

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

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2013/ED-1(ST)
2013/ELOG-1448

August 28, 2013

Ms. Genevieve Salmonson, Interim Director
Office of Environmental Quality Control
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813-2437

FILE COPY

SEP 23 2013

Dear Ms. Salmonson:

SUBJECT: Chapter 343, Hawaii Revised Statutes
Draft Environmental Assessment
Shoreline Setback Variance

Project: After-the-fact Deck and Retaining Wall
Applicant: Kristen and Joseph Souza
Agent: Structural Hawaii
Location: 47-079 Kamehameha Highway - Kahaluu
Tax Map Key: 4-7-19: 49
Request: Shoreline Setback Variance
Proposal: To retain an unauthorized concrete deck/retaining wall and to construct an additional wooden/composite stairway within the 40-foot shoreline setback.

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

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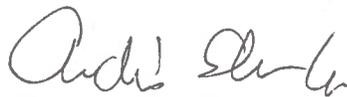
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We respectfully request publication of the Draft Environmental Assessment (DEA) in the next edition of The Environmental Notice. We anticipate a finding of no significant impact for this shoreline setback variance to retain the existing structure and stairway addition in Kahaluu, Oahu.

Enclosed is a copy of the DEA document in pdf format on a compact disk, one hardcopy of the DEA, and the completed OEQC Publication Form. Simultaneously, these documents were also sent via electronic mail to your office.

If you have any questions, please contact Steve Tagawa of our staff at 768-8024.

Very truly yours,


George I. Atta, FAICP
Director

GIA:nw
Attachments

**APPLICANT ACTIONS
SECTION 343-5(C), HRS
PUBLICATION FORM (JANUARY 2013 REVISION)**

Project Name: Souza Residence concrete deck and stairway in the 40-foot shoreline setback
 Island: Oahu
 District: Kahaluu
 TMK: 4-7-19: 49
 Permits: After-the-fact Shoreline Setback Variance
 Approving Agency: Department of Planning and Permitting,
 City and County of Honolulu
 650 South King Street,
 Honolulu, Hawaii 96813
 Steve Tagawa, (808)768-8024
 Applicant: Joseph and Kristen Souza
 47-079 Kamehemeha Highway
 Kaneohe, Hawaii 96734
 Consultant: Structural Hawaii
 1255 Kuala Street #2
 Pearl City, Hawaii 96782
 Riza Gatlula, (808)488-5000

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- DEA-AFNSI Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.
- FEA-FONSI Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
- FEA-EISPN Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.
- Act 172-12 EISPN Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
- DEIS The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
- FEIS The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
- Section 11-200-23 Determination The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.
- Section 11-200-27 Determination The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

__Withdrawal (explain)

Summary: The Applicant seeks an after-the-fact shoreline setback variance (SV) to retain an existing 5.5-foot high concrete deck (9 feet with posted railings) and stairway built without necessary approvals and to be allowed to construct a new lightweight (wood) stairway that continues to the shoreline.

The deck and railing consists of a concrete masonry unit retaining wall with a coralline rock fascia and backfill in the 40-foot shoreline setback. The deck extends 19 feet makai of an existing dwelling and spans the 74-foot width of the 9,000 square-foot parcel located at 47-079 Kamehameha Highway. The shoreline parcel is zoned R-10 Residential District and varies in elevation from 35 feet at the street, to mean sea level.

In August 2003, the Department of Planning and Permitting (DPP) issued the applicant a citation (No. 2003/NOV-09-021) for the construction of the concrete deck, railing, and stairs without obtaining an SV.

In November 2003, DPP issued a Notice of Order (No. 2003/NOO-223), which included an initial fine of \$500 and subsequent daily fines of \$50 per day after September 3, 2007.

On January 28, 2010, DPP denied the Applicant's previous SV application (No. 2009/SV-18), which included a proposal to add 2 new retaining walls and a seawall. This EA is being prepared for the submission on another SV application without the addition of retaining and seawalls.

Because these improvements are accessory to the existing single-family use, they are exempt from Special Management Area requirements.

Draft Environmental Assessment for Shoreline Setback Variance Application

**After-the-fact Concrete Deck and
Slope and Shoreline Stabilization
for
Kristen and Joseph Souza Residence
at
TMK: 4-7-019:049**

July 23, 2013

Prepared By:



Structural Hawaii, Inc.

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Phone: (808) 488-5000, Fax: (808) 454-8899
Email: info@structuralhawaii.com
Website: www.structuralhawaii.com

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Appendix E	Topographic Survey Map (April 26, 2008)
Appendix F	Preliminary Stair and Landing Layout for Souza Residence

1.0 INTRODUCTION

1.1 General Information

- A. Applicant: Joseph N. Souza III
Kristen L. Souza
47-079 Kamehameha Hwy Kaneohe, HI
(T) 808-429-6469; 808-429-5521
- B. Recorded Fee Owner: Joseph N. Souza III
Kristen L. Souza
- C. Agent/EA Preparation: Structural Hawaii, Inc.
1255 Kuala Street, 2nd Floor,
Pearl City, HI 96782
(T) 808-488-5000; (F) 808-454-8899
- D. Property Profile:
- Location: Kaneohe, Oahu, Hawaii
 - Site Address: 47-079 Kamehameha Highway, Kaneohe, Hawaii
 - TMK: 4-7-019:049
 - Lot Area: 9000 Square Feet (0.21 acres)
 - State Land Use: Urban
 - Community Development Plan: Ko'olaupoko Sustainable Communities Plan
 - Zoning: R-10 Residential
 - Flood Zone: D
 - Height Limit: 25 Feet
 - Special District: No
 - Shoreline Management Area: Yes
 - Shoreline Setback: Yes
 - Existing Land Use: Residential, Currently Occupied
- E. Agencies Consulted:
- City and County of Honolulu, Department of Planning and Permitting
 - State of Hawaii, Department of Land and Natural Resources
 - Army Corps of Engineers
- F. Permits Required:
- Shoreline Setback Variance
 - Building Permit
 - Grading Permit with C&C of Honolulu
 - Conservation District Use Permit with DLNR
- G. Special Management Area Requirements:
- Although the site is in the SMA, the proposal is associated with a single-family dwelling. Therefore, it is exempt from SMA approvals pursuant to Section 25-1.3(2)(A) and (N), Revised ordinances of Honolulu.



