DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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
DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

JUN 23

2005/ED-23(AA)

June 5, 2009

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:	Regina Constantinau Trust and Renau P. Constantinau Trust
Agent:	Analytical Planning Consultants, Inc.
Location:	68-691 Farrington Highway - Mokuleia
Tax Map Key:	6-8-10: 22
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 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, Director
Department of Planning and Permitting

DKT:cs
Encls.

g:posseworkingdirectory\ann\2005ed23oeqcfonsi.doc

FINAL ENVIRONMENTAL ASSESSMENT

SHORELINE SETBACK VARIANCE

TMK: 6-8-10: 022
68-691 Farrington Highway
Mokuleia, Oahu, Hawaii

ACCEPTING AUTHORITY:

City and County of Honolulu
Department of Planning and Permitting

PREPARED BY:

Analytical Planning Consultants, Inc.

August 2008

FINAL ENVIRONMENTAL ASSESSMENT

SHORELINE SETBACK VARIANCE

TMK: 6-8-10: 022
68-691 Farrington Highway
Mokuleia, Oahu, Hawaii

APPLICANT AND OWNER:

Mr. Renau Constantinau

ACCEPTING AUTHORITY:

City and County of Honolulu
Department of Planning and Permitting

PREPARED BY:

Analytical Planning Consultants Inc.
Honolulu, Hawaii

August 2008

OEQC BULLETIN PUBLICATION FORM

(Follow instructions on other side)

1. Project Name: Shoreline Setback Variance for Improvements at 68-691 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: 022

3. Applicant or applicant agency:
   Mr. Renau Constantinau
   Address: PO Box 98
   Honolulu, HI 96814
   Contact: Renau Constantinau Phone: (808) 524-7696

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/Height Waiver, Minor Shoreline Structure Permit

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

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

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

Renau Constantinau
Property – 68-691 Farrington Highway, Mokuleia, Oahu
Shoreline Setback Variance
TMK 6-8-10: 022

PROJECT SUMMARY

The subject residential property is located along Farrington Highway in Mokuleia on the northwest coast of Oahu. The property, purchased in 1968 by the applicant, is located between single family residences on either side. The applicant is seeking approval for an after-the-fact variance for an existing seawall located about 40 feet makai of the house. There are approximately 16 contiguous properties with existing seawalls along this embayment, some of which were built prior to the shoreline setback rules and regulations and others which have gained after-the-fact government approval, including a permitted seawall adjacent to the subject property. The Mokuleia coastline has had a 50+ year history of erosion. Without the seawall in place, the applicant's lot would suffer an immediate loss of property. This would place the existing house in danger of being destroyed.

Table of Contents

1. GENERAL INFORMATION 3
2. LOCATION AND GENERAL DESCRIPTION OF THE PROPOSED PROJECT 5
   2.1 Site Description and Background 5
   2.2 Proposed Action 8
   2.3 Technical Characteristics 9
   2.4 Economic and Social Characteristics 10
   2.5 Cultural and Historic Characteristics 10
   2.6 Environmental Characteristics 10
3. ENVIRONMENTAL SETTING 11
   3.1 General Description 11
   3.2 Soils 11
   3.3 Flood Characteristics 11
   3.4 Marine Flora and Fauna 11
   3.5 Water Quality 12
   3.6 Public Access, Coastal Use and Recreational Resources 12
   3.7 Archaeological and Cultural Resources 13
   3.8 Applicable Land Use Considerations 13
4. COASTAL SETTING 15
   4.1 General Description 15
   4.2 Shoreline Characteristics 15
   4.3 Existing Shoreline Structures 15
   4.4 Shoreline History 18
   4.5 Coastal Processes and Sand Transport 19
   4.6 Potential Littoral Impacts 21
   4.7 Coastal Hazards 22

5. ALTERNATIVES CONSIDERED 22
   5.1 Sloping Revetment 23
   5.2 Sand Bags 23
   5.3 Beach Restoration 23
   5.4 No Action 24
   5.4 Removal 25

6. PROJECT IMPACTS 25
   6.1 Summary of Unavoidable Adverse Environmental Impacts 29
   6.2 Findings and Reasons Supporting Anticipated Determination 29

Table of Contents (continued)

7. MITIGATION MEASURES 29

8. REQUIRED APPROVALS, AGENCY AND PUBLIC CONSULTATION AND REVIEW 30

9. REFERENCES 33

List of Figures

1. Location Map
2. Project Area TMK Map
3. Photo Key Map
3A. Photos of TMK 6-8-10: 022
4. Deleted – see Appendix C
5. 1986 Department of Land Utilization Letter
6. Deleted – See Appendix C
7. As-Built Plan
8. Aerial Photo 1969
9. Shore and Nearshore Characteristics
10. Photos of Continuous Seawalls along Embayment
11. Mokuleia Beach Loss – Historic Aerial Photo
12. Mokuleia Beach – Changes in Vegetation Line
13. Sand Transport Figures

Appendices

Appendix A Building Permits
Appendix B Property Tax Record Card (select material)
Appendix C Shoreline Survey and 1973 Certified Shoreline for Parcel 21
Appendix D Shoreline Setback Area Calculation
Appendix E 2005 and 2004 Coastal Engineering Assessment by EKNA Services, Inc.

1.0 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. Renau Constantinau
Mailing address: PO Box 98
Waialua, HI 96791

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:	68-691 Farrington Highway
TMK:	6-8-10: 022
Land Area:	Total 8,594 SF
	Erosion 2,518 SF
	Net 6,076 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 Office of Environmental Quality Control
- Office of Hawaiian Affairs
- State Land Use Commission
- Oahu Civil Defense

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

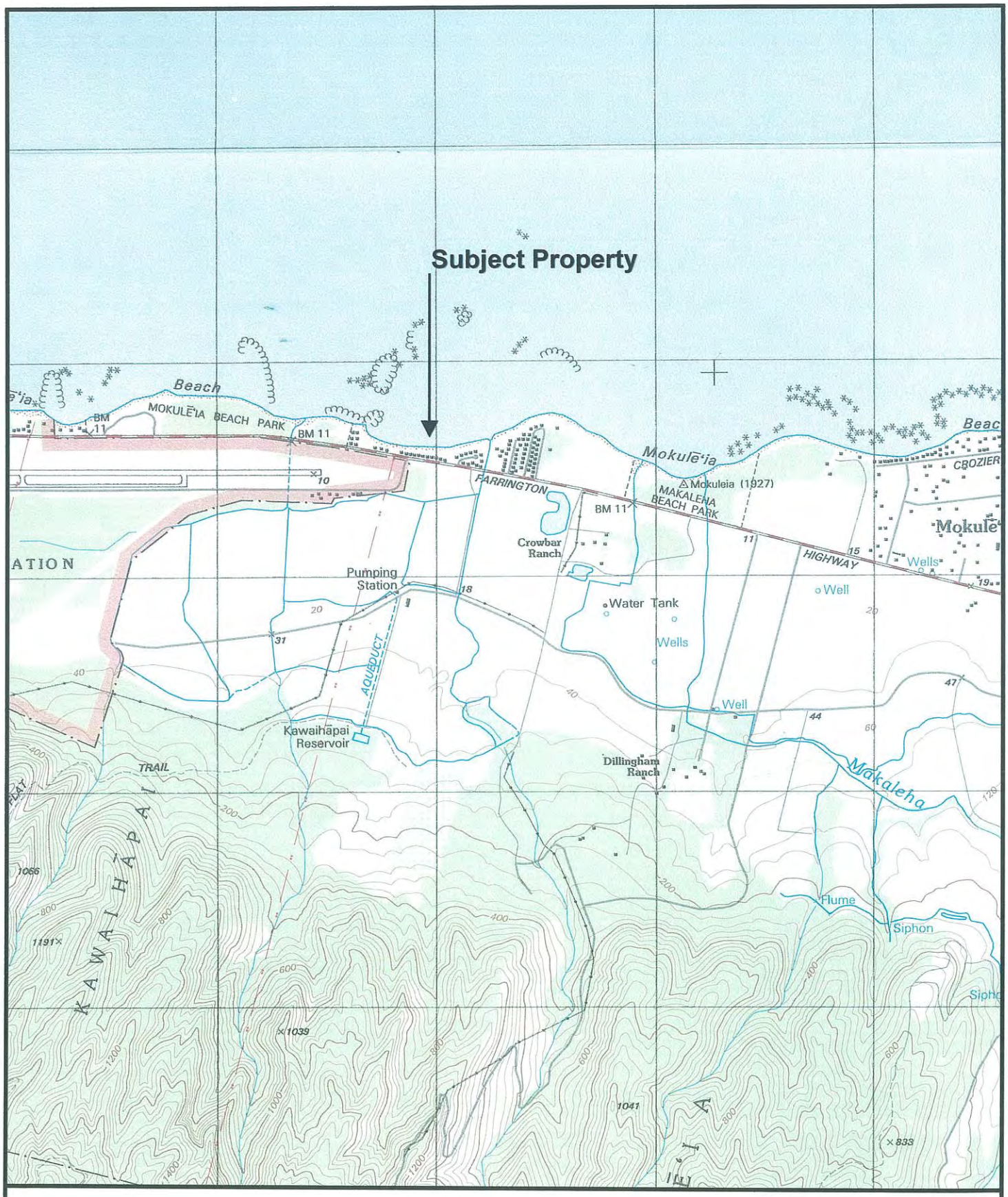
2.0 LOCATION AND GENERAL DESCRIPTION OF THE SUBJECT PROPERTY

2.1 Site Description and Background

The subject property, TMK 6-8-10: 022, is located at 68-691 Farrington Highway on the northwest coast of Oahu. The 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 November 16, 2005 notes that data confirms changes in the vegetation line since the late 1950's specifically recording a net loss of shoreline prior to and including the time at which the seawall was constructed on the parcel.

The subject property was purchased in December 1967 by the applicants, Mr. and Mrs. Renau Constantinau, who have lived in the house for 38 years. The recorded lot area to which the owners hold title is 8,594 square feet. After subtracting the eroded seaward portion of 2,518 square feet, the net area of the lot is 6,076 square feet. The shoreline is defined by the existing seawall located between 40 feet to 43 feet inland of the seaward property boundary of record. 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.**



NORTH

0 1000 2000

SCALE IN FEET

Source USGS 1998

Figure 1
LOCATION MAP

Constantinau, 68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

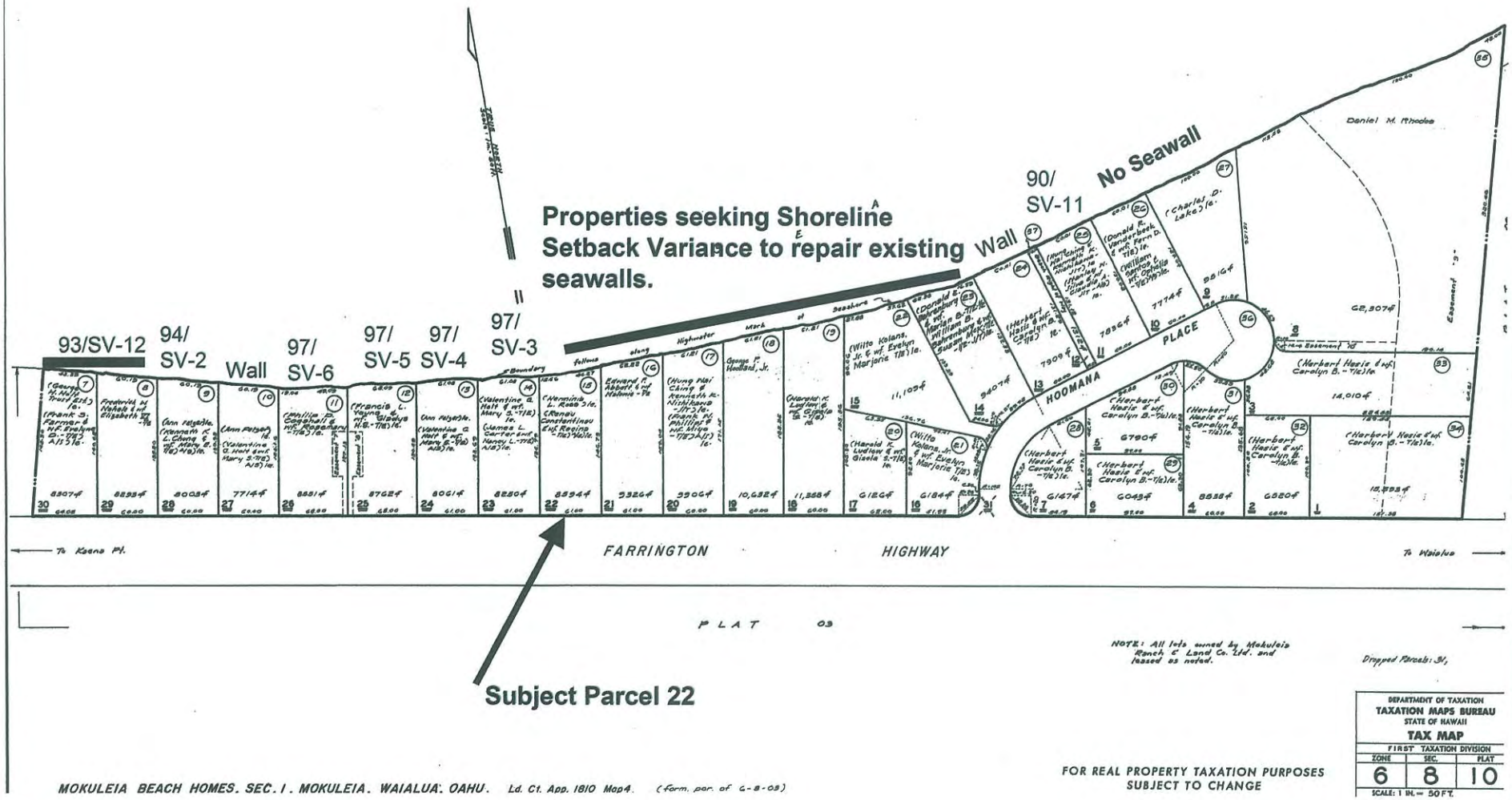


Figure 2

PROJECT VICINITY TMK MAP

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

The existing house and garage were constructed in 1960 per Building Permits No. 172516 and No. 172517 respectively, both dated September 9, 1960 (**Appendix A).** The TMK Plat Number was different in 1960 than today. 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 and garage as shown on the July 14, 1961 Real Property Tax Record Card (**Appendix B)** match the current footprint of the house and garage.

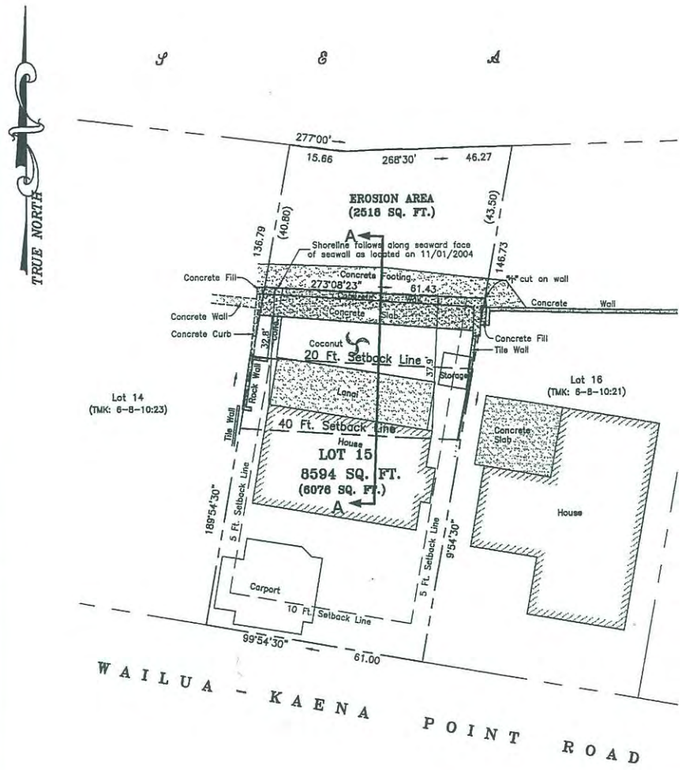
Appendix D contains a Department of Land Utilization (DLU) May 1, 1986 worksheet for the property which shows that the parcel was subject to a 20-foot shoreline setback area, rather than 40-foot setback. Prior to 1992, the shoreline setback was 20 feet for lots whose buildable area was reduced to less that 50% after applying the 40-foot shoreline setback and all other setback requirements. The subject property meets those criteria as demonstrated in the DLU calculations. The house and garage, which are permitted existing non-conforming structures, are set back more than 20 feet from the face of the existing seawall.

Around 1968 or 1969, about 1 year after he bought the house, Mr. Constantinau had the seawall built, and the ocean-side concrete lanai, which abuts the rear of the house and measures approximately 13 feet by 44 feet or 572 square feet and no building permit was required or obtained. Additionally, according to Mr. Constantinau, the solid concrete block walls located along the east and west property boundary, which are also setback over 20 feet from the face of the seawall, were in place when he purchased the house in December 1967. Mr. Constantinau had the photo in **Figure 8** taken in the late 1960's after he had the seawall constructed. The subject property has the white-painted seawall. The concrete walls along the side property lines are visible in the enlarged photo and the concrete lanai is under the lanai roof which is attached to the main roof. There also exists on the property a 56 SF storage shed located within the 40-fot setback area. As there are no building permits nor evidence to collaborate that these structures were constructed legally and placed prior to 1992, the structures do not have nonconforming status and require a Shoreline Setback Variance or Minor Shoreline Structures permit in order to be retained.

Mr. Constantinau explained that in 1969 he was one of the first homeowners to build a vertical seawall, while some of the other properties had used wooden poles similar to telephone poles. However, after a few severe storms those wooden poles were washed out and brought back in with the high surf. Some of those poles actually struck Mr. Constantinau's seawall, eventually creating the need for Mr. Constantinau to repair the seawall a few times over the years or risk having the seawall collapse onto the beach and possibly injure someone. The original City Real Property record card for the subject property documents that in 1970 there was *"wave damage: minor damage to sea wall and steps and water and sand damage to landscape".*

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.

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. Similarly, from the photographic evidence available, it appears that the original seawalls were constructed using very large concrete blocks for foundation along this line/arc. In 1991, some of the walls collapsed from the continuous pounding of the ocean and it appears that, over time, these seawalls have been replaced and/or repaired and strengthened and the original foundations left to support the walls. 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. The existing subject seawall has been repaired since it was originally constructed and a comparison of the certified shoreline done in 1973 for parcel 21 and the one done in 2004 shows that portions of the reconstructed wall has been extended makai of the previous seawall.



SITE PLAN

SCALE: 1"= 20'

CONSTRUCTION NOTES

1. All applicable construction work shall be done in accordance with the Standard Specifications for Public Works Construction, September 1986 and Standard Details for Public Works Construction, September 1984, as amended, of the Department of Public Works, City and County of Honolulu and the Counties of Kauai, Maui, and Hawaii.

2. The underground pipes, cables or ductlines known to exist by the engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

3. No Contractor shall perform any construction operation so as to cause falling rocks, soil or debris in any form to fall, slide or flow into existing City drainage systems, or adjoining properties, streets or natural watercourses. Should such violations occur, the Contractor may be cited and the Contractor shall immediately make all remedial actions necessary.

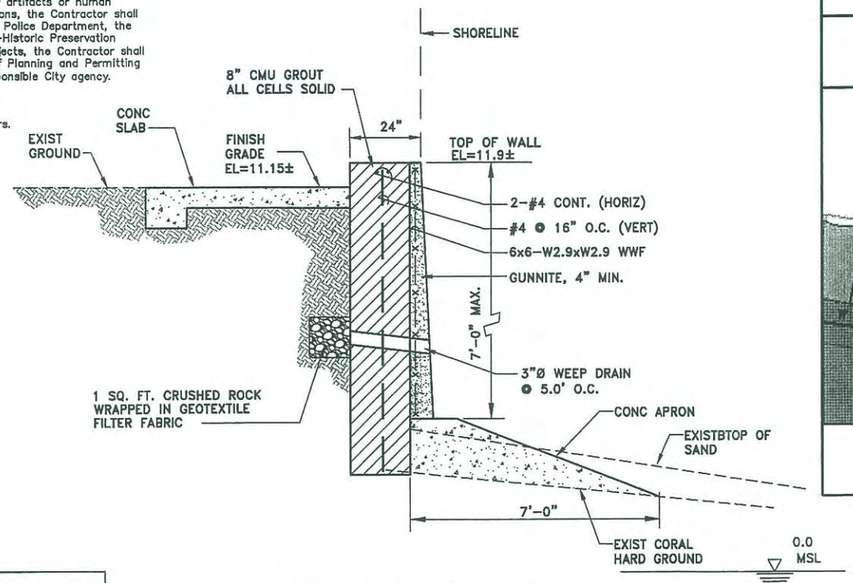
4. The Contractor shall be responsible for conformance with the applicable provisions of the water quality and water pollution control standards contained in Hawaii Administrative Rules, Title 11, Chapter 54, "Water Quality Standards", and Title 11, Chapter 55, "Water Pollution Control", as well as Chapter 14 of the Revised Ordinances of Honolulu, as amended. Best Management Practices shall be employed at all times during construction.

5. Pursuant to Chapter 6E, HRS, in the event any artifacts or human remains are uncovered during construction operations, the Contractor shall immediately suspend work and notify the Honolulu Police Department, the State Department of Land and Natural Resources–Historic Preservation Division (692–8015). In addition, for non–City projects, the Contractor shall inform the Civil Engineering Branch, Department of Planning and Permitting (523–4881); and for City projects, notify the responsible City agency.

6. For Bench Mark, see sheet C–1.

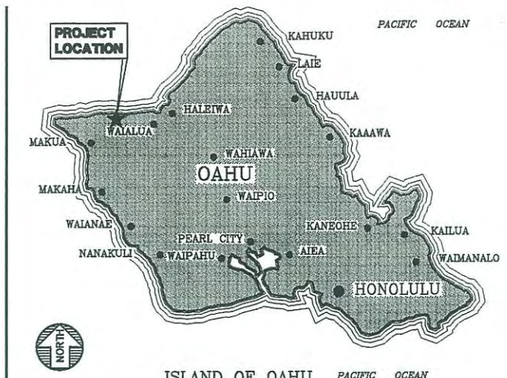
7. Assumed Life expectancy for Seawall is 30 years.

NOTE: BACKFILL UTILIZED : 25 Cu. Yd.



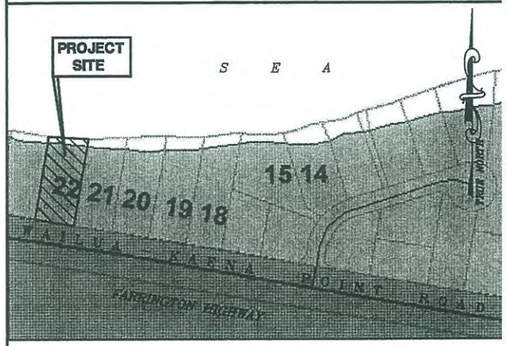
TYPICAL WALL DETAIL

SCALE: 1/2"=1'-0"



VICINITY MAP

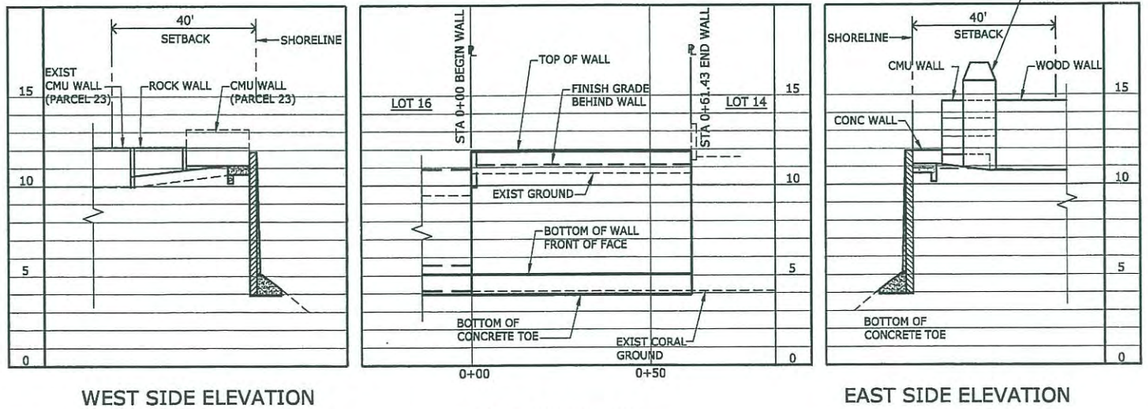
NO SCALE



LOCATION MAP

NO SCALE

TAX MAP KEY: 6–8–10: 22

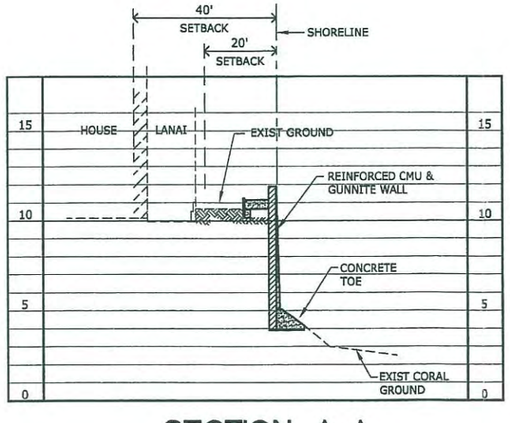


WEST SIDE ELEVATION

EAST SIDE ELEVATION

ELEVATION

SCALES: HORIZ 1" = 20'
VERT 1" = 4'



SECTION A-A

SCALES: HORIZ 1" = 20'
VERT 1" = 4'

GRAPHIC SCALES

2 0 1 2 4 8
1/2" = 1' – 0"

20 0 10 20 40 80
1" = 20'

5 0 5 10 15
1" = 4'

HARVEY K. HIDA
LICENSED PROFESSIONAL ENGINEER
No. 4363–C
HAWAII, U.S.A.

LICENSE EXP. APR. 30, 2010

This work prepared by me or under my supervision and construction of this project will be under my observation. (Observation of construction as defined in Section 16–115–2 of the Rules of the Board of professional Engineers, Architects and Surveyors of the State of Hawaii).

By: _____

Date: _____

Revision	Date	Brief	Made by	Approved

HIDA, OKAMOTO & ASSOCIATES, INC.
CONSULTING ENGINEERS
1440 KAPIOLANI BOULEVARD, SUITE 1120, HONOLULU, HAWAII 96814
TELEPHONE (808) 942–0066

SEA WALL AFTER–THE–FACT
Mokuleia, Waialua, Oahu
Tax Map Key: 6–8–10: 22

VICINITY MAP, LOCATION MAP, SITE PLAN, ELEVATION, SECTION, AND NOTES

Figure 7

Des. HKH	Dr. RH	Ck. HKH

C-1

SHT 1 of 1

E:\0\1822-22-L01S.DWG

2.2 Proposed Action

After having the seawall on the property for over 36 years, the applicant received a Notice of Violation in July 2004 for a concrete seawall constructed in the shoreline setback area without a variance. The applicant now wishes to seek approval for an after-the-fact Shoreline Setback Variance, and if approved, an after-the-fact building permit for:

1. The seawall located along the shoreline including the 348 SF concrete slab behind the wall which acts as a splash plate for storm wave action and helps to protect the wall from being undermined from the inside.
2. Portion of rock wall along the west property boundary;
3. Return wall and CMU and wood wall along the east property boundary;
4. The 572 square foot concrete slab lanai ;

The applicant is requesting that these additional non-permitted structures located within the 40-foot shoreline setback area be included in the variance or that these structures be approved as "minor structures" under Chapter 23 section 15-1(b)(8).

a) Two decorative open work concrete tile supports for a table top. (Each 2′ high, 2′ in length, and 4″wide for a total footprint for both of 1.33 SF).
b) Two circular supports for a swing seat. (Approximately 3′ high 4" in diameter - for a total of 0.175 SF)

There is also a 56 square foot storage shed located within the 40-foot shoreline setback area and 5-foot side yard setback along the east property boundary. The shed is constructed of CMU blocks and is used for cool storage of perishable items in case of emergency. The owner installed the shed due to the isolated location of the residence along the coastline away from other sources of supplies and services. Adjacent to the shed are 10-12 (1 SF) cement tiles (see photos). The applicant is requesting to retain the structure by including it in the Shoreline Setback Variance and will seek a variance from the Land Use Ordinance Section 21-4.30 to retain the structure within the 5' side yard.

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. A full size shoreline survey for the subject parcel is in **Appendix C.**

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.

2.3 Technical Characteristics

The existing seawall is a reinforced concrete wall with a top elevation of about +10'MSL. The seawall, which spans a width of 61.43 feet across the makai side of the property, has return walls along both side property lines. The concrete slab that is level with the rear yard behind the lip of the seawall is structurally part of the seawall; it is the concrete cap over the fill material that comprises the backfill behind the seawall. The concrete slab also serves as a splash plate to capture water that comes over the wall in heavy surf. The water then drains and discharges back to the ocean.

Figure 7 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 concrete block which has been applied with a layer of gunnite. 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 25 cubic yards. Life expectancy for the existing 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 seawall located on parcels 32 received a Shoreline Setback Variance in 1998 and the owners of parcel 20 are in the process of obtaining an after-the-fact shoreline setback variance.

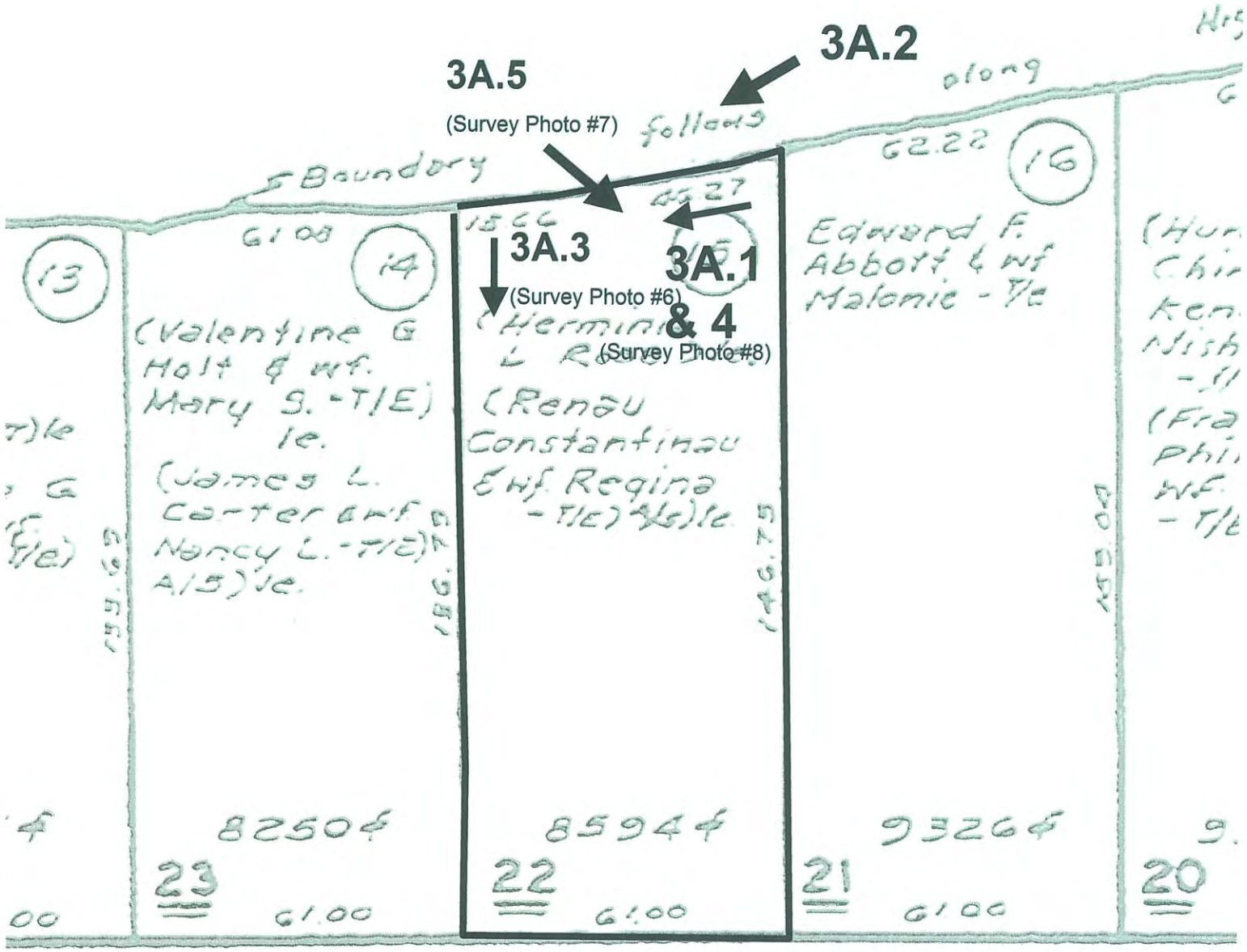


Figure 3

PHOTO KEY MAP

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

3A.1

Mokuleia
TMK: 6-8-10:22
Photo date 01-12-05
By Hida, Okamoto & Assoc.

3A.2

Mokuleia
TMK: 6-8-10:22
Photo date 04-02-05
Time 2:00 pm
By EKNA Services
Tide approx. 0.1' MLLW

Figure 3A
SUBJECT SEAWALL TMK: 6-8-10: 022
68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

Figure 3A

SUBJECT SEAWALL TMK: 6-8-10: 022

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

Figure 3A.5

SUBJECT SEAWALL TMK: 6-8-10: 022

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

Storage Shed (west property boundary)

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 19 SHORELINE SETBACK DETERMINATION

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

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 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, which is the time frame in which the owner/applicant had the seawall constructed. 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 seawall ties into concrete seawalls on both sides of the subject property. Please see Section 4 and the Coastal Engineering Assessment in **Appendix E** for a more detailed discussion of environmental characteristics.

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

3.0 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 about 500 feet 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 project site 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.

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 fast portion of the subject parcel is within the State Urban District; and, the approximately 2,518 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. There is no record of any previous certified shorelines issued for the subject parcel.

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:

- 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.

4.0 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 E** 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 (also in **Appendix E)** 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 almost in 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 9** 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 500 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** depicts the condition of the shoreline in the vicinity of the subject property. The slope at the base of the seawall appears to have been placed to protect the foundation of the seawall from scouring as the elevation of the fronting beach was lowered over an approximately 30 year period by continuing erosion. Some of the seawalls along this reach show similar measures to protect their footings from becoming undermined.

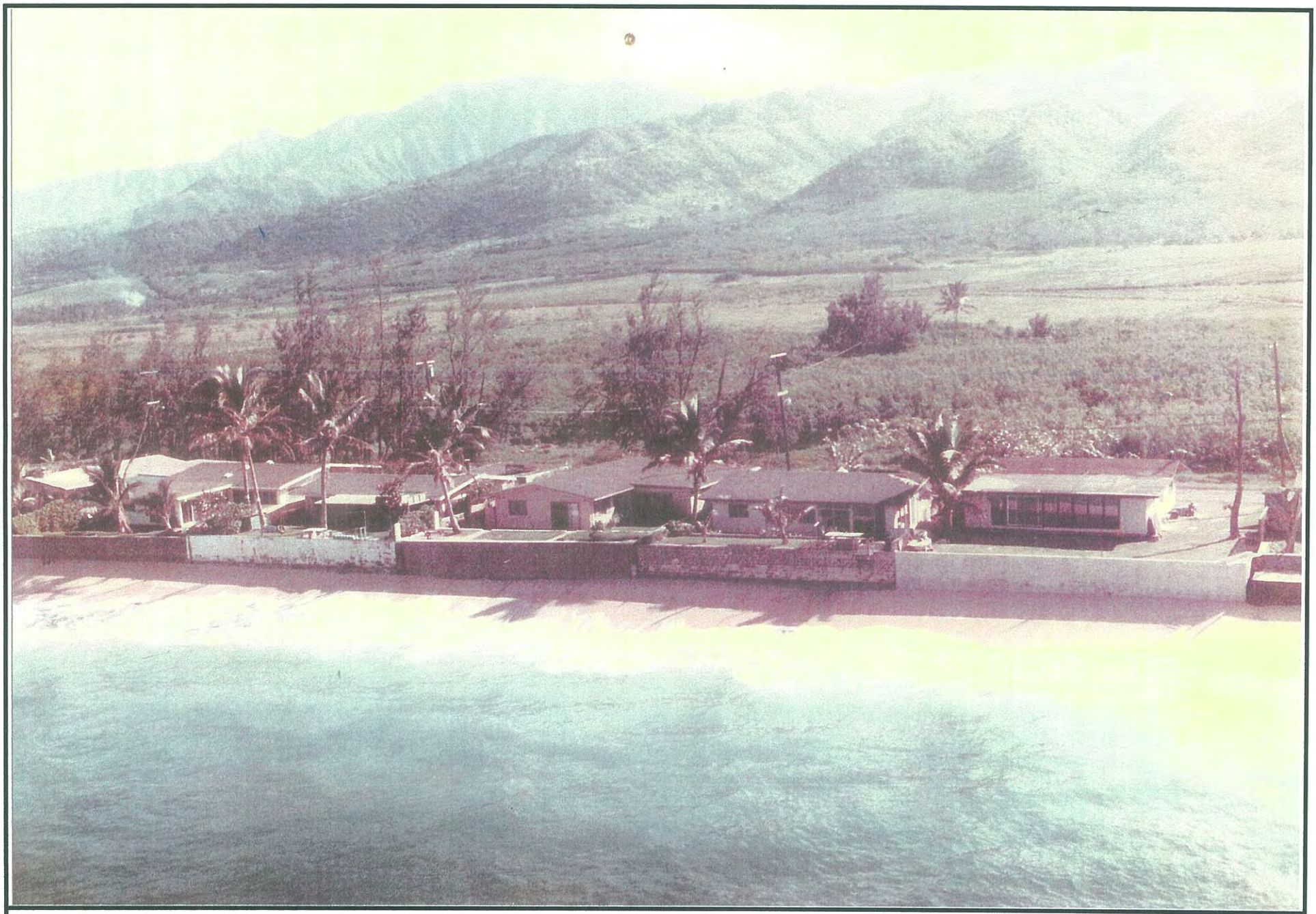


Figure 8

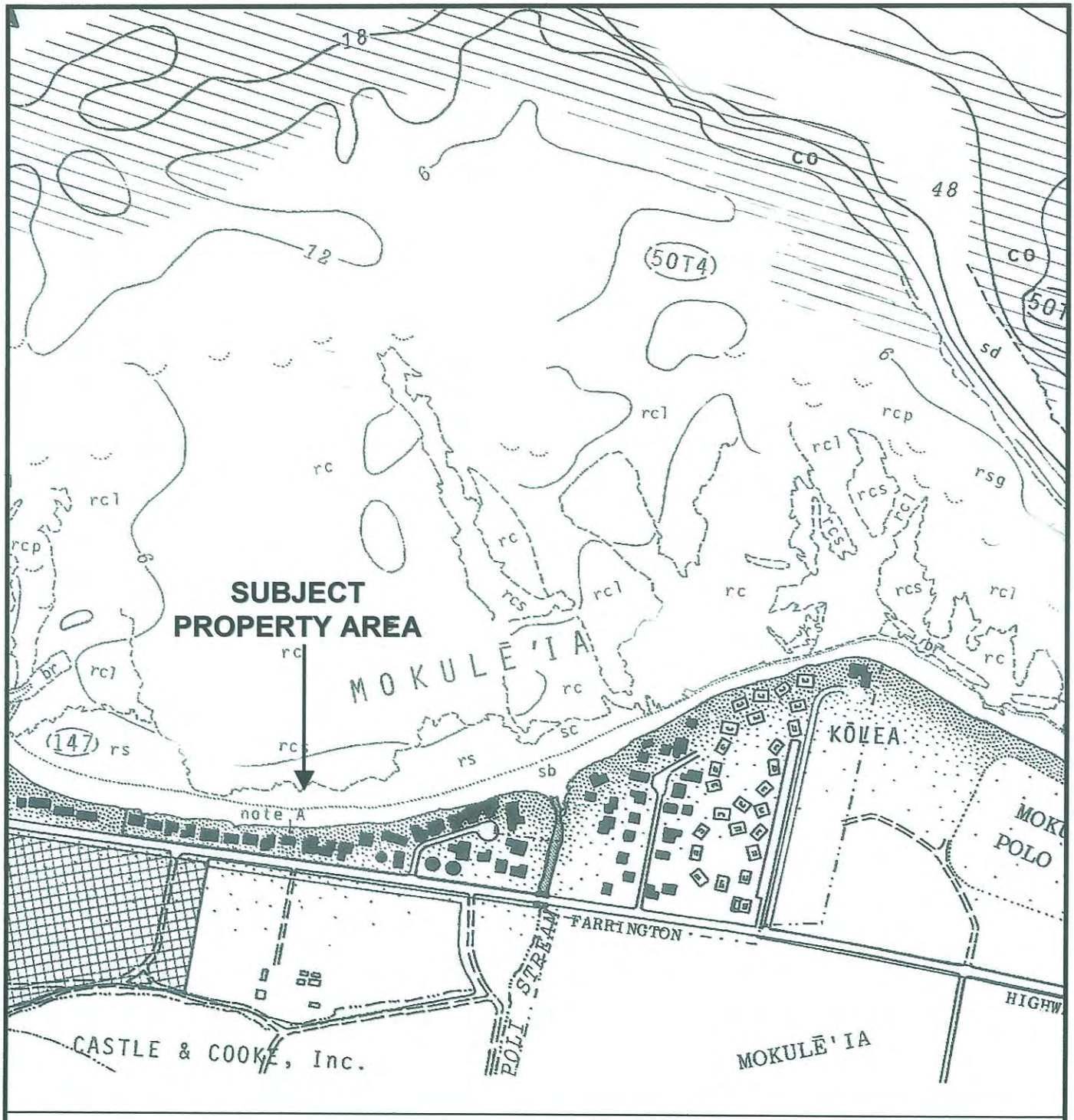
CONSTANTINAU SEAWALL – 2ND ON LEFT PAINTED WHITE

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

Figure 10

EXISTING CONTINUOUS SEAWALLS ALONG EMBAYMENT

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



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 9

SHORE AND NEARSHORE CHARACTERISTICS

68-691 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. 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.

The existing subject seawall has been repaired since it was originally constructed and a comparison of the certified shoreline done in 1973 for parcel 21 and the one done in 2004 shows that portions of the reconstructed wall has been extended makai of the previous seawall.

4.3 Existing Shoreline Structures

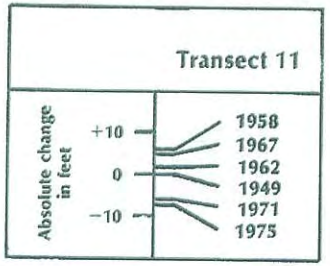
All of the residential lots on both sides of the subject property along this embayment have existing seawalls or revetments to provide shoreline erosion protection **(Figure 10).** It is likely that many of the original shoreline protection structures were built without building permits in the 1970's and 1980's to address the chronic erosion in the area. 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 3 lots west 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.

Just a little over 8 years ago in 1996/1997, four contiguous properties adjacent to the subject property experienced undermining behind the existing old seawalls. These properties suffered loss of backfill material, creation of sinkholes and collapse of the seawall on parcel 25 and near collapse of the other seawalls (TMK: 6-8-10: 23, 24, 26). In 1998, those four property owners requested and were granted approval for a shoreline setback variance to construct a new continuous seawall that would cover the seaward face of the four properties adjacent to Mr. Constantinau's property. That seawall is still in place today, adjacent to the subject property.

The six (6) adjacent seawalls to the east of the subject property are in the process of submitting shoreline setback variance applications to the City.

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 11

MOKULEIA BEACH LOSS AS REVEALED BY HISTORIC AERIAL PHOTOGRAPH

68-691 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 12

MOKULEIA BEACH - CHANGES IN VEGETATION LINE

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

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 2,518 square feet or almost 30 percent of the property's total 8,594 square feet. An area about 40 linear feet deep is now located seaward of the 2004 shoreline survey.

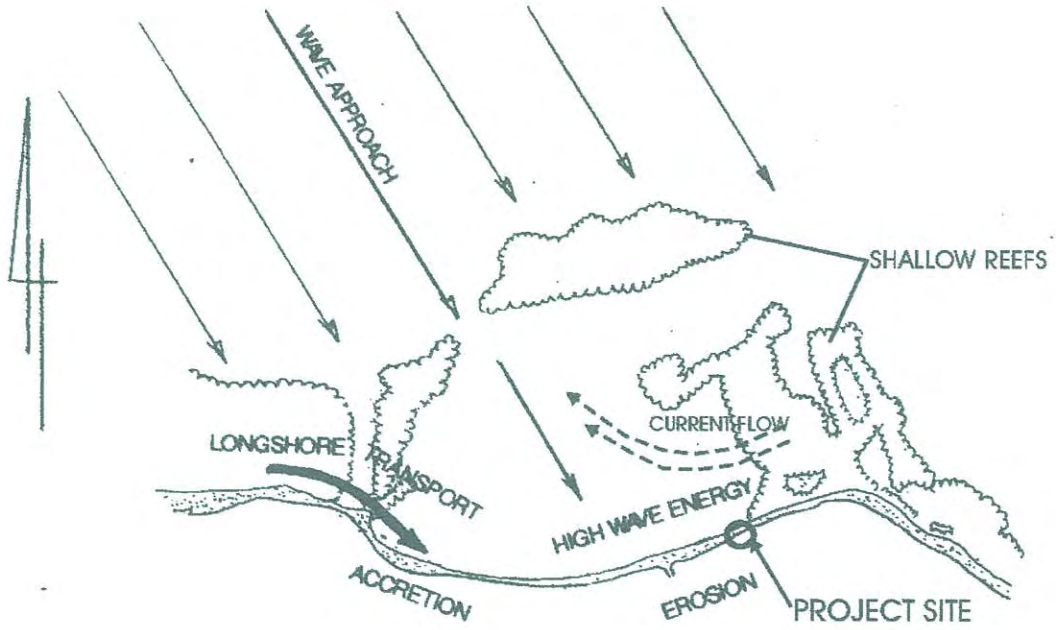
The report *Beach Changes on Oahu as Revealed by Aerial Photographs* (Hwang, 1981), documents the characteristics of the "middle section" of Mokuleia Beach, which includes the subject property. Hwang (1981) used historical aerial photograph analysis to assess shoreline

changes on Oahu, based on movement of the vegetation line. **Figure 11** shows the location of transects where data were collected as shown in **Figure 12.** 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.

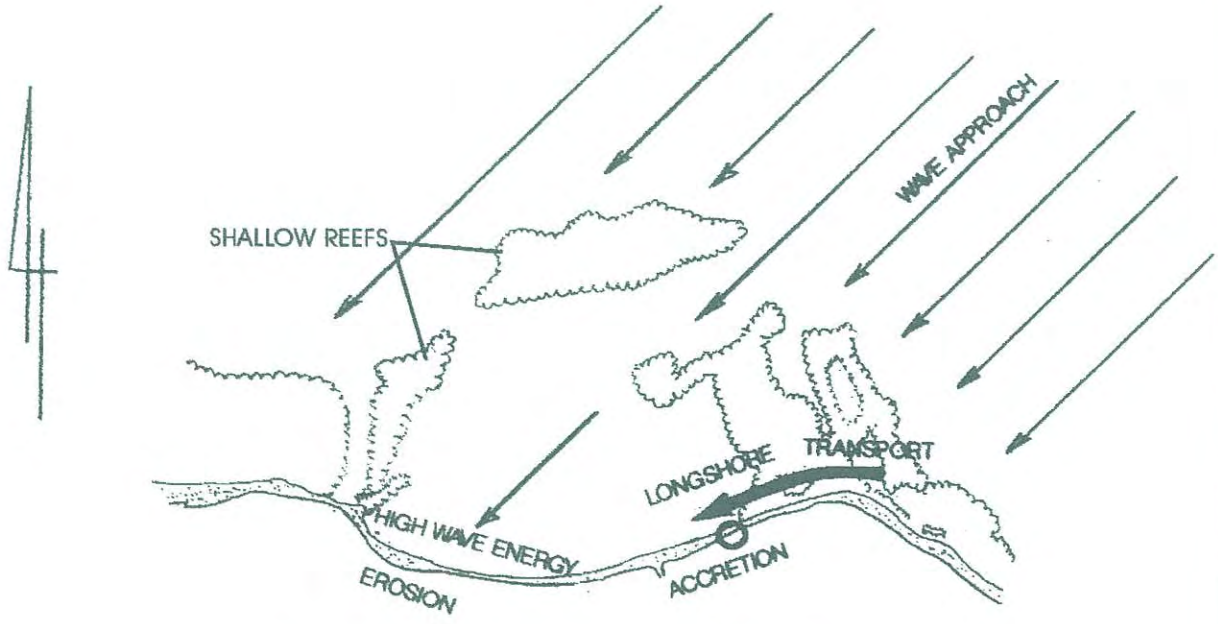
In 1989, Sea Engineering Inc. prepared for the City's Department of Land Utilization (DLU) the *Oahu Shoreline Study – Data on Beach Changes*, which was similar to and an extension of the 1981 Hwang study. The report concluded that landward recession of the vegetation line since 1949 has continued. Data 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.*



WINTER NORTHWEST SWELL CONDITIONS



SUMMER NORTHEAST TRADEWIND CONDITIONS

Source: EKNA Services, Inc.

Figure 13

SAND TRANSPORT FIGURES

68-691 Farrington Highway, Mokuleia, Oahu, Hawaii

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.

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 E**). 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 is 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 13** 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.

5.0 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 E.** 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 E.** 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 40 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 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 40 feet away from the existing wall, the house would be destroyed if the seawall was removed. In addition, 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.

6.0 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 about 500 feet 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 and the concrete slab adjacent to the seawall protect the property from further erosion and protect 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 concluded 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 requested that a Finding of No Significant Impact (FONSI) be issued for the proposed action.

7.0 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 in the area. The Coastal Engineering Assessment states that the existing seawall has no effect on the existing littoral processes at this site and it does not alter seasonal erosion/accretion patterns. No mitigation measures are proposed.

8.0 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 variance or zoning adjustment for the existing seawall
- Variance to retain the storage shed within the side yard
- Minor Shoreline Structure Permit

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 located along the shoreline including the 348 SF concrete slab behind the wall which acts as a splash plate for storm wave action and helps to protect the wall from being undermined from the inside.
2. Portion of rock wall along the west property boundary;
3. Return wall and CMU and wood wall along the east property boundary;
4. The 572 square foot concrete slab lanai;
5. A 56 square foot storage shed.

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 Final Environmental Assessment (FEA):

- 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
- State Office of Environmental Quality Control
- Sierra Club
- Office of Hawaiian Affairs
- State Land Use Commission
- Oahu Civil Defense

8.4 Comments and Responses on the Draft Environmental Assessment

The Final EA contains 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
DEPT. INTERNET: www.honoluludpp.org • INTERNET: www.honolulu.gov

MUFI HANNEMANN
MAYOR

HENRY ENG, FAICP
DIRECTOR

DAVID K. TANOUE
DEPUTY DIRECTOR

2005/ED-23(ST)

December 8, 2005

Mr. Donald Clegg, President
Analytical Planning Consultants, Inc.
928 Nuuanu Ave.
Honolulu, Hawaii 96817

Dear Mr. Clegg:

Re: Draft Environmental Assessment (DEA)
Shoreline Setback Variance (SV) to Retain an Existing Seawall
68-691 Farrington Highway - Mokuleia
Tax Map Key 6-8-10: 22

We have reviewed the Draft Environmental Assessment (DEA) for the above-referenced project and offer the following comments:

Section 1 - General Information

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 (HRS).

Section 2.1 - General Description and Background

The DEA states that the existing vertical seawall and lanai predate the shoreline setback regulations and implies that they are nonconforming structures. In order for these structures, which include the concrete deck behind the seawall, the seawall returns and low concrete fencewall, to be recognized as nonconforming structures, information (i.e., building permits, U.S. Army Corps of Engineers permits, State Department of Transportation Shore water construction permits, etc), must be provided to document their lawful establishment prior to June 22, 1970. Should these structures be determined to be nonconforming, then a shoreline setback variance and the preparation of this DEA would be unnecessary to retain the structures as they were prior to the above date.

Even if the Department of Planning and Permitting (DPP) were to determine that the original CMU seawall lawfully predated the shoreline regulations, however, the subsequent alterations have eliminated any such nonconformity, pursuant to Section 23-1.6, Revised Ordinances of Honolulu (ROH).

Our records, which include a survey of the shoreline fronting this site on December 12, 1972 (certified by the State on 9/17/73) and photographs taken by our inspectors in 1981, indicate that the current seawall has been extended further seaward (makai) by as much as 2.5 feet from its previous configuration as a concrete masonry units (CMU) seawall and did not include the concrete apron that extends several feet from its base.

Therefore, the Final EA must be revised to provide the information necessary to substantiate the claim of the original seawall's nonconformity and additional detail that clarifies the changes to this structure.

In addition, the "as-built" plans (Exhibit 7) by Hida, Okamoto & Associates, Inc. do not appear to accurately represent the thickness of the existing seawall, which appears to be wider than the 12 inches indicated. All revised plans should include a graphic scale in order to verify various dimensions. We also find that the discussion of the lot (Parcel 19) three parcels west (Waialua) of the site does not describe the subject property (Parcel 22) and is misleading. This discussion and Exhibit 5 (letter from DLU) is more appropriately discussed in Section 4.3 Existing Shoreline Structures. The Final EA should be revised to relocate these items.

Section 2.2 - Proposed Action

This section should be revised to indicate that all existing structures, including the lanai, storage shed, seawall returns (walls), table, swing bench, and low decorative fence wall, are the subject of the after-the-fact request for a shoreline setback variance. The seawall returns and concrete deck do not qualify as minor shoreline structures (MSS). Independently, the table and swing bench might be allowed via an MSS. However, because the combined area occupied by all the structures within the shoreline setback is more than 10 percent, a shoreline setback variance is required.

Section 2.3 Technical Characteristics

The Final EA should include an estimate of the amount of backfill that is retained behind the existing seawall.

A certified shoreline survey is required for a complete shoreline setback variance application. However, we are aware that the Department of Land and Natural Resources (DLNR) rules for

shoreline certifications, revised December 12, 2002, explicitly require government approval where the shoreline is located at the base of a manmade structure (e.g., Section 13-222-7(a)(14), Hawaii Administrative Rules. Please address what, if any, issues (i.e., shoreline encroachments, etc.) exist that must be addressed in order to obtain a certified shoreline survey.

Section 5.3 Beach Restoration

This section should be revised to disclose if the DLNR Office of Conservation and Coastal Lands was contacted on possible beach restorations options. We are aware that a program for small-scale beach nourishment projects has been developed in conjunction with the State Department of Health and the U.S. Army Corps of Engineers.

Section 5.4 No Action

This section must be expanded to describe the physical conditions that are anticipated if no action were to be taken. The Final EA should provide an estimate of the life expectancy of the existing seawall without further alterations.

Section 6 Project Impacts

Criteria 3 - The discussion of Criteria 3 fails to describe the State's policies with regard to beach erosion and shoreline protection. The Final EA should be revised to include a discussion of the shoreline protection policies of the DLNR Office of Conservation and Coastal Lands. It should also disclose whether the office was consulted on this proposed action relative to the State's long-term policy and goals and guidelines for our shoreline.

Criteria 12 - The discussion of Criteria 12 fails to discuss the scenic vistas and view planes from and along the coastline and from the near-shore waters which are enjoyed by residents and visitor alike and crucial to the ocean recreation and tourist industry.

Shoreline Setback Regulation

The Final EA should include a section that addresses the criteria under which a shoreline setback variance (SV) may be granted. This section must specifically address the three (3) tests of the Hardship Standard, pursuant to Section 23-1.8(b)(3), ROH. We strongly recommend that a thorough discussion be provided in the context of these specific criteria.

Conformance with County Plans

A section should be added to the Final EA that addresses how the request is consistent with the vision, land use policies, principles and guidelines of the North Shore Sustainable Community Plan (Ordinance 00-15), including the Open Space and Natural Environment (Section 3.1) and guidelines pertaining to lateral public access along shoreline areas (Section 3.1.3.2).

If you have any questions, please contact Steve Tagawa of our staff at 523-4817.

Very truly yours,

Barbara A. Moon for
Henry Eng, FAICP, Director
Department Planning and Permitting

HE:pl

cc: DLNR-OCCL
OEQC

G:landuse/posseworkingdirectory/SteveT/DEAConstant.com

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

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

July 28, 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: Steve Tagawa

Subject: Draft Environmental Assessment (DEA) No. 2005/ED-23 (st)
Shoreline Setback Variance for Existing Seawall - Constantinau
68-691 Farrington Highway – Mokuleia
Tax Map Key 6-8-010:022

Dear Mr. Eng:

Thank you for your comment letter dated December 8, 2005 addressed to Mr. Donald Clegg, President, of Analytical Planning Consultants, Inc. All information requested has been included in the FEA as necessary. We respectfully offer the following responses:

1.0 Information requested regarding preparation of the EA has been included.

2.1 This section has been expanded to clarify the status of the existing seawall and other structures included in the application for the after-the-fact shoreline setback variance. The applicant recognizes that there are no building permits or evidence to collaborate that the wall and the concrete deck were constructed legally and is requesting after-the-fact approval. As such, the structures do not have nonconforming status. The "as-built" plans have been revised. Section 4.3 Existing Shoreline Structures has been expanded to include reference to parcel 19.

On the certified survey dated 1/8/73 for adjoining parcel 21, it appears that the east side of the seawall on the applicant's parcel is located 1.3' mauka of the face of the seawall as located in 2004. This has been noted in the FEA.

2.2 Section 2.2 has been revised to include all structures located within the shoreline setback area in the shoreline setback variance request.

2.3 A discussion of requirements for a certified shoreline has been included in Section 2.3. The estimated amount of fill has been verified by Hida, Okamoto & Associates and is included on the plans and in the text.

5.3.1 Section 5.3 Beach Restoration has been expanded to include information of other beach restoration projects on Oahu and their relevancy to the subject property.

5.4 Section 5.4 No Action has been expanded to include the following information: 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.

6. Criteria 3: The following information has been added:
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.

Criteria 12: The following information has been added:
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 views of the coastline are impacted.

Section 8.2 of the FEA includes the criteria and justification for a Shoreline Setback Variance.

7. Section 3.8 Applicable Land Use Considerations has been added to the FEA which includes a discussion of the North Shore Sustainable Communities Plan.

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,

Donald Clegg
President

Isaac Moriwake
223 S. King St. 4th Fl.
Honolulu, HI 96813

December 8, 2005

Mary O'Leary
Analytical Planning Consultants, Inc.
928 Nu`uanu Ave.
Honolulu, HI 96817

Steve Tagawa
C&C Dep't of Planning & Permitting
650 S. King St., 7th Fl.
Honolulu, HI 96813

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

Re: Constantinau After-the-Fact Seawall and Shoreline Setback Variance, 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 and shoreline variance 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), wherein the Kaua`i planning department ordered a seawall removed.

Apart from the substantive question of the propriety of seawalls, 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. 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 beach parks on either side of this coastline (Mokuleia and Makalehu). 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 discussing 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 beach parks on either side of this area. Is there a difference, and does the shoreline hardening account 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 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 (p. 35). This omission is all the more conspicuous given that the DEA cites a report stating that "if erosion continues, [lateral access] will be lost" (p. 28). 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.

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 24, 2008

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

Subject: Draft Environmental Assessment (DEA)
Shoreline Setback Variance for Existing Seawall - Constantinau
68-691 Farrington Highway – Mokuleia
Tax Map Key 6-8-010:022

Dear Mr. Moriwake:

Thank you for your comment letter dated December 8, 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,

Donald Clegg
President

LINDA LINGLE
GOVERNOR

ANTHONY J.H. CHING
EXECUTIVE OFFICER

RECEIVED
'05 NOV 18 P5:46
DEPT. OF PLANNING
CITY & COUNTY

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

November 16, 2005

Mr. Henry Eng, Director
Department of Planning and Permittin
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

SLUC comment ltr.

Dear Mr. Eng:

Subject: Draft Environmental Asse etback Variance
Application
Renau Constantinau
Mokuleia, Oahu, Hawaii
Tax Map Key: 6-8-10: 22

We are in receipt of the subject DEA transmitted by your letter dated November 7, 2005. We understand that the landowner/applicant is requesting approval for an after-the-fact Shoreline Setback Variance and, if approved, an after-the-fact building permit for (i) an existing seawall (a height waiver is also required); (ii) a 572-square-foot concrete slab lanai abutting the back of the house; and (iii) a 56-square-foot storage shed. We understand that the existing seawall was built in 1968 or 1969 without the required building permit. The landowner/applicant is also seeking approval for Minor Shoreline Structure permits for a concrete picnic table, removable swinging bench, and open-work concrete tile fencing along the makai portion of both side yards.

For your information, the State land use designation of residential parcels along the Mokuleia coast, including the subject parcel, was established on August 23, 1964. While the landward portion of the parcels was designated within the Urban District, the coastal portion having an elevation below the highwater mark as it existed at that time was designated within the Conservation District. The DEA references a report entitled *Beach Changes on Oahu as Revealed by Aerial Photographs*, indicating that Central Mokuleia Beach has experienced changes to the

vegetation line since the late 1950s. Data to the west and east of the subject parcel appear to support the landowner/applicant's contention that the subject parcel had also shared in this pattern of continuing erosion. We specifically note that the lands on both sides of the subject parcel recorded a net loss of shoreline prior to and including the time at which the seawall was constructed on the subject parcel. Based on the above findings and the absence of any definitive data to the contrary at this time, we believe that the existing seawall is located within the State Land Use Urban District.

We have no further comments to offer at this time. Thank you for the opportunity to comment on the subject DEA. Please feel free to contact Bert Saruwatari of my office at 587-3822, should you require clarification or any further assistance.

Sincerely,

Anthony J. H. Ching

ANTHONY J. H. CHING
Executive Officer

c: Office of Environmental Quality Control

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

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

June 5, 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)
Shoreline Setback Variance for Existing Seawall - Constaninau
68-691 Farrington Highway – Mokuleia
Tax Map Key 6-8-010:022

Dear Mr. Davidson:

Thank you for your comment letter dated November 16, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We acknowledge confirmation from the Land Use Commission that the subject parcel is located within the State Land Use Urban District.

Sincerely,

Donald Clegg

Donald Clegg
President

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

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

June 5, 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 - Constaninau
68-691 Farrington HIghway – Mokuleia
Tax Map Key 6-8-010:022

Dear Ms. Kealoha:

Thank you for your comment letter dated December 6, 2005 addressed to Mr. Henry Eng of the Department of Planning and Permitting. We respectfully offer the following responses:

1. The adjacent property owners have been notified of the request to retain the existing seawall and a copy of the DEA was forwarded to the North Shore Neighborhood Board.

2. 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.

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 OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

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

December 6, 2005

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

Dear Mr. Eng:

Subject: Draft EA for the Constantinau Shoreline Setback Variance, Mokuleia

Thank you for the opportunity to comment. Here are our comments.

1. Please consult with adjacent neighbors and notify the neighborhood board.

2. How does this project comply with state and county policies on beach protection?

3. For assistance in completing the assessment please review the "Shoreline Hardening Policy and Environmental Assessment Guidelines" available at http://www.state.hi.us/health/oeqc/guidance/shoreline.htm.

Please call Jeyan Thirugnanam at 586-4185 if you have any questions.

Sincerely,

Genevieve Salmonson
Director

C: APC
Constantinau

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

HRD05/2115

December 7, 2005

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

RE: Draft Environmental Assessment for an after-the-fact Shoreline Setback Variance, 68-691 Farrington Highway; Mokuleia, O'ahu; TMK: 6-8-010:022

Dear Henry Eng,

The Office of Hawaiian Affairs (OHA) is in receipt of your November 7, 2005, request for comments on the above project, which would allow Renau Constantinau to retain an unauthorized 10-foot-high concrete seawall with backfill and a concrete deck, a 572-square-foot lanai, tile fence walls and a 56-square-foot storage shelter within the 40-foot shoreline setback on the northwest coast of O'ahu.

While OHA does not generally support the construction of seawalls, we understand that this one has been in existence for more than 30 years, and that because of the high erosion rate at Mokuleia Beach, its removal would equate to an extensive loss of the applicant's property. We further understand that the alternatives of a sloping revetment, sand bags, beach restoration or nourishment and no action are not viable options for this location. Also, because no new construction is proposed, OHA has no comments at this time.

Thank you, however, for updating OHA on the status of this seawall and for the opportunity to comment. If you have any 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: Donald Clegg, President
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue
Honolulu, HI 96817

9.0 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.

Bathen, Karl. 1978. *Circulation Atlas for Oahu, Hawaii.* Sponsored by the University of Hawaii Sea Grant College Program.

Chu, Michael S., and Robert B. Jones for the City and County of Honolulu, Department of Land Utilization, *Coastal View Study*, 1987.

City and County of Honolulu, Department of Planning & Permitting, Geographic Information Systems on-line database at http://.gis.hicentral.com

EKNA Services, Inc. April 2004. C*oastal Engineering Assessment of Existing Seawalls at Mokuleia, Oahu, Hawaii, TMK: 6-8-9:010 and 011.*

Fletcher, Charles. 2002. *Atlas of Natural Hazards in the Hawaiian Coastal Zone*. Prepared in cooperation with the University of Hawaii, State of Hawaii Office of Planning and the National Oceanic and Atmospheric Administration.

Hwang, Dennis. 1980. *A Method for Using Aerial Photos in Delineating Historic Patterns of Beach Accretion and Retreat*. 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.

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.

Sterling, Elspeth and Catherine Summers. *Sites of Oahu.* Bishop Museum Press, Honolulu, Hawaii.

U.S. Army Corps of Engineers, Pacific Ocean Division. June 1979. *Help Yourself – A Shore Protection Guide for Hawaii.*

U.S. Department of Agriculture, Soil Conservation Service in cooperation with the University of Hawaii Agriculture Experiment Station. Soil Survey of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii. August 1972.

APPENDIX A

ORM BD-35 REV.

SEE INSTRUCTIONS BELOW

PERMIT NUMBER **172517**

DEPARTMENT OF BUILDINGS
CITY AND COUNTY OF HONOLULU

APPLICATION AND BUILDING PERMIT

26 693 30005.00L
Fee Received

WRITE IN ALL INFORMATION	EST. VALUE	PERMIT FEE	CLASS OF CONSTRUCTION	NO. OF STORIES	ZONE	SEC.	PLAT	PARCEL	LOT NO.	DISTRICT
	$800.00	$5.00	UN	(1)	6	8	3	10	9	MOKULEIA

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

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

CLASSIFICATION OF OCCUPANCIES GROUP: I Garage

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)
							✓

FILL IN REQUIRED INFORMATION

PROPOSED ADDRESS (NO.) (STREET) Mokuleia & Keana Point — LOT AREA 8575 SQ. FT. — USE DISTRICT RP

OVERALL DIMENSIONS 21'6" x 18' — FLOOR AREA 387 SQ. FT. — NO. OF STORIES 1

BASEMENT None SQ. FT. — TYPE OF FOUNDATION Concrete — TYPE OF FLOOR Concrete + ac.

TYPE OF EXTERNAL WALLS Wood — TYPE OF INTERNAL PARTITIONS Wood — TYPE OF ROOF Built up 3 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 11 FT. 6" 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 50% OF THE SPACE ADJOINING A PROPERTY LINE. UNDERSIDE OF FLOOR SILLS WILL BE AT LEAST 20 INCHES ABOVE HIGHEST PART OF GROUND. CEMENT FLOOR SLABS OF BUILDINGS SHALL HAVE MARGINAL WALLS 24 INCHES BELOW GRADE WHERE REQUIRED.

PERMIT APPLICATION RECEIVED SEP 13 3 45 PM '60 BLDG. DEPT. CITY AND COUNTY HONOLULU

NAMES AND ADDRESSES OF:

BUILDING OWNER Oahu Homes — ADDRESS Liberty Bank Bldg.

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

PLAN MAKER Mid Pac. Lumber — ADDRESS Kalani Street

PLUMBING SUB-CONTRACTOR Kukuku 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 K.K. Nishikawa

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] FOR 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 none — ON MASTER PLAN ____

SUB-DIVISION FILED yes — COMMISSION REPORT ____

SUB-DIVISION APPROVED ____ RECOMMENDATION ____

[signatures] 9/13/60

FORM BD-35 REV.

PERMIT NUMBER 172516

DEPARTMENT OF BUILDINGS
CITY AND COUNTY OF HONOLULU

5216 6 8 2 60020.503

APPLICATION AND BUILDING PERMIT

Fee Received

SEE INSTRUCTIONS BELOW

WRITE IN ALL INFORMATION	EST. VALUE	PERMIT FEE	CLASS OF CONSTRUCTION	NO. OF STORIES	ZONE	SEC.	PLAT	PARCEL	LOT NO.	DISTRICT
	$8,500.00	$28.50	UN	1	6	8	3	10	9	MOKULEIA

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

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

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 (NO.) Mokuleia & Kaena Point (STREET) LOT AREA 8575 SQ. FT. USE DISTRICT RP

OVERALL DIMENSIONS 46' x 28' FLOOR AREA 1288 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 9 FT. 0 INCHES TO NEAREST ADJOINING PROPERTY LINE AND NO PART OF THIS BUILDING WILL BE NEARER THAN 11 FT. 6 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 50% OF THE SPACE ADJOINING A PROPERTY LINE. UNDERSIDE OF FLOOR SILLS WILL BE AT LEAST 20 INCHES ABOVE HIGHEST PART OF GROUND. CEMENT FLOOR SLABS OF BUILDINGS SHALL HAVE MARGINAL WALLS 24 INCHES BELOW GRADE WHERE REQUIRED.

NAMES AND ADDRESSES OF

BUILDING OWNER Kaena Homes ADDRESS Liberty Bank Bldg.

GENERAL CONTRACTOR H. L. Richardson Inc. LICENSE NO B-374 ADDRESS Waianae Kaena Rd.

PLAN MAKER Hill Pac. Lumber ADDRESS Kalani Street

PLUMBING SUB-CONTRACTOR Kaena 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 [signature] 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 9-12 19 60 APPROVED [signature] AGENT, BOARD OF HEALTH

DATE 19 APPROVED CHIEF ENGINEER, FIRE DEPARTMENT

DATE 9-14 19 60 APPROVED [signature] FOR 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 9/13 19 60

ZONE (USE DISTRICT) RP SUB-DIVISION PENDING

SET BACK None ON MASTER PLAN

SUB-DIVISION FILED Yes COMMISSION REPORT

SUB-DIVISION APPROVED Yes RECOMMENDATION

SIGNATURE [signature] 9/13/60

OFFICE INDEX CARD

APPENDIX B

6	8	10	27

SURVEY BY Lum
DATE 1.14.61

(HOU)SE TYPE & OCC.

	RENT.	HOME
(1)-FAM.	☐	☑
(2)-FAM.	☐	☐
(A)PART.	☐	☐
MULTI.	☐	☐

(U)NITS & ROOMS

UNITS 1
(RO)OMS 6
(STO)RIES 1
(BA)SEMENT

(F)OUND. & STEPS

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

FRAME

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

EXTERIOR WALLS

1x8 R/W

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 ☑

24. INTER. WALLS

TYPE 1x8
MAT. R/W

25. CEILING

CANEC ☑ PLAS ☐
PINE ☐ PLY ☐
Exposed

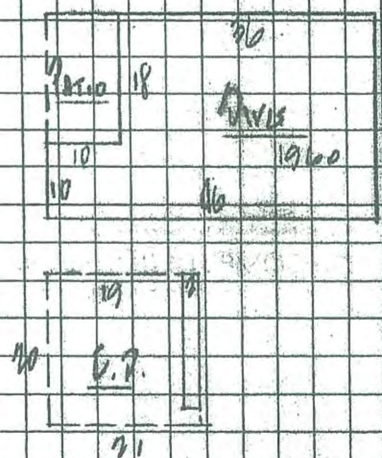
26. BATHROOMS

1 ☐ 1½ ☑
2 ☐ 2½ ☐
3 ☐

Dwlg
18 x 36 = 648
10 x 46 = 460
1108 ⌀

C.P.
20 x 21 = 420 ⌀

Patio
10 x 18 = 180 ⌀



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
BATH TUB				
W.C.		1		113
BASIN		1		80
SH. STALL				
SINK				
LAUND				
SUN HT.				
SUB TOTAL—PLUMBING				763

22. FLOORING

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

23. ELECTRICAL

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

30. ADD'L FLOOR DET.

2ND ☐ 3RD ☐ 4TH ☐

31. CONDITION

BETTER THAN AVER ____ %
AVERAGE (NOR. DEP) ☑
BELOW AVER ____ %

32. CLASSIFICATION

CLASS W S/CL 2
BY ML 113

29. ADD'L IMPVT DETAILS

ITEM	RF	WL	FL	AREA	CLS	VAL.
Carport	3/16	W/W	B.T.	420	151	634
Patio	"	"	"	180	143	257
B-INS				(MED)		189

SUB TOTAL DETAILS 1080 891
TOTAL ITEMS 28 & 29 1843 1654

parcel 22

ZONE	SEC.	PLAT	PARCEL
6	8	10	22

1st DIVISION — Jan 70 N/s wave damage; minor damage to sea wall & steps and water & sand damage to landscape. 4/20/70 RM inc

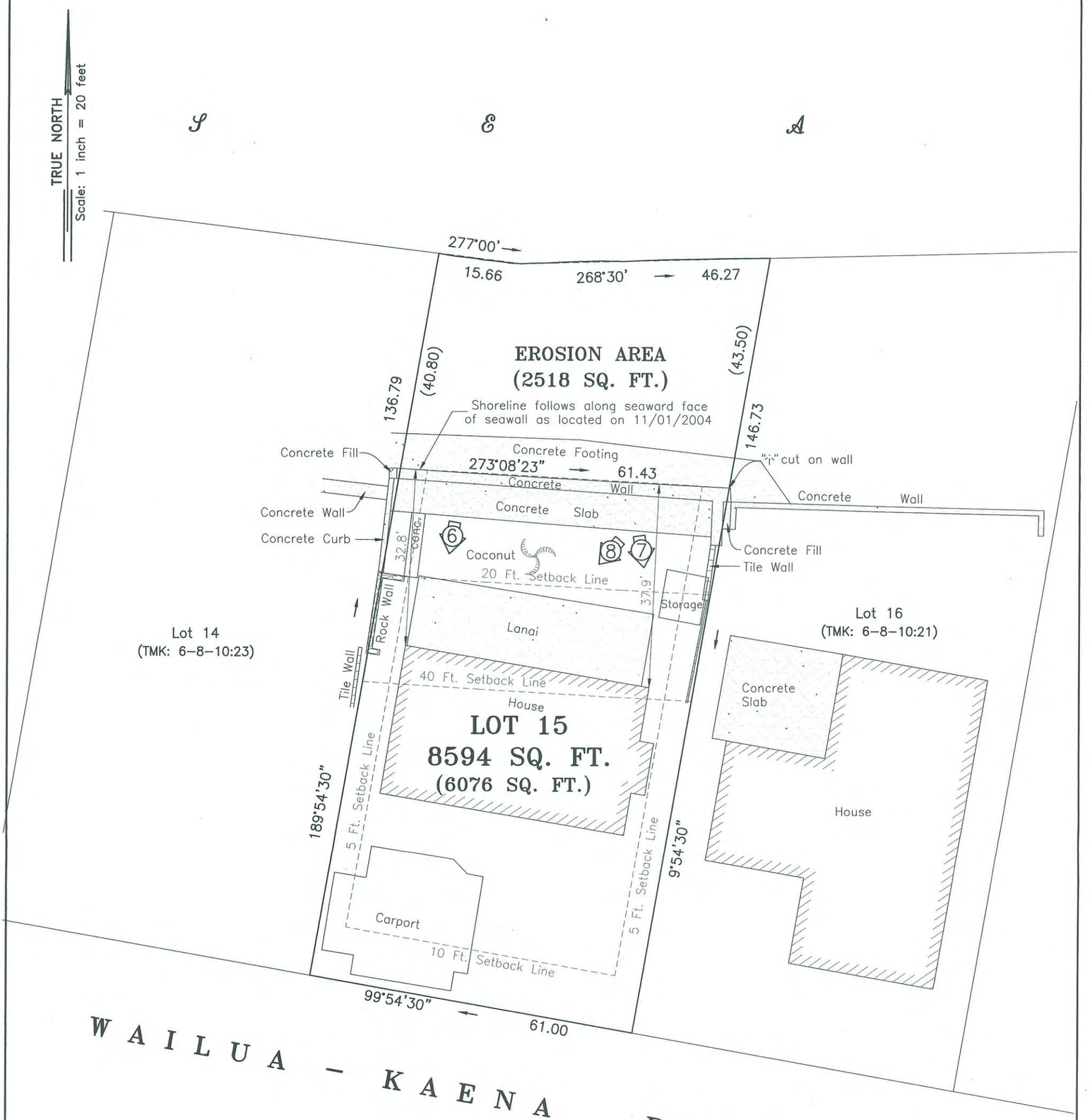
LR

NO.	SYMBOL	FRONT	RATIO	DEPTH	LOT	AREA	U.F.V.	1961 VAL.	U.F.V.	1965 VAL.	U.F.V. VAL.	U.F.V. VAL.
1			9200	140		8575 ±	5%	4142	875	6903		
2								1966				
3						4687 ±	875	4110				
4				OCEAN		3878 ±		1				
5						8575 ±		4111				
6								1969		1971		
7						4697 ±	210	9864	2625	12330		
8				OCEAN		3897 ±		1		1		
9						8594 ±		9865		12331		
10												
11								1974 - 1975		1976 - 1977		
12						5000 ±	420	21000				
13						3594 ±	210	7547				
14						8594 ±		28547		34256		
15												
16												
17												
18												

YEAR	1961	YR	1962	YR		YR		YR		YR		YR		YR		YR		YR	
AREA	8575 ±	AR	8575 ±	AR		AR		AR		AR		AR		AR		AR		AR	
LAND VALUE	4142	L	4142	L		L		L		L		L		L		L		L	
IMPROVEMENT	8734	I	8655	I		I		I		I		I		I		I		I	
TOTAL	12876	T	12797	T		T		T		T		T		T		T		T	
LESS EX.		EX.	3250	EX.		EX.		EX.		EX.		EX.		EX.		EX.		EX.	
NET TAX VALUE	12876	N.T.	9547	N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.	
TAXES	178.85		132.61																

YEAR		YR.		YR.		YR.		YR.		YR.		YR.		YR.		YR.		YR.	
AREA		AR.		AR.		AR.		AR.		AR.		AR.		AR.		AR.		AR.	
LAND VALUE		L.		L.		L.		L.		L.		L.		L.		L.		L.	
IMPROVEMENT		I.		I.		I.		I.		I.		I.		I.		I.		I.	
TOTAL		T.		T.		T.		T.		T.		T.		T.		T.		T.	
LESS EX.		EX.		X.		EX.		EX.		EX.		EX.		EX.		EX.		EX.	
NET TAX VALUE		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.		N.T.	
TAXES																			

APPENDIX C



SHORELINE SURVEY MAP

LOT 15

as shown on Map 4
of Land Court Application 1810

Mokuleia, Waialua, Oahu, Hawaii
Tax Map Key: 6-8-10:22
Scale: 1 inch = 20 feet
Date: November 1, 2004
Revised: June 9, 2008

Owner: Mr. Renau Constantinau
Mailing Address: P. O. Box 98
Waialua, HI 96791

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

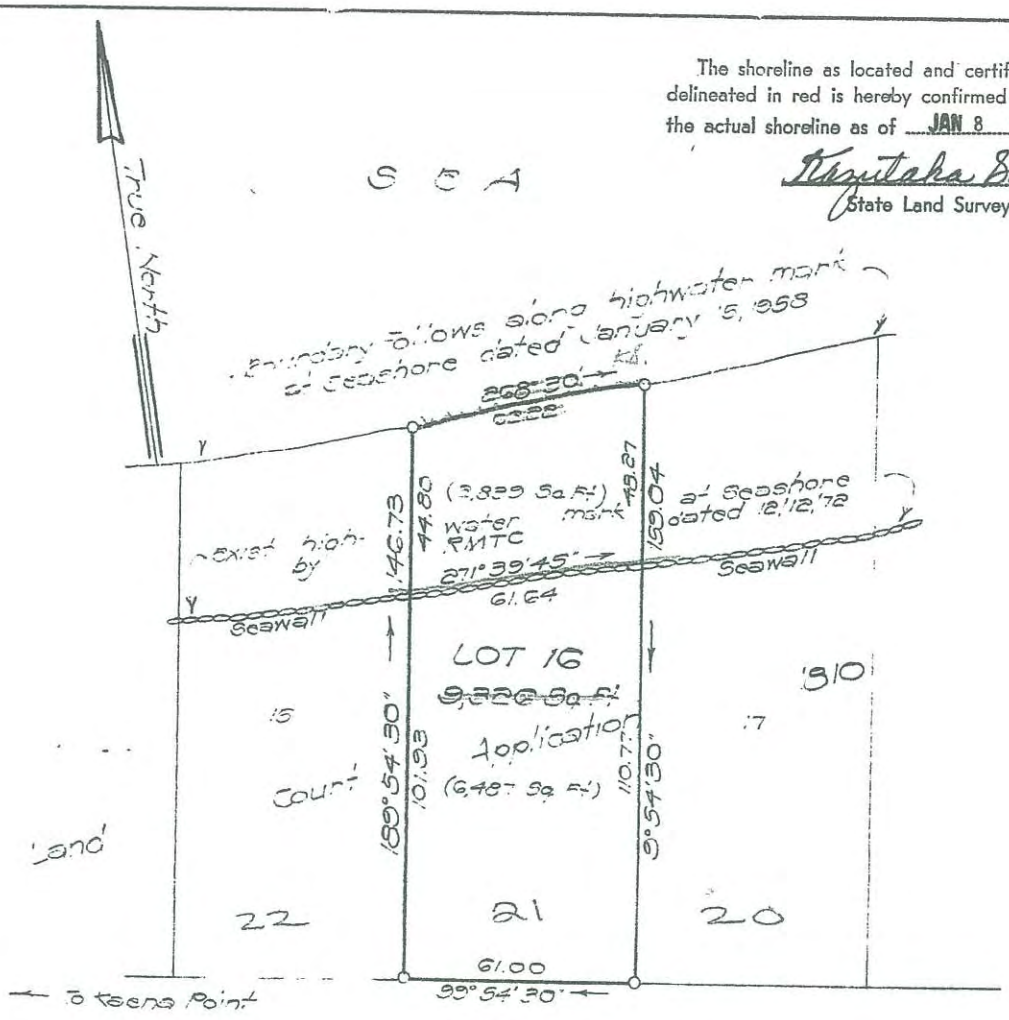
(IN FEET)

1 inch = 20 feet

NOTES:
1. Only improvements shown were located.
2. ⑥ 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 Saiki
State Land Surveyor



WAIALUA - KAENA POINT ROAD

To Haleiwa →

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 Tsutsumi
REGISTERED PROFESSIONAL LAND SURVEYOR
CERTIFICATE NUMBER 281.

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

APPENDIX D

apc

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

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 302 • HONOLULU, HI 96817

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

Property:TMK: 6-8-10: 22 Mr. Renau Constantinau

1. LOT AREA

	8,594		total lot area
	(2,518)		loss due to erosion
	6,076	sf	lot area after erosion
	6,076		lot area after erosion
	50%		reduced by 50%
	3,038	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
	2,457	sf	
	137		west side yard depth
x	5		side yard setback
	684	sf	
	147		east side yard depth
x	5		side yard setback
	734	sf	
	4,485		**Lot Area comprised of setbacks**

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

The 4,485 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 E

EKNA Services, Inc.

Engineers
and
Environmental
Consultants

Engineering
Planning
Surveys
Computer
Modeling

615 Piikoi Street
Suite 300
Honolulu, Haw
96814-3139

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

CN 2474-00F# August 25, 2005

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

Subject: SSV for Existing Seawall
68-691 Farrington Highway, Mokuleia, Oahu
TMK: 6-8-10:22

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 1300 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 +11' 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 rock and 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 seven parcels (about 500 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

poured concrete slope 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). 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 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 30 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

Coastal Engineering Assessment
of Existing Seawalls at Mokuleia
TMK: 6-8-9:010 and 011

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.

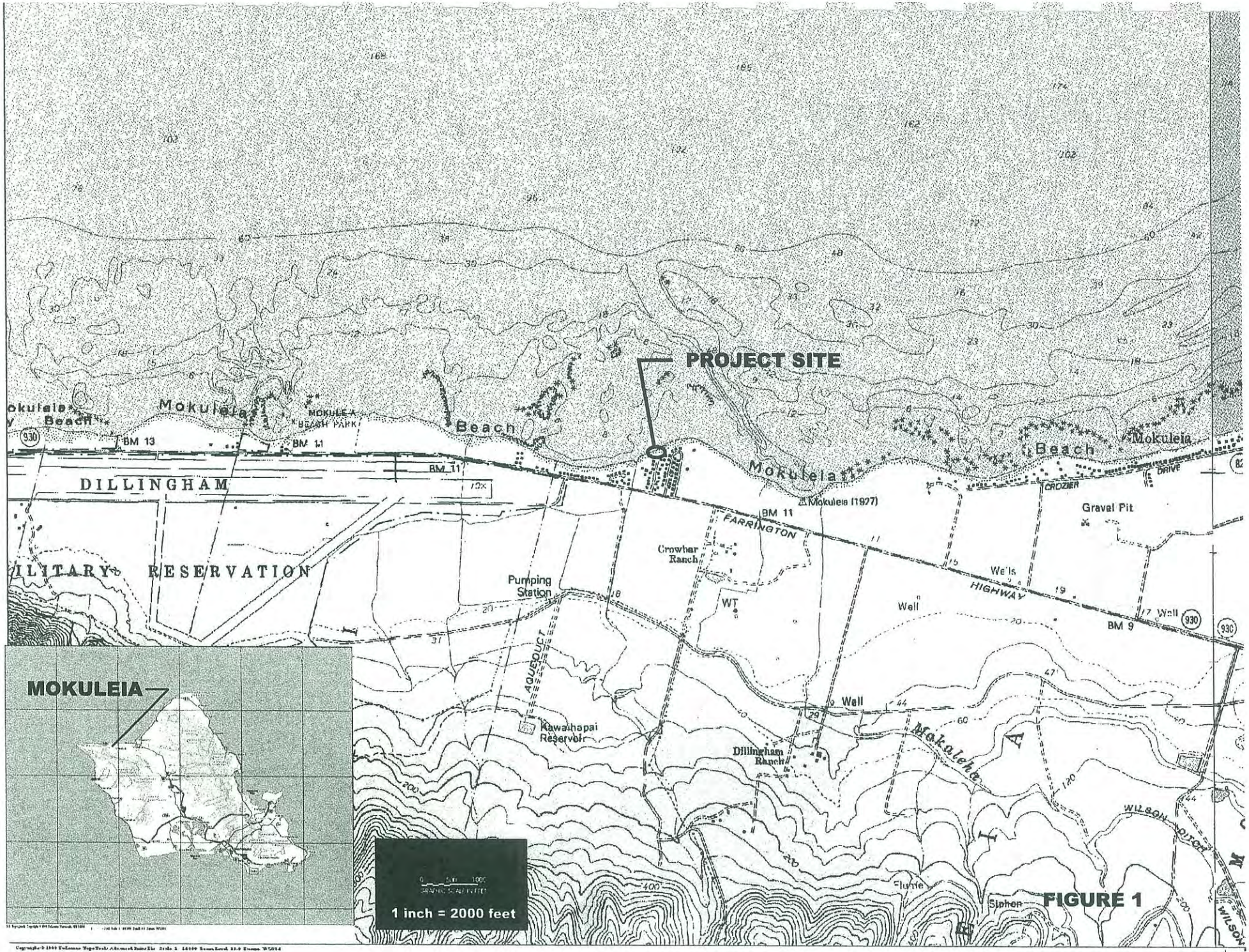

PROJECT SITE
MOKULEIA
1 inch = 2000 feet
Mokuleia Beach
MOKULEIA BEACH PARK
DILLINGHAM
MILITARY RESERVATION
BM 13
BM 11
FARRINGTON HIGHWAY
Mokuleia (1927)
Gravel Pit
Crowbar Ranch
Pumping Station
WT
Well
Wells
BM 9
AQUEDUCT
Kawaihapai Reservoir
Dillingham Ranch
Makaleha
Flume
Siphon
WILSON TUNNEL
930
930C

FIGURE 1

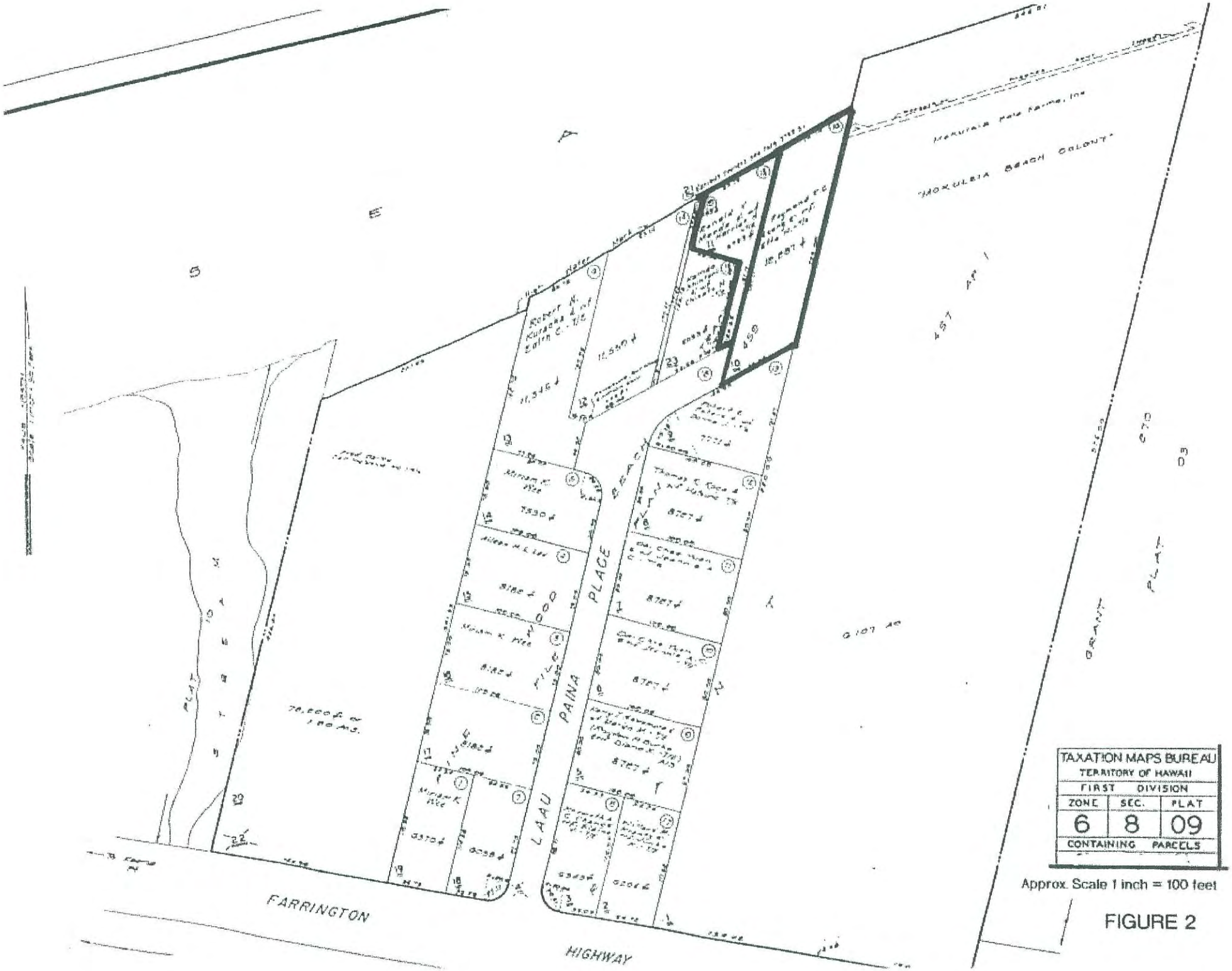
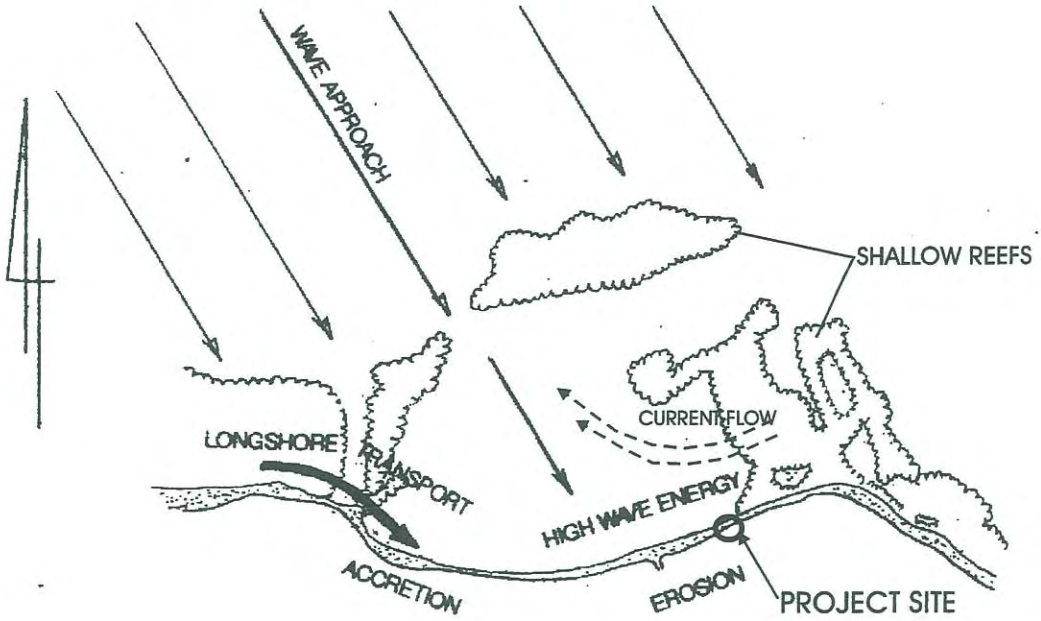
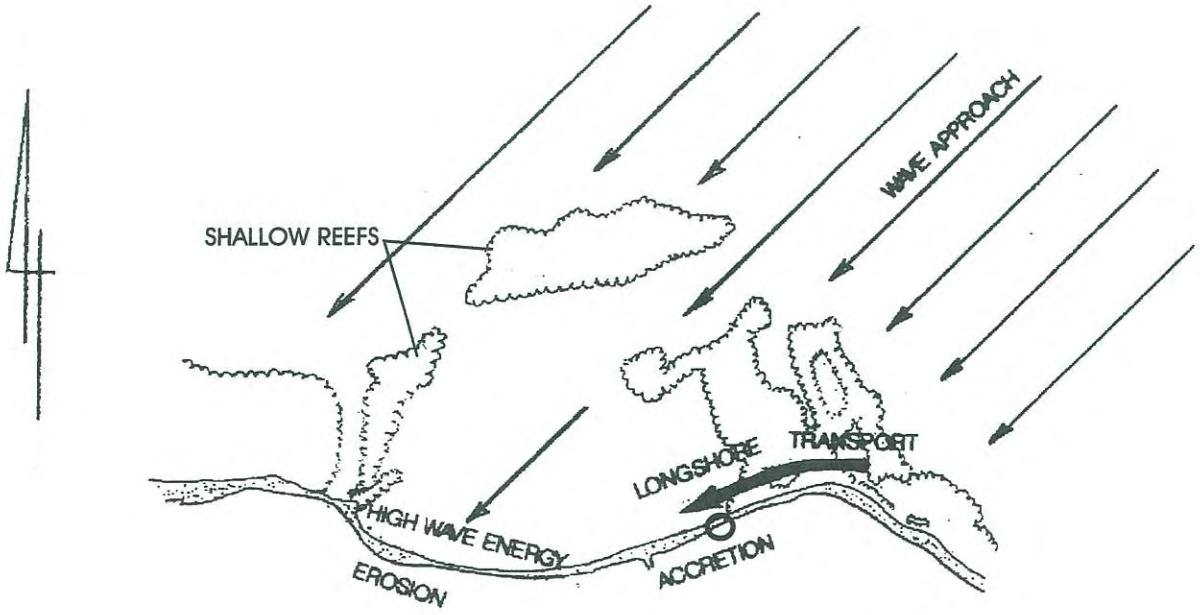

MOKULEIA BEACH COLONY
LAAU PLACE
PAINA PLACE
FARRINGTON HIGHWAY
TAXATION MAPS BUREAU
TERRITORY OF HAWAII
FIRST DIVISION
ZONE 6
SEC. 8
PLAT 09
CONTAINING PARCELS
Approx. Scale 1 inch = 100 feet

FIGURE 2



WINTER NORTHWEST SWELL CONDITIONS

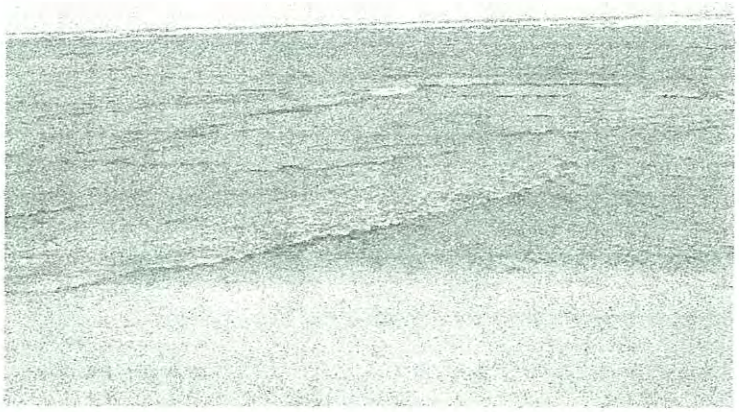


SUMMER NORTHEAST TRADEWIND CONDITIONS

FIGURE 3

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

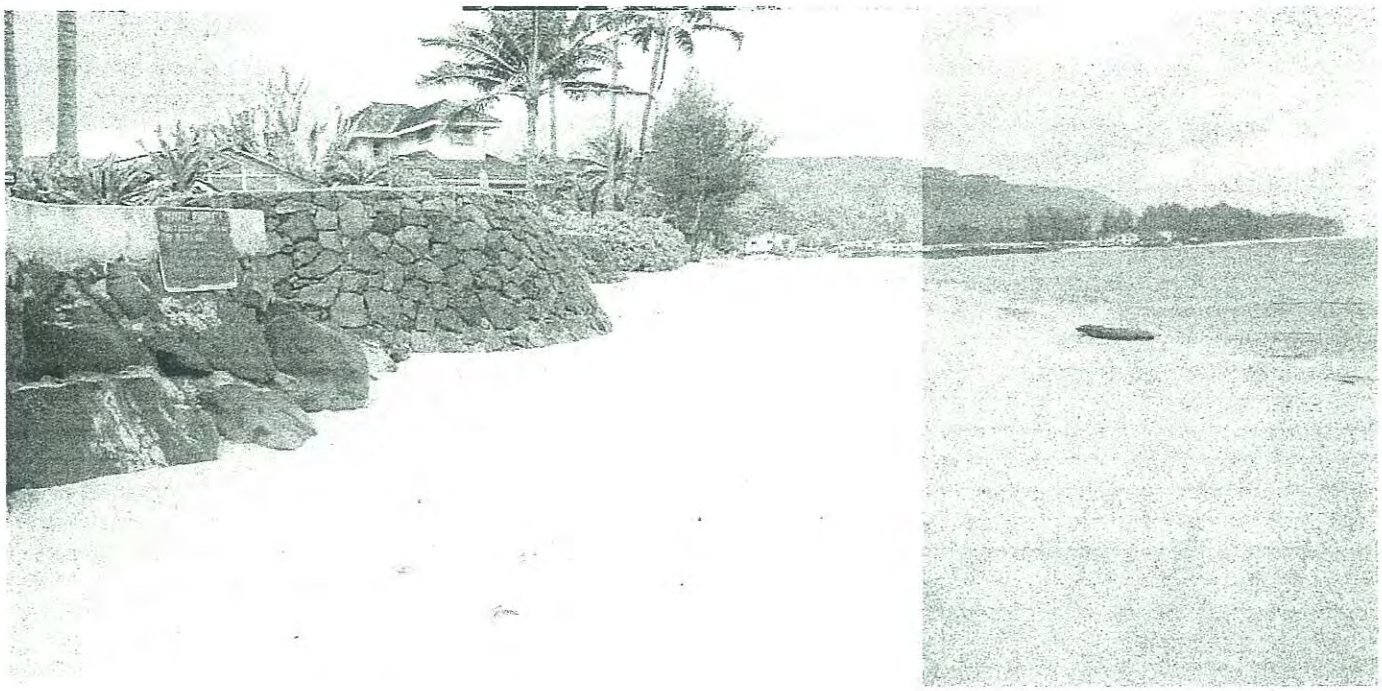
View eastward along the beach fronting the Mokuleia Beach Colony seawall. Note the narrow and steep beach profile.



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

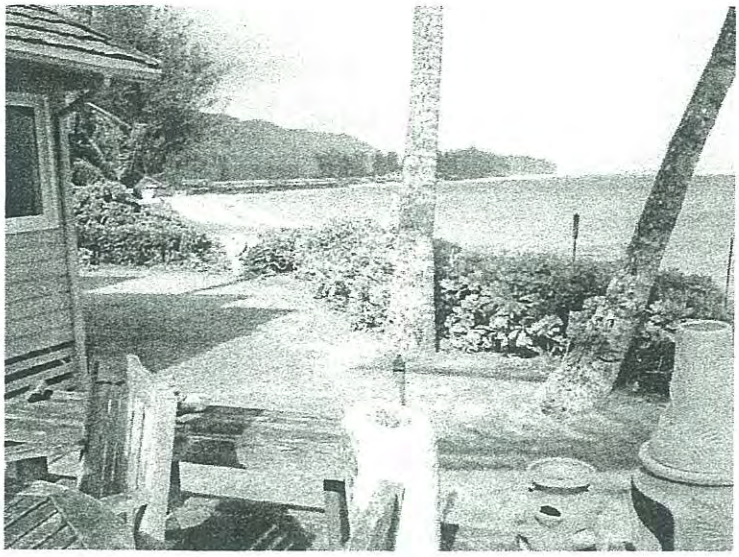
Winter North Pacific swell were causing breaking waves across entire embayment.

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.

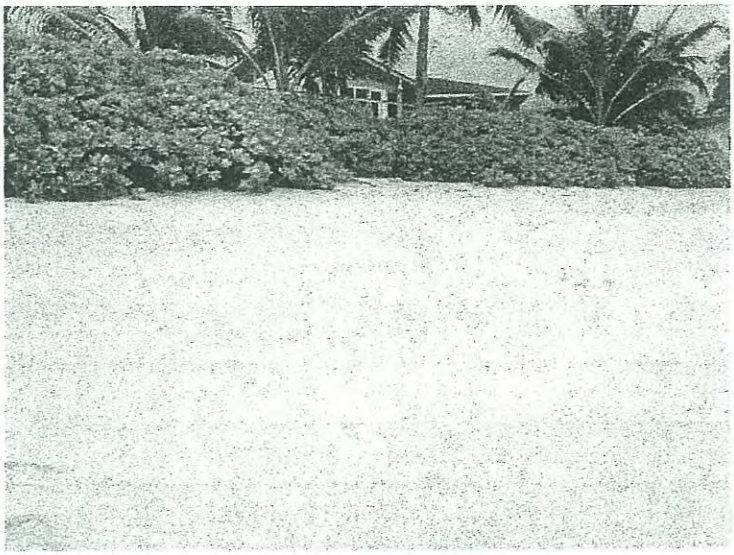
View offshore from porch on Parcel 11. Steps in seawall lead down to the beach.

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

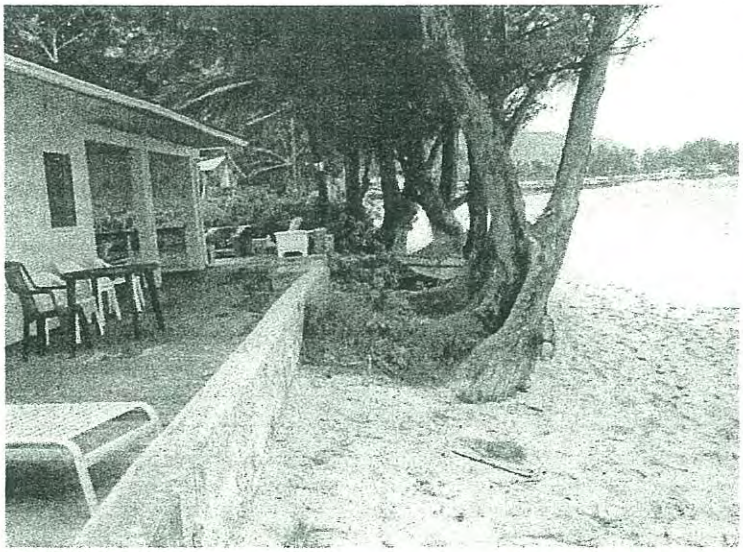
View mauka along private right-of-way. The CRM wall on left is Parcel 11's return wall.

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