problem where people can slip and injure themselves. Even newly installed bags with no algal growth can be slippery because of the smooth surface of the bag material.

Beach restoration and nourishment is commonly cited as a preferred alternative to protecting eroding shorelines and beaches. Unfortunately, this alternative is costly (due to lack of suitably large quantities of natural beach sand to serve as a commercial source of material) and not an economically viable alternative for individual residential property owners. Beach nourishment would be required for a long stretch of shoreline reach extending beyond the subject parcels, since wave energy will quickly redistribute small quantities of beach material unless beach containment structures (such as groins) are built to confine the beach fill fronting individual parcels or short stretches of shoreline. If no structural measures are built to stabilize the beach fill, periodic nourishment would likely

[4]Trade name for large sand bags from Bulk Lift International, designed for beach erosion protection.

be required. Beach restoration and nourishment, in general, is difficult to design and maintain as a "shore protection" alternative. For the beach to provide adequate protection during storm wave events, it must have adequate beach width, elevation, and length along the entire shoreline reach within the defined littoral cell. The large quantities of suitably coarse natural beach sand required for major beach restoration/nourishment projects are not readily available in Hawaii. As a matter of fact, the government agencies that have responsibility for our recreational beach resources can rarely afford to perform major beach nourishment for public beach parks or publicly accessible beach areas.

While not an erosion control measure, relocating the existing building improvements on the parcels is considered a temporary measure to prevent or mitigate damage to the dwellings. Erosion is expected to continue along this coastline, leading to continued loss of properties that are not protected. While it is not possible to predict the "serviceable" life of any beachfront property, it is a reasonable certainty that properties that are not protected from erosion damage will eventually be lost to the sea.

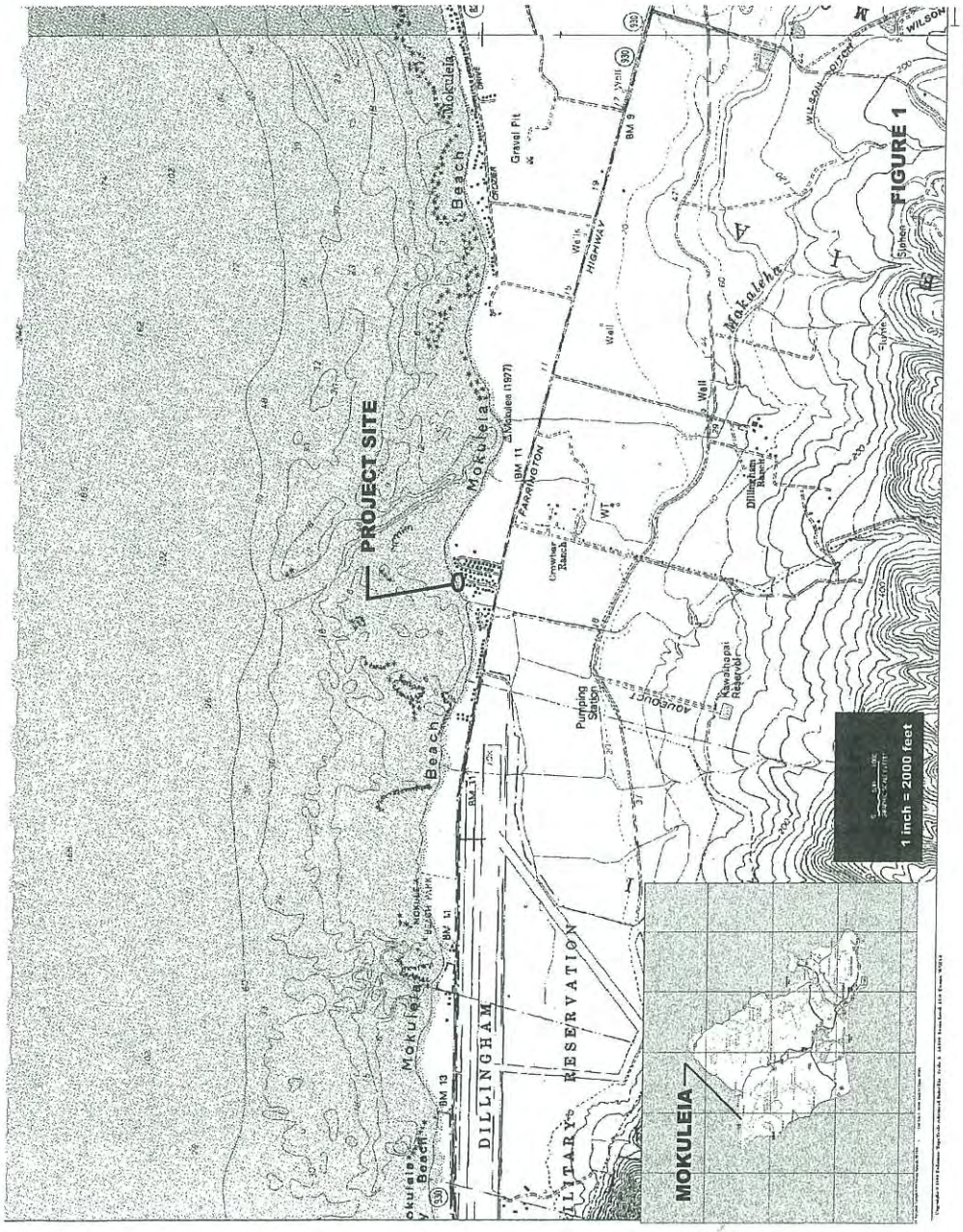


FIGURE 1

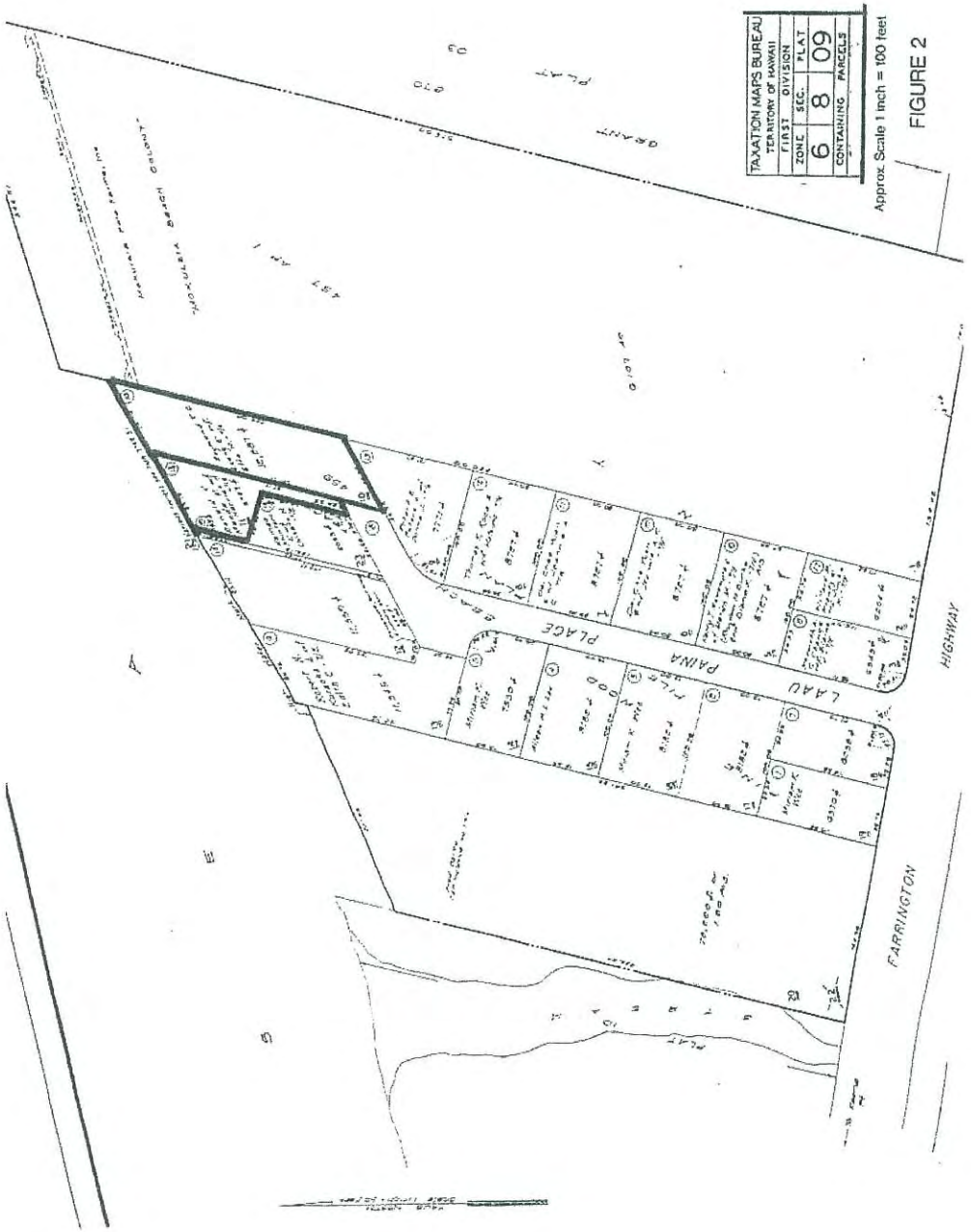
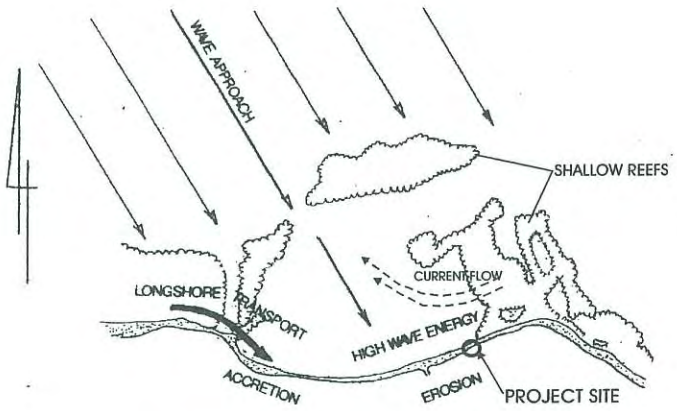
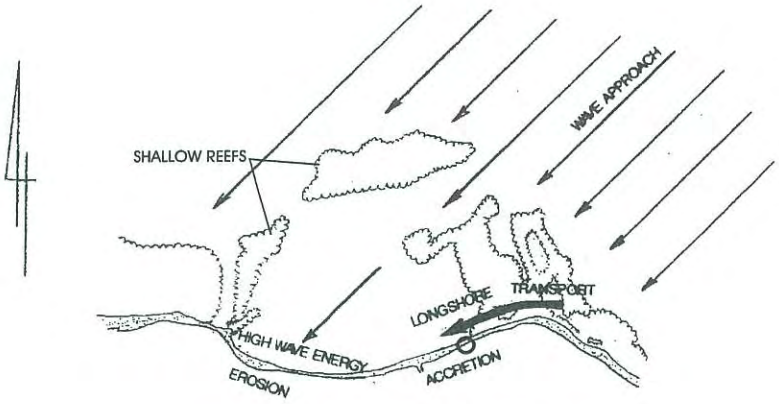


FIGURE 2

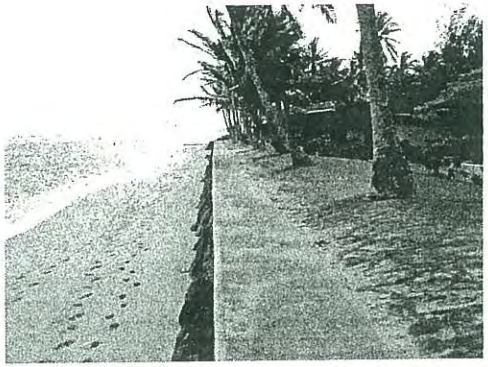


WINTER NORTHWEST SWELL CONDITIONS



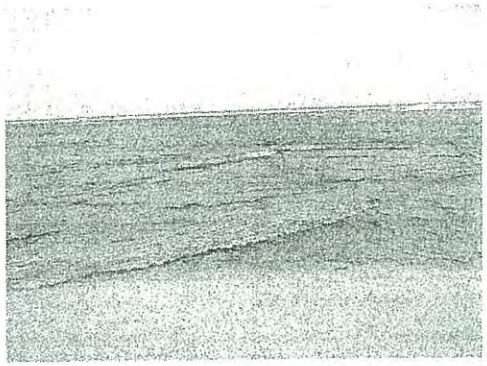
SUMMER NORTHEAST TRADEWIND CONDITIONS

FIGURE 3



View eastward along the top of the seawall fronting the Mokuleia Beach Colony. Note the narrow beach.

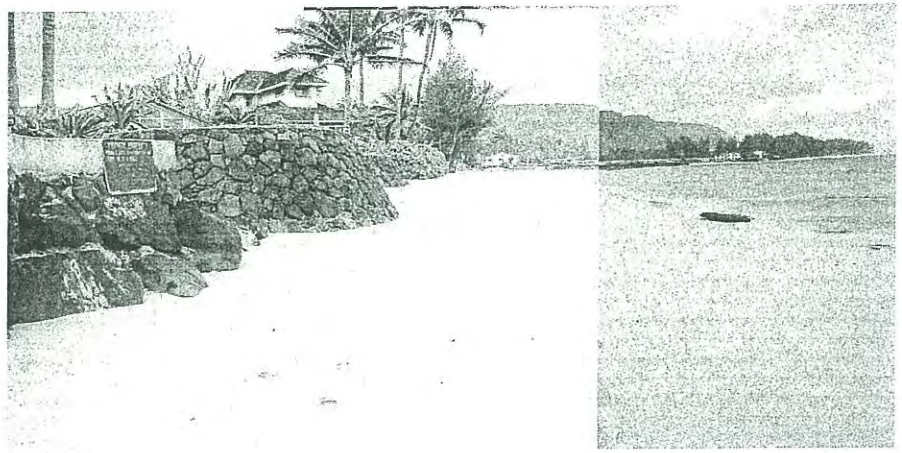
View eastward along the beach fronting the Mokuleia Beach Colony seawall. Note the narrow and steep beach profile.



View offshore Parcel 10. Note the shallow reef and wave angle at the shoreline indicating eastward longshore transport.

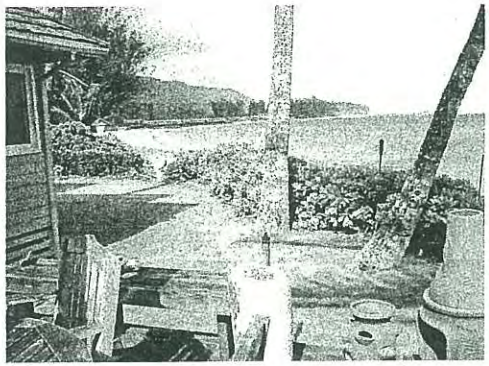
Winter North Pacific swell were causing breaking waves across entire embayment.

MOKULEIA
PHOTO DATE 4-9-04
TIME 09:15 AM
TIDE APPROX. 0.0 MLLW

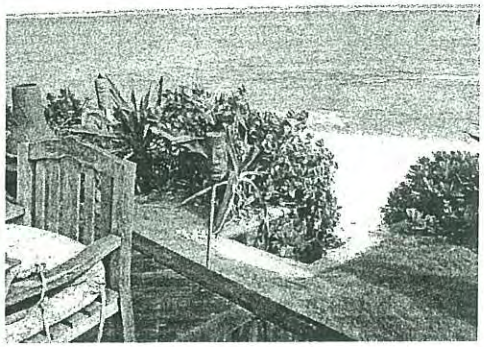


Views westward from west end of Mokuleia Beach Colony seawall. Parcel 10 is in the foreground. Parcel 11 is next to Parcel 10. (Sign is on the west end of the Mokuleia Beach Colony seawall. The sign permits the public to walk on the top of the seawall.)

MOKULEIA
PHOTO DATE 4-9-04
TIME 09:15 AM
TIDE APPROX. 0.0 MLLW



View westward from porch on Parcel 11.



View offshore from porch on Parcel 11. Steps in seawall lead down to the beach.

View of Parcel 11 seaward frontage. Seawall is hidden by naupaka vegetation. Curved seawall on left fronts Parcel 10.

View mauka along private right-of-way. The CRM wall on left is Parcel 11's return wall.

MOKULEIA
PHOTO DATE 4-9-04
TIME 09:00 AM
TIDE APPROX. 0.0 MLLW

View westward from private right-of-way. Naupaka vegetation fronts Parcel 12.

Naupaka vegetation fronting Parcel 12 on west side of private right-of-way.

CMU wall fronts Parcel 13 .

Shoreline fronting Parcel 20 on east side of stream. Note debris line at edge of vegetation.

MOKULEIA
PHOTO DATE 4-9-04
TIME 09:25 AM
TIDE APPROX. 0.0 MLLW

View westward from stream mouth. Note eroded condition of embankment on west side of the stream. Continuous line of seawalls protect entire central shore frontage within the embayment.

MOKULEIA
PHOTO DATE 4-9-04
TIME 09:30 AM
TIDE APPROX. 0.0 MLLW