Figure 1-1: State and Island Map

1.2 Purpose and Need

This Draft Environmental Assessment (Draft EA) was prepared in conformance to the regulatory requirements prescribed under Chapter 343, Environmental Impact Statements, Hawai'i Revised Statutes (HRS), and Title 11, Chapter 200 Environmental Impact Statement Rules of the State Department of Health's Administrative Rules (HAR).

Actions which "trigger" the requirement for environmental review of a project are prescribed by State law. This project triggered the State environmental review process because it proposes a structure within the City's shoreline setback area. Subsequently, the Final EA will be included with a Shoreline Setback Variance application in accordance with the Revised Ordinances of Honolulu (ROH), Chapter 23-Shoreline Setbacks.

The after-the-fact concrete deck and retaining wall, towards the back of the dwelling, were built for the purpose of providing access to the shoreline and view. The stated were constructed without building permit which caused a notice of violation to be sent to property owners, Mr. and Mrs. Souza on September 23, 2003. Because of the steepness of the slope at the back of the house and due to weather conditions, erosion of the soil was foreseen and overgrown vegetation was not maintained. A geotechnical engineer was consulted regarding the issue and slope stabilization solutions were

recommended. It was concluded in the report that the after-the-fact concrete deck actually helps with the soil stabilization and was not advised to be removed. Other alternatives explored by geotechnical engineer, Horst Brandes, were expounded later in this report. In summary, the client would like to propose retention of the after-the-fact concrete deck for soil stabilization and wooden staircase by the slope for maintenance purposes.

1.3 Existing Land Use Designations

State Land Use District

According to HRS 205-2, Districting and Classification of Lands, there are four major land use districts in which all lands in the State shall be placed: urban, rural, agricultural, and conservation. The project site is classified as an urban district on the State Land Use District Boundary Map. Figure 1-2 shows the project's State Land Use designation.

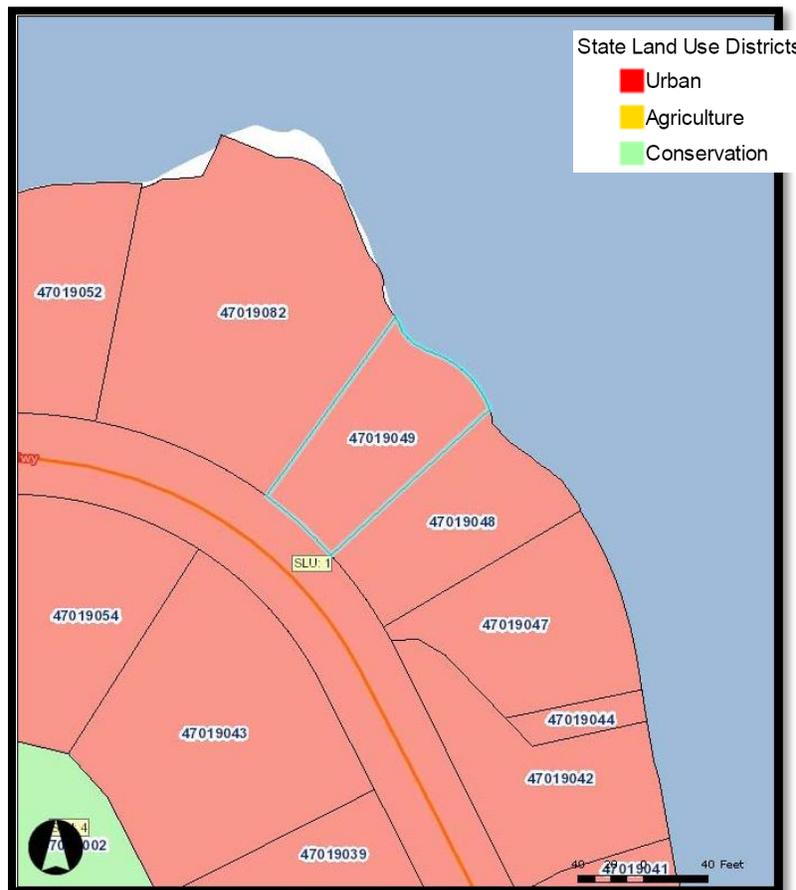


Figure 1-2: State Land Use Districts

City and County Development & Sustainable Communities Plan

As required by City Charter, Development or Sustainable Communities Plans together with the Oahu General Plan, guide land use growth over a 20-year time span. As part of the annual city budget process, all capital improvement projects are reviewed to determine if they are consistent with the respective development plan. Development Plans are also intended to guide City land use approvals and permits and influence private sector investment decisions.

Oahu is divided into eight planning areas: Central Oahu, East Honolulu, Ewa, Ko'olaupoko, Ko'olau Loa, North Shore, Primary Urban Center, and Waianae. Each area has a Development Plan which is adopted by City Council ordinance and administered by the Department of Planning and Permitting.



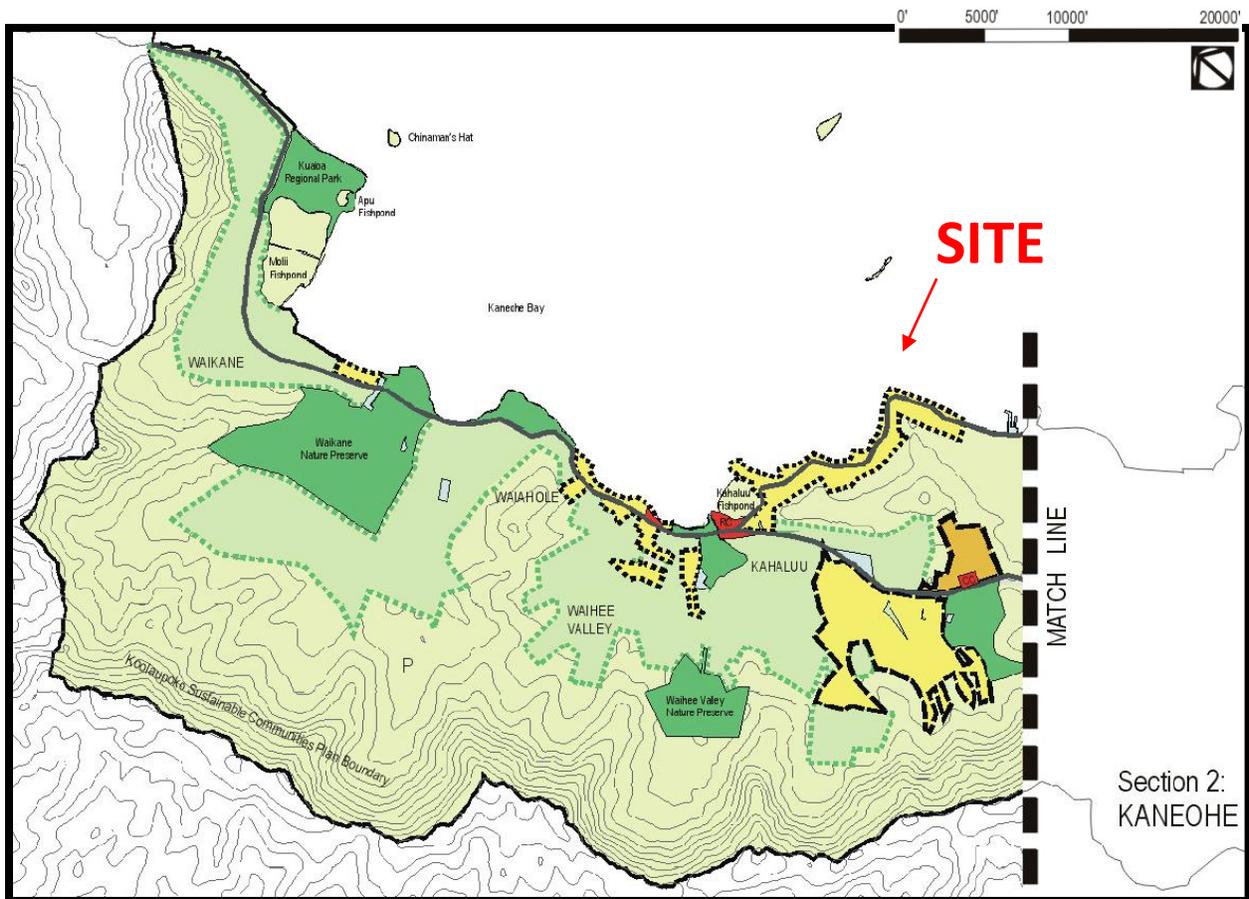
Figure 1-3: Development/Sustainable Communities Plan

This project is part of the Ko'olaupoko Communities Plan. The Plan seeks to preserve Ko'olaupoko's natural, scenic, cultural, historical, and agricultural resources, and to protect the residential environment of its neighborhoods. The Plan calls for adaptation of the traditional "ahupua'a" concept as a basis for land use and natural resources management.

The project site and surrounding properties are designated "Low Density Residential" on the Ko'olaupoko Communities Plan Map. In addition, the project site is located within the "Rural Community Boundary". These communities consist of smaller, more dispersed, less intensively developed residential communities and towns than those of

Ko'olaupoko's urban fringe areas. Figure 1-4 shows the project site in relation to the plan's land use map. City and County Zoning Districts

Lands within the City are categorized, or zoned, into specific districts. The uses permitted within these districts are described under ROH Chapter 21, Land Use Ordinance (LUO), and are shown on zoning maps. The purpose of the LUO is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies, including the Oahu general plan and development plans, and to promote and protect public health, safety, and welfare. The project site and surrounding properties are zoned R-10 Residential. This classification is intended to provide areas for large lot developments (10,000 square feet and more) typically located at outskirts of urban development where residential use is desirable. Figure 1-5 shows the zoning associated with the project site and surrounding areas.



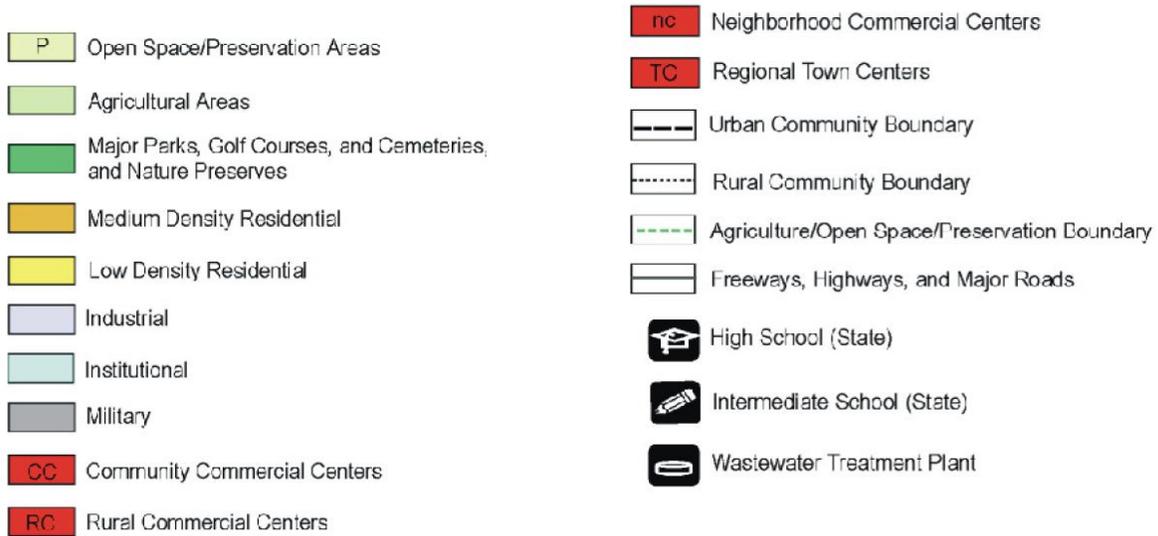


Figure 1-4: Ko'olaupoko Sustainable Communities Plan

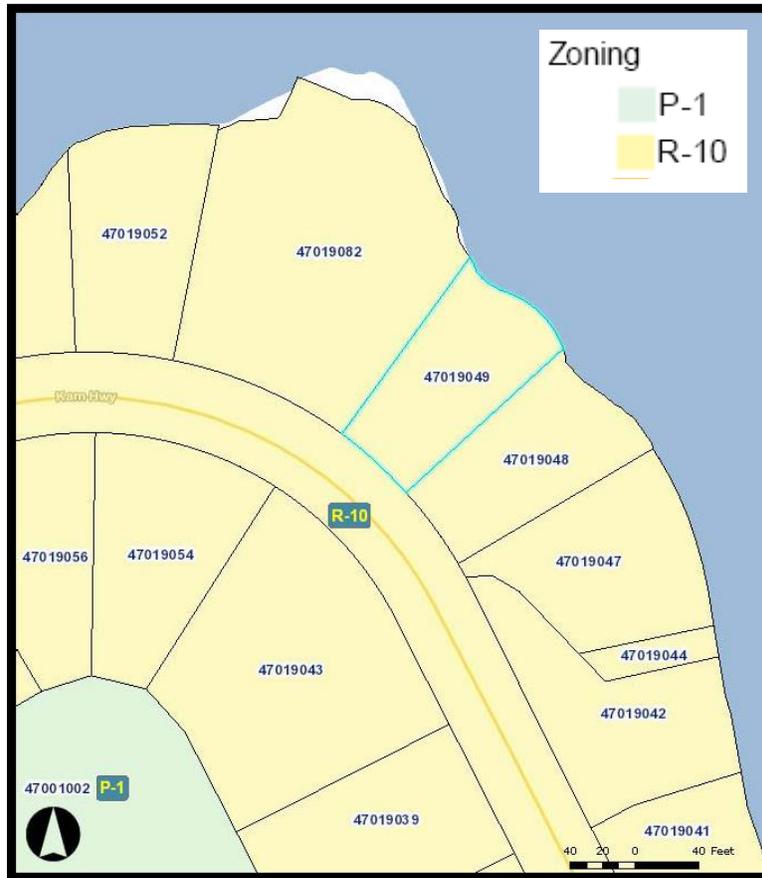


Figure 1-5: City Zoning Map

Special Management Area

As described in ROH Chapter 25, Special Management Area, it is the City's policy to preserve, protect, and where possible, restore the natural resources of the coastal zone of Hawaii. Under HRS 205A, Coastal Zone Management, the City and County of Honolulu is given authorization to regulate land uses located within established Special Management Area (SMA) for the Island of Oahu. Figure 1-6 presents the project area in relation to the SMA boundaries. Review of the City's SMA Map determined that the entire project site is within the City's SMA. Although the site is in the SMA, the proposal is associated with a single-family dwelling. Therefore, it is exempt from SMA approvals pursuant to ROH, Section 25-1.3(2)(A) and (N).



Figure 1-6: Special Management Area

Flood Zone

The entire parcel is in Flood Insurance Rate Map (FIRM) Zone D, as shown on the Federal Emergency Management Agency FIRM Panel ID No. 15003C0260F, effective date September 30, 2004. FIRM Zone D designates areas in which flood hazards are undetermined.

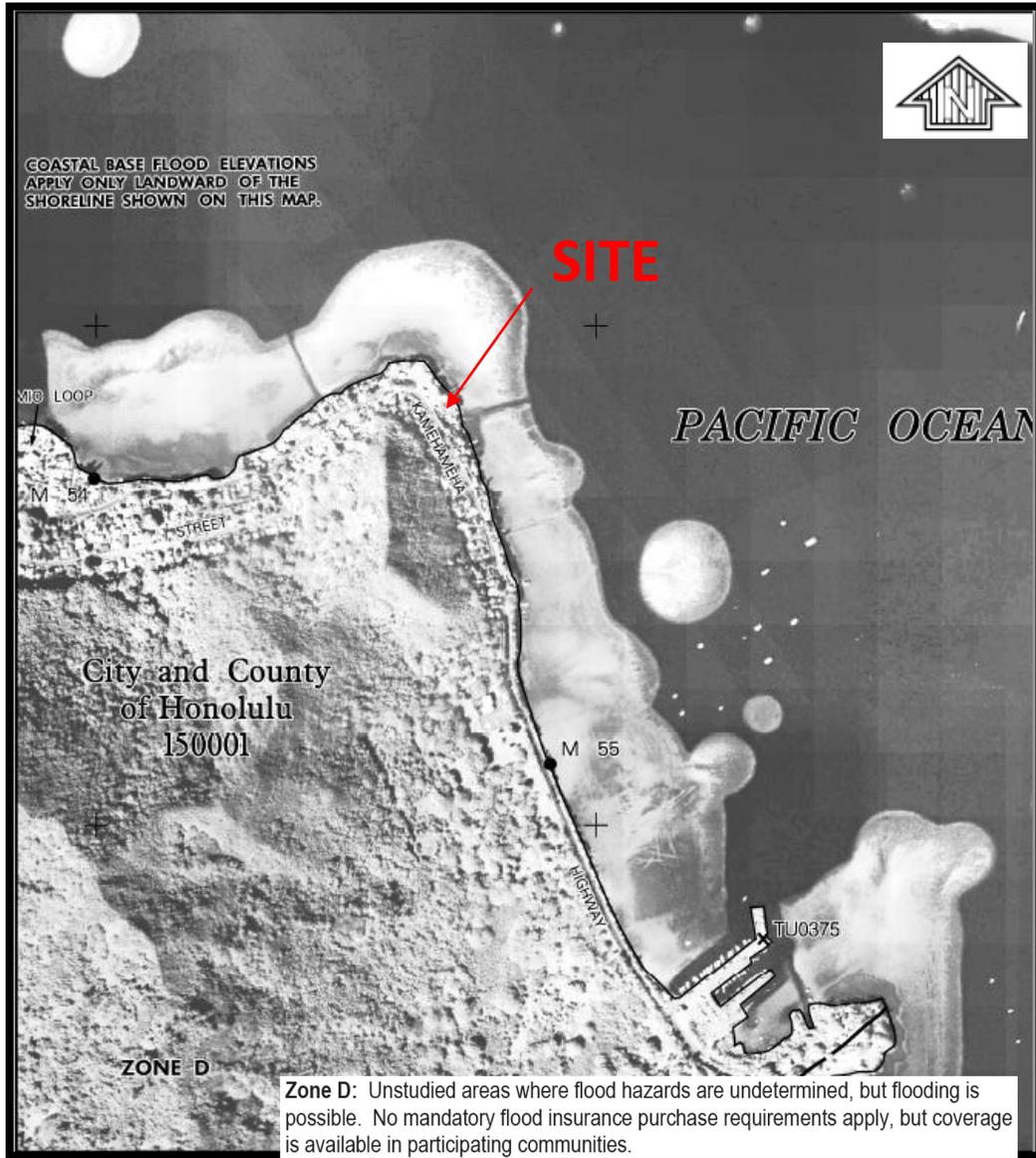


Figure 1-7: Flood Insurance Rate Map

2.0 PROJECT SITE AND DESCRIPTION

2.1 Project Site

The project site, with TMK 4-7-017:049, is located on 47-079 Kamehameha Highway Kaneohe, Hawaii, within a residential neighborhood along the shore of Kaneohe Bay. The site is 9000 square feet (0.21 acres) and sits about thirty feet above Kaneohe Bay. See project plat plan on Figure 2-1.

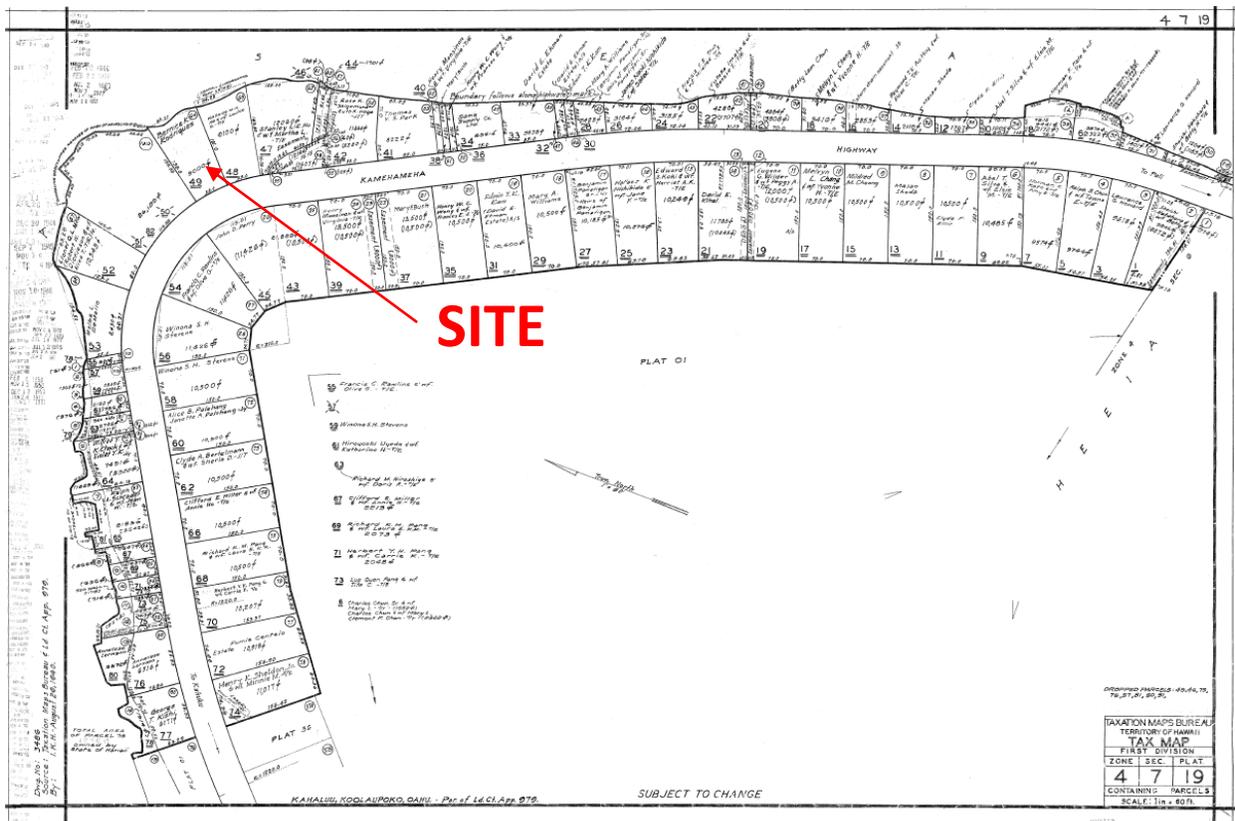


Figure 2-1: Plat Plan

The adjacent lot to the south of the property (TMK 4-7-019:048) currently has a permitted retaining seawall that extends past the property's shoreline. The far reach of the neighboring property's seawall shows how much the shore has receded. On the opposite side, TMK 4-7-019:082 is an empty lot with no seawalls along the shore or existing structures on site.

A shoreline survey was completed by Gil Bumanglag and certified by the Chairman of the Board of Land and Natural Resources on March 20, 2009 (See shoreline survey map

on Appendix B). The existing one-story dwelling sits just outside of the 40'-0" shoreline setback but the concrete slab and retaining wall in question is within the setback.

A photograph from 1975 shows a home that was once located on the neighboring lot on the west of the parcel (See Figure 2-2). This home has since been demolished and removed by the previous owner. The property itself made additions and alterations to the dwelling and walls of the site. A list of applications and permits can be found in Table 2-1.



Figure 2-2: Historical Aerial Photographs

The list below shows some of the proposed work with completed, discontinued, or closed permit applications. The notice of violation for the subject unpermitted structures was given on September 23, 2003.

Table 2-1: Building Permits and Applications

APPLICATION NO.	BLDG PERMIT NO.	ISSUE DATE	TMK	STATUS	DESCRIPTION
	329065	12/23/1992	47019049-	COMPLETED	RODRIGUES - PL
	344996	11/19/1993	47019049-	COMPLETED	RODRIGUES - PL
A2002-07-0803	538423	8/19/2002	47019049	PERMIT APPLICATION CLOSED	JOE & KRIS SOUZA - ADD BATHROOM, DINING, UTILITY, BEDROOM, RELOCATE KITCHEN

July 23, 2013

A2003-08-0449	563057	8/7/2003	47019049	PERMIT APPLICATION CLOSED	JOSEPH & KRISTEN SOUZA - REPLACE EXISTING DRIVEWAY APPROACH WITH NEW APPROACH
A2008-06-0157	627598	6/4/2008	47019049	PERMIT APPLICATION CLOSED	JOSEPH SOUZA - ADD NEW CORAL ROCK VENEER TO EX CMU WALL W/ 5'-0" MAX AT FRONT OF PROPERTY (EX WALL 16" IN FROM FRONT PROPERTY LINE)

An existing wall was built in April 2003 without the required city building permits. The wall was built within the 40'-0" setback and does not block any beach access. It is an 8" thick concrete masonry unit (CMU) wall with coral rock veneer at a height of 94" from the top of the wall to the bottom of the footing. An aluminum railing is built atop the wall between 3'-6" high columns. The wall supports a 4" concrete slab that was poured at the rear of the dwelling, within the 40'-0" setback. The total length of the wall is 75'-3" long. Concrete stairs were included to access a portion of the cliff to maintain shrubs and overgrown plants (See Appendix A for photos).

The cliff past the retaining wall consists mostly of overgrown vegetation and bare soil. A milo tree is growing at the base of the cliff and is presumably thought to be what is stabilizing the remaining dirt from eroding. Weeds are also growing on the cliff and it has to be maintained in order for it to not spread into neighboring properties. In addition, centipedes, geckos, and rodents were often encountered along the cliff side. This needs to be eliminated to not cause issues with sanitation and neighboring properties.

Drawings of the existing concrete deck and wall are shown on Appendix F and below.

July 23, 2013

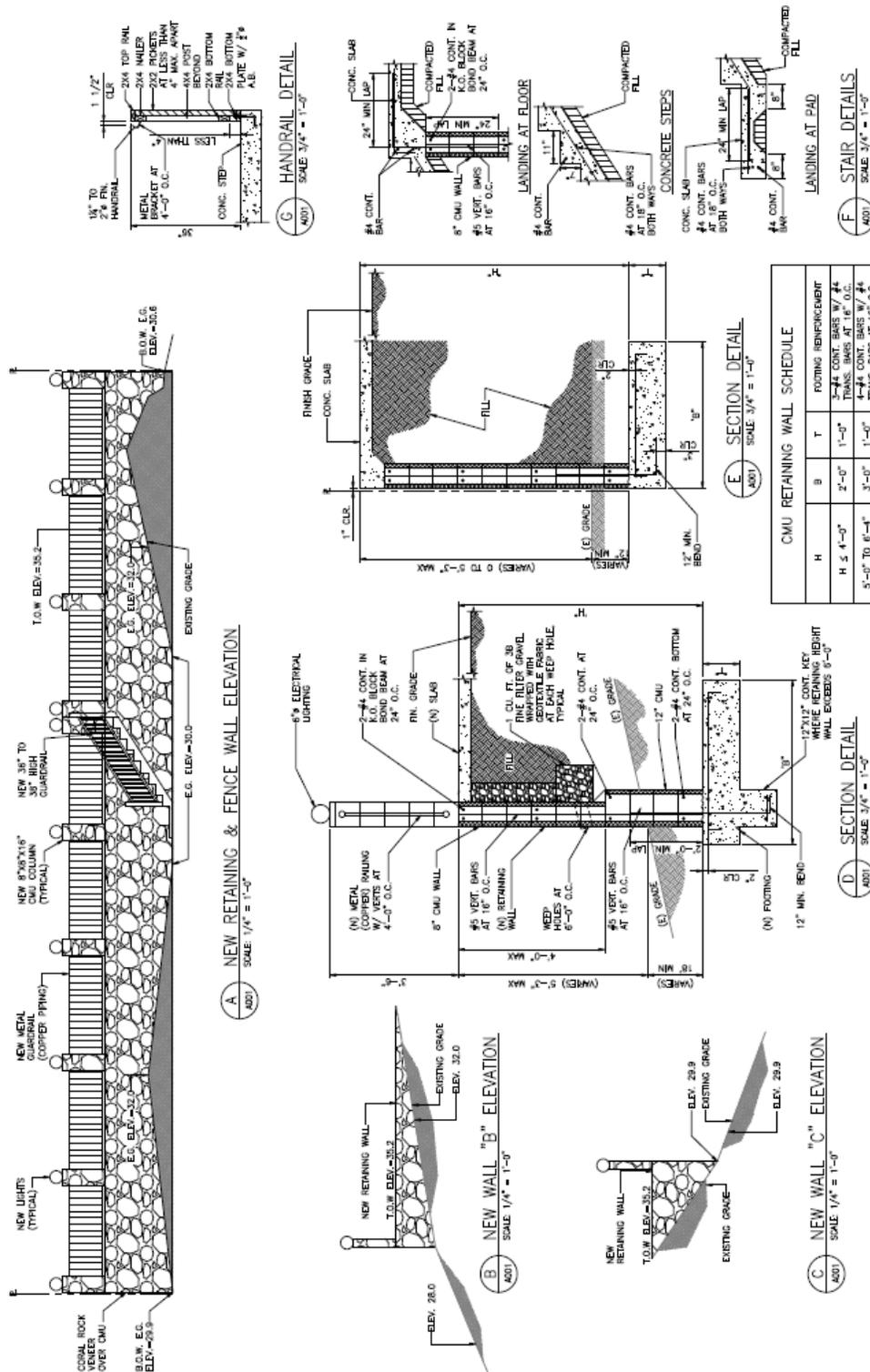


Figure 4: Project Elevation and Details

2.2 Project Description

According to a soils report written by Applied Geosciences, LLC in 2008, soil on the slope consists of fractured, loose, and unstable materials. The soil is presumably being reinforced by the existing vegetation. Since 2004, approximately 323 square feet of the 9000 square feet of the property has eroded. This Environmental Assessment report is in support of keeping the after-the-fact deck and placing or repairing the existing stairs on the slope with lightweight wooden stairs with railings for access for vegetation control, prevent rodent infestation, and to monitor the state and condition of the slope.

Site Plan

Based on the geotechnical analysis made by Applied Geosciences, LLC, the existing deck should not be removed due to its capability to protect the slope from eroding further and keeping the existing house from being undermined. From the existing break in the wall, wooden stairs used for maintenance access begins straight down to the slope and stops midway down. This report proposes to retain the existing concrete deck and either fix the existing staircase by providing safer supports and railings or construct a new lightweight wooden staircase that would go straight down the slope for access to areas containing overgrown weeds and bushes, in addition to monitor the slope. The stairs will have 7-inch risers and 11-inch treads, as well as 36" high handrails at each side.

Grading Concept

The amount of grading would be limited to areas around the staircase within the shoreline setback. Besides these areas, the existing slope will be untouched.

Erosion Control Measures

The installation of these items will be done in a way that will keep pollution to the bay or disruption to any wildlife in the area to a minimum.

- Proper controlling measures will be employed to keep the surrounding properties free of any damage.
- Work will be supervised regularly by the engineer of record
- Contractor will be held responsible for following the plans and stipulations stated by the City and County Department of Planning and Permitting and the State of Hawaii Department of Land and Natural Resources. Because of the severity of this project, work will be done quickly and swiftly without delay.

Best Management Practices (BMP) during construction consists of:

- Sand bags around the area of work located within water areas
- Silt fences down the slope of property to prevent sediment from entering neighboring properties
- Construction stabilized entrance at entry of property

Without a proper stabilizing system for the soil, and without the deck, erosion will surely continue to occur into Kaneohe Bay. Eventually, the retaining wall will be undermined and fail. Because of the connection of the wall, concrete slab, and residential building foundation, the home will also be affected. In addition, without proper access on the hill side, necessary maintenance will not be possible; therefore, unwanted vegetation and animal life will continue to live on the slope.

Project Plan

The proposed lightweight wooden stairs would be constructed with shallow concrete pyramid footings that support a wooden post and stair stringers. Wood or composite decking material will be used for the treads. Please see Appendix F for Proposed Stair and Landing Layout for Souza Residence.

The stairs will start at the new concrete landing (elevation 29.5) on CMU wall and will continue to a new wood landing at the same elevation. From here, Stair “A” with 12 steps continues down to another wood landing (elevation 21.0). Further down, Stair “B” having 6 steps continues to an additional wood landing (elevation 16.5). Stair “C” continues down with 6 steps to one more wood landing (elevation 12.0). And lastly, Stair “D” with 15 steps stops at the bottom of the shoreline.

As mentioned earlier, the proposed lightweight wooden stairs and retaining of the concrete deck are both important to provide access on the slope for maintenance of overgrown vegetation and to protect from excess water seepage that could erode the soil underneath the house. Please see Appendix F for preliminary drawings on the proposed additions for Souza Residence.

3.0 TECHNICAL CHARACTERISTICS

3.1 General Description

Kaneohe Bay area was formed as part of basic geological events like the Kailua, Ko’olau, and Honolulu volcanic series, in addition to reef building, changing sea level, continuing soil erosion, and sediment deposition. Three of the volcanic ridges that separate streams flowing into Kaneohe Bay are present today. One of the ridges, Puu a Pohakea,

projects into Kaneohe Bay between Kaneohe and He'eia, where the project site is located, and extends out to Moku o Loe (Coconut Island).

3.2 Shoreline Characteristics

According to the 1978 Kaneohe Bay *Water Resources Study*, the surface of Kaneohe Bay is approximately 8 miles long and 2.6 miles wide. About midway across the mouth of the bay, an extensive reef barrier protects the waters of the bay from the ocean. The fringing reef flat borders the shoreline almost continuously except for stream channels that extends between 1,000 and 2,500 feet off the shoreline.

The shoreline along the project's location is fairly calm except for wave action when wind and rain occur. The shoreline is a coral reef, greatly covered by gorilla ogo, and the offshore adapts range from 5 feet to 225 feet. The littoral conditions between the low and high water marks of Kaneohe Bay are very consistent along the shoreline. The project does not have any public recreational resources like swimming, surfing, or jet skiing, etc. The only lateral access at the shoreline of the property would be from occasional kayaking or diving by neighbors.

3.3 Oceanographic Characteristics

Winds

Winds in Hawaii can be classified into four different groups: trade winds, Kona winds, tropical storms, and tropical cyclones. Winds affect the direction and magnitude of the surface currents in the ocean, as well as the currents in shallow coastal areas. The project area, located on the northeast or windward side of Oahu, is exposed to the prevailing northeast trade winds.

Waves

Wave patterns in Hawaii are generally categorized in five major types: trade wind waves, North Pacific swell, Kona storm waves, south swell, and cyclonic or hurricane waves. The southwestern shore of Kaneohe Bay is sheltered from wave attack from the east by the Mokapu Peninsula and by the Island of Oahu from waves from the south and west. Waves that enter the bay from the north and northeast are greatly reduced by the wide and shallow reef protecting Kaneohe Bay. The project location is exposed to trade wind waves which occur approximately 75 percent of the time with an average significant wave height of 4.8 feet.

Despite the reduced waves that enter the bay, it can still cause tremendous effects to the hillside. The property does not have sea walls protecting the shoreline from eroding. When the tide rises, red dirt disperses into the bay covering a large portion of the reef. The wave action can also amplify the erosion of the property on the outer lying walls along the shoreline.

Animal Life

There is a possibility of disruption of wildlife in the area due to continuous erosion and pollution going into the bay. Because this area of the property is unstable and eroding, proper maintenance was not done that resulted in overgrown trees, weeds, and pili grass. In addition, rats, centipedes, and geckos have often been encountered along the hillside of the property. No other sea life can be found at the base of the property due to gorilla ogo infestation along the shoreline. Proper mitigation is necessary to control the issue and minimize pollution and disruption of any animal life.

4.0 ALTERNATIVES CONSIDERED

During early consultation process conducted for this project, a few alternatives to satisfy the project needs were identified. The preferred alternative was selected and discussed in Chapter 2.

4.1 Alternative Concepts: Shoreline Improvements

Demolish Existing Concrete Deck Structure

According to extended analysis made by Applied Geosciences, LLC, removal of the concrete deck would expose critical areas in the back of the slope to additional infiltration from rainfall, and hence would result in a much higher likelihood of mass erosion. This would cause a negative impact on the bay and therefore, undesirable from an environmental perspective. Large-scale slope instability could also compromise the safety of individuals if it were to be substantial enough to place the main house in jeopardy. Therefore, the concrete deck has played an important role in reducing the potential for slope instability and soil erosion and should remain.

Demolish and Replace Existing Concrete Deck

An extended analysis from Applied Geosciences, LLC states that replacing the existing deck with a sealed deck was considered and found unsuitable. Water would easily seep through a wood floor and reach the ground level through the sides. Similarly, a

cantilevered structure with a sealed floor was considered inadequate unless waterproof walls on the sides will be included. Even with the concrete deck in place, with the given overall marginal level of safety, any of the mentioned alternatives would still have resulted in unacceptably low safety of factors.

Demolish Existing Concrete Deck with the Installation of Geotechnical Netting or Tie-back system

From discussions with the Geotechnical Engineer from Applied Geosciences, LLC, the existing concrete deck may be demolished given that a geotechnical netting or tie-back system will be placed in lieu of the existing concrete deck. But without a stabilization system, possible undermining of the house can occur. Therefore, large-scale slope instability could also compromise the safety of individuals in the household and danger may be caused to the Souza family. This alternative was not a feasible option due to installation costs of tie-back system, and risk of danger.

Demolish Existing Concrete Deck with the Installation of Engineered fiber system

Another alternative explored is the use of geosynthetics underneath the embankment and soft foundation soil after demolition of the deck. Geosynthetics may prevent sliding failure and may increase stability of the slope. This alternative may be effective but would require removing the entire fill, placing the engineered fiber, and backfilling the slope. This option was turned down because taking out the fill would increase the possibility of soil erosion that could undermine the house. There will be a greater risk in doing this because of the existing and worsening slope issues on the property.

New Retaining Walls

According to the Geotechnical Engineering Exploration Report by Applied Geosciences, LLC, a set of terraced retaining walls with proper backfill and effective drainage provisions, would be effective in preventing additional soil loss into Kaneohe Bay and at the same time provide necessary support to the porch and the house that exist on the property. Though it is effective, it would be difficult to tie back the proposed retaining walls into the slope. This can be done by a reinforced concrete footing tied back to the slope but this alternative can be expensive and unsightly. In addition to this, the City stated that this proposal is excessive and is not due to unique circumstances. Therefore, other alternatives which would not require large encroachments should be considered.

Gunite Existing Slope

Another alternative considered was to reinforce the existