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2003/ED-31(ask)

March 2, 2004

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

SHORELINE SETBACK VARIANCE
CHAPTER 343, HRS
Final Environmental Assessment (EA)/Determination
Finding of No Significant Impact

Recorded Owner/ Applicant	:	Elia A. Long and DTP Holdings
Agent	:	Robin Foster, PlanPacific
Location	:	1256 and 1264 Mokulua Drive
Tax Map Key	:	4-3-005: 88 and portion of 59
Request	:	Shoreline Setback Variance
Proposal	:	Construction of a Seawall
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 four copies of the Final EA. If you have any questions, please contact Ardis Shaw-Kim of our staff at 527-5349.

Sincerely yours,

ERIC G. CRISPIN, AIA
Director of Planning
and Permitting

EGC:cs
Enclosures
posse doc no. 280592

2004-03-23 FONSI
LANIKAI SHORE PROTECTION STRUCTURES

Final Environmental Assessment

Proposed Shore Protection -- Two Residences, Lanikai

Lanikai, Oahu
TMKs: 4-3-005: 088 and 059

Prepared by PlanPacific, Inc.

February 2004

Final Environmental Assessment

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Lanikai, Oahu
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Prepared by PlanPacific, Inc.

February 2004

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Appendices

1. Project Summary

PROPOSED ACTION:	Construct a shore protection structure for two contiguous lots 1256 and 1264 Mokulua Drive, Lanikai, O'ahu
PROPERTIES & OWNERS:	1256 Mokulua Drive Tax Map Key 4-3-005: 088 9,934 square feet Owner/Applicant: Elia A. Long 1264 Mokulua Drive Tax Map Key 4-3-005: por. 059 (Lot 366) 11,206 square feet, less eroded area = 10,603 s.f. Owner/Applicant: DTP Holdings
PLANNING & ZONING:	State Urban District; designated "Residential" on Koolaupoko Sustainable Communities Plan; zoned R-10 Residential District
SPECIAL MANAGEMENT AREA, SHORELINE SETBACK:	Located within the SMA and the shoreline area; lots are subject to 40-foot shoreline setback
PERMITTING AGENCY:	Department of Planning and Permitting City & County of Honolulu
CONSULTED AGENCIES:	Department of Planning and Permitting, City & County of Honolulu; State Dept. of Land and Natural Resources, Land Division; U.S. Army Engineer District, Honolulu
CHAPTER 343 ACTION:	Construction within the shoreline setback
PERMITS REQUIRED:	Shoreline Setback Variance Building Permit
CHAPTER 343 ACTION:	Construction within the shoreline setback
ANTICIPATED DETERMINATION:	Finding of No Significant Impact (FONSI)

2. General Description of the Action

2.1 SITE DESCRIPTION AND BACKGROUND

The project site is located on two contiguous shoreline parcels at 1256 and 1264 Mokulua Drive, Lanikai (TMKs 4-3-005: 088 and 4-3-004: 059, respectively). **Figure 1** shows the general location of the site. The tax map in **Figure 2** also provides a key for photographs of the site (see **Photographs A-D**).

1256 Mokulua (parcel 88) is a flag lot owned by Elia A. Long. The lot is occupied by a single-family dwelling, located close to the shoreline. Access from Mokulua Drive is via a flag-stem driveway. 1264 Mokulua is also a flag lot, one of two lots that comprise TMK parcel 59. Both lots are owned by DTP Holdings, an entity belonging to the Pietsch family. The single-family dwelling occupying the shoreline lot (Lot 366) is also located near the shoreline.

The State Department of Land and Natural Resources (DLNR) certified the shoreline survey for parcel 59 on May 9, 2003 (see **Figure 3b**). As shown on the survey map, parcel 59 has eroded five to 12 feet inland from the recorded seaward property boundary; the eroded area is 603 square feet.

DLNR certified the shoreline survey for parcel 88 on December 9, 2002 (see **Figure 3a**). The certified shoreline follows a low seawall, built around 1960, which has been exposed by ongoing erosion. A shoreline survey certified on September 26, 2000 did not detect the seawall, which was covered by sand and vegetation at the time. The 2000 survey delineated the shoreline along the previous vegetation line, which ran slightly inland of the seawall on the southern portion of the lot. Because the 2000 certified shoreline was part of a subdivision action, it was later recorded in Land Court as the seaward property boundary of the lot. Based on the 2002 certified shoreline, Mr. Long has petitioned Land Court to restore the seaward property boundary to the seaward edge of the wall.

In 1968, Mr. Long obtained approvals from the City, the State, and the U.S. Army Corps of Engineers (COE) to install a "protective stone blanket" extending 10 feet seaward from the base of the existing seawall on parcel 88 and the seawalls of the three adjacent parcels to the north. The stone blanket remains in place seaward of parcel 88. In granting a variance for the stone blanket on November 7, 1968, the City Zoning Board of Appeals recognized the seawall as a nonconforming structure (Findings of Fact, Conclusions of Law, Decision and Order, File No. 68/Z-124).

2.2 TECHNICAL CHARACTERISTICS

The owners are jointly proposing to construct a continuous seawall, tying into a nonconforming reinforced concrete seawall on the north and a municipal drain structure on the south. As shown in the topographic survey (**Figure 4**), the elevation of the two lots varies between seven and eight feet above Mean Sea Level (MSL).

The seawall will be of concrete rubble masonry (CRM) construction, utilizing large basalt rocks grouted in place. It will be sited landward of the certified shoreline along the 150-foot-long shoreline of the two parcels, entirely within the 40-foot shoreline setback. The makai edge of the foundation will follow the certified shoreline. The distance between the inland edge of the proposed wall and the dwellings on parcel 88 varies from 21 to 30 feet. This is sufficient to allow for wall construction without disturbing the dwellings' slab foundations.

Figure 5a is a reduced version of the structural engineering plans for the project, including the wall layout plan and sections. Structural calculations are provided in **Figure 5b**. As shown in the drawing "Section Thru New CRM Wall," the proposed structure is a typical gravity wall design, with a foundation set five feet below mean sea level (MSL). The wall will be approximately 9.5 feet wide at the base, tapering to two feet wide at the top. The top of the wall will be at or slightly above the grade of the rear yards, which varies from +7.0 to +8.0 MSL. The area behind the wall will be excavated and backfilled with granular backfill wrapped in geotextile filter fabric. The backfill and weep-holes will allow for relief of

hydrostatic pressures created when the wall is over-topped by high tides and storm waves; the filter fabric will prevent escape of fine soil material into shore waters. Following construction, the existing SEAbags will be removed, and a safety railing will be installed on top of the seawall.

The "Wall Layout Plan" (**Figure 5a**) shows that the seaward edge of the wall foundation follows the existing seaward Land Court boundary or the certified shoreline, whichever is farther inland. On parcel 88, the seaward edge of the seawall follows the existing Land Court seaward boundary. (Note: The above description and the Wall Layout Plan relative to parcel 88 have been changed from those contained in the Draft EA. The plan described in the Final EA is based on the current property boundary for parcel 88.) In the event that Land Court approves Mr. Long's petition to relocate the seaward boundary contiguous with the 2002 certified shoreline on parcel 88 (see Section 2.1 above), then the makai edge of the seawall foundation would be relocated seaward. In any event, no portion of the seawall will be constructed on State land.

In the Wall Layout Plan, the top of the wall is represented with cross-hatching. On the Kailua end, the wall will tie into an existing concrete wall that extends along the side boundary about 25 feet mauka of the certified shoreline. On the Waimanalo end, the wall will abut the mauka corner of the municipal drain outfall and will have a return at least 10 feet in length along the side boundary. The return is intended to provide stability and flank protection. A seven-foot-wide stairway will be located in the middle of the wall, half on each side of the lots' common boundary; no portion of the stairs will extend seaward of the certified shoreline. As shown in the "Section Thru Stairs," the stairway portion of the structure will be over 18 feet wide at the base.

The wall will be constructed using heavy equipment to excavate the trench and move basalt rocks into place. Very large rocks will be used for the base of the wall. The heavy equipment will operate entirely landward of the wall being constructed. The existing SEAbags will be left in place during construction, thereby minimizing wave inundation of

the work area and potential discharge of material to the ocean. Following construction, the owners will apply to the Department of Land and Natural Resources and the U.S. Army Corps of Engineers for permission to remove the sandbags.

The project requires only limited dewatering. Wastewater will be retained onsite and will not be discharged to State waters. Construction will take 3-6 weeks to complete.

2.3 ECONOMIC AND SOCIAL CHARACTERISTICS

The proposed project will not generate any new jobs or increase the resident population of the area. It will provide short-term construction employment and related State tax revenues. The estimated cost of the seawall is $150,000.

2.4 CULTURAL AND HISTORIC CHARACTERISTICS

The two lots are fully-developed residential properties which are not currently used for cultural or religious practices. Public access to the shoreline from the public road will not be affected by this project. Removal of the SEAbags, which extend seaward into the State Conservation District, would improve lateral access along the shoreline.

2.5 ENVIRONMENTAL CHARACTERISTICS

Littoral processes along the Lanikai shoreline are poorly understood. Installation of a seawall will disrupt the natural process of coastal erosion for the two lots, whereby wave action takes sand from eroding shoreline properties and redistributes it within the littoral system. On the other hand, these lots have already contributed a significant volume of sand and land area to the littoral system. At this point, erosion is endangering the existing homes. Moreover, the presence of seawalls has not stopped the beach from accreting along other sections of the Lanikai shoreline. Research has demonstrated that nearly every one of Lanikai's shoreline lots has a seawall. In the future, it is possible that – either through natural littoral processes or through an engineered beach replenishment project – a wide dry beach will be restored to

this section of the Lanikai shoreline. See Section 3 and the Coastal Engineering Evaluation for a more detailed discussion of environmental impacts.

The subject property does not contain unique or endangered species of plants nor significant faunal habitat.

3. Description of the Affected Environment, Impacts and Mitigation

3.1 DESCRIPTION OF THE SURROUNDING AREA

Lanikai is a fully-developed residential community occupying a narrow coastal strip of land, bounded by the slopes of Kaiwa Ridge. Zoned R-10 Residential, the area is subdivided into residential lots which are generally 10,-20,000 square feet in size and developed with single-family dwellings. The area is characterized by warm temperatures and average annual rainfall of 40-50 inches.

To the north, parcel 88 abuts a double lot that is currently vacant (TMK 4-3-005: 76). This parcel is protected by a nonconforming seawall, which until recently had been covered by sand and vegetation. Along with parcel 88, this parcel and the two further north were together granted a variance for a protective stone blanket seaward of their nonconforming seawalls.

The southern edge of the project site abuts a public beach right-of-way owned by the Lanikai Association (TMK 4-3-005: 087). A City drainage pipe runs beneath the right-of-way, ending in a CRM outfall structure that projects about 12 feet seaward of the certified shoreline on parcel 59. The four parcels south of the right-of-way have seawalls.

3.2 SOILS, TOPOGRAPHY AND DRAINAGE

The soils are classified as Jaucas sand, according to the Soil Survey (USDA Soil Conservation Service, 1972). Jaucas soils consist of excessively drained, calcareous soils that occur as narrow strips on coastal plains, adjacent to the ocean. The permeability of Jaucas sand is described as rapid, and runoff is very slow to slow. The hazard of water erosion is slight, but wind erosion is a severe hazard where vegetation has been removed. The available water capacity is 0.5 to 1.0 inch per foot of soil. Workability is slightly difficult because the soil is loose and lacks stability for use of equipment.

The topography is level, varying between +7.0 and +8 MSL on the seaward side of the lots. There is a steep escarpment at the shoreline, where portions of both lots have been eroded by wave action. The escarpment is protected by SEAbags (large sandbags). The elevation at the top of the SEAbags is generally +6 to +8 Mean Sea Level (MSL), while the toe is less than +1 MSL.

A topographic survey performed on July 28, 2003, recorded elevations within both properties as well as beach elevations along four transects extending 80-100 feet seaward from the shoreline (see **Figure 4**). The survey shows a consistent, gradual drop-off from about Mean Sea Level to about –4.5 to –5.0 MSL over 80-100 feet.

Rainfall drains directly onto the ground and is quickly absorbed by the sandy soils. As shown on the Flood Insurance Rate Map, the seaward portions of the properties lie in the AE zone, with a regulatory flood elevation of +6 feet MSL.

3.3 SHORELINE CHARACTERISTICS AND COASTAL PROCESSES

This section summarizes information contained in a Coastal Engineering Evaluation prepared by Edward K. Noda and Associates, Inc. (EKNA) in 1997 for the neighboring Dilks property (see **Appendix A**). In its letter of April 11, 2003, EKNA states that the Evaluation is applicable to the subject Grossman and Carpenter lots. Section 2.0 of the Coastal Engineering Evaluation describes the characteristics of the Lanikai shoreline and coastal processes. Section 3.0 discusses historic beach and shoreline changes in Lanikai. Section 6.0 of the Coastal Engineering Evaluation assesses potential littoral impacts – i.e., impacts on the beach.

Lanikai Beach has been undergoing net long-term erosion over the past 30+ years. The coastal reaches at both the northern and southern ends of Lanikai are devoid of dry beach, and beach erosion is progressing from the southern end northward towards the middle of the beach. Various types of seawalls and revetments protect about 1,500 of shoreline property south of Alala Point (bordering Kailua Bay), and about 2,500 feet north of Wailea Point

(bordering Waimanalo Bay). A narrow beach remains along about 3,000 feet of shoreline in the middle of Lanikai. A review of historical records and the 1989 study report, *Hawaii Shoreline Erosion Management Study: Overview and Case Study Sites*, shows that all but a few Lanikai shoreline lots have shoreline protection structures of some kind. (Prepared by Edward K. Noda and Associates and DHM, the 1989 report includes a case study of the Kailua-Lanikai coast.) At present, shore protection structures located in the middle segment of Lanikai are buried in sand. Field inspection by PlanPacific staff confirmed these observations.

The near shore wave approach patterns are complex due to interactions between the wave trains and the irregular offshore reefs and islands. In general, within the Lanikai littoral cell, net transport of sand is predominantly northward from Wailea Point during the summer months, due to easterly tradewind-generated waves and southeasterly swells, and predominantly southward during from Alala Point during the winter months, due to North Pacific swell. This accounts for the greater loss of beach at the endpoints of the Lanikai littoral cell and the greater stability of the beach in the middle of the littoral cell.

Since the late 1990s, the owners of the subject lots and four lots further south have sought to prevent damage to their residences by placing SEAbags along the eroded escarpment. In the past three years, seawalls have been built to protect the Dilks and Dewey properties, located south of the subject lots. The City Department of Planning and Permitting published Environmental Assessments and granted Shoreline Variances authorizing the construction of the two new shore protection structures.

Consistent with the conclusions stated in Section 6.0 of the Coastal Engineering Evaluation (see **Appendix A**), the proposed seawall will not alter the existing littoral processes affecting the site. The erosion occurring along the Lanikai shoreline can be described as "passive erosion," in contrast to "active erosion" that is induced or accelerated by shore protection structures. Passive erosion occurs when a protective structure is built and erosion continues, eroding adjacent unprotected shoreline mauka 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. While the northward erosion trend may continue, nearly all shoreline lots in the vicinity are protected by either permanent or temporary structures and are therefore unlikely to be affected by passive erosion.

3.4 RECREATIONAL RESOURCES

There is a public beach right-of-way immediately abutting parcel 59. Owned by the Lanikai Community Association, the beach access is located on TMK parcel 4-3-005: 087. There is no public beach park in Lanikai. This is part of a system of rights-of-way that provide good public access to the Lanikai shoreline.

Erosion has reduced such activities as jogging and sunbathing along this section of Lanikai Beach. The waters off Lanikai are excellent for swimming, sailing, kayaking, and canoeing. There is also some use of motorboats and windsurfing, but Kailua Beach provides better conditions and access for these activities. There is some pole fishing from boats and from the shore, but reef fish populations have diminished over the years. Spear-fishing and snorkeling is practiced among the coral heads farther offshore. There are a few spots for board-surfing around the Mokulua Islands.

Construction of the seawall will not affect existing recreational resources or access from the public road to the shoreline. Replacing the SEAbags with a seawall may improve walking conditions at low tide and will eliminate the current hazards of climbing over the slippery bags.

3.5 FLORA AND FAUNA

Lanikai Beach is not a habitat for rare, threatened or endangered species, although Hawaiian Stilts occasionally forage along the waterline. Green Sea Turtles graze and loaf in the waters off Lanikai, as they do in Kailua Bay and Waimanalo Bay. The action is not expected to affect terrestrial or aquatic life.

3.6 VISUAL RESOURCES

The shoreline offers a 180-degree view up the beach to the north, towards the ocean and the Mokulua Islands, and south to Wailea Point. The appearance of the beach will be improved by the replacement of the unsightly SEAbag revetment with a seawall.

3.7 ARCHAEOLOGICAL AND HISTORIC RESOURCES

No archaeological features exist on the subject property, and no negative impacts are anticipated. If any archaeological, cultural, or historic materials are discovered, construction work will be stopped and the State Historic Preservation Division will be notified.

3.8 WATER QUALITY

As stated in the Coastal Engineering Evaluation (see **Appendix A**), potential water quality impacts during construction would be temporary and minor because (a) the seawall would be constructed entirely landward of the certified shoreline and (b) the existing SEAbags would be left in place during construction, thereby minimizing wave inundation of the work area and potential discharge of material to the ocean. The project requires only limited dewatering. Wastewater will be retained onsite and will not be discharged to State waters. Once the seawall is built up to a height of about +4 MSL, potential impacts become negligible.

3.9 NOISE

Construction of the seawall will generate noise from the use of heavy equipment, but will be confined to daylight hours and will be relatively short-term. Construction activities will comply with *Hawaii Administrative Rules, Chapter 11-46, Community Noise Control*, administered by the State Department of Health.

3.10 AIR QUALITY

Air quality impacts attributed to the proposed action will include exhaust emissions and dust generated by short-term, construction-related activities. These impacts will be minimal

because of the limited extent of the project and sandy soils. Construction activities will be conducted in compliance with State air pollution control regulations contained in *Hawaii Administrative Rules, Chapter 11-60.1-33, Fugitive Dust.*

3.11 ROADS AND UTILITIES

The proposed action will have no effect on existing roadways, traffic, or parking; except for short-term construction-related traffic. The action will also have no effect on water supply, wastewater systems, drainage facilities, solid waste disposal, electrical power, or communications services.

3.12 PUBLIC SERVICES

The proposed project will not result in any change in the demand or supply of public services, including police and fire protection and school, medical and recreation facilities.

3.13 SUMMARY OF SHORT-TERM AND LONG-TERM MITIGATION MEASURES

As indicated above, the project will cause no significant long-term impact to recreational, biological or scenic resources. The owners' contractor will take appropriate action to mitigate noise and dust impacts from short-term construction activities.

3.14 SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Installation of a seawall will prevent further erosion of the subject properties and thus limit the potential movement of sand seaward. As stated in the Coastal Engineering Evaluation, the proposed project is not anticipated to create any significant long-term impact on littoral processes along Lanikai Beach.

3.15 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Resources to be committed are limited to rock, other construction materials, and human effort. The project will be paid for with private funds.

4. Consideration of Alternatives

The Coastal Engineering Evaluation (**Appendix A**) discusses various alternatives to the proposed action, including beach nourishment, an offshore breakwater, and a sloping rock revetment (see Sections 4.0 and 5.0). Prepared for a neighboring property in 1997, the Evaluation is relevant to the subject properties. The Evaluation's analysis of alternatives is summarized below.

Beach restoration and nourishment. As stated in Section 4.0 of the Coastal Engineering Evaluation, beach restoration and nourishment would be the preferred alternative, but it is costly and difficult to permit. To be effective, beach nourishment needs to be undertaken along a large reach of shoreline, well beyond the two subject properties. Structural measures, such as groins, would be needed to stabilize and retain large amounts of sand imported to nourish the beach. State studies have documented sources of offshore sand deposits as near as Kailua Bay; and these deposits could be mined and transported to Lanikai Beach at a lesser cost than importing sand from continental sources. The actual cost of beach restoration, however, includes not only construction of containment structures and importation of sand, but also design of the project, preparing state and federal environmental impact statements, and securing state and federal permits. All phases involve substantial commitment of resources and time, clearly beyond the organizational or financial capability of individual residential lot owners.

Offshore breakwater. Construction of an offshore breakwater would be a viable alternative to mitigate ongoing erosion. However, an offshore breakwater must be designed and sited properly to withstand storm wave attack, yet avoid causing water quality problems or dangerous currents. Offshore construction is costly and carries a high risk of accident, damage to equipment, and water pollution. Like beach restoration, such a project would have to fulfill state and federal environmental requirements and secure state and federal permits.

This alternative is likewise beyond the organizational or financial capability of individual residential lot owners.

Sloping Revetment. A conceptual plan for a sloping revetment is shown in **Figure 6,** "Layout Plan – Revetment Alternative." The toe of the revetment would be placed at -5.0 MSL and would rise at a 2:1 slope – 2 horizontal to 1 vertical – to the elevation of the rear yard, +7 to +8 MSL. With a four-foot-wide crest at the top, the revetment would be 28 to 30 feet deep across the shoreline frontage of the two lots. As shown in the Layout Plan, the structure would be located as far landward as possible, while allowing space for construction equipment and avoiding damage to the dwelling foundations. Because of the depth of the revetment, it would need to encroach into the Conservation District by 6 to 12 feet, extending seaward of the adjacent seawall to the north. In 1997, the City Department of Land Utilization queried the Department of Land and Natural Resources about allowing a revetment at the Dilks property four lots to the south. DLNR's response stated the following conclusion: ". . . DLNR would not support the construction of any portions of a revetment on the makai side of the shoreline, where there are alternatives available." In the letter, DLNR explicitly recognizes a vertical seawall as a viable option, if it is constructed mauka of the shoreline. (Letter dated November 19, 1997, a copy of which is included below in **Appendix C**, "Comments and Responses to the Draft EA.")

Beach Retreat. Beach retreat means allowing the property to erode and preserving structures by moving them further landward. This alternative might be viable under the following conditions: (1) the lot is large and unencumbered with other structures; (2) the structure(s) to be moved have post-and-beam foundations; and (3) the property lies in a shoreline area that has few or no shore protection structures, and beach retreat has been adopted as policy applying to all lots. The subject properties meet none of these conditions. They are small lots, encumbered with more than one structure. The structures have slab-on-grade foundations, which makes relocation infeasible. Finally, over 90 percent of the Lanikai shoreline has shore protection structures, as do the adjacent parcels on either side of the site.

Whereas beach retreat might be appropriate for a shoreline area that has little or no shore protection structures (e.g., Kailua Beach), the prevalence of structures makes such a strategy infeasible for the Lanikai shoreline.

No Action. The "no-action" alternative was also considered but rejected because of the continuing threat posed by ongoing coastal erosion. As stated above, the residences on both properties have slab-on-grade foundations, which makes relocation infeasible. Any further erosion would eat into the soil supporting the foundation, undermine the foundation and cause it to crack. As erosion progressed and the crack became larger, the house would break up.

Continuation of the SEAbag revetment. The emergency SEAbag revetment has provided a measure of protection, but is not intended as permanent protection. The SEAbags are continually being undermined be wave action and damaged by punctures from fishermen's stakes and from other people using the beach. When punctured, a SEAbag gradually loses its contents. In addition, the SEAbags have been severely damaged and dislocated by winter storm surf. Damage to the SEAbags has been repaired periodically at considerable expense, and additional repairs would be required.

Maintaining the SEAbag revetment over an extended period of time would be extremely expensive and would not provide the secure shore protection of a CRM seawall or a sloping rock revetment. Therefore, maintaining the SEAbag revetment in perpetuity is not a viable option.

5. Consistency with the Hawaii Coastal Zone Management (CZM) Objectives and Policies

HRS Chapter 205A sets forth objectives and policies for coastal zone management in Hawaii, as well as delegating regulatory authority over the Special Management Area (SMA) to the counties. Under SMA regulations, single-family residences and accessory structures are exempt from permit requirements.

Objectives and policies relevant to beaches and shore protection structures include the following (from HRS Section 205A-2):

> Provide recreational opportunities accessible to the public by:
>
> "protecting unique coastal resources" (i.e., sand beaches); and
>
> "providing and managing adequate public access to and along the shoreline."
>
> Protect beaches for public use and recreation by "prohibiting construction of private erosion-protection seaward of the shoreline . . ."

Construction of a shore protection structure is a measure of last resort, usually undertaken when progressive coastal erosion threatens to destroy a home or other structure. Typically, the erosion has already taken the dry beach area and a portion of the homeowner's yard. A shore protection structure will prevent the further erosion of sediments from the private property and therefore the further nourishment of the beach from that property. Therefore, a shore protection structure does not in and of itself advance the CZM objective and policies for recreational resources. However, it would be unreasonable to expect a family to sacrifice their home and property—typically their major financial asset—in order to nourish an eroding beach. Asking one or a few property owners to make such a sacrifice is particularly difficult to justify when the government has no comprehensive program for dealing with the chronic erosion problem or restoring the beach.

The CZM Act's policy to protect beaches and to prohibit shoreline structures is a statement of general public policy. The Act, however, also recognizes that shore protection is justified in certain instances where there is a hardship and therefore provides a variance procedure. Under HRS Section 205A-46(9), a variance may be granted where shoreline erosion would cause hardship if the shore protection structure were not allowed.

In order to protect the remaining beach for public use, the proposed seawall would be constructed landward of the certified shoreline. As an alternative, the applicant proposes a sloping revetment. Revetments are generally believed to be less reflective of wave energy, to cause less scouring, and therefore to have lesser impact on littoral processes. However, the revetment would need to be constructed partly seaward of the certified shoreline.

6. List of Approvals and Permits Required

The only land use approval required is a Shoreline Variance. If the Shoreline Variance is approved, then a Building Permit will be needed in order to construct the seawall.

The applicant will consult with the Department of Land and Natural Resources and the U.S. Army Corps of Engineers concerning the removal of the SEAbags and whether a permits will be required.

7. Determination of Significance

According to the Department of Health Rules (11-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will result from the development. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the criteria listed below.

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

The proposed seawall will not significantly affect littoral processes, nor will it change the pattern of continuing coastal erosion on the south end of Lanikai Beach. The seawall will not affect public access to the shoreline. The subject lots do not contain any known biological or cultural resources.

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

In accordance with its zoning, the subject property is committed to private residential use. The proposed project will preserve beneficial uses of the privately owned land. The project will affect beach resources inasmuch as it will permanently prevent the further erosion of sand from the property onto the public beach. If erosion continues, then the absence of dry beach in this reach of the Lanikai shoreline will also continue. If accretion occurs, then sand will accumulate seaward of the seawall, forming dry beach for public use.

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

The proposed development is consistent with the Environmental Policies established in Chapter 344, HRS. The seawall will not affect the State's natural resources and will not lower the total quality of life for Hawaii residents. While the project does not support the guideline of preserving shorelines free of manmade improvements, it does conform to the longstanding history of government decisions approving shore protection structures in Lanikai. On the middle section of Lanikai Beach, the beach has accreted despite the presence of shore protection structures.

4. **Substantially affects the economic or social welfare of the community or state.**

The proposed project will have no effect on the socio-economic welfare of the community or state.

5. **Substantially affects public health.**

The proposed project will not affect public health.

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

The proposed project does not involve substantial secondary impacts.

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

It is not anticipated that the proposed project would degrade environmental quality.

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

The proposed project is individually limited, will itself have an insignificant effect on the environment, and does not involve a commitment for larger actions. It continues a 70-year history of episodic construction of shore protection along various reaches of Lanikai Beach. It is unclear whether or not the building of shore protection structures

in Lanikai has had a considerable cumulative effect on the environment. Seawalls built 20-30 years ago in the central section of Lanikai have since been entirely covered by sand that extends to a wide dry beach.

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

There are no endangered plant or animal species located on the subject property.

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

Construction may produce temporary impacts to air quality and noise levels, but these impacts will be negligible. Water quality may be temporarily affected by construction.

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, freshwater, or coastal waters.**

The proposed seawall is expressly designed to preserve residential structures from the effects of coastal erosion and will also provide some protection from storm waves or tsunami. It is not expected to increase the flood hazard for the subject property or surrounding properties.

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

The proposed project will not affect any public scenic vistas or view planes identified by the county or state.

13. **Requires substantial energy consumption.**

The proposed project and its construction are small-scale and will not require substantial energy consumption after construction is complete.

8. Anticipated Determination

Based on the findings of this Environmental Assessment, the approving agency has determined that the proposed project will not have a significant environmental impact, and an Environmental Impact Statement (EIS) will not be required. Therefore, a Finding of No Significant Impact (FONSI) is anticipated.

FIGURES

RECEIVED AS FOLLOWS

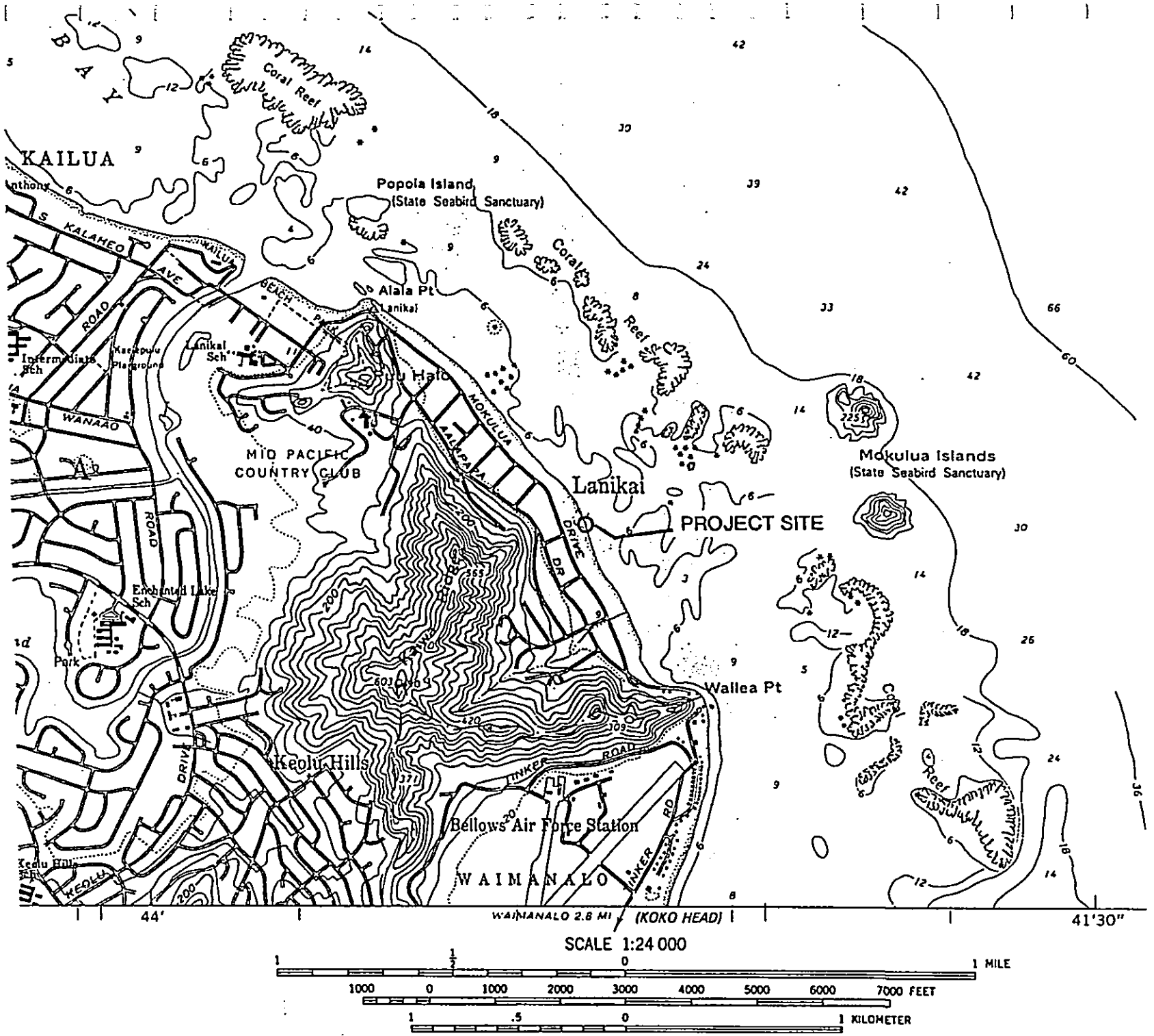


FIGURE 1

RECEIVED AS FOLLOWS

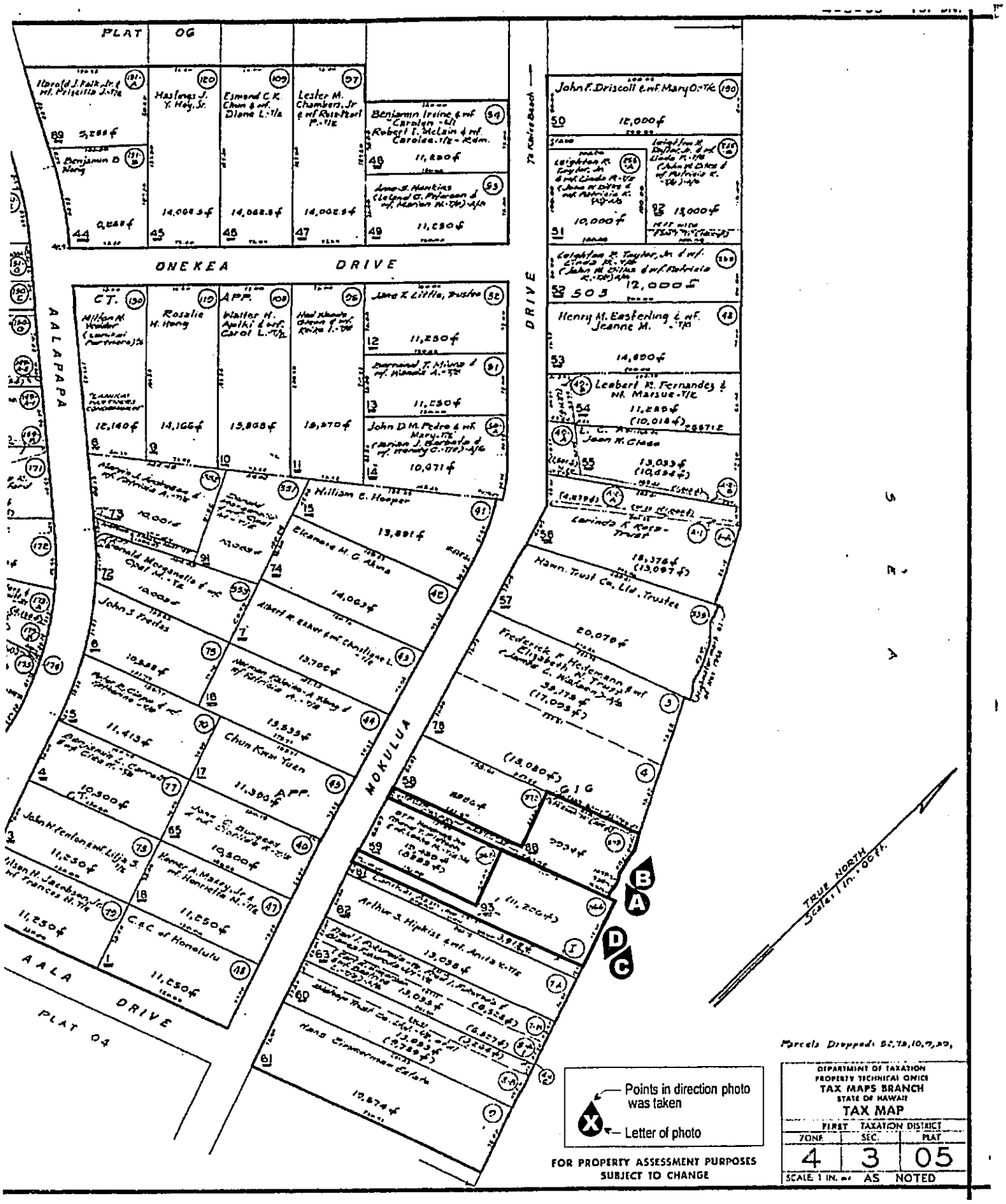


FIGURE 2
Tax Map and Photo Key

RECEIVED AS FOLLOWS

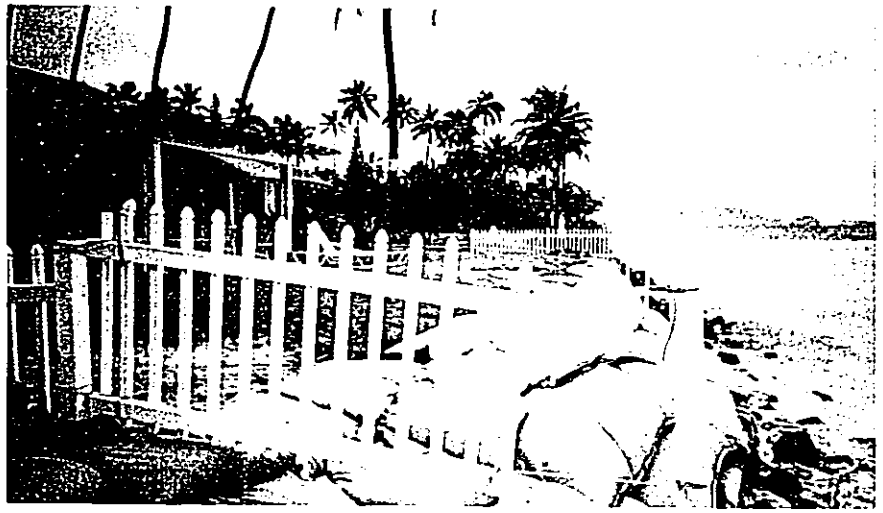


Photo A: View looking north (toward Mokapu) across parcel 88 The white fence in the foreground marks the boundary between parcels 59 and 88 The white fence in the distance marks the north boundary of parcel 88

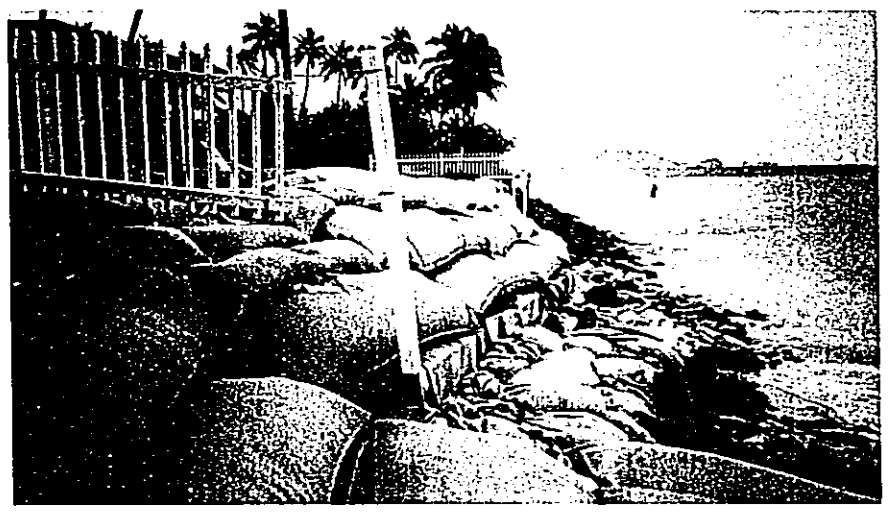


Photo B: Looking in the same direction as Photo A at the base of the SEAbags The top edge of the nonconforming seawall is visible, starting at the bottom of the white post The rocks lying on the seaward side of the wall are part of a "rock blanket" intended to protect the toe of the wall The rock blanket was permitted in 1968 by the City Planning Department, the Department of Land and Natural Resources, and the U S Army Corps of Engineers.

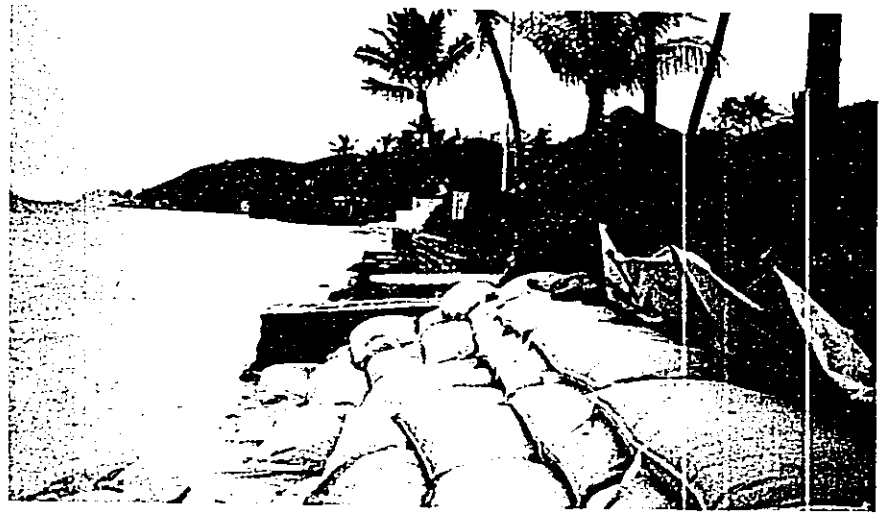
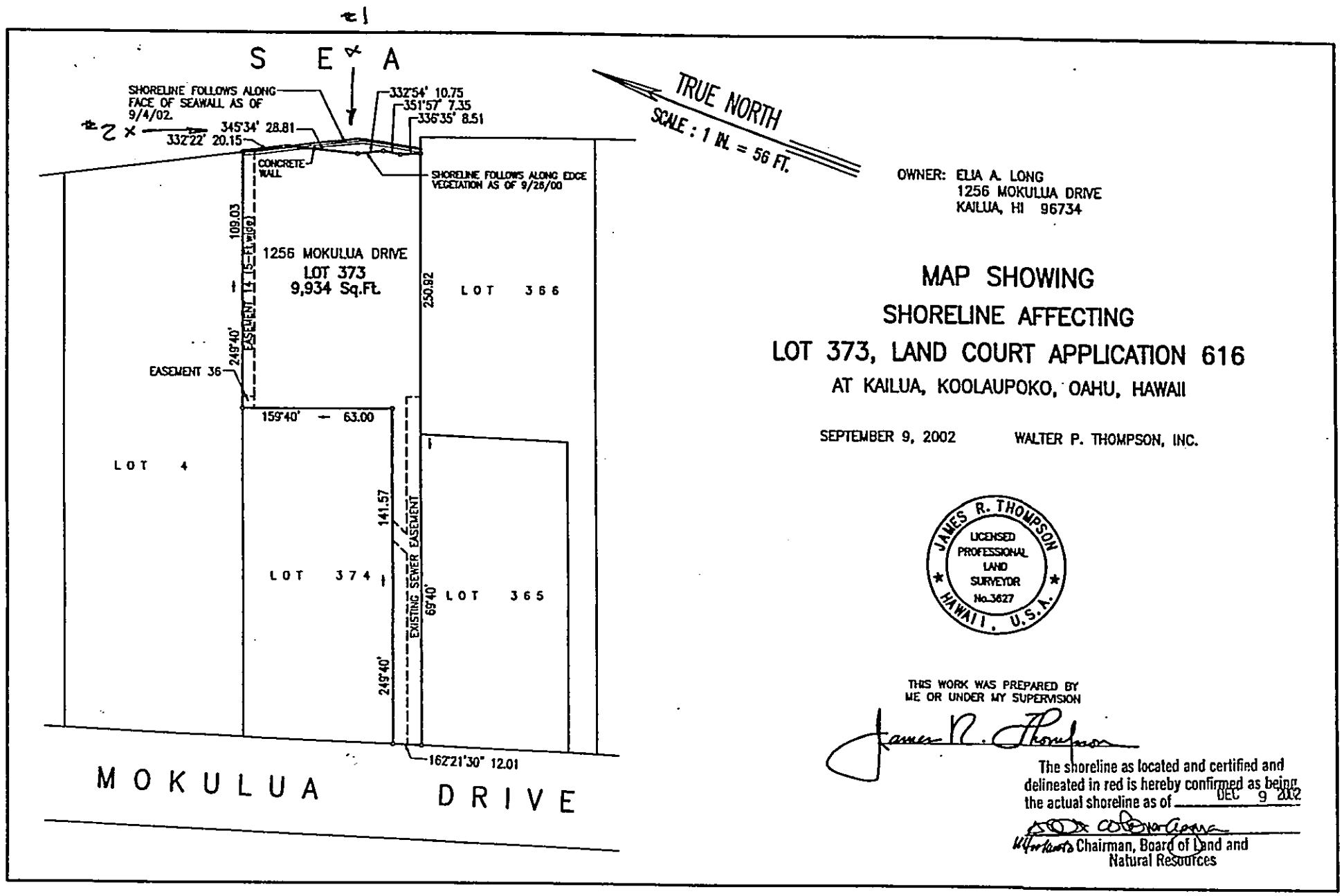


Photo C: View from the middle of parcel 59's shoreline, looking south toward Waimanalo The protruding CRM groin wall houses the end of a City drainage line and marks the southern end of parcel 59 A public beach right-of-way abuts the southern boundary of parcel 59

Photo D: View from the south corner of parcel 59 looking north along the shoreline



OWNER: ELIA A. LONG
1256 MOKULUA DRIVE
KAILUA, HI 96734

MAP SHOWING
SHORELINE AFFECTING
LOT 373, LAND COURT APPLICATION 616
AT KAILUA, KOOLAUPOKO, OAHU, HAWAII

SEPTEMBER 9, 2002 WALTER P. THOMPSON, INC.

JAMES R. THOMPSON
LICENSED PROFESSIONAL LAND SURVEYOR
No. 3627
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

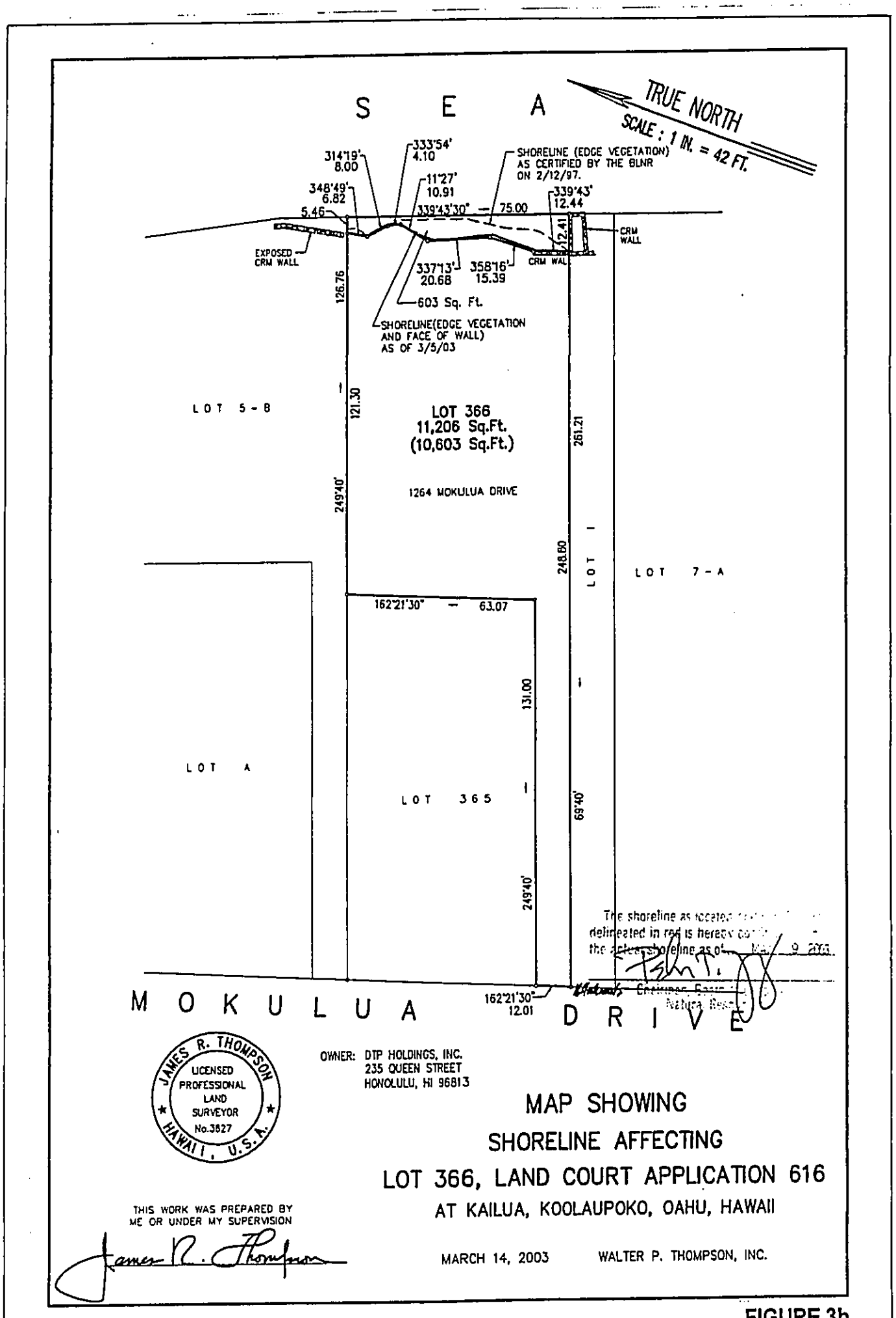
James R. Thompson

The shoreline as located and certified and delineated in red is hereby confirmed as being the actual shoreline as of DEC 9 2002

Chairman, Board of Land and Natural Resources

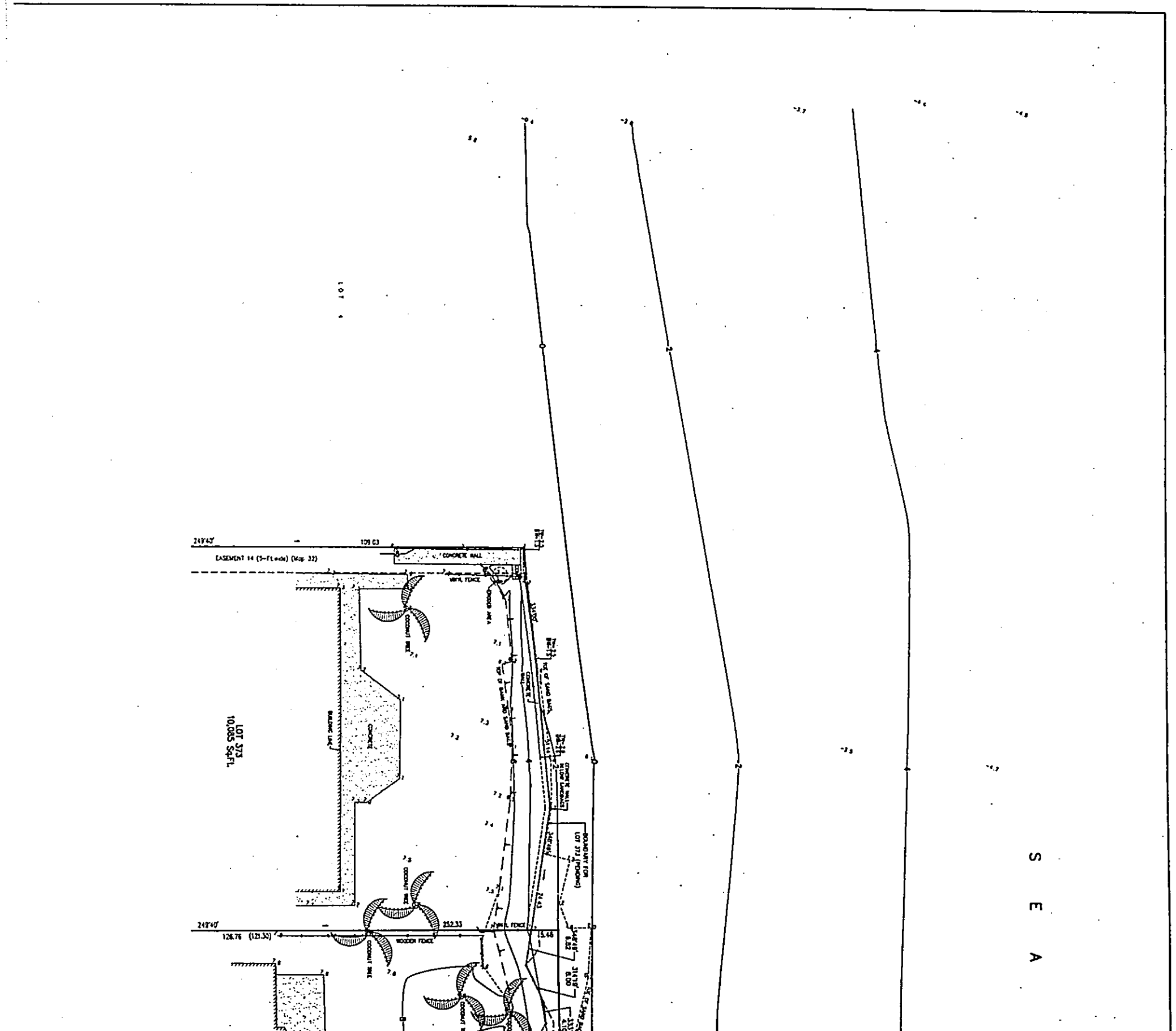
TAX MAP KEY : 4 – 3 – 05 : 88

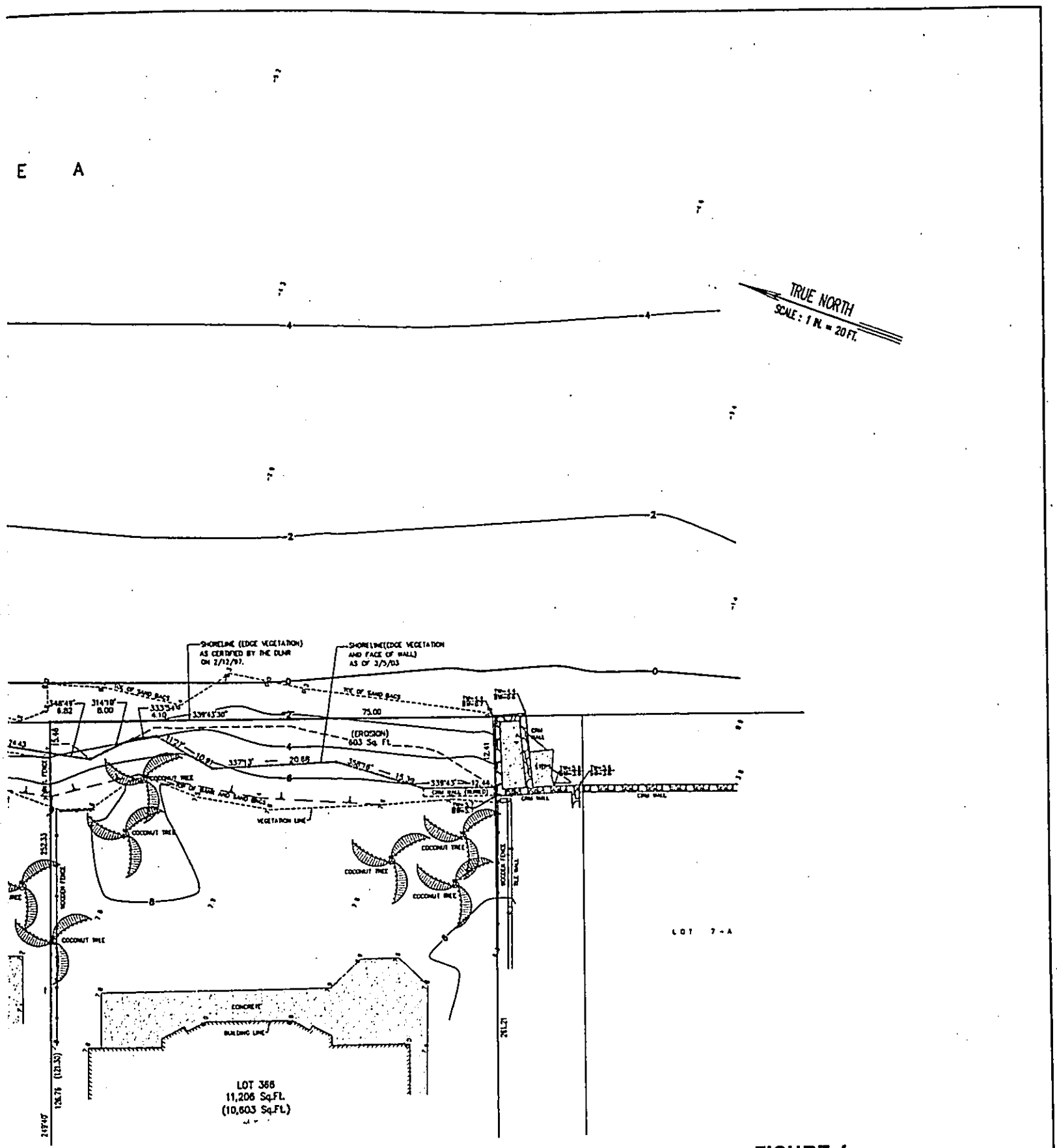
FIGURE 3a



TAX MAP KEY : 4 - 3 - 05 : 59

FIGURE 3b


EASEMENT 14 (5-Ft wide) (Map 32)
CONCRETE WALL
WIRE FENCE
WOODEN FENCE
COCONUT TREE
CONCRETE
BUILDING LINE
LOT 373
10,085 SqFt.
249'40"
109.03
252.33
126.76 (121.30)
SEA



JAMES R. THOMPSON
LICENSED PROFESSIONAL LAND SURVEYOR
No. 3817
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

James R. Thompson

FIGURE 4

TOPOGRAPHIC SURVEY
PORTION LOTS 366 AND 373
LAND COURT APPLICATION 616
AT LANIKAI, KAILUA, KOOLAUPOKO, OAHU, HAWAII

JULY 28, 2003 WALTER P. THOMPSON, INC.

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE "STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION OF THE CITY AND COUNTY OF HONOLULU" (LATEST).

2. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND SPECIFICATIONS.

3. EMBED BASE OF WALL 3'-0" MIN. BELOW MEAN SEA LEVEL UNLESS SOLID NON-ERODABLE STRATA IS ENCOUNTERED AT A HIGHER ELEVATION.

4. ALL STONES SHALL BE CLEAN AND FREE FROM DIRT OR LOOSE MATERIAL.

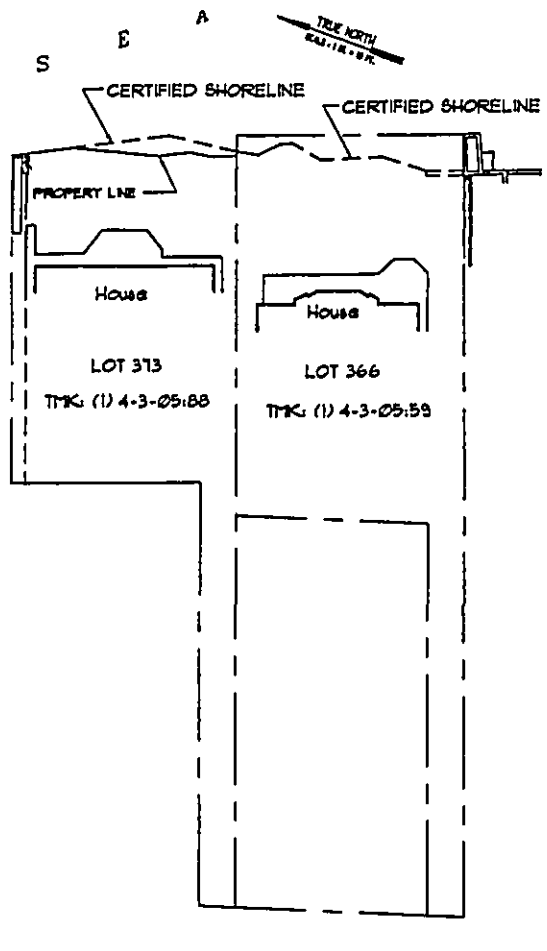
5. THE WALL SHALL BE GROUTED SOLID. GROUT AND MORTAR SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.

6. WEEPHOLES, 4 INCHES IN DIAMETER, SHALL BE PLACED AT CORNERS AND SPACED NOT MORE THAN 6 FEET ON CENTER

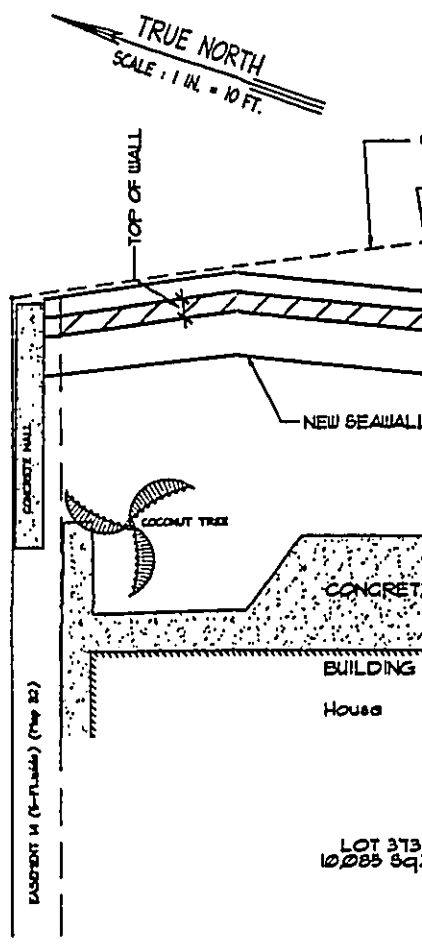
7. BACKFILL SHALL CONSIST OF CLEAN SAND, 3B FINE OR OTHER APPROVED NON-EXPANSIVE GRANULAR MATERIAL. COMPACTION SHALL NOT EXCEED 95%. BACKFILL SHALL BE WRAPPED IN A GEOTEXTILE FABRIC SUCH AS SUPAC 4NP. LAP FILTER FABRIC 5'-0" MIN.

8. ALL WORK SHALL BE PERFORMED MAUKA OF THE CERTIFIED SHORELINE.

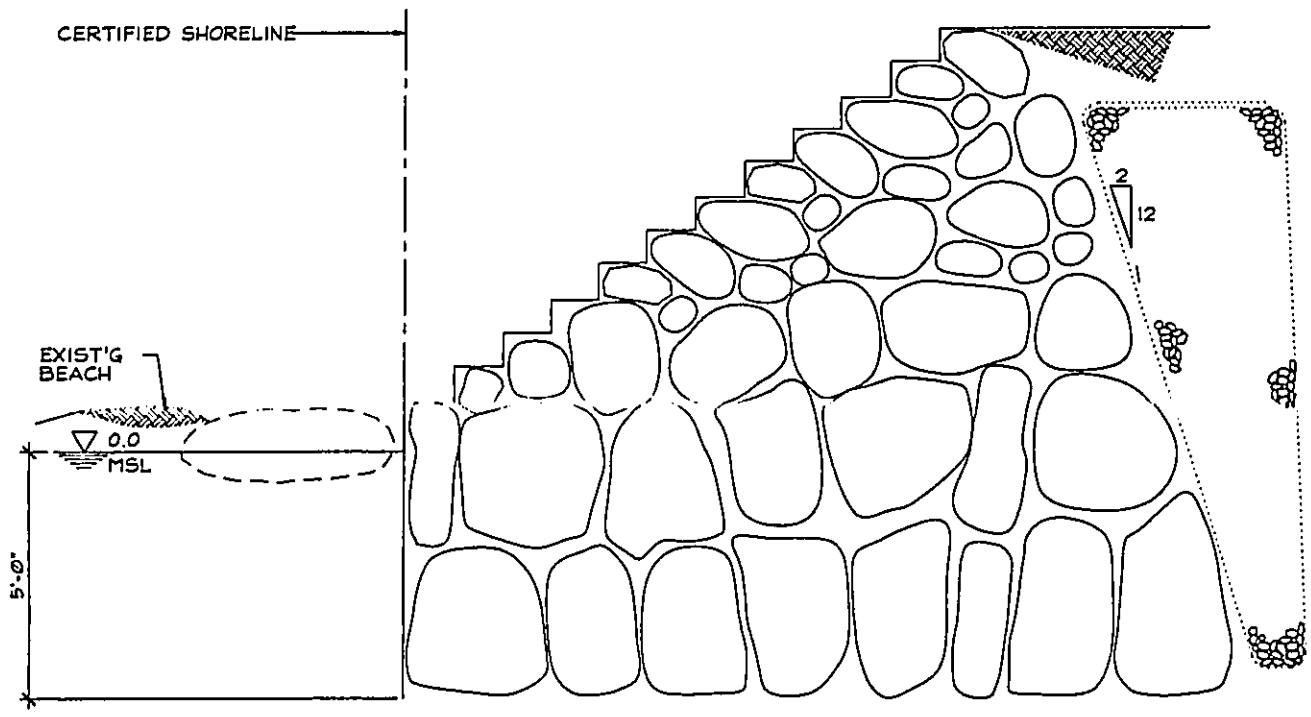
9. EXISTING SAND BAGS SHALL BE REMOVED. SAND FROM THESE BAGS SHALL BE REPLACED ON THE FRONTING BEACH.



SITE PLAN
NTS
A
S-1

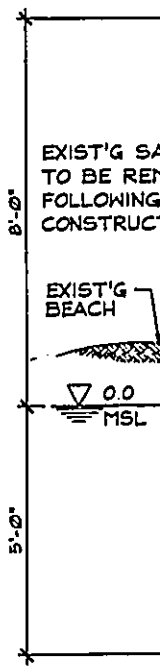


WA
SC 1"

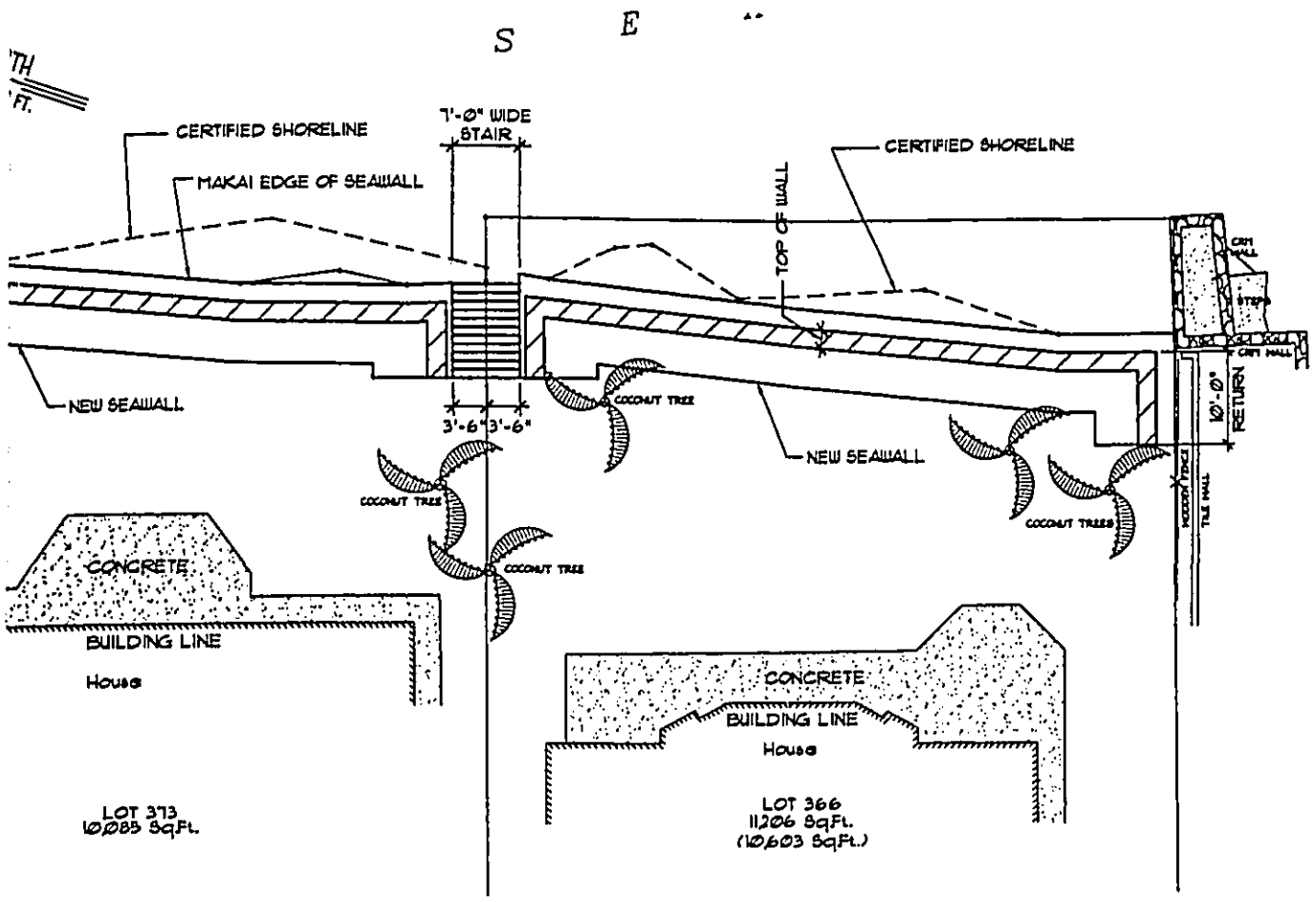


*EMBED 5'-0" MIN. BELOW MEAN SEA LEVEL UNLESS FOUNDED ON SOLID NON-ERODIBLE SUBSTRATA

SECTION THRU STAIRS
SC 1/4" = 1'-0"
C
S-1



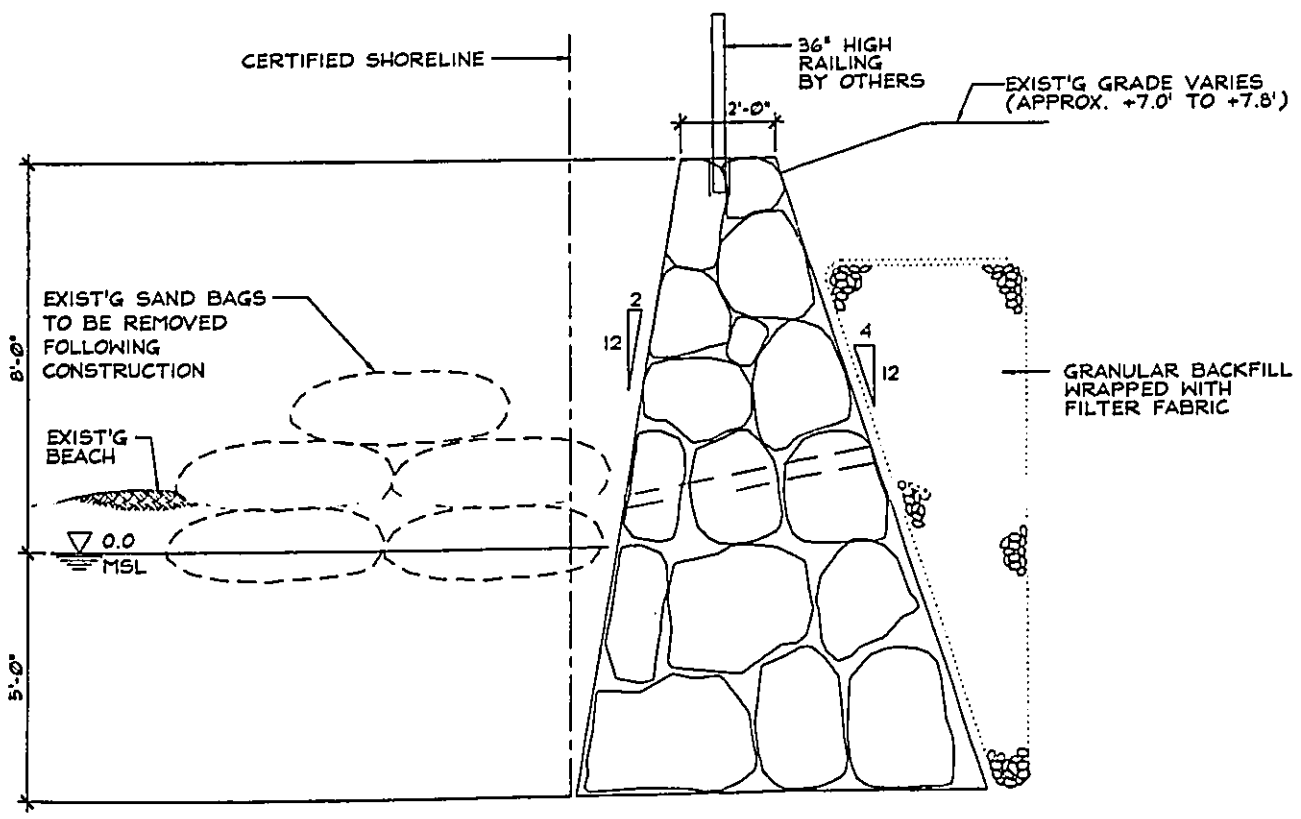
*EMBE
FOUN
SECTIO
SC 1/4" = 1'-0



WALL LAYOUT PLAN

SC 1" = 20'-0"

D 6-1



*EMBED 5'-0" MIN. BELOW MEAN SEA LEVEL UNLESS FOUNDED ON SOLID NON-ERODIBLE SUBSTRATA

SECTION THRU NEW CRM SEAWALL

SC 1/4" = 1'-0"

D 6-1

THOMAS Y. TANIMURA LICENSED PROFESSIONAL ENGINEER No. 4929-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION

Thomas Y. Tanimura

DATE

LONG/PIETSCH SEAWALL

TMK: (1) 4-3-05: 88 & (1) 4-3-05-59

TANIMURA & ASSOCIATES, INC.
CONSULTING STRUCTURAL ENGINEERS
925 Bethel Street, Suite 309 • Honolulu, Hawaii • 96813

SITE PLAN & SECTIONS

DRAWN TT

DATE 3/3/03

SCALE AS NOTED

SHEET

FIGURE 5

RECEIVED AS FOLLOWS

S E A W A L L

J O B N A M E :	LONG/PIETCH SEAWALL
D E S C R I P T I O N :	8 FT. HIGH SEAWALL w/ 5 FT. EMBEDMENT

S O I L D A T A :

Phi (DEGREES)	30	SIN(Phi)	0.500
SOIL WEIGHT DRY (PCF)	113	SOIL WEIGHT WET (PCF)	50
Ka	0.333	Kp	3.00
ACTIVE PRESSURE DRY (PCF)	38	PASSIVE PRESS WET (PCF)	150
ACTIVE PRESSURE WET (PCF)	20	COEFF. OF FRICTION	0.50
Kv, VERT. COMPONENT	0	ALLOW. BEARING (KSF)	3.00

L O A D T Y P E :	SLOPE OF BACKFILL 1000 H TO 1V
THICKNESS OF SOIL COVERING TOE (FT)	5.00
DEPTH OF SOIL DISCOUNTED FOR PASSIVE PRESSURE (FT)	5.00
DEPTH OF WATER TOE SIDE (FT)	5.00
DEPTH OF WATER HEEL SIDE (FT)	6.50

W A L L P A R A M E T E R S :

TOTAL STEM HEIGHT (FT)	13.00	BATTER, TOE SIDE (FT)	2.17
STEM THICKNESS AT TOP (FT)	2.00	BATTER, HEEL SIDE (FT)	4.33
WEIGHT OF WALL (PCF)	145	BASE WIDTH (FT)	8.50

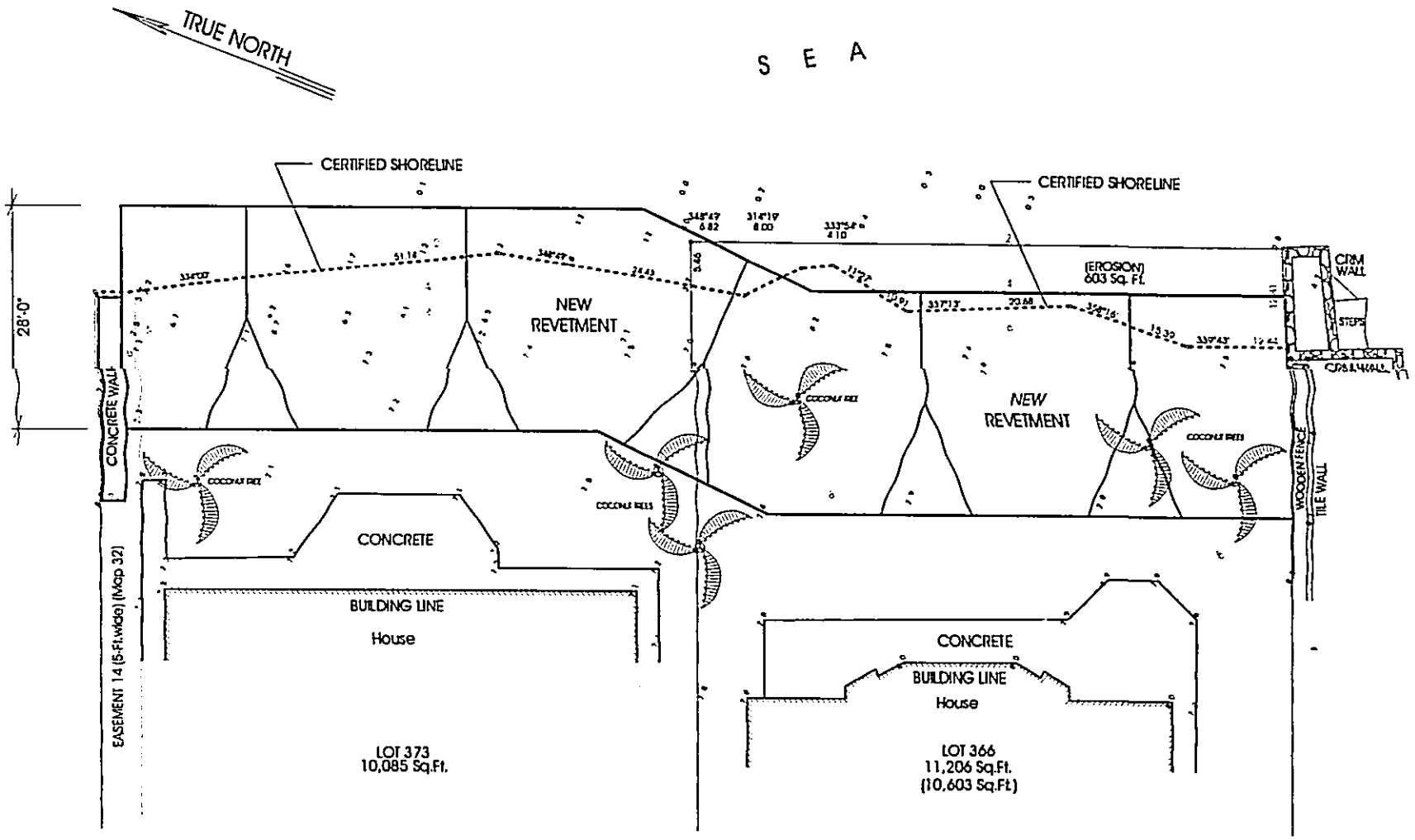
L A T E R A L F O R C E S :	FORCE (KIPS)	MOM. ARM (FT)	MOM (FT-K)
ACTIVE ABOVE WATER TABLE	0.792	8.667	6.866
ACTIVE BELOW WATER TABLE	1.584	3.250	5.149
ACTIVE BELOW WATER TABLE	0.417	2.167	0.903
WATER PRESSURE	0.070	5.500	0.387
WATER PRESSURE	0.469	2.500	1.172
SURCHARGE PRESSURE	0.002	6.500	0.014
PASSIVE PRESSURE	0.000	0.000	0.000
FRICTION FORCE	-5.003	0.000	0.000
V E R T I C A L F O R C E S :			
STEM ABOVE WATER	2.103	3.167	6.658
TOE BATTER ABOVE WATER	0.635	1.764	1.120
HEEL BATTER ABOVE WATER	1.270	4.972	6.316
BACKFILL ABOVE WATER	0.792	5.611	4.445
BACKFILL ABOVE WATER	1.584	7.417	11.751
TOE BELOW WATER	0.455	0.639	0.290
TOE BELOW WATER	0.265	1.563	0.413
STEM BELOW WATER	0.949	3.167	3.004
HEEL BELOW WATER	1.146	5.375	6.162
TOE BELOW WATER	0.455	7.222	3.283
BACKFILL BELOW WATER	0.352	7.778	2.738
VERTICAL FORCE DUE TO SLOPE	0.000	8.500	0.000
SUBTOTAL (VERT. FORCES)	10.005		46.182

O U T P U T :	ACTING	RESISTING	S.F.
FORCES (KIPS)	3.335	5.003	1.500
MOMENTS (FT-K)	14.491	46.182	3.187

	TOE	HEEL	ALLOWABLE
BEARING (KSF)	2.077	0.278	3.000

RESULTANT LOCATION (FT.) 3.167 RESULT. LOC./BASE WIDTH 0.373

FIGURE 5b
Structural Calculations



LAYOUT PLAN - REVETMENT ALTERNATIVE

SC 1" = 20'-0"

FIGURE 6

Appendix A

Edward K. Noda and Associates, 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 2384

November 3, 2003

Mr. Eric G. Crispin, AIA
Director of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment (DEA)
Shoreline Setback Variance for Shoreline Protection Structure
1256 and 1264 Mokulua Drive - Lanikai
TMK: 4-3-005:088 and 4-3-005:059 (por.)

Dear Mr. Crispin,

At the request of Mr. Robin Foster of PlanPacific, Inc., I have reviewed the subject DEA and proposed seawall that is intended to be constructed on the subject contiguous properties owned by Elia Long (1256 Mokulua Drive) and DTP Holdings (1264 Mokulua Drive). Following are my comments:

1. Erosion is continuing to occur along this portion of Lanikai Beach. As you know, Edward K. Noda and Associates, Inc. (EKNA) is very familiar with the past history of shoreline changes, having provided coastal engineering services to numerous Lanikai homeowners, including Mr. John Dilks who owns two contiguous properties south of the applicants' lots (TMK: 4-3-04:74 and 4-3-05:61).

2. The Coastal Engineering Evaluation report prepared by EKNA for the Environmental Assessment to support the SSV for Mr. Dilks' seawall is also applicable and appropriate to the subject properties. The proposed seawall will have no significant impact on the existing coastal processes. I have recommended to Mr. Foster that our report be included in entirety as an Appendix in his Environmental Assessment to provide the required coastal engineering information to support his SSV application.

3. With respect to the alternative of a sloping revetment, such a structure on this site would need to be about 30 feet wide. There is insufficient open land area between the shoreline and the existing houses to build a revetment within the shoreline setback. Extending the revetment seaward of the shoreline, onto State land, is not a viable option inasmuch as the State Board of Land and Natural Resources has adopted policy formally opposing shoreline protection structures.

Very truly yours,

Elaine E. Tamaye

Elaine E. Tamaye
President

cc: Mr. Robin Foster

Edward K. Noda
and
Associates, Inc.

Engineers
and
Environmental
Consultants

Engineering
Planning
Surveys
Computer
Modeling

615 Piikoi Street
Suite 300
Honolulu, Hawa
96814-3116

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

COASTAL ENGINEERING EVALUATION FOR A SHORE PROTECTION STRUCTURE AT LANIKAI, OAHU, HAWAII (TMK:4-3-4:74 and 4-3-5:61)

Prepared by:

Edward K. Noda and Associates, Inc.
615 Piikoi Street, Suite 300
Honolulu, Hawaii 96814

(EKNA Control No. 1781)

December 1997
(Revised)

Coastal Engineering Evaluation
for a Shore Protection Structure at Lanikai, Oahu, Hawaii

1.0 LOCATION AND PROBLEM IDENTIFICATION

The project site is located along two (2) contiguous parcel shorefronts at Lanikai, at 1286 and 1302 Mokulua Drive (TMK: 4-3-4:74 and 4-3-5:61). Both parcels are owned by John Dilks. Figure 1 shows the general site location and Figure 2 provides portions of the Tax Map Key for both parcels.

Because of severe ongoing erosion to these two parcels, particularly during the 1995-1996 winter season, emergency sandbag protection was initiated in April 1996 and completed in May 1996. The SEAbags[1] were placed along the eroded escarpment to form a protective slope. Authorization for this work was obtained from the State of Hawaii Department of Land and Natural Resources (DLNR) and from the U.S. Army Corps of Engineers. Coordination with the City and County Department of Land Utilization was also undertaken.

Unusually large North Pacific swell during November 1996 caused severe shoreline erosion and wave overtopping damage to the windward Oahu coastline. While properties adjacent to the subject parcels suffered additional erosion damage, the emergency sandbag protection prevented significant additional damage to the shoreline embankment fronting the subject properties. However, damage and loss of individual SEAbags did occur, causing slumping of the protective structure and scouring at the crest. Significant wave overtopping also caused sand and water damage to the house and property.

Because the beach fronting this Lanikai coastline is continuing to erode, and because the SEAbag structure was intended as only a temporary emergency measure, the property owner desires to construct a permanent shore protection structure. In accordance with Ordinance No. 92-34 and the Shoreline Setback Rules and Regulations of the City and County of Honolulu, this coastal engineering evaluation is prepared in support of an application for a Shoreline Setback Variance for a permanent shore protection structure extending across the two subject parcels.

---

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

2.0 SHORELINE CHARACTERISTICS AND COASTAL PROCESSES

Lanikai's beaches have been undergoing net long-term erosion over the past 30 years or so. The coastal reaches at both the northern and southern end of Lanikai are devoid of dry beach, and beach erosion is progressing towards the middle section of this coastline. Various types of seawalls and revetments protect about 2,500 feet of shoreline reach northward of Wailea Point (at the south end of Lanikai) and about 1,500 feet of shoreline reach southward of Alala Point (at the north end of Lanikai). A narrow beach remains along about 3,000 feet of shoreline in the middle segment, but erosional processes are continuing to affect this reach with the starving of sediment from the endpoints of the Lanikai coast.

The project site is located at the southern boundary between the "unprotected" middle segment and "armored" southern end of Lanikai. Beach and shoreline erosion has been steadily progressing northward into the "unprotected" middle segment. Where a narrow dry beach (above the limits of typical wave uprush during high tide) fronted the project site about 7 years ago, now there is no dry beach as well as additional loss of about 10-20 feet of shorefront property. The shoreline escarpment is within about 10 feet of the house foundation on parcel 74, which prompted the owner to construct emergency SEAbag protection.

Figure 3 is a shoreline survey that was performed in February 1996 just prior to the placement of the SEAbags. The SEAbags were stacked against the shoreline embankment to prevent further erosion of the property which could lead to damage to the house foundation. If not for the SEAbags, the large winter waves of November 1996 would certainly have caused more serious damage to the house. Although significant wave overtopping and wave splash carried sand and water onto the property and dwelling, the SEAbags prevented significant additional shoreline erosion and potential undermining of the house foundation. However, in preventing significant additional erosion of the shoreline, the SEAbag protective structure did suffer damage from these storm waves, compromising the integrity of the structure. Storm wave damage, coupled with the ongoing problem of vandalism (bags intentionally or unintentionally cut by beach users and fishermen), had resulted in significant damage and loss of individual SEAbags within a 6-month period following the initial placement of the emergency structure. The owner subsequently replaced the damaged bags to restore the SEAbag revetment structure to its approximate original configuration.

Although the wave climate along the Lanikai shoreline is relatively mild because of the protection afforded by the shallow offshore fringing reefs and islands, ongoing beach erosion threatens properties and homes that are not fronted by wave protective structures. Typical nearshore wave heights are 1 foot or less, with typical maximum wave heights less than 2 feet. Extreme breaking wave height at the shoreline is estimated to be less than 4.8 feet at the project site.

Beaches protect the shoreline by dissipating wave energy through wave breaking and runup processes. However, as beaches narrow because of ongoing erosion processes, more wave energy reaches the shoreline or "fastlands" mauka of the beach, causing erosion damage to the private properties. Property owners typically lose substantial property area and are faced with increasing danger of losing houses and other improvements to erosion damage before they are compelled to expend substantial amounts of money to erect shore protection measures. As in this case for the subject project, combined loss to erosion of almost 3,000 square feet has occurred for the two parcels, and erosion is threatening the foundation of the house and pool.

The nearshore wave approach patterns are complex due to interactions between the wave trains and the irregular offshore reefs and islands. In general, within the Lanikai littoral cell, net transport is predominantly northward from Wailea Point during summer months due to easterly tradewind-generated waves and southeasterly swell that may reach this coastal area, and southward from Alala Point during winter months due to North Pacific swell. This accounts for the greatest loss of beach at the endpoints of the Lanikai littoral cell, and the greater stability of beach area within the middle segment. Because there is a deficit of sand at the southern end of Lanikai, there is little sand transport towards the project site during predominant easterly tradewind wave conditions. During periods of more northerly tradewind waves and in winter months when northerly swell can occur, southward longshore transport of sand from the beaches in the middle segment of Lanikai can result in some buildup of sand along the project reach. However, because winter North Pacific swell can be more energetic than typical tradewind waves, they can also cause more wave damage to properties that are already vulnerable to erosion damage because of narrow or non-existent dry beach area.

3.0 HISTORIC BEACH AND SHORELINE CHANGES

Data from a prior study[2] indicates that the southern end of the Lanikai shoreline has experienced considerable accretion and subsequent erosion over a long-term period from 1950 to the 1980s, while the middle segment has been relatively more stable. It is evident that the erosion trend is continuing at present, and progressing into the middle segment.

Between 1950 and 1970, the southern end of Lanikai accreted substantially, a maximum of about 200 feet near the Lanipo Drive drainage channel. Over a 2,500 feet length of shoreline north of Wailea Point, average accretion of the vegetation line was 50 feet and about 90 feet for the beach toe line, over the 20-year period. From 1970 to the early 1980s, this shoreline reach eroded back to the approximate 1950s position. Most of the seawalls were constructed in response to this erosion cycle. This long-term accretion-erosion cycle was not unique to Lanikai, as similar shoreline movement occurred at Kailua Beach Park. Figure 4a shows the average cumulative movement of the shoreline at the southern end of Lanikai, and Figure 4b shows the historical shoreline movement at Kailua Beach Park at the location of two transects northward of the boat ramp. The long-term accretion-erosion cycle was a natural process, possibly caused by shifts in wind and wave patterns. In general, long-term cycles have been observed in meteorological trends and it has been postulated[3] that there is a cycle with an appropriate period involving the variation in mean direction of the tradewinds near the Hawaiian Islands.

The seawalls and revetments armoring the entire southern end of Lanikai were constructed in response to the erosion cycle to protect existing residential improvements, and were not the cause of the erosion. Their influence now, however, may be to discourage sand buildup because of the increase in reflectivity. Deficit of sand along this southern end of Lanikai is causing a gradual shift of the erosion trend northward into the middle segment of the Lanikai coast which historically has been relatively stable. The project site is in the transition zone between the armored

---

[2]Based on analysis of historical aerial photos as described in the study report "HAWAII SHORELINE EROSION MANAGEMENT STUDY, Overview and Case Study Sites (Makaha, Oahu; Kailua-Lanikai, Oahu; Kukuiula-Poipu, Kauai)", prepared by Edward K. Noda and Associates, Inc. and DHM Inc., for the Hawaii Coastal Zone Management Program, Office of State Planning, June 1989.

[3]Wyrtki, K. and G. Meyers, (1975), "The Trade Wind Field Over the Pacific Ocean - Part 1. The Mean Field and the Mean Annual Variation", Hawaii Institute of Geophysics Report HIG-75-1.

southern end of Lanikai and the middle segment that has undergone relatively small fluctuations in the position of the shoreline and beach. Because there is no evidence that the long-term erosion cycle in the vicinity of the project site is likely to reverse, the subject property owner and others to the north will likely suffer progressive erosion damage, and have little recourse but to build shore protection structures to prevent erosion damage to their homes.

About seven years ago, four property owners with unpermitted seawalls were required to remove the walls and replace them with sloping revetment structures. The prevailing opinion at that time was that sloping revetment structures were less harmful to the beach than vertical seawalls. These four contiguous properties are located about 200 feet south of the project site, on the south side of the public right-of-way (TMK:4-3-4:96). The property on the immediate north side of the public right-of-way (TMK: 4-3-4:77) was the last armored property along this southern reach at that time, also with an unpermitted shore protection structure.

After lengthy litigation with the City and County, a settlement agreement was reached with the property owner of parcel 77. The settlement agreement required that the unpermitted rock slope be removed and a system of sand-filled bags would be used initially to construct a protective revetment structure. Because the Lanikai Community Association was considering pursuing a comprehensive plan for replenishment or restoration of sand along the Lanikai shoreline, the sand bag system would serve as interim protection until such time as the beach was restored. However, because of the uncertainty of the beach restoration program and the questionable long-term durability of the sand bag revetment under storm wave attack and continued beach erosion, the property owner would be permitted to construct a permanent rock revetment if and when the sand bag revetment does not serve to adequately prevent erosion and wave damage to the property. The settlement agreement also included the adjacent parcel 76 (on the north side of parcel 77) and parcel 96 (the public right-of-way on the south side of parcel 77).

The sand bag work was initiated in late 1995. By February 1996, SEAbags had been placed along parcels 77, 76 and 98 (parcel 98 is adjacent to subject parcel 74). SEAbags were not only stacked along the shoreline embankment, but were also placed seaward of the shoreline to form a somewhat protective breakwater berm seaward of the beach toe. The offshore berm was apparently intended to function by tripping the waves and, in the process, trapping suspended sand landward of the berm to rebuild

the beach. The SEAbags on the adjacent properties did not survive the 1995-1996 winter season very well. The SEAbag revetment on adjacent parcel 98 had to be rebuilt in February-March 1996, and by that time, the property owner of the two subject parcels had suffered extensive erosion damage. Photos 1 through 8 show the condition of the subject properties and adjacent properties in February-March 1996.

Whether the SEAbag work undertaken on the adjacent parcels aggravated the erosion on the subject parcels is speculative. However, the erosion that was experienced during that 1995-1996 winter season was particularly severe, prompting the subject property owner to also construct a SEAbag revetment as an emergency shore protection measure. The SEAbag revetment on the subject parcels was initiated in April 1996 and was substantially completed in May 1996. Photos 9 through 11 show the completed SEAbag revetment on the subject parcels and the condition of adjacent properties in June 1996. In November 1996, severe winter waves caused additional damage to the already deteriorated SEAbag system on the adjacent parcels, and also caused some damage to the SEAbag revetment on the subject parcels. Erosion damage to the adjacent unprotected property on the north side of the subject parcels also occurred. In early 1997, the subject property owner replaced the damaged SEAbags to restore the condition of his SEAbag revetment.

Photos 12 through 17, taken in May 1997, show the existing condition of the SEAbag revetment on the subject parcels and the condition of adjacent properties. Note that the shoreline fronting the adjacent properties to the south is continuing to be modified by placement of SEAbags, removal of prior SEAbags that were damaged, placement of additional beach sand obtained from offsite source(s), and possibly mechanical re-distribution of sand in the nearshore area. While the details are unclear, apparently the work is being done as part of a demonstration pilot project for beach replenishment by the Lanikai Beach Management Committee.[4] A Departmental Permit for use within the Conservation District was issued by the Board of Land and Natural Resources on June 3, 1996 for the demonstration beach replenishment project. A condition of the permit was the requirement to perform pre-, during-, and post-construction beach profile monitoring and topographic monitoring for at least a year. The first monitoring report for the "Pilot Research Project" was filed in September 1997 by David Lipp, the coastal engineer who is monitoring the project on a volunteer basis. The report

[4]Reference: Conservation District Use Application for a Demonstration Pilot Project for Beach Replenishment on State-owned Submerged Lands Identified as Offshore at Kailua, Oahu, File No. OA-2802, dated May 31, 1996, Department of Land and Natural Resources.

includes time series graphs of beach profiles for five transects along the shoreline. Each graph shows data from four observations made between September 1995 and June 1997. Attached as Appendix A, Lipp's report states that sand movement into the area over time is due to environmental conditions, not the SEAbags themselves. According to Lipp, *"What is important to note is that the sandbags did not prevent the beach from reforming."*

The monitoring report and its conclusions were reviewed in a memorandum dated September 8, 1997, which is attached as Appendix B. In summary, the review:

(1) concurred with Lipp's conclusions and commented on the seasonal movement of sand on Lanikai Beach;

(2) pointed out that there was no evidence of restoration of any dry beach area and that, without the SEAbags protecting the properties, there could have been greater loss of fastlands;

(3) observed that quarterly measurements would account for seasonal changes and provide more meaningful data; and

(4) observed that the monitoring report lacks any description of the work actually performed over the 21-month period, including the amounts of sand added to the littoral system and the various configurations of SEAbags tested.

In any event, the "Demonstration Pilot Project" is limited to a small portion of the Lanikai shoreline and is unlikely to benefit the Dilk's property or the adjacent properties to the north. As stated in the Conservation District Use application, it is experimental in nature. To date, there is no known plan to undertake a comprehensive beach replenishment/restoration program.

In Photo 17, note also that seawalls are now exposed on two parcels to the north of the subject parcels (TMK: 4-3-05:62 and 63). Located on the south side of a public right-of-way (TMK:4-3-05:87), these seawalls were probably built some time ago but were obscured with vegetative growth because this section of beach had accreted and was relatively stable until recent times. With this past winter storm wave damage to the shoreline area, the seawalls are now fully exposed.

In summary, the City and County of Honolulu has made concerted effort over the last ten years to enforce the shoreline setback rules and regulations in a way that would minimize potential impacts to the beach and shoreline at Lanikai. Unpermitted seawalls were required to be replaced with sloping rock revetments, and sand bags were required to be used in lieu of permanent shore protection as an interim measure in hopes that the erosion trend may diminish or reverse. As of this date, the long-term erosion trend is continuing, and there is no evidence of significance difference in beach response related to the types of shore protection structures that have been built. Construction of the proposed seawall would not foreclose the possibility of future restoration of a wide beach strand, whether by natural or artificial means. In the 1960's and 70's, seawalls were built along other portions of Lanikai Beach which were then suffering erosion but have subsequently experienced accretion. Along the middle part of Lanikai Beach, accreted sand has built up the beach in front of the seawalls, in some cases almost to the full height of the walls. The history along Lanikai Beach gives evidence that the presence of a seawall does not preclude natural beach accretion.

4.0 CONSIDERATION OF ALTERNATIVES

Beach restoration and nourishment would be the preferred alternative for the entire southern end of Lanikai. Unfortunately, this alternative is costly 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 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. In fact, sand is periodically barged to Hawaii from overseas locations (such as Australia) for commercial sale to golf courses at premium cost. For beach restoration programs, the actual "cost" of implementation includes the regulatory (EIS/permits), design, initial construction, and periodic nourishment costs. All phases involve substantial commitment of resources, clearly beyond the financial capability of individual residential landowners.

An offshore breakwater structure would be a suitable alternative to mitigate continued erosion damage. A low profile offshore breakwater would not significantly affect scenic views while still serving to dissipate the incoming wave energy, thereby forming a protective area in the lee of the structure. Since littoral sediment transport processes require breaking wave energy to transport the littoral materials at the shoreline, a reduction of the incident wave energy will directly reduce erosion in the lee of the breakwater. Access to the beach and nearshore waters would not be affected by the offshore structure. However, the breakwater must be properly designed to function adequately. For example, it must have adequate dimensions (length, width, height) to dissipate storm wave energy, it must be built with materials that will maintain its structural integrity under storm wave attack (large boulders or concrete armor units), and it must not affect nearshore circulation in a way that may cause water quality problems or dangerous currents. Offshore breakwater construction is costly and carries a higher risk than onshore construction. Repair or maintenance of the

structure, if damaged due to an extreme storm event, is also very costly due to difficulty in accessing the structure with conventional land equipment.

For individual residential property owners, seawalls and revetments are the most viable methods of protecting the shoreline from wave attack. Seawalls are vertical or near-vertical structures, typically concrete or grouted rock masonry walls. Revetments are sloping structures typically constructed using rock of sufficient size to remain stable under design wave attack, although there are a variety of manufactured systems and materials used to build sloping revetment structures. Seawalls are generally less costly to construct than revetments since they can be built using smaller building materials than rock revetments and require much less total quantity of building material. Near-vertical seawalls also occupy less space along the shore than sloping revetments, and their narrow footprint maximizes use of the backshore areas as well as minimizing encroachment into the public shorefront seaward of the structure.

For sandy shorelines, vertical impermeable seawalls are generally not as desirable as permeable rock revetments because of their high reflectivity, which can cause scouring of the sand in front of the structure and can lead to undermining at the base of the wall if the seawall is not founded on hard material. For beach environments, rock revetments are more effective in dissipating wave energy and are not prone to catastrophic damage due to its flexibility. However, revetments must be properly designed such that the armor layer is stable under design wave attack, and with proper provisions for underlayer(s) and filter material to prevent leaching of the foundation or backfill material through the voids in the rock layers. Revetments can also suffer scouring of sand in front of the structure, and the revetment toe must be designed to prevent undermining at the base of the rock slope, which can lead to slumping or unraveling of the rock slope. Because revetments occupy substantial space on the shoreline due to their sloping face and multiple rock layers, in some cases there is insufficient space between the certified shoreline and the dwelling to construct a revetment because of the substantial erosion that has already occurred.

To construct a sloping revetment on the Dilks' property would entail building a portion of the structure seaward of the certified shoreline, within the jurisdiction of the State Conservation District. This would necessitate applying for and obtaining a Conservation District Use Permit from the State Board of Land and Natural Resources. It could also require a permit from the U.S. Army Corps of Engineers.

The placement of SEAbags for interim shore protection, as has been used at the subject property to provide a protective revetment slope, is effective but cannot be considered a permanent measure. The bags are prone to damage from storm wave attack and vandalism, and can require frequent and continual maintenance. The cost of materials and labor to install the bags is less than $300 per linear foot of revetment (assuming that in-situ sand is used to fill the bags). But considering the potential long-term maintenance requirement, the total cost over 25 years can be greater than the cost of initially constructing a permanent shore protection structure. 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 probably is more reflective than a rock revetment, for the same slope. 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 safety problems 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.

5.0 DESCRIPTION OF PROPOSED ACTION

Because of the severity of the shoreline erosion fronting the subject parcels, there is little space between the certified shoreline and the house and swimming pool structures. The only type of structure which can physically be constructed landward of the certified shoreline (county jurisdiction only) is a near-vertical seawall. As discussed in Section 4.0 above, constructing a sloping revetment would entail extending the structure seaward into the State Conservation District and would require obtaining a Conservation District Use Permit. Although the Department of Land and Natural Resources has stated that it favors a vertical seawall in this situation, a plan for a sloping revetment has been prepared and is provided as an alternative to the vertical seawall (see Section 5.2 below).

5.1 Proposed CRM Seawall

A concrete reinforced masonry (CRM) seawall is a practical and visually attractive type of shore protection which has been constructed on many lots throughout Lanikai Beach. The seawall would be built landward of the certified shoreline[5] fronting both subject parcels. The seawall would extend along approximately 150 feet of shoreline frontage, with short return sections at each end. Figure 5 shows the proposed layout plan for the seawall and Figure 6 shows a typical section prepared by the property owner's structural engineer.

The top of the seawall would be at elevation 9 feet above MSL, which is at or slightly above the existing grade of the property shoreline. The bottom of the wall would be placed 3 feet below MSL (or on hard material if encountered at shallower depth). Therefore, the total height of the wall is 12 feet. The existing SEAbags that are still intact would be left in place along the seaward base of the seawall, to the extent practicable, to provide additional scour protection and to facilitate construction of the wall. At present, there is little or no dry sand beach fronting the project site (i.e., waves reach the SEAbag revetment during high tide). Therefore, if not for the existing SEAbags, it would be very difficult to build the seawall because wave uprush would inundate the work area.

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[5]The February 12, 1996 shoreline survey was submitted for certification. The shoreline was certified by the State Land Surveyor on June 12, 1997.

The seawall would be constructed of rock set with cement mortar, using very large rocks at the base of the wall and smaller rocks near the top. The bottom width of the wall would be 7.5 feet. Because of the requirement to build the seawall entirely landward of the certified shoreline, the landward base of the wall would be within about 8 feet of the foundation of the house at its closest point, and within about 10 feet of the concrete slab of the pool. Temporary shoring may be required to stabilize the excavation side slope during construction.

Because the top of the wall would not extend much above the existing shoreline elevations, wave overtopping can occur during high tides and storm wave attack. Therefore, weepholes would be provided to relieve hydrostatic pressures that could result in damage to the wall or formation of sinkholes landward of the wall.

To facilitate access to the beach, stairs would be constructed at about midpoint near the boundary between the two subject parcels. No portion of the stairs would extend seaward of the certified shoreline.

At both ends, the seawall would turn mauka and extend approximately 20 feet landward along the side property boundaries. The flank sections of the wall would be virtually identical to the seaward section, except that the footing need not be extended as deep. Because wave crests are nearly parallel with the beach, the flank walls will not be subject to scouring problems. Their function is to prevent erosion on the back-side of the seawall in the event that the adjacent properties are not protected and are allowed to erode. Because the seawall must be built entirely within the Dilks' property, there is very little room to build the flank sections.

The top of the wall will have a green chainlink fence, bronze anodized railing or similar dark-colored fence or railing approximately 42 inches above grade. This is needed for safety.

5.2 Revetment Alternative

As a proposed alternative, a sloping rock revetment would be built along the certified shoreline fronting both parcels. It would extend along the 150 feet of shoreline frontage, with short return sections at each end. Figure 7 shows the proposed layout plan for the revetment, and Figure 8 shows a typical section.

The toe of the revetment would be placed 3 feet below M$L and would rise at a 2:1 slope—2 horizontal to 1 vertical—to an elevation approximately 9 feet above MSL, at or slightly above the existing grade at the property shoreline. The revetment would be approximately 18 feet wide from top to bottom, with a 4-foot crest at the top that would be level with the grade of the property.

As shown in the drawings, the revetment would be aligned in a straight line across the front of the properties and sited as far landward as possible. On the northern parcel, the toe of the revetment would extend to the seaward Land Court property boundary. On the southern parcel, the toe would be landward of the Land Court property boundary. On both parcels, the revetment would extend seaward of the certified shoreline, so that a portion would be in the Shoreline Setback, administered by the City, and a portion would be in the Conservation District, administered by the DLNR. Both a Shoreline Setback Variance and a Conservation District Use Permit would be required.

Based on the plans prepared by the applicant's structural engineer (Figure 8), the following describes the main elements of the revetment:

- Filter fabric and a bedding layer of spalls to 10-inch stones placed on a slope of 2H: 1V. The filter fabric/ bedding layer serves as a foundation for the armor stones to prevent differential settlement into the sand.

- A 2-stone-thick layer of armor stones 900-1,600 pounds in weight (stones of approximately 2-foot diameter), which are large enough to prevent dislocation by storm waves. The larger rocks would be placed on the outer surface. The ends of the filter fabric would be wrapped around large end stones at the crest and toe of the revetment.

The ends of the revetment would be armored to prevent erosion from waves wrapping around the structure, in the event that the adjacent properties are not protected and are allowed to erode.

The SEAbags currently protecting the shoreline of the property would be opened and the sand released. Alternatively, some or all of the SEAbags may be moved away from the Dilks' property and reused in the Lanikai Beach Management Committee's pilot project.

6.0 POTENTIAL LITTORAL IMPACTS

Neither the proposed seawall nor the alternative sloping rock revetment will alter the existing littoral processes affecting the site. The entire southern end of the Lanikai shoreline has been experiencing net long-term erosion since 1970, and erosion has been steadily progressing northward into the middle segment of the Lanikai coast. Unless permanent shore protection is constructed, there is a high risk of damage to the foundation of the house and pool in the near term.

The seawall will not affect longshore sediment transport processes, but 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 the Lanikai 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 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[6], 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. Recent field studies conducted by 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-

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[6]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.

vertical seawall as well as on the adjacent unprotected beach.

The erosion that is occurring along the Lanikai 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 building the proposed seawall at the Lanikai properties.

In the long-term, passive erosion will likely continue to affect adjacent unprotected properties. However, the consequence of not building the subject shore protection structure is the eventual loss of the house and other residential improvements to erosion damage. Because the existing improvements on the subject parcels (consisting of a 3,000 square feet slab-on-grade custom-designed house and adjacent pool) cannot feasiblely be relocated, the economic and environmental consequences of erosion damage to these improvements are very significant.

If and when a major beach replenishment/restoration program is implemented, the subject seawall and other shore protection structures will not adversely affect the design and performance of the restored beach. In fact, the existing shore protection structures will be beneficial to the long-term beach nourishment program. Periodic nourishment requirements cannot be predetermined with a high degree of assurance (because erosional forces are dependent on the wind/wave climate), and therefore severe erosion of the beach can result in damage to unprotected residential properties and improvements before renourishment can be implemented. However, if properties are already protected with a seawall or other shore protection measure, then this provides flexibility in the timeframe for planning and implementation of subsequent renourishment (for example, time to obtain the necessary funding, and to design and implement the renourishment), without the worry of imminent erosion or wave damage to residential improvements. Thus, a long-term beach replenishment/restoration program can be designed for the sole purpose of maintaining recreational beaches, rather than to serve in the additional capacity of providing shoreline protection.

Potential water quality impacts during construction of a seawall would be temporary and minor, since the seawall would be constructed entirely landward of the certified shoreline. To the extent practicable, the existing SEAbags would be left in place to form a protective berm, to protect the work area from wave uprush. This would minimize wave erosion and turbidity during the excavation to place the base of the seawall. Once the seawall is completed to a height of about 4 feet above MSL (above the height of normal wave uprush), there will be no potential water quality impacts during the remainder of the wall construction.

With respect to construction of a sloping revetment, there would be minor water quality impacts during excavation and placement of the stones. These impacts can be mitigated by performing the excavation during periods of low tide and using the larger stones to form a temporary berm that would protect the work area from wave action. This would minimize wave erosion and turbidity during excavation and would facilitate construction. There would be short-term impacts to beach access and use along this shoreline reach because, for safety reasons, public access within work limits may be restricted during the period of construction.

Photo 1: View southward showing eroded condition of subject property at TMK:4-3-4:74. (Note sand bags on beach south of subject property.)

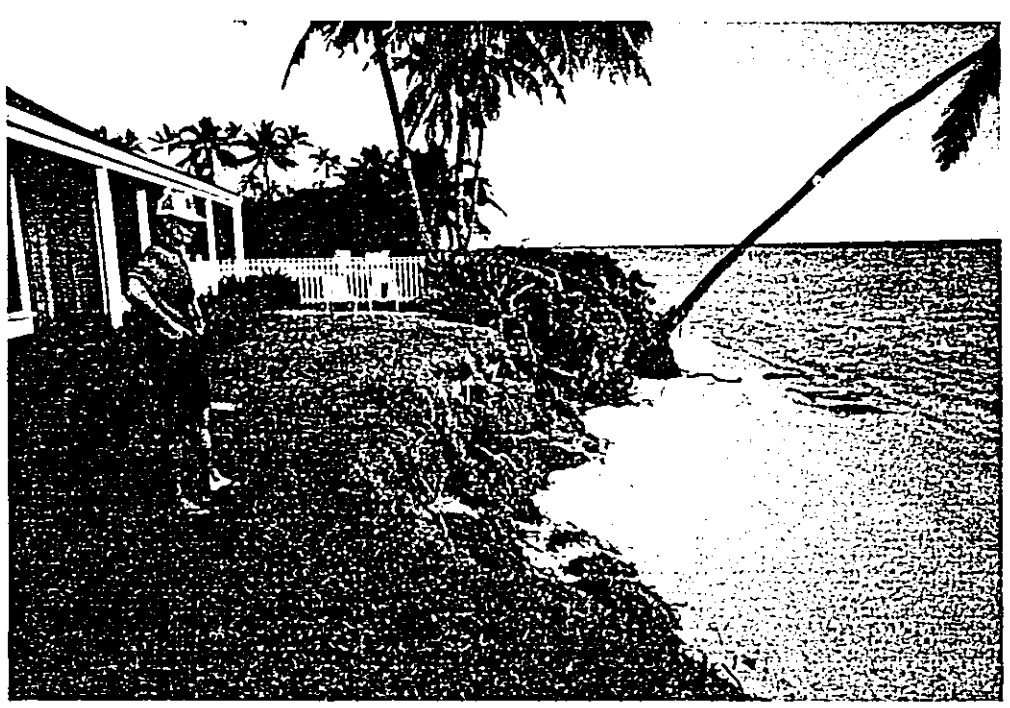

Photo 2: View northward showing eroded condition of subject property.

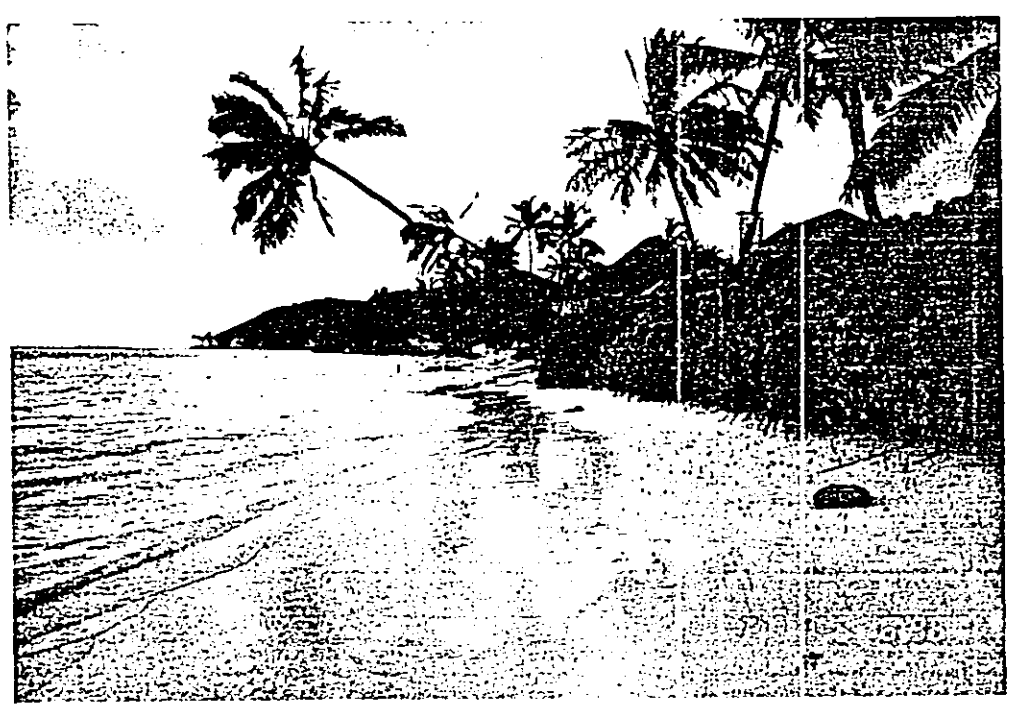

Photo 3: View southward fronting subject property TMK:4-3-5:61.

DATE OF PHOTOS: FEBRUARY 6, 1996 (Tide approx. +1' MLLW)

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Photo 4: View northward showing damaged condition of sandbags fronting adjacent parcel 98 (Carpenter).

Photo 5: View southward showing sandbags fronting parcels 76 (Olds) and 77 (Davis).

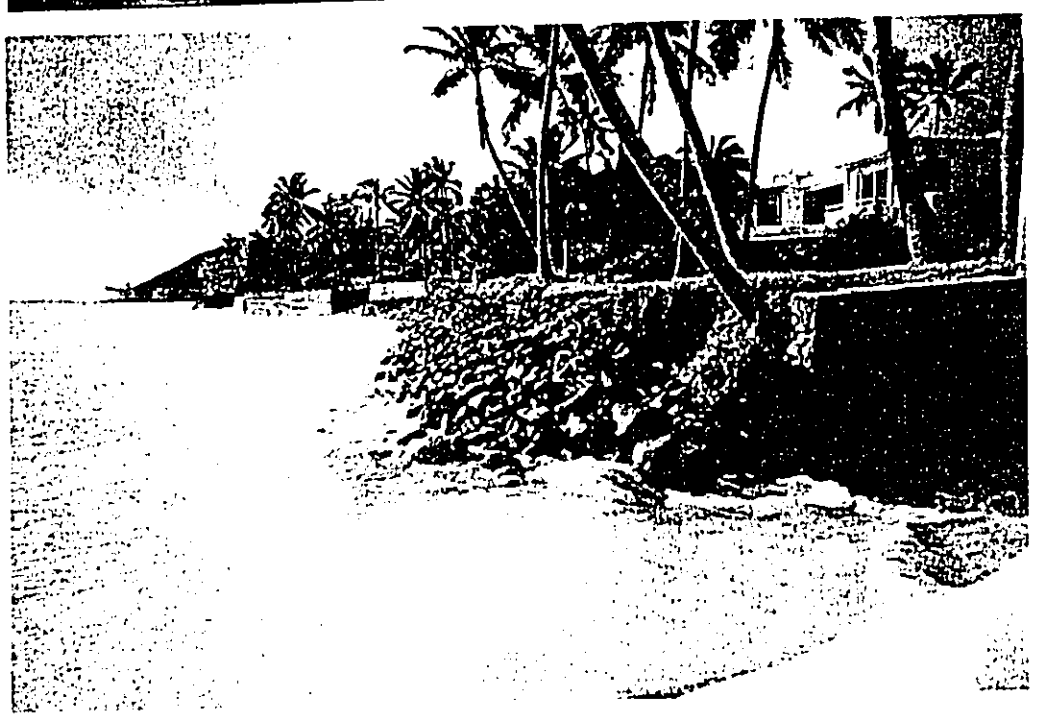


Photo 6: View southward showing condition of shoreline south of parcel 96 (public right-of-way).

DATE PHOTOS: FEBRUARY 6, 1996
(Tide approx. +1' MLLW)

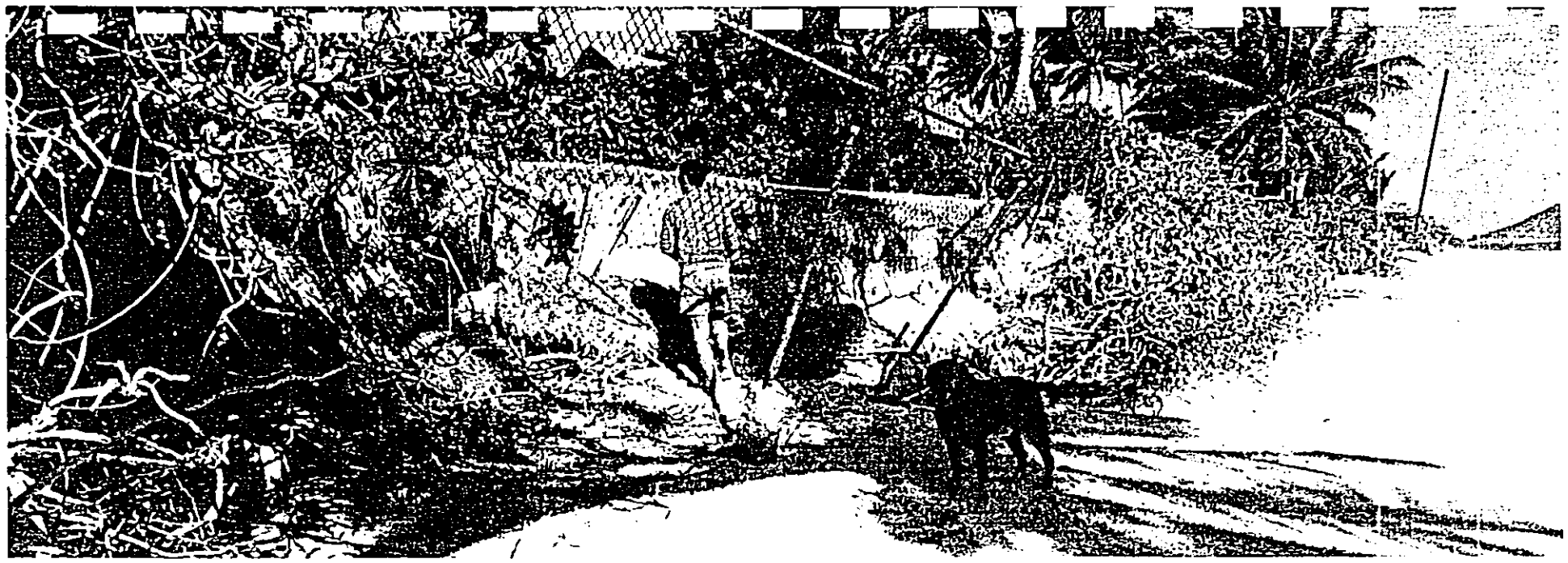


Photo 7: Eroded condition of subject property at TMK:4-3-5:61. (Note erosion of shoreline vegetation and undermining/collapse of fence.)

Photo 8: View southward showing rebuilt sand bag revetment on adjacent parcel 98 (Carpenter).

DATE OF PHOTOS: MARCH 14, 1996 (Tide approx. +0.3' MLLW)

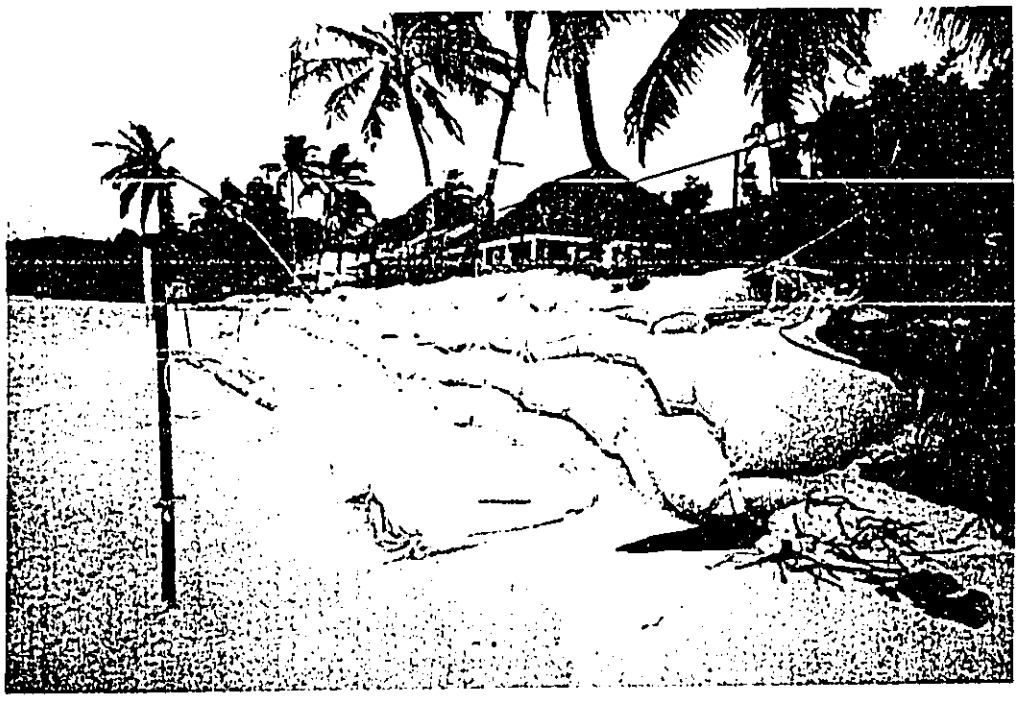


Photo 9: View southward showing completed sand bag revetment on subject property TMK:4-3-5:61.

Photo 10: View northward from parcel 76 (subject property TMK:4-3-4:74 is in background).

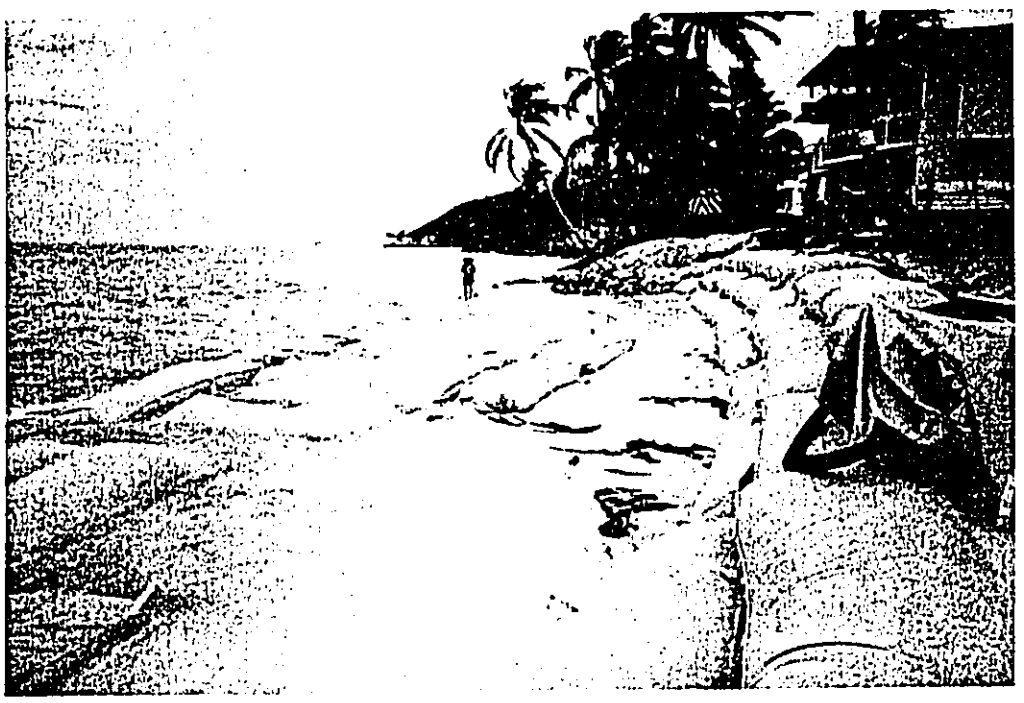


Photo 11: View southward from parcel 76.

DATE PHOTOS: JUNE 30, 1996
(Tide approx. +2' MLLW)

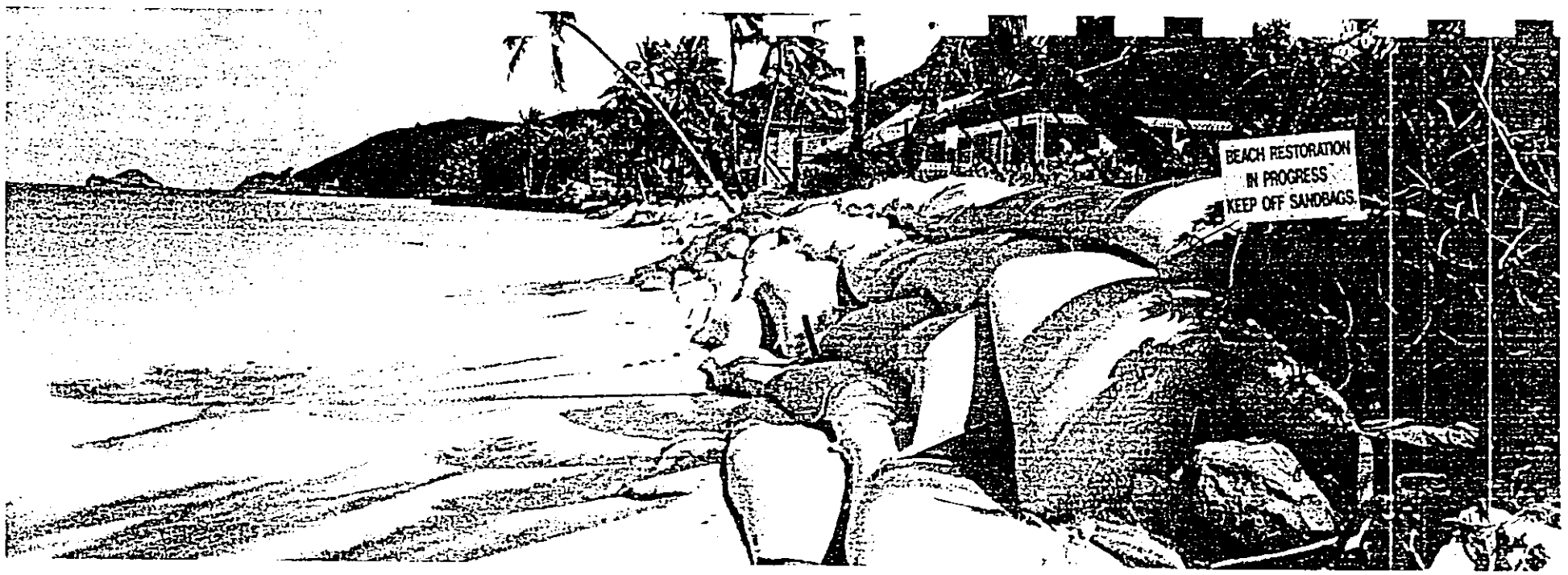


Photo 12: View southward fronting subject property TMK:4-3-5:61 showing condition of sand bag revetment after repairs completed.

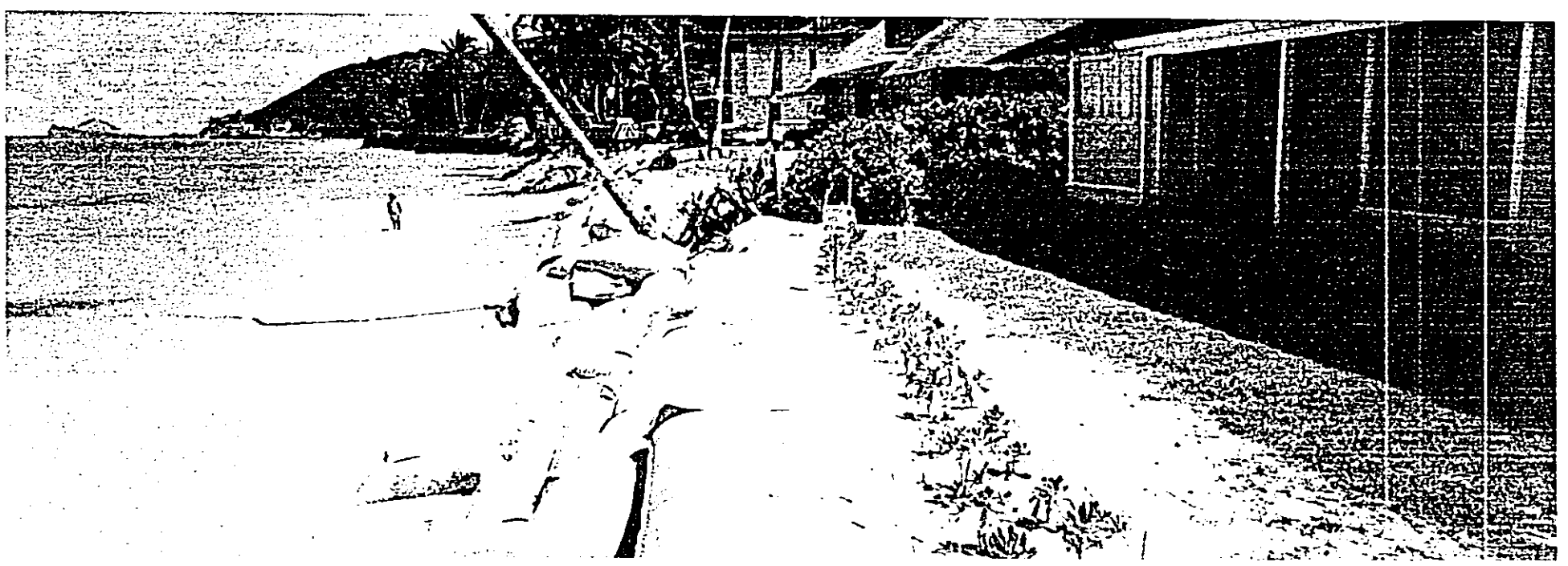


Photo 13: View southward showing shoreline condition in front of the house on subject parcel TMK:4-3-4:74.

DATE OF PHOTOS: MAY 9, 1997 (Tide approx. +1' MLLW)

Photo 14: View northward showing condition of shoreline fronting adjacent parcels 76 (Olds) & 98 (Carpenter). Subject parcel is in background.

Photo 15: View southward fronting parcel 77 (Davis). Note stockpiled sand and new sand bags on this property.

DATE OF PHOTOS: MAY 9, 1997 (Tide approx. +1' MLLW)

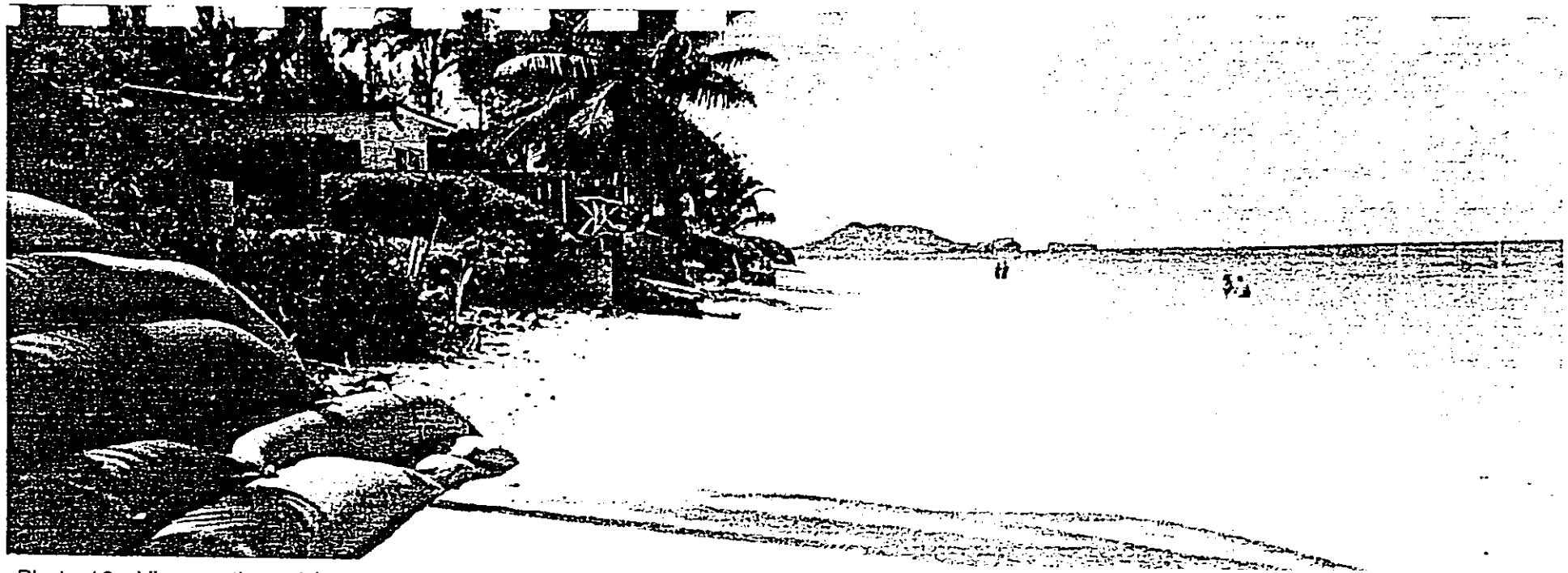


Photo 16: View northward from north end of subject parcel TMK:4-3-5:61 showing eroded condition of adjacent shoreline.

Photo 17: View southward from public right-of-way showing exposed seawalls on parcels 62 and 63 located north of subject parcel.

DATE OF PHOTOS: MAY 9, 1997 (Tide approx. +1' MLLW)

RECEIVED AS FOLLOWS

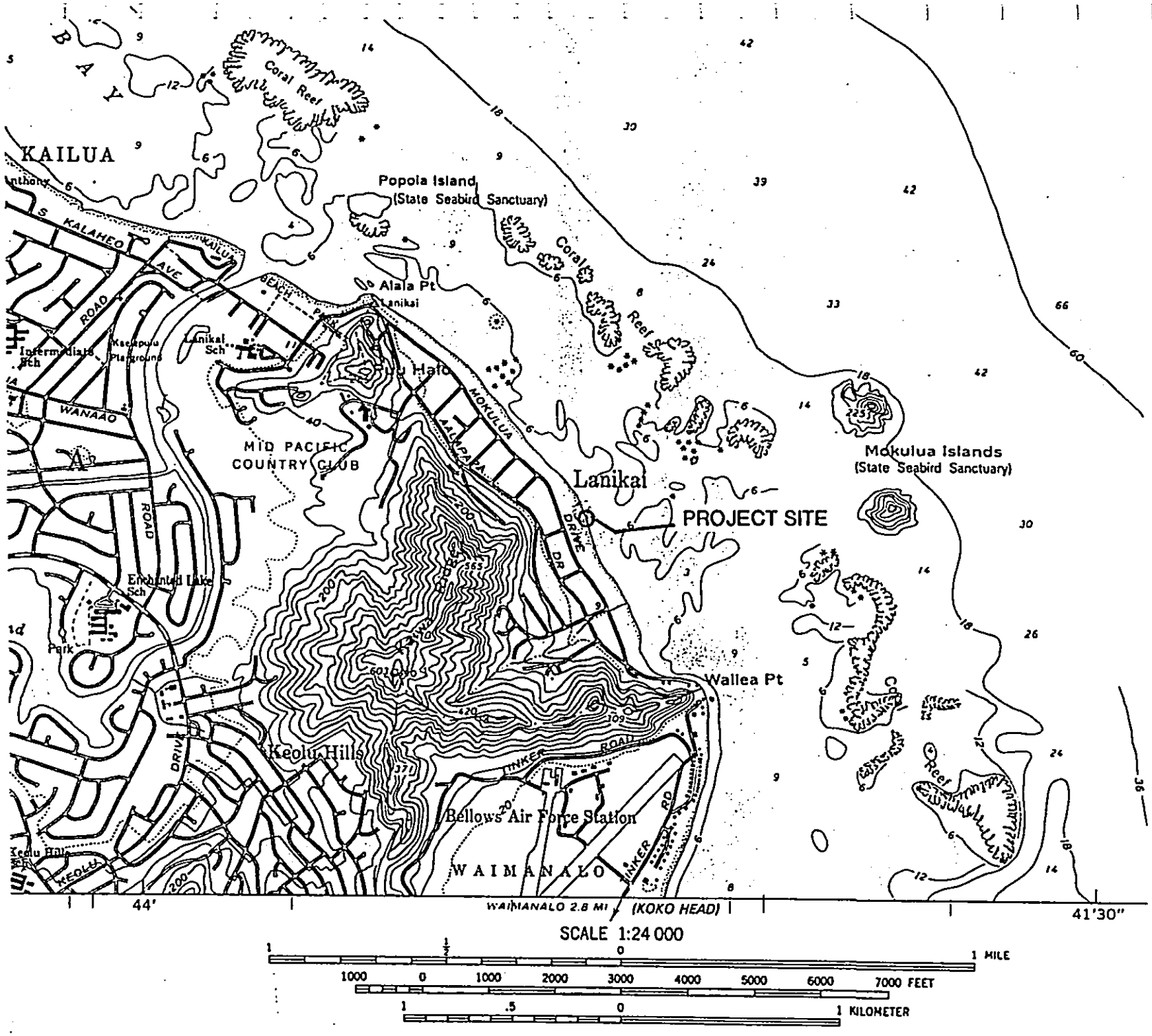


FIGURE 1

RECEIVED AS FOLLOWS

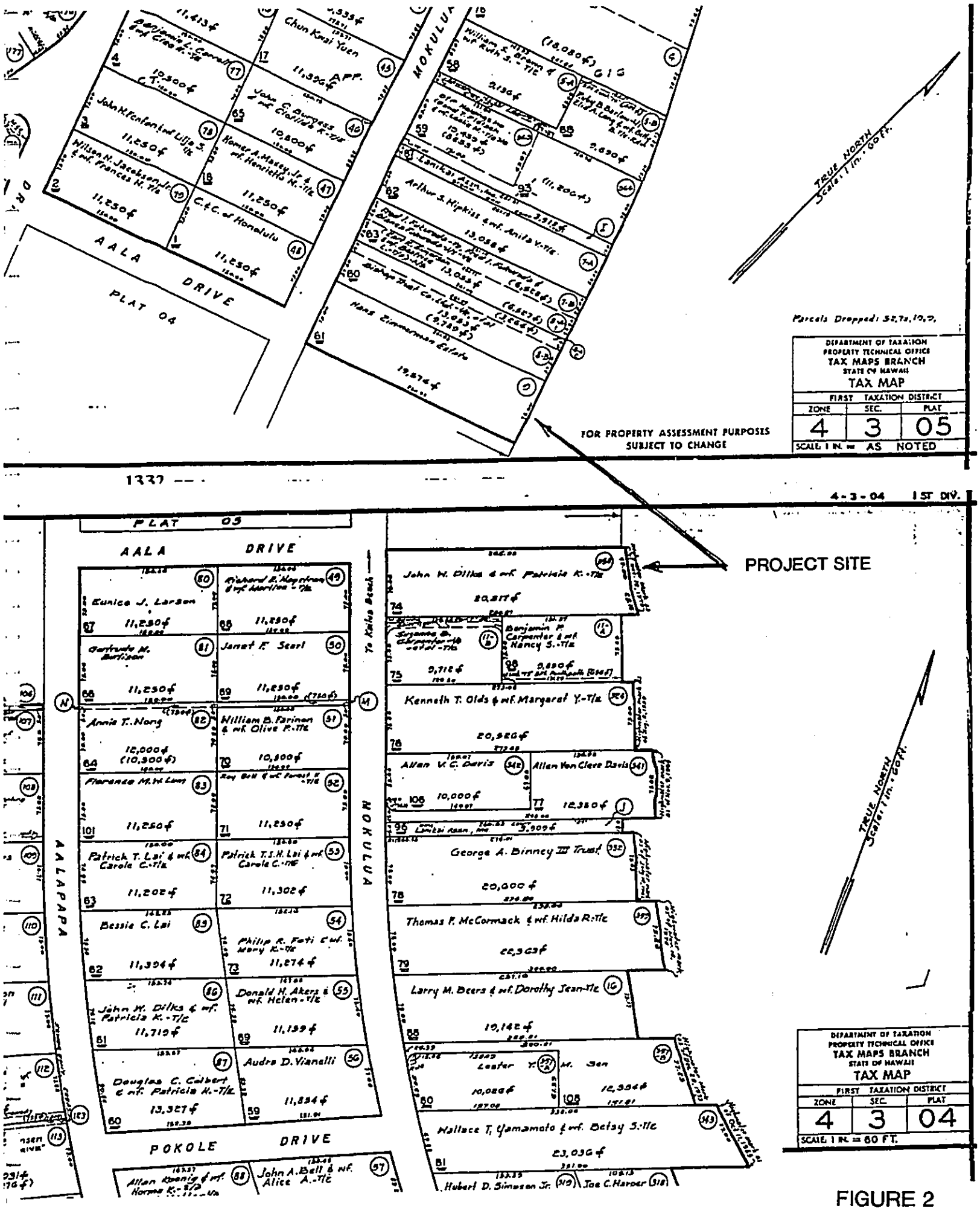
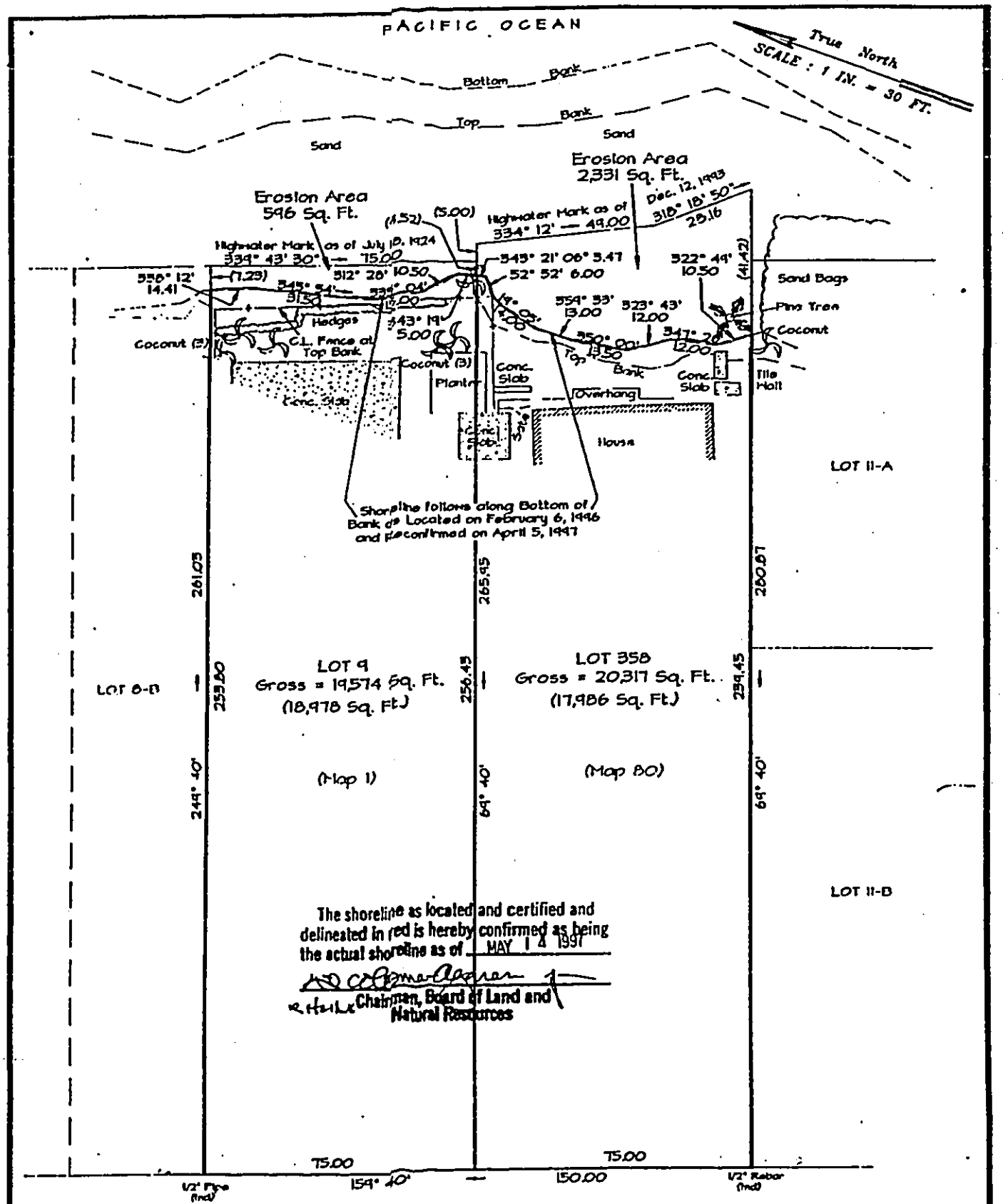


FIGURE 2

RECEIVED AS FOLLOWS



KENDALL N. H. HEE
LICENSED PROFESSIONAL LAND SURVEYOR
No. 5649
HAWAII, U.S.A.

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

Kendall N. H. Hee

Shoreline Certification

Lot 358 as shown on Map 80
and Lot 6 as shown on Map 1
of Land Court Application 616
at Lanikai Beach Tract, Kailua, Oahu, Hawaii
T.M.K. : 4-3-04 : 74 And 4-3-05 : 61

FIGURE 3

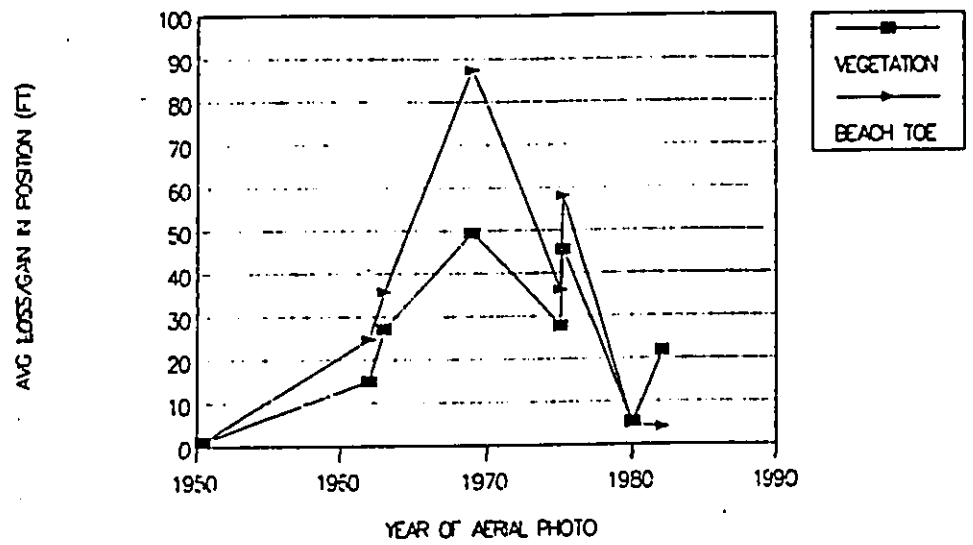


Figure 4a: Average cumulative movement for a 2,500-foot stretch of shoreline from Wailea Point northward to the project site.

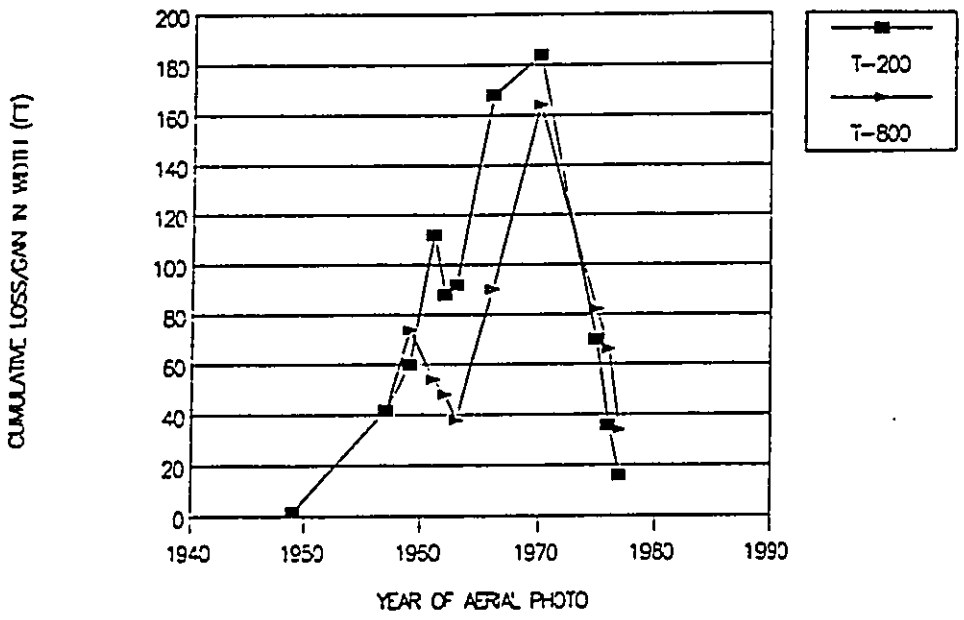
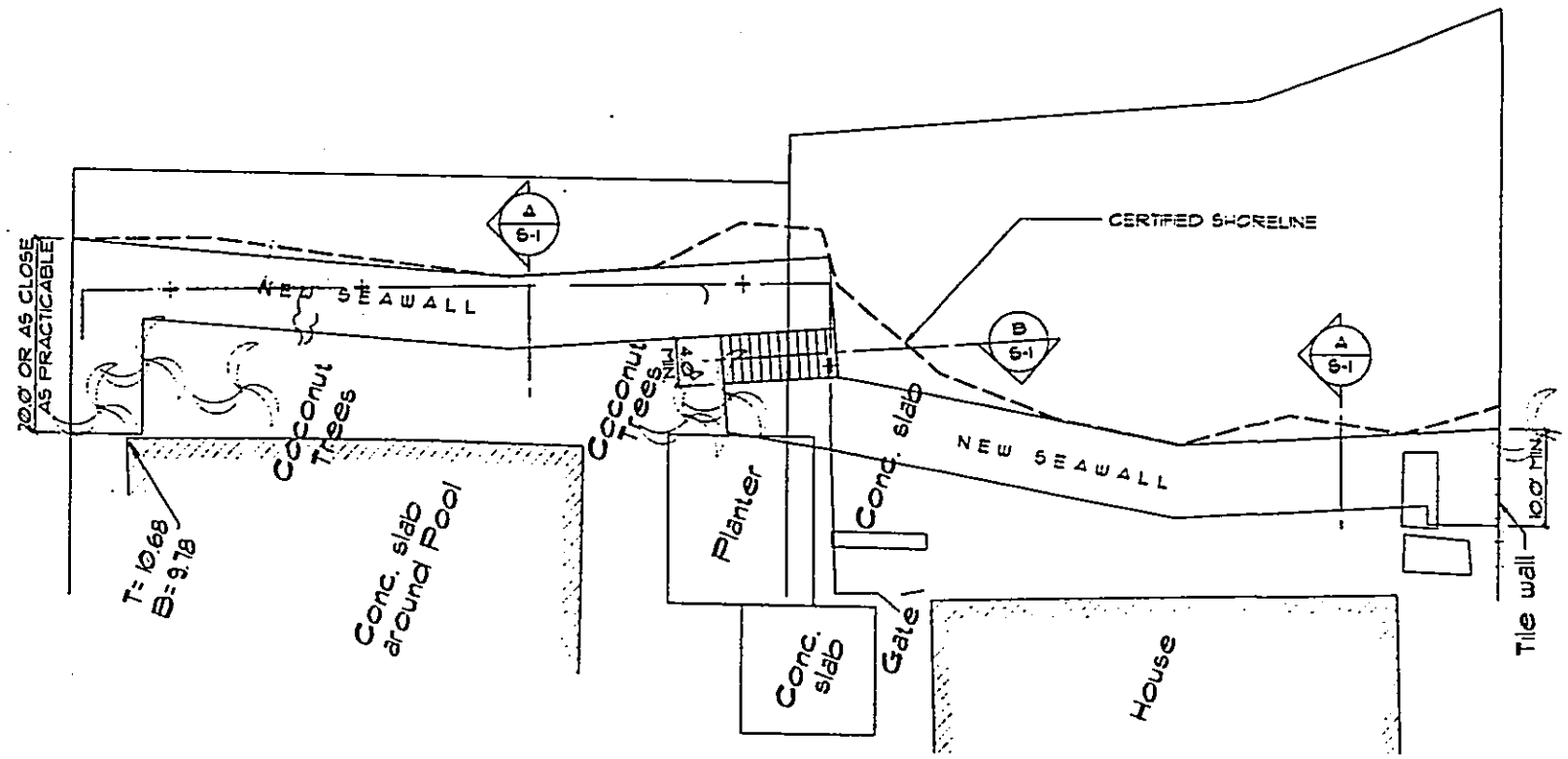


Figure 4b: Cumulative movement of the shoreline at Kailua Beach Park at locations 200' and 800' from the boat ramp.

(From "HAWAII SHORELINE EROSION MANAGEMENT STUDY, Overview and Case Study Sites - Makaha, Oahu; Kailua-Lanikai, Oahu; Kukuiula-Poipu, Kauai", by Edward K. Noda and Associates, Inc. and DHM, Inc., for the Hawaii Coastal Zone Management Program, June 1989.)

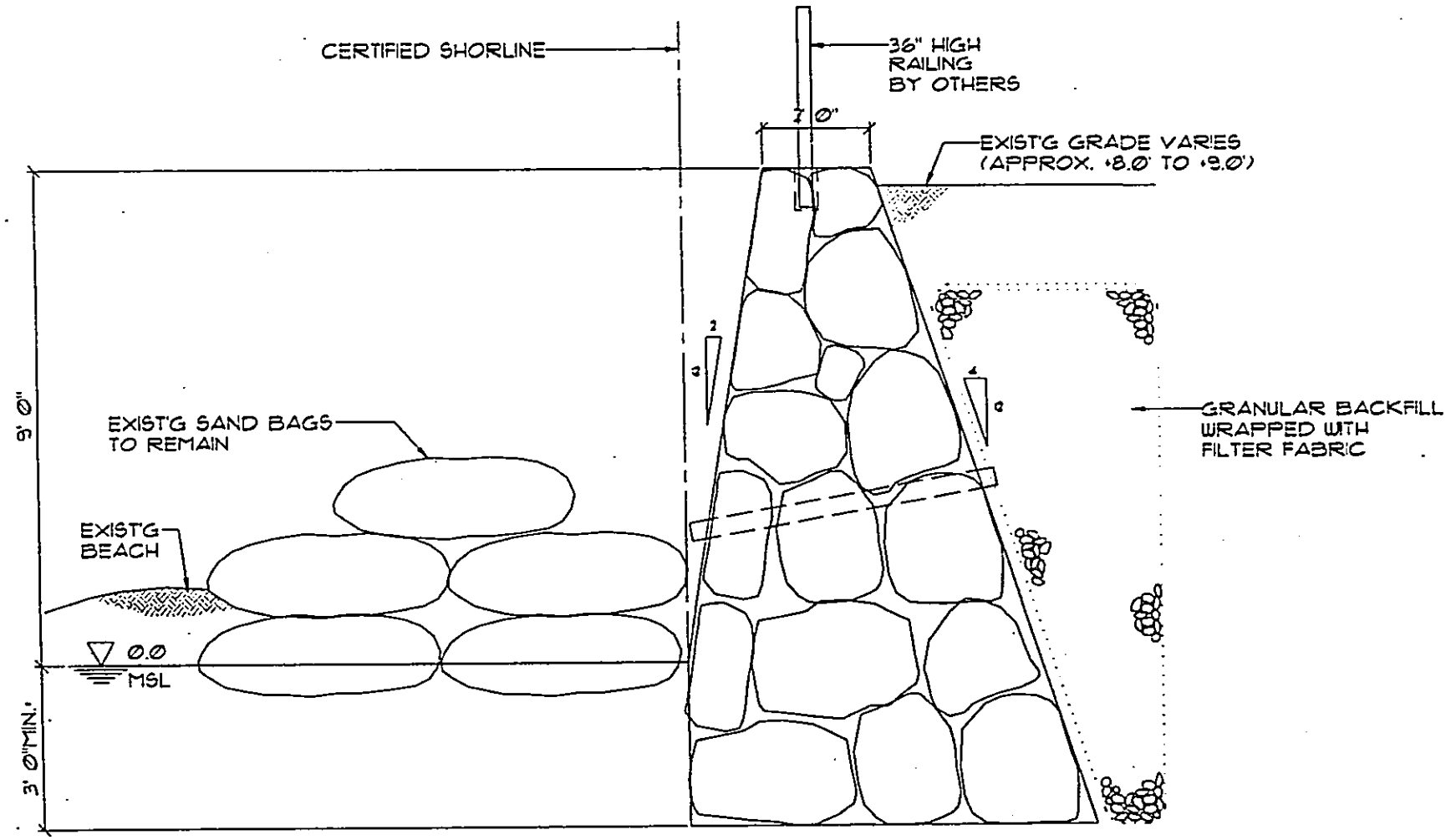
FIGURE 4



WALL LAYOUT PLAN

SCALE: 1" = 20'

FIGURE 5



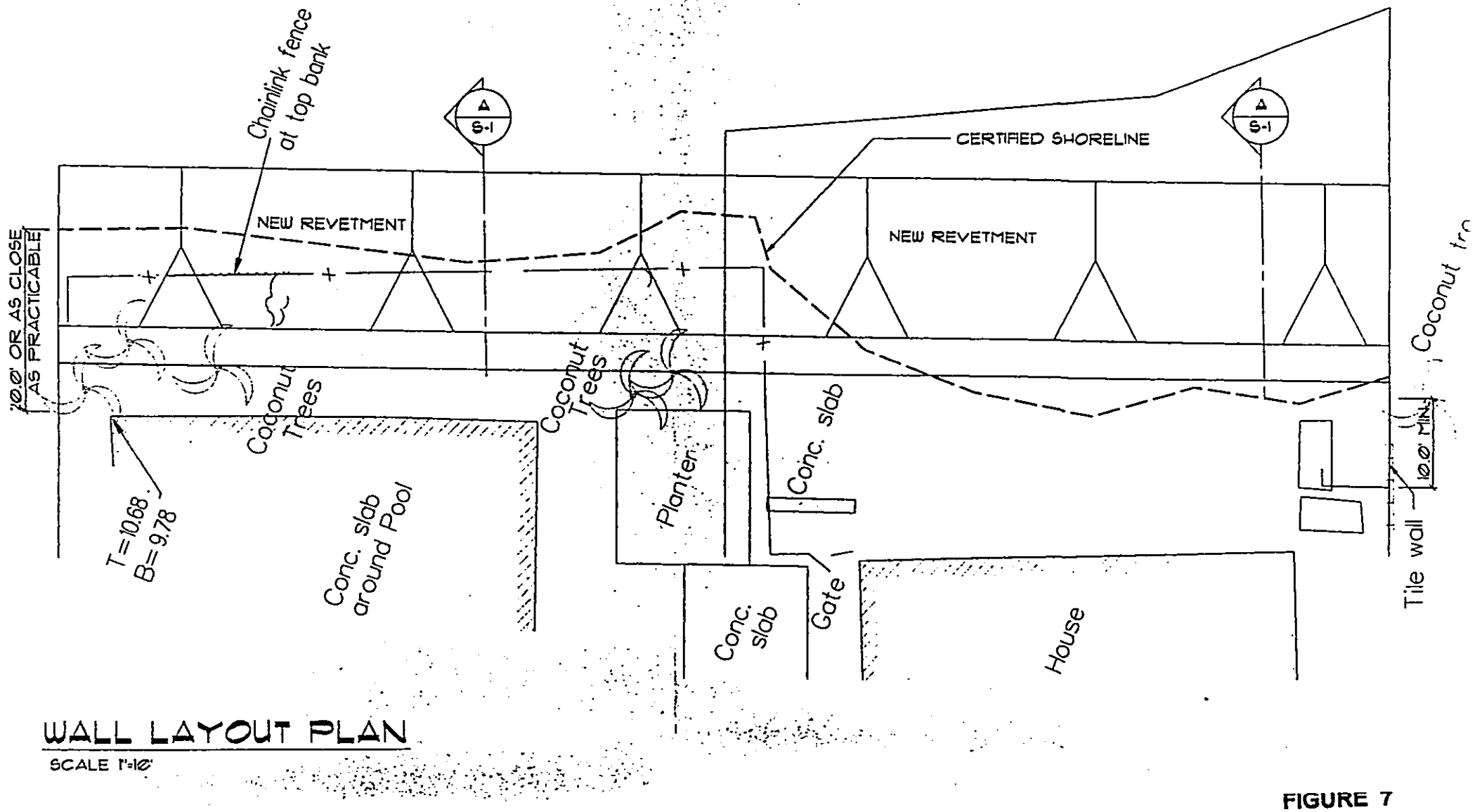
*EMBED 3'-0" MIN. BELOW MEAN SEA LEVEL UNLESS FOUNDED ON SOLID NON-ERODIBLE SUBSTRATA

SECTION THRU NEW CRM SEAWALL

A
S-1

SCALE: 1" = 3'

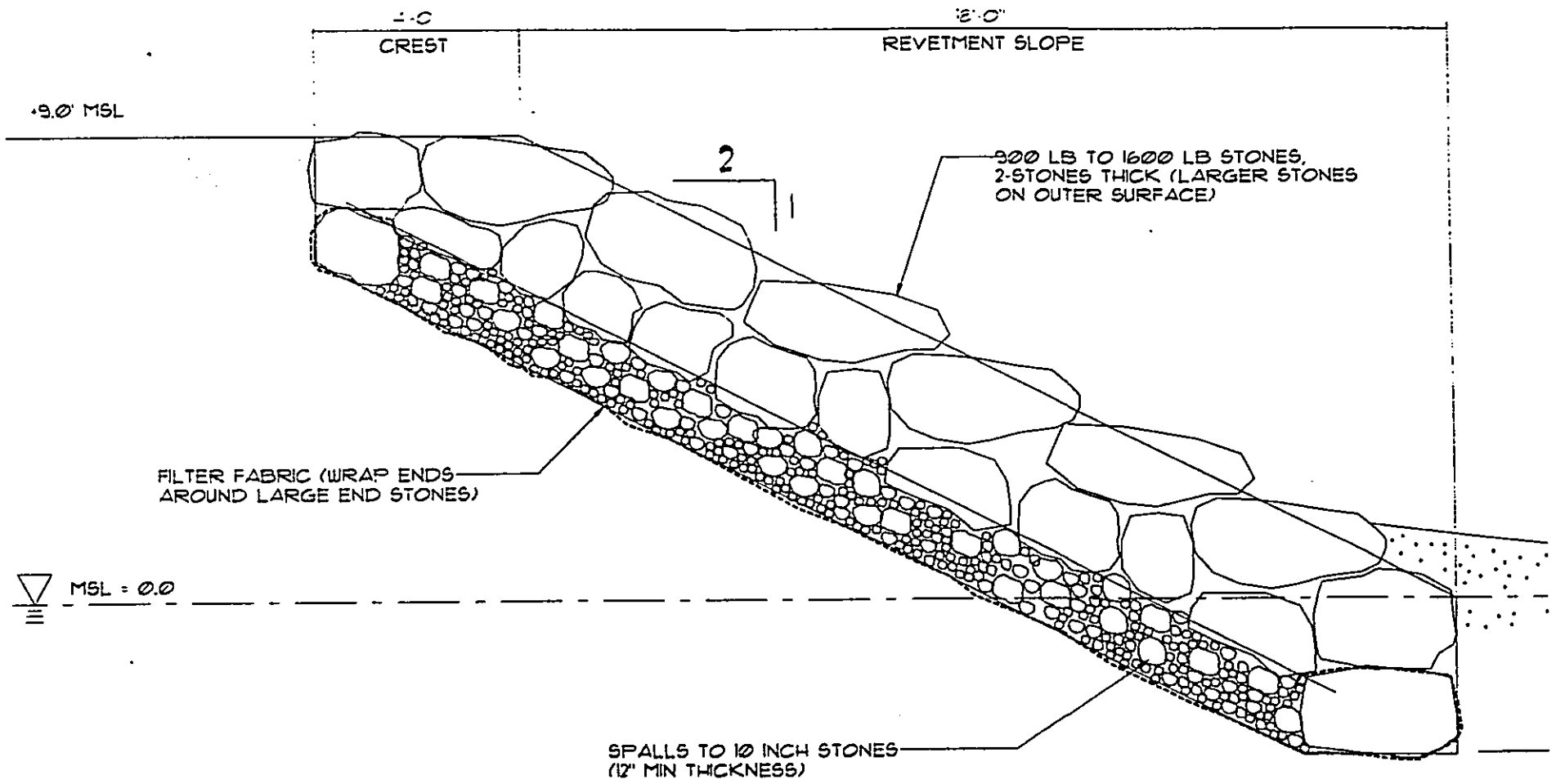
FIGURE 6



WALL LAYOUT PLAN

SCALE 1"=10'

FIGURE 7



TYPICAL SECTION THRU REVETMENT

SC 1/2" = 1-0"

FIGURE 8

Appendixes A and B

A. Lanikai Beach Pilot Research Project
Monitoring Report - September 1997

B. Review of Monitoring Report

LM

Lanikai Beach Management Committee

1343 Mokulua Drive
Kailua, Hawaii, 96734

July 24, 1997

Michael Wilson, Chairman
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI, 967809

The Lanikai Beach Management Committee has prepared this report as an informational update for the various City, State and Federal agencies that were involved in the planning and permitting of our pilot project.

David Lipp, our coastal engineering consultant, has provided a series of beach profiles covering the period from September, 1995 to June, 1997. He includes a brief written assessment.

A photographic record of the area has been kept since December, 1995. Views up and down the beach are taken once a month at low tide. Prior to December, 1996, the tide height for photographs was random. We are now trying to standardize the time for shooting a photo so that changes in beach profile are more apparent. We have included a few of these pictures as a visual record of the project. More are available upon request.

We have several observations on the use of the bags as experienced over the last months:

1. The sandbags placed along the escarpments fronting the subject properties have provided protection from further erosion of the fastland. They have been shored up in several spots, but no moreso than boulder revetments that line the area to the south of the experiment. They would appear to be working well as a means of protecting the private property they front.

2. The "perched beach" has provided continuous lateral access to the open beach from the public right of way. After the erosion became acute in 1994, such access was unavailable to the public until the sandbags were positioned in this format.

3. The sandbags are "user friendly". Children play on and around them, fishermen fish from them and sunbathers sit on them. Walking on them is not difficult, as opposed to walking on boulders at the water's edge.

4. Repositioning the bags can be done relatively quickly with the right equipment. Mr. Correa has developed a method of moving the bags from spot to spot and has reconfigured the layout several times in the course of the experiment. (See photo)

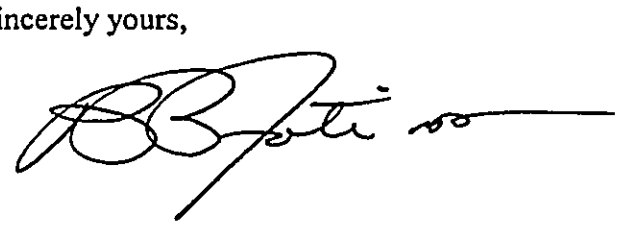
APPENDIX A

5. Since the bags have been in the water schools of halalu (young akule) have formed in the nearshore water where none were observed before. Sea turtles have also been seen grazing on the limu that grows over the submerged bags.

6. The smooth fabric bags become slippery when submerged, but the heavily textured bags, even though covered with limu, are not hazardous underfoot.

The project has another year to go under the terms of the permit. We would like to continue.

Sincerely yours,



Philip R. Foti

Summary of observations on the Lanikai Beach Revetment Alternative Pilot Research Project (9/95 to 7/96):

The sand movement in Lanikai is primarily longshore and its direction is dependant on the wind and wave directions. In the test area there is little sand transport during a mild wind and wave climate from any direction. Strong trade winds and associated wind waves produce a slight northwesterly transport (toward Kailua). Strong easterly winds and waves produced from a long duration easterly wind produce a strong northwesterly transport. North winds and north swells produce a southeasterly transport (toward Waimanalo). The trend is thus slow sand movement toward Kailua during the summer, increased sand movement toward Kailua during the fall (when the trades tend to turn easterly and increase in velocity), and variable movement during the winter dependant on wind and swell. The trend during the winter and spring is for sand movement towards Waimanalo.

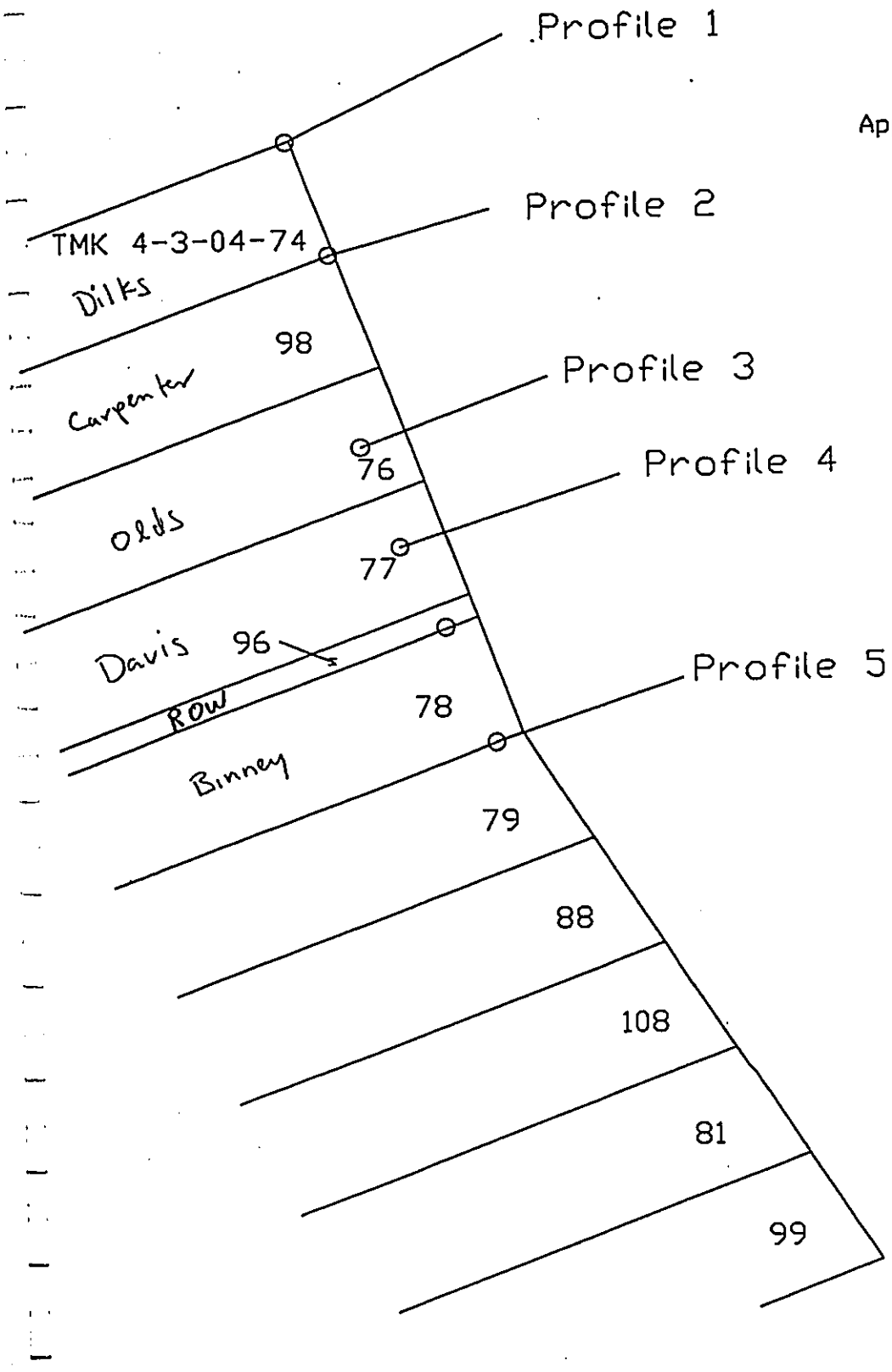
'Between the period of 9/2/95 when the first profile was taken, and 10/5/96, there was considerable loss of sand from the area fronting Dilks and Carpenter (profiles 1 and 2). During the period of 10/5/96 and 6/8/97, all the sand returned to this area, the 6/8/97 profile is very similar to the 9/2/95 profile. This sand movement into the project area during late '96 and early '97 is due to environmental factors and not the sandbags themselves. ***What is important to note is that the sandbags did not prevent the beach from reforming.***

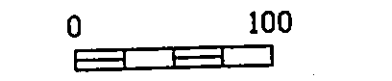
The profiles fronting the Olds property shows no real loss between 9/95 and 10/96, but does show an increase by 6/97. Again, mother nature moved the sand, but the bags did not prevent the beach from forming.

The Davis property bags jut out slightly from the neighboring bags, this has turned out to be beneficial to the beach fronting the neighboring properties. During the winter the sand accumulated fronting the Olds property, during the summer and spring the sand accumulates fronting the public right of way to the beach. The sand accumulates because a small longshore transport gradient is created due to the sandbags fronting the Davis property. This effect is shown in the Binney profile of 10/5/96. Binney is to the southeast of Davis, during tradewind weather the sand accumulates fronting the right of way between Binney and Davis. This has enhanced public access.

I recommend continuing the pilot program.

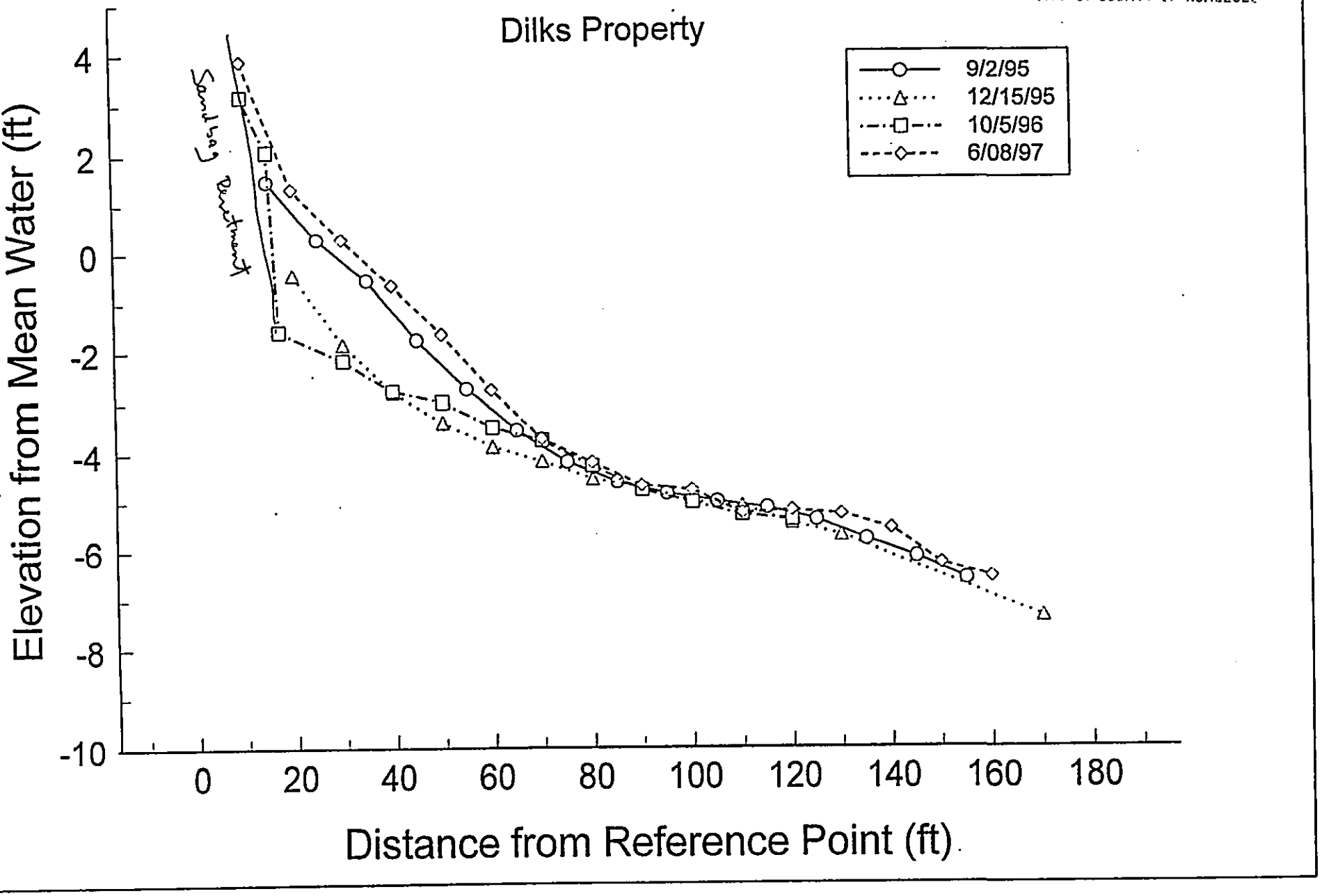
David Lipp
Coastal Engineer



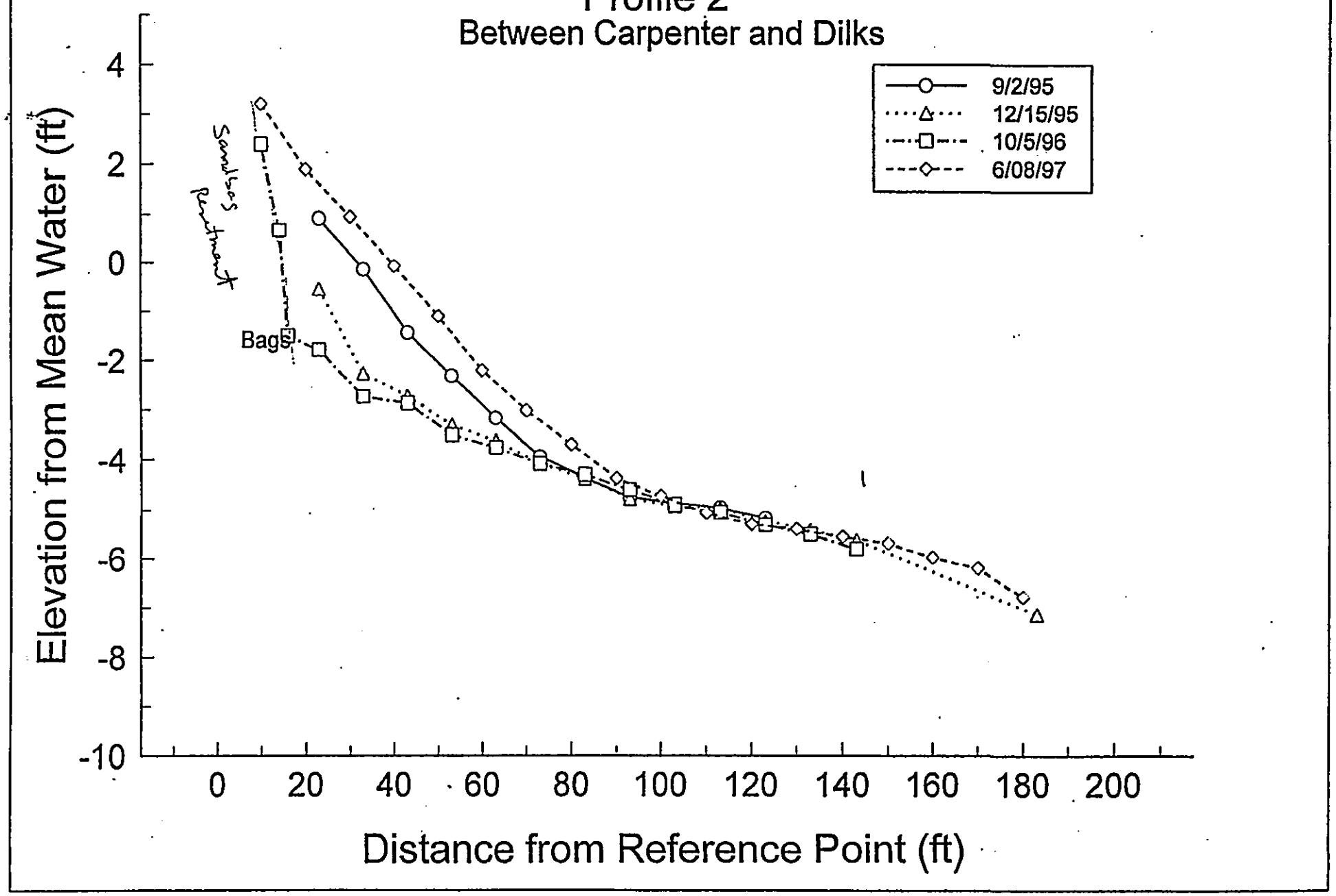


Profile 1

Dilks Property



Profile 2
Between Carpenter and Dilks

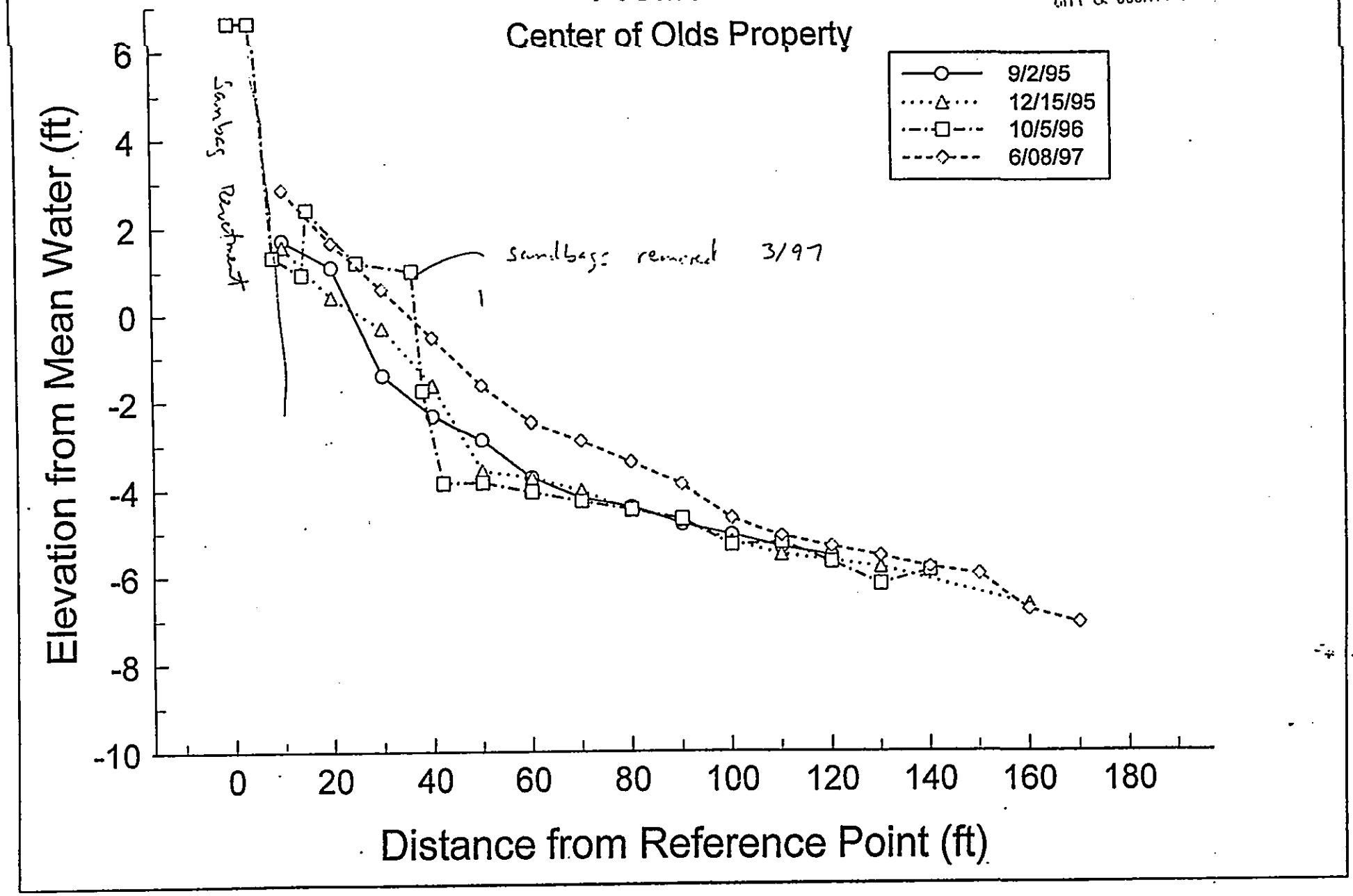


1997 SEP -8 AM 10: 11

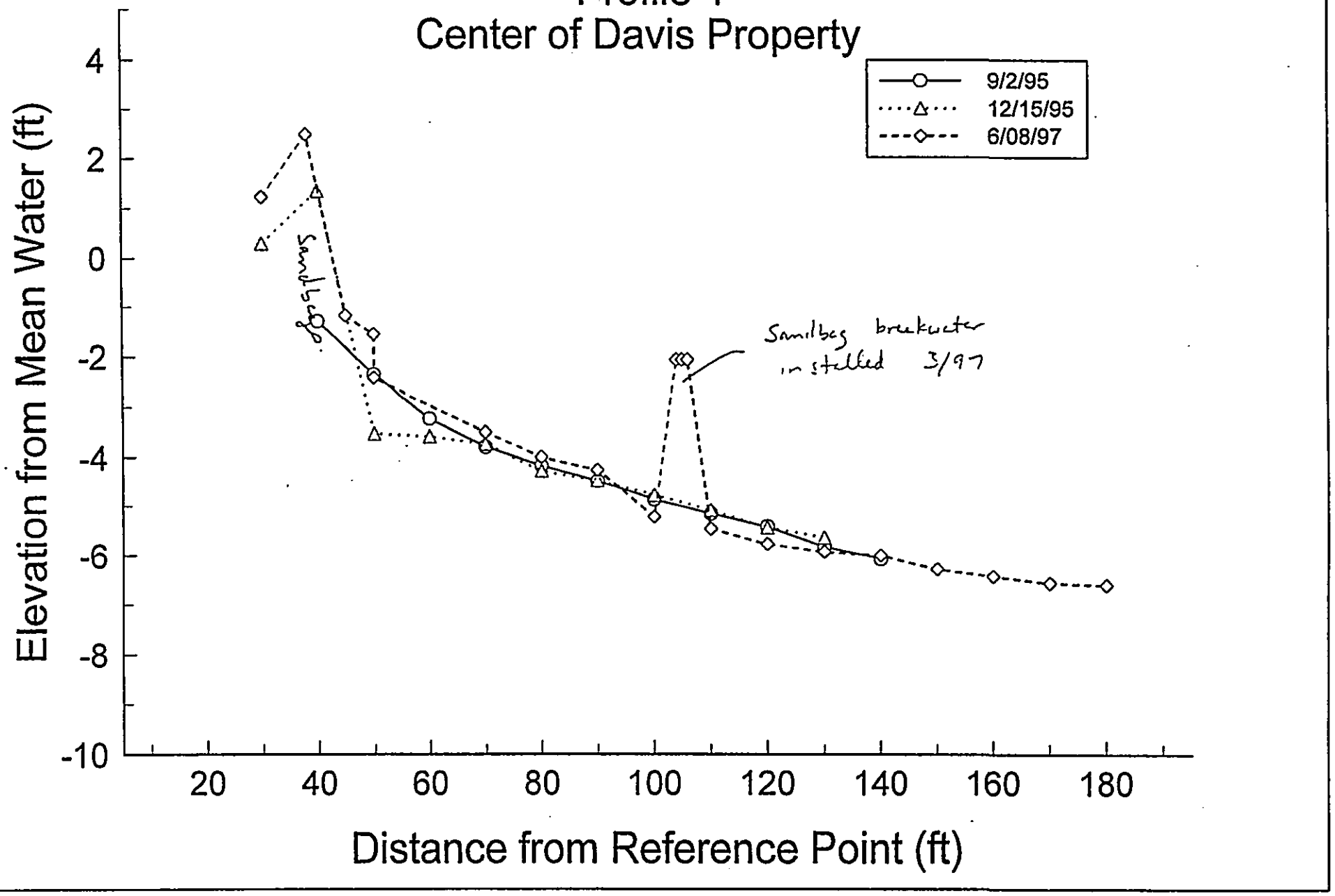
DEPT. OF LAND UTILIZATION
CITY & COUNTY OF HONOLULU

Profile 3

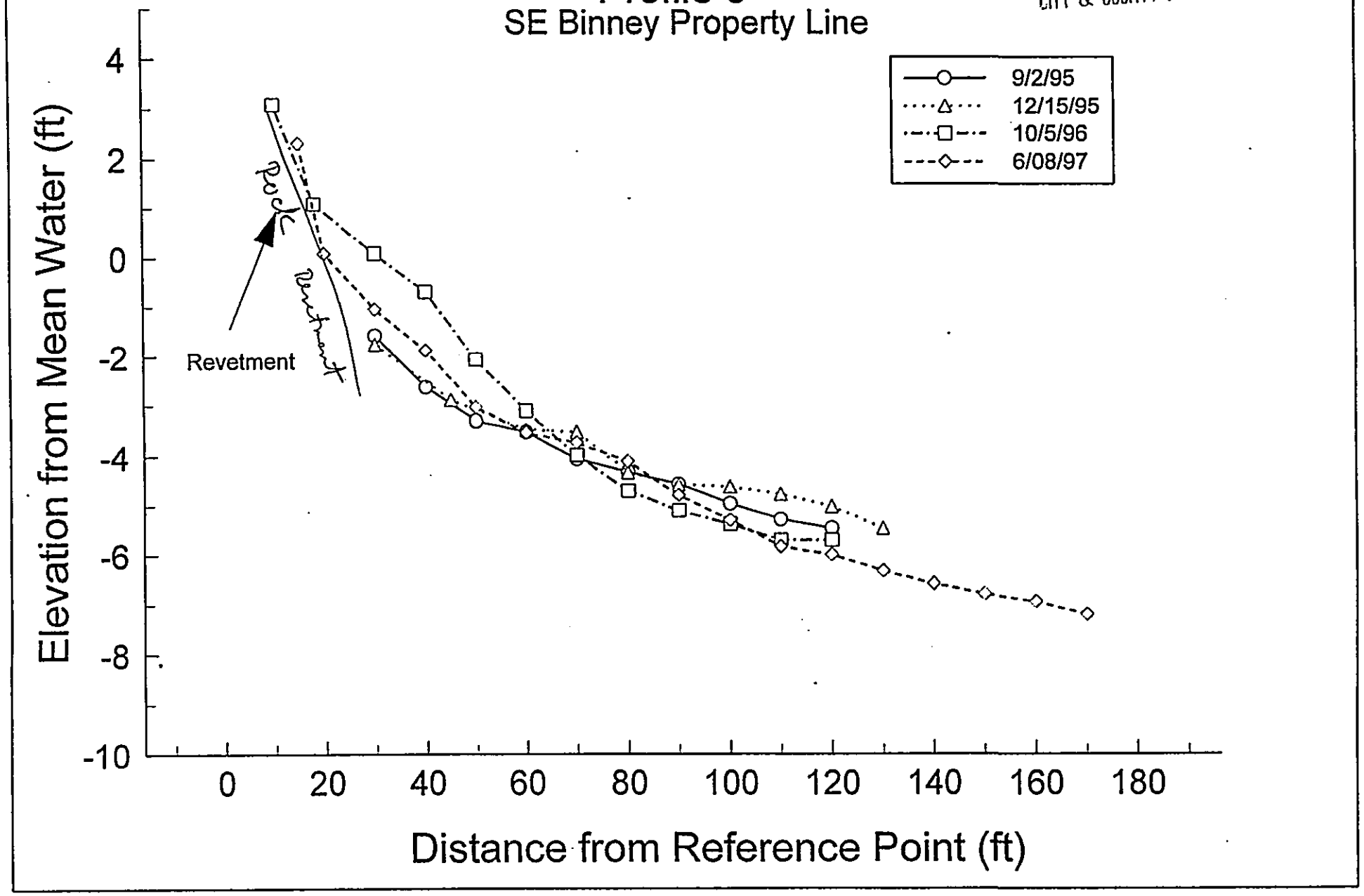
Center of Olds Property



Profile 4
Center of Davis Property



Profile 5
SE Binney Property Line



Edward K. Noda
and
Associates, Inc.

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and
Environmental
Consultants

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Planning
Surveys
Computer
Modeling

615 Pilkoi Street
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(808) 591-8553
Facsimile:
(808) 593-8551

CN 1781

September 8, 1997

MEMORANDUM

TO: Robin Foster

FROM: Elaine Tamaye

SUBJECT: Summary Report by David Lipp

I have reviewed the data and summary report by David Lipp and have the following comments:

(1) There is a significant seasonal movement of sand along this section of coastline. The beach profile data are not sufficient to define the extent of the seasonal variability versus long-term trend. Profiling was done only twice in 1995 (Sept and Dec), once in 1996 (Oct), and once in 1997 (Jun). Therefore, it is not possible to draw any conclusions from this data about the "effectiveness" of the pilot program. It is important to note that David Lipp's conclusion was that the sand movement is due to environmental factors and not the sandbags themselves. His only "conclusion" about the sandbags is that "the sandbags did not prevent the beach from reforming".

(2) Although the profiles indicate that the sand elevations on the beach have increased from Dec 1995 to June 1997, that is not to say that the beach has been "restored". The profiles extend seaward of the sandbag revetments, and there is no evidence of restoration of any dry beach area. The top of beach elevations (less than 4 feet above mean water level) are clearly below the wave runup level. Therefore, if not for the existing shore protection structures, there could very likely have been additional loss of fastlands (erosion of the shoreline as defined by the vegetation line), even though there may have been a slight gain in elevation of the beach foreshore.

(3) In order to provide meaningful data, the beach profiles need to be measured at least quarterly, and additional profiles should be established on the Kailua-side (across "dry" beach areas) to determine the pilot program's effect on adjacent shoreline areas and to obtain a better understanding of the

seasonal sand movement affecting this coastal reach.

(4) There is no mention about how much sand was "added" to the littoral system. How much of this sand fill contributed to the increase in beach elevations? There is also no description of what was done with the sandbags, such as what configurations were tested and for how long. There is simply insufficient information from the monitoring program to draw any valid conclusions about the pilot program.

Appendix B

APPENDIX B

Justification for a Shoreline Setback Variance under ROH Sec. 23-1.8 (3) "Hardship Standard"

The owners will suffer hardship if they are not allowed to construct permanent shore protection. Their application for a shoreline setback variance fulfills the three criteria for hardship set forth in ROH Sec. 23-1.8 (3)(A), as discussed below.

The applicants will be deprived of reasonable use of the land. If the shore protection structure were not allowed, the foundations of the two residences will be undermined by the combination of storm waves and ongoing beach erosion. Undermining of the foundations would cause serious damage to the houses and would render them uninhabitable.

At present, the house is protected by SEAbags allowed under an emergency Conservation District Use Application. The SEAbags, however, are not a long-term solution. They require continual maintenance and have been damaged by vandalism and by storm waves. Over the years, the owners have had to make substantial repairs in order to maintain this temporary protection.

The applicants' proposal is due to unique circumstances. The southern end of Lanikai Beach is known as a site of ongoing, long-term beach erosion. The same is not true for the middle portion of Lanikai Beach, which has had a protracted term of accretion. The sole reason for the variance request is the erosion occurring at this particular section of beach. Many other property owners along the southern portion of Lanikai Beach have built seawalls or revetments to protect their homes from erosion. In the past few years, the Department approved Shoreline Variances for seawalls on the two adjacent properties to the north.

The proposal is the practicable alternative which conforms best to the purpose of the shoreline setback regulations. The Coastal Engineering Evaluation analyzes a number of alternative measures. The preferred alternative would be beach restoration by replenishment of sand, possibly augmented by construction of a low-profile offshore breakwater structure. To be

effective, however, a beach restoration program must be designed, financed, permitted, and developed across an entire littoral cell. The littoral cell in this case would encompass the beach frontage of numerous residential properties. Typically, beach restoration projects are carried out by the U.S. Army Corps of Engineers or by an agency of state government. The scope of such a project places it beyond the capability of a single property owner.

A *sloping revetment* would also be feasible to protect the subject lots, provided that the State Department of Land and Natural Resources permitted a substantial portion to be constructed within the Conservation District. As shown in Figure 7 of the Environmental Assessment, a 2:1 sloping revetment would be about 28 feet wide, including the below-grade foundation and engineered fill. According to the certified shoreline survey, there is only about 10 feet of Urban District land between the shoreline and the Carpenter house. Since it is currently DLNR policy not to allow shore protection structures within the Conservation District, this is not a viable option.

Appendix C

LIST OF COMMENTS RECEIVED – Draft Environmental Assessment, Proposed Shore Protection – Lanikai Residences (Long & Pietsch)

Agency/Organization	Comment Rec'd	Response
City & County of Honolulu		
Department of Planning and Permitting	---	---
State of Hawaii		
Department of Health	12/12/03	2/5/03
Department of Land and Natural Resources	12/30/03	2/5/03
Historic Preservation Division, DLNR	12/15/03	2/5/03
Land Use Commission	12/4/03	2/5/03
Office of Environmental Quality Control	1/7/04	2/5/03
Office of Hawaiian Affairs	---	---
University of Hawaii at Manoa Environmental Center	---	---
Federal Government		
U.S. Army Engineer District, Honolulu	---	---
U.S. Fish & Wildlife Service, Pacific	---	---
Community		
Kailua Neighborhood Board #31	---	---
Lanikai Association	---	---
Jennifer Littenberg	1/7/04	2/5/03

RECEIVED AS FOLLOWS

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

2003 DEC 17 PM 3 41

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

In reply, please refer to
EMD / CWB

12041CEC.03

December 12, 2003

Mr. Eric G. Crispin, AIA
Director of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Crispin:

Subject: Comments on the Draft Environmental Assessment (DEA) for Shoreline Setback Variance (SSV) Application for the Construction of a Concrete Rubble Masonry (CRM) Seawall at Seaward Boundary of Shoreline Parcels at 1256 and 1264 Mokulua Drive, Lanikai, Kailua, Island of Oahu File No. 2003/ED-31 (ASK) / TMKs: (1) 4-3-005:059 and 088

Thank you for the opportunity to review and comment on the DEA prepared for the subject project. The following are our general comments based on the information provided in the DEA:

1. Pursuant to Chapter 11-54 (entitled Water Quality Standards) of the Hawaii Administrative Rules (HAR), a Site-Specific Construction Best Management Practices (BMPs) Plan shall be developed, implemented, and properly maintained during the pool construction period to prevent/minimize the potential soil particles from entering the adjacent State waters in a form of fugitive dust (airborne), or being pushed by the construction equipment, or being carried by the storm water runoff.

2. Soils at the project site are classified as Jaucas sand (see page 6 of DEA), the base of the proposed CRM wall is located at elevation of -5 feet mean sea level (see figure 5.a), and construction site dewatering activity is anticipated (see pages 5 and 10 of the DEA). However, there is no BMPs measure(s) proposed to ensure that the dewatering effluent "will be retained onsite and will not be discharged to State waters." A National Pollutant Discharge Elimination System (NPDES) permit is required for the discharge, either directly or indirectly, of construction site treated dewatering effluent into adjacent State waters. The NPDES Notice of Intent (NOI) and guidelines, and HAR, Chapters 11-54 and 11-55 are available at CWB's website: http://www.state.hi.us/health/eh/cwb/forms.html.

3. Site-specific BMPs measures shall also be implemented during the removal of the existing sand bags. The BMPs plan shall include an adequate and effective silt containment device(s). The device(s) shall be installed in a manner to properly isolate and confine the construction activity(ies) and to contain and prevent any potential pollutant(s) discharges from adversely

impacting the State waters. Heavy equipment shall not be allowed to enter waters. A Section 401 Water Quality Certification is required if the sand bag removal activity (spread sand on the dry beach or in the water) requires a Department of the Army permit issued under the authorization of Section 404 of the Federal Clean Water Act.

4. The applicants and their agent, PlanPacific, Inc., shall ensure that the construction of the proposed CRM seawall will not cause any erosion to the adjacent properties or the down drift sand beaches. The CRM seawall construction shall not interfere with or become injurious to any assigned uses made of, or presently in, the State receiving waters.

If you have any questions regarding the NPDES permitting requirements, please contact me or direct your staff to contact Mr. Edward Chen of the Engineering Section, Clean Water Branch, at (808) 586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

RECEIVED AS FOLLOWS

PLANPACIFIC

February 5, 2004

Dr. Chiyome L. Fukino, Director
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

Attn.: Denis R. Lau, Clean Water Branch

Dear Dr. Fukino:

Subject: Draft Environmental Assessment (Draft EA) for Proposed Shore Protection Structures, Lanikai; TMKs 4-3-005: 059 and 088

Thank you for your comment letter dated July 21, 2003. We offer the following responses:

1. U.S. Army Corps of Engineers requirements. Following review of the Draft EA and a site inspection, the U.S. Army Corps of Engineers (COE) found that the proposed seawall lies outside of its jurisdiction and concluded that no Department of the Army (DA) permit is required. (See COE letter dated September 8, 2003.) The proposed removal of the sandbags following construction may require a DA permit. The applicants will consult with the COE and the State Department of Land and Natural Resources prior to removing the sandbags.

2-4. NPDES Permit requirements. The total land area to be disturbed is approximately 2,000 square feet (seawall length of 150 linear feet x 20 feet estimated width of the trench). The project requires only limited dewatering. Wastewater will be retained onsite and will not be discharged to State waters. Therefore, the project will not need an NPDES permit.

Sincerely,

Robin Foster, AICP

345 Queen Street
Suite 802
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9468

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

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

December 30, 2003

LD-NAV

DEC 3 1 2003

2003-ED-31.RCM

Honorable Eric G Crispin, AIA
Director of Planning and Permitting
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Crispin:

SUBJECT: Review: Special Management Area
Request: Shoreline Setback variance
Applicant: Elia Long and DTP Holding (Plan Pacific, Inc.)
I.D. No.: 2003-ED-31
Location: 1256 and 1264 Mokulua Drive, Lanikai
Proposed: Construct a seawall
TMK: (1) 4-3-005: 088 and 059

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

A copy of the document pertaining to the proposed project was transmitted or made available to the following Department of Land and Natural Resources' Divisions for their review and comment.

- Division of Forestry & Wildlife
- Engineering Division
- Division of Boating and Ocean Recreation
- Office of Conservation and Coastal Lands
- Land-Oahu District Land Office

Attached is a copy of the Division of Aquatic Resources and Office of Conservation and Coastal Lands comments.

The Department of Land and Natural Resources has no other comment to offer on the subject matter.

Should you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: ODLO

RECEIVED AS FOLLOWS

Suspense Date: Decmeber 16, 2003

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawaii

MEMORANDUM

To: Bill Devick, Acting Administrator
From: Richard Sixberry, Aquatic Biologist
Subject: Comments on Shoreline Setback Variance

Comments Requested By: Dierdre Mamiya, Administrator, Land Division

Date of Request: 11/28/03 Date Received: 11/28/03

Summary of Project

Title: Shore Protection Structure

Proj. By: Long & DTP Holdings

Location: Lanikai Beach, Oahu

Brief Description:

The applicants propose to construct a CRM (concrete-reinforced masonry) seawall mauka of the certified shoreline along the 150-foot frontage of two beachfront parcels at Lanikai, Oahu. Ongoing erosion of the shoreline is intensifying and storm waves have eroded the shoreline edge of the property close to the main residence.

Comments:

Although some minor shoreline disturbance may occur near the high water line during construction of the seawall, no significant long-term adverse impact to aquatic resources are expected from the activities proposed.

Finally, control should be maintained by appropriate agencies to limit or prevent future structures or shoreline modifications that could adversely affect aquatic resource values by influencing cycles of accretion and erosion, as described in the "Coastal Erosion Management Plan for the State of Hawaii".

LINDA LINGLE
GOVERNOR OF HAWAII

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER
COMMISSION ON WATER RESOURCE MANAGEMENT
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
CONSERVATION AND RESOURCES ENFORCEMENT
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

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

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DEC 31 2003

Ref.:OCCL/DE

12/23/03

Correspondence: OA-0484

Eric Crispin, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Subject: Comments on Draft EA for Shoreline setback variance application 1256 and 1264 Mokulua Drive Kailua, Hawaii 96734 TMKs 4-3-005:088 and 059.

Dear Mr. Crispen:

The State of Hawaii Department of Land and Natural Resources (DLNR) Office of Conservation and Coastal Lands (OCCL) has reviewed the November 2003 Draft EA for shoreline setback variance application. The Department offers the following comments and suggestions.

The proposed variance is for a continuous vertical concrete reinforced masonry (CRM) seawall fronting two adjoining residential dwellings in Lanikai, Oahu. The Department understands that the proposed seawall will be sited entirely landward of the certified shoreline along a 150 foot long shoreline of the properties and entirely within the 40 foot shoreline setback. The current design assumes that the property boundary of parcel 88 is coterminous with the certified shoreline, which is subject to Mr. Long's land court petition to restore the property boundary of the seaward edge of the wall. As you may know, the certified shoreline does not necessarily delineate the seaward boundary of the property. The draft EA further states that there will be negligible or no significant impacts to the physical, social, cultural, economic and historical environment.

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The Department recognizes the value of shoreline structures in protecting private lands under the influence of erosion. The Department agrees with the draft EA findings that the presence of seawalls are not the cause of erosion in Lanikai, however disagrees that the proposed seawall will not affect the existing coastal processes. It is generally understood that the presence of seawall on a chronically eroding shoreline like Lanikai, exacerbate "passive erosion" where the erosion continues as the beach migrates landward eventually resulting in beach loss. At this point the seawall or shoreline structure does significantly affect the existing coastal processes by trapping sand mauka of the structure, increasing the reflected wave energy, and accelerating nearshore currents and turbidity due to the lack of a subaerial profile fronting the structure.

The Department feels this issue needs to be addressed and that the effects of passive erosion should be identified and rationalized. To state that the seawall would have no significant effects on the coastal processes is simply inaccurate. The Department recommends a more detailed description of the potential impacts the seawall might have on the coastal processes. How might these impacts be mitigated? There should be more discussion on the potential impacts of the proposed structure in relation to the existing erosion control measures and if there were no structures. The draft EA sites that the central portion of Lanikai has experienced accretion despite having shoreline structures in place. This is not a justification that seawalls do not affect the shoreline processes but evidence that the beach state (eroding, seasonal, stable or accreting) is the deciding environmental factor. Under chronically eroding conditions a fixed structure will eventually lead to beach loss through passive erosion.

The Department would like to clarify a few items in Section 4.0 Consideration of Alternatives.

1. The draft EA states that the large quantities of suitable natural beach sand required for beach nourishment are unavailable in Hawaii. The Department has been investigating potential sand sources for beach nourishment and has identified several viable offshore sources. The Kailua offshore paleo-channel has been assessed and estimated up to 4.8 million cubic yards of beach quality sand lie offshore[1].
2. The draft EA also mentions that although a revetment was considered, the impression was that the Department has a stated policy in opposition to hard shoreline protection. The Department would like to clarify that the shoreline armoring policy is not one of opposing all shoreline structures but rather weighing the consequence vs. potential benefit of each case individually based on a ranking system for the beach and the protected infrastructure.
3. In addition to the "No Action" alternative the Department would like to see the addition of "retreat" as an alternative considered. Understanding the position, construction and orientation of the property this is unlikely to relocate the building but it should be addressed.

[1] Beach Nourishment Viability Study
Sea Engineering, Inc. Prepared for Office of State Planning, Coastal Zone Management Program
December 1993

4. The Department agrees that all the alternatives fail to meet the criteria to provide adequate and viable protection of the subject properties but would like to see beach nourishment in conjunction with the proposed structures considered in more detail. The protection and restoration of the beach would serve a great benefit to the whole community (not just beach front property owners) as well as the general public.

The Department encourages beach nourishment in conjunction with the proposed structures. With the placement of hard shoreline protection the reliance on beach nourishment as a protective measure is removed and the property owners can be assured the security of their property. Beach nourishment would provide an opportunity to restore the valuable resource that has attracted many of property owners to purchase beach front in the first place.

Contact Sam Lemmo of the Land Division, Planning Branch at 587-0381, or Dolan Eversole of the University of Hawaii Sea Grant Program at 587-0439, should you have any questions regarding this matter.

Thank You,

Dierdre S. Mamiya, Acting Administrator
DLNR, Office of Conservation and Coastal Lands (OCCL)

cc: Oahu Land Agent
City and County of Honolulu Planning and Permitting
DOH/OHA
ACOE

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PLANPACIFIC

February 5, 2004

Mr. Peter T. Young, Chairperson
State of Hawaii
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Attn.: Deirdre Mamiya, Land Division

Dear Mr. Young:

Subject: Draft Environmental Assessment (Draft EA) for Proposed Shore Protection Structures, Lanikai; TMKs 4-3-005: 059 and 088

Thank you for your letter dated December 30, 2003, transmitting comment memoranda from various divisions of DLNR. We offer the following responses:

Aquatic Resources Division. To minimize disturbance of the shoreline and nearshore waters, the applicants will retain the SEAbags during construction and build the proposed seawall landward of the SEAbags. After construction, the applicants propose to remove the SEAbags. Prior to their removal, the applicants will consult with DLNR.

Office of Conservation and Coastal Lands. We acknowledge your point about passive erosion – i.e., that constructing a seawall prevents the ocean from taking more sand from the properties protected and thus decreases the supply available to the beach system. We also concur with your view that the "deciding environmental factor" in beach erosion is the "beach state" – i.e., the state of the beach as eroding, seasonal, stable or accreting. In a low-energy wave climate such as Lanikai, we do not believe that wave energy reflected by shore protection structures significantly increases ongoing coastal erosion.

In response to your specific comments regarding Section 4.0, Consideration of Alternatives, we have augmented that section of the EA. Following are specific responses.

1. Thank you for pointing out that offshore sources of beach sand are available. Section 4.0 has been revised accordingly.

2. Thank you for the clarification that the Department of Land and Natural Resources does not oppose all shoreline protection structures. As stated in your letter, the Department takes the approach of "weighing the consequences vs. the potential benefit of each case individually based on a ranking system for the beach and the protected infrastructure." If the ranking system is publicly available, we would appreciate receiving a copy.

   In 1997, the City Department of Land Utilization wrote to DLNR explicitly requesting review of alternatives to the vertical seawall. DLNR responded with a letter dated November 19, 1997, a copy of which is attached.

3. Section 4.0 of the EA has been revised to include a "retreat" alternative.

4. We concur that beach nourishment and restoration is a desirable objective. We reiterate that it needs government financial and regulatory support and is beyond the means of one or two shoreline owners. The Department's 1997 letter observes that beach restoration is a long-range prospect, and not much has changed in the intervening six years.

Sincerely,

Robin Foster, AICP

345 Queen Street
Suite 802
Honolulu
Hawaii 96813

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TY & COUNTY OF HONOLULU

Ref.:PB:SL

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P.O. BOX 621
HONOLULU, HAWAII 96809

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

NOV 19 1997

The Honorable Jan Naoe Sullivan
Director of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Ms. Sullivan:

Subject: Proposed Shore Protection Structure at Lanikai, Oahu
(TMKs: 4-3-04:74 and 4-3-05:61)

Thank you for your October 16, 1997 letter regarding the subject matter.

Revetment vs Seawall:

There is still a large degree of uncertainty as to whether revetments are preferable to vertical seawalls. Much depends on the location of a shore protection structure relative to the wash of the waves. It would be preferable to have a structure set back far enough from the water so that it has minimal influence on wave and current dynamics. A revetment consisting of a 20 or 30 foot-wide footing that covers a portion the public right-of-way and also influences the wash of the waves may not be a desirable alternative in every case. The bottom line is that both forms of hardening are undesirable, if the objective is to preserve the beach. Seawalls and/or revetments are not designed to protect beaches.

As evidenced in the Lanikai area, we understand that there are currently seawalls that are completely buried with sand, and also sloping structures where there are no beaches to speak of. This does not provide a very solid factual basis to support revetments over seawalls, with respect to the protection of the beach.

Therefore, DLNR would not support the construction of any portions of a revetment on the makai side of the shoreline, where there are other alternatives available. This would infringe upon the public right-of-way, and would be in conflict with DLNR polices regarding the preservation of lateral beach access.

Maintenance of the Seabag Revetment vs. Construction of a Seawall:

We were not aware of the high maintenance costs associated with the bags. We would be interested in obtaining some expenditure figures from the Dilks with respect to maintenance of the bags. It does appear that the bags have stopped the erosion and have served as a good temporary measure to address the concerns of the landowner as far as land loss.

Alternatives to Shoreline Hardening:

The applicant does have alternatives at this time. First, he can apply to DLU for a vertical seawall, and second, he can re-develop the lot in a way that mitigates any immediate threat of erosion to the residence. Third, he can wait to see if the Lanikai Beach Project will be successful, and then decide to either participate in the project or move forward with other plans.

Future Plans for Beach Nourishment:

At this time, we do not have any plans to renourish Lanikai Beach. While there has been dialogue about a possible project in Lanikai, it will take time, interest and money, for planning and implementation. Much depends on the willingness of the shorefront owners and the larger Lanikai community's willingness to provide assistance as well as government's commitment to the program.

Lanikai Beach Management Committee Experiment:

The purpose of the Lanikai Beach project was to test innovative shore protection measures which minimize wave reflection, provide beach access, do not inhibit the re-accretion of sand should the erosion conditions end, and not to introduce permanent structures or materials to the beach. If enough sand were to accrete at the site, it would be shown that the need for manmade protection would have been naturally mitigated. The seabags are viewed as a stop-gap measure while we struggle to find other long-term solutions. We feel that the project should continue for another year or so to determine its effectiveness.

Thank you for your cooperation in this matter. Please feel free to contact Sam Lemmo, of the Land Division, Planning Branch, at 587-0381, should you have any questions on this matter.

Aloha,

Michael D. Wilson

Attachment

cc: Oahu Board Member

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LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

ERNEST Y.W. LAU
DEPUTY DIRECTOR - WATER

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

December 15, 2003

Eric G. Crispin, Director
Department of Planning and Permitting
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

LOG NO: 2003.2524
DOC NO: 0312EJ07

Dear Mr. Crispin:

SUBJECT: Chapter 6E-42 Historic Preservation Review –Environmental Assessment (EA) for Shoreline Setback Variance (SV) for Construction of a Shoreline Protection Structure for Two Contiguous Lots at 1256 and 1264 Mokulua Drive, Lanikai, O`ahu
Kailua, Ko`olaupoko, O`ahu
TMK: (1) 4-3-005:088 and por. 059

Thank you for the opportunity to comment on the proposed seawall construction at 1256 and 1264 Mokulua Drive in Lanikai. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project area.

The applicants propose to construct a continuous seawall, tying it into an existing non conforming reinforced concrete seawall on the north and a municipal drain structure on the south. Although this area is comprised of Jaucas sands, a review of our records shows that there are no known historic sites at this location. Human burials have been found in the more inland lots of the Lanikai neighborhood near Aalapapa and Koohoo Drives. Because this is an active beach and no historic sites have been identified along this shoreline, we believe that "no historic properties will be affected" by this project.

However, in the event that historic sites, including human burials, are uncovered during routine construction activities, all work in the vicinity must stop and the State Historic Preservation division must be contacted at 692-8015.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

P. Holly McEldowney, Administrator
State Historic Preservation Division

EJ:jk

c: A. Van Horn Diamond, Chair, O`ahu Island Burial Council
Kai Markell, Burial Sites Program

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February 5, 2004

Ms. P. Holly McEldowney, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Dear Ms. McEldowney:

Subject: Draft Environmental Assessment (Draft EA) for Proposed Shore Protection Structures, Lanikai; TMKs 4-3-005: 059 and 088

Thank you for your letter dated December 15, 2003. In the event that an historic site or burial is discovered during construction, work will be halted and your office will be contacted.

Sincerely,

Robin Foster, AICP

345 Queen Street
Suite 802
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9468

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LINDA LINGLE
GOVERNOR

ANTHONY J.H. CHING
EXECUTIVE OFFICER

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

December 4, 2003

Mr. Eric G. Crispin, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Crispin:

Subject: Draft Environmental Assessment (DEA)
Proposed Shore Protection – Two Residences, Lanikai
Lanikai, Oahu
Tax Map Key No: 4-3-05: 88 and 59

We have the DEA for the subject project forwarded by your letter dated November 24, 2003. We understand that the parcels' landowners are jointly proposing to construct a continuous concrete rubble masonry seawall landward of the current certified shoreline. According to the Project Summary in the DEA, the subject parcels are deemed to be within the State Land Use Urban District.

Based on review of our records, we cannot confirm whether the subject parcels are, in fact, entirely within the Urban District. For your information, the State land use designation of the subject parcels was established on August 23, 1964. While the landward portion of the subject 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. We note that although Figures 3a and 3b as well as other maps in the DEA identify the shoreline as it existed on various dates, there is no information on the location of the highwater mark as it existed in 1964. In this case, the current certified shoreline is not necessarily indicative of the location of the Urban/Conservation District boundary given that there are existing artificial

structures which may have altered the shoreline since the district boundary for the subject parcels was established. We therefore request that a boundary interpretation request be filed with our office pursuant to section 15-15-22, Hawaii Administrative Rules. Such a request accompanied by the appropriate documentation would assist us to more definitively locate the Urban/Conservation District boundary for the subject parcels.

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
Executive Officer

c: Office of Environmental Quality Control

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February 5, 2004

Mr. Anthony J.H. Ching, Executive Officer
Land Use Commission, State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804-2359

Dear Mr. Ching:

Subject: Draft Environmental Assessment (Draft EA) for Proposed Shore Protection Structures, Lanikai; TMKs 4-3-005: 059 and 088

Thank you for your letter dated December 3, 2003.

You question whether the subject parcels are "entirely within the Urban District." Actually, only those portions of the subject parcels that are inland of the certified shoreline are within the State Urban District. Any portion of the subject lot that is seaward of the certified shoreline is within the State Conservation District.

This is reflected in the Project Summary (Section 1 of the EA), which lists the area of each lot that is in the Urban District. For parcel 88, the Urban lot area is 9,934 square feet – the entire Land Court lot area. For parcel 59, the Urban lot area is 10,603 square feet –the area of the Land Court lot, less eroded area. The eroded area – i.e., the area seaward of the certified shoreline – lies within the State Conservation District.

The lot areas and the plan of the proposed seawall are based on 2003 shoreline surveys of the two parcels that were certified by the State Department of Land and Natural Resources (EA Figures 3a and 3b). It is our understanding that the Urban/Conservation boundary at the shoreline varies and can only be established by a current shoreline survey, duly certified by the DLNR. Since this has already been accomplished, there is no need for further interpretation of the boundary by the State Land Use Commission.

Sincerely,

Robin Foster, AICP

345 Queen Street
Suite 802
Honolulu
Hawaii 96813

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Fax (808) 521-9468

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

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JAN - 8

January 7, 2004

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

Dear Mr. Crispin:

Subject: Draft Environmental Assessment for the Lanikai Seawalls (Long & Pietsch), O'ahu

Thank you for the opportunity to review and comment on the subject project. We have the following comments.

1. 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

2. Please consult with the adjacent neighbors and the Lanikai Association

Sincerely,

Genevieve Salmonson
Director

c: Plan Pacific
Elia Long
James Pietsch

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PLANPACIFIC

February 5, 2004

Ms. Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
236 South Beretania Street, Suite 702
Honolulu, HI 96813

Dear Ms. Salmonson:

Subject: Draft Environmental Assessment (Draft EA) for Proposed Shore Protection Structures, Lanikai; TMKs 4-3-005: 059 and 088

Thank you for your comment letter dated January 7, 2004. In response, we offer the following;

1. We are familiar with the Shoreline Hardening Policy and Environmental Assessment Guidelines.
2. We have consulted with the adjacent neighbors and the Lanikai Association.

Sincerely,

Robin Foster, AICP

345 Queen Street
Suite 802
Honolulu
Hawaii 96813

Tel (808) 521-9418
Fax (808) 521-9468

ACSI
Advanced Compliance Solutions, Inc.
1818 Kahai St.
Honolulu, HI 96819
Phone (808) 330-6517
Fax (808) 847-0917

January 7, 2004

Mr. Eric Crispin, AIA
Director of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Reference: Comments in regards to the Draft Environmental Assessment (DEA), Proposed Shore Protection-Two Residences, Lanikai, TMKs: 4-3-005: 088 and 059

Dear Mr. Crispin,

At the request of our client Ms. Melissa Jackson (the owner of the residential property designated by TMK: 4-3-005:058), we have reviewed the above referenced document and have the following comments and concerns that may be addressed in the Final Environmental Assessment (FEA).

1. Ms. Jackson has been granted the easement on the north (Kailua) side of Lot 373 (TMK: 4-3-005:058). This easement allows for continuous access from the property to the shoreline along the north side of Lot 373. The proposed seawall is to have an average height of 7.0 feet (ft). to 8.0 ft. above mean sea level (msl). Due to the construction and configuration of the proposed seawall, which includes the removal of the seabags, the distance from the access point at the top of Ms. Jackson's easement to the shoreline will increase dramatically and possibly eliminate a safe passage to the shoreline. In order for the easement to be utilized and maintained in its current state, a structure will need to be constructed to ensure that access to the shoreline is not eliminated.

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2. The DEA states that the proposed seawall will be constructed entirely within the 40-foot shoreline setback (page 3, paragraph 3). If the shoreline setback variance is granted, does this constitute a public right of way along the constructed seawall?

We appreciate the opportunity to comment on the DEA and if you have any questions please contact me at (808) 330-6517 or jennifer.littenberg@acsihawaii.com

Sincerely,

Jennifer M. Littenberg
Chemical Engineer

Cc:M. Jackson

PLANPACIFIC

February 5, 2004

Ms. Jennifer M. Littenberg
Advanced Compliance Solutions, Inc.
1818 Kahai Street
Honolulu, Hawaii 96819

Dear Ms. Littenberg:

Subject: Draft Environmental Assessment (Draft EA) for Proposed Shore Protection Structures, Lanikai; TMKs 4-3-005: 059 and 088

Thank you for your comment letter dated January 7, 2004, written on behalf of your client Ms. Melissa Jackson. Ms. Jackson owns an adjacent residential lot mauka of subject parcel 88 and has been granted an easement on the north side of parcel 88. We respond to your comments as follows:

1. You express concern about Ms. Jackson's ability to use the easement after the seawall has been constructed. The intention of the applicants, Mr. and Mrs. Long, is to maintain the height of the new seawall within the easement at the level of the existing concrete wall that runs along the north boundary of parcel 88. They do not intend to interfere with your use of the easement. Mr. and Mrs. Long will consult with Ms. Jackson before the wall is built.
2. In answer to your question, the granting of a shoreline variance allowing construction of a seawall does not create a public right-of-way. The seawall will be constructed entirely within the boundaries of the Longs' private property.

Sincerely,

Robin Foster, AICP

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Fax (808) 521-9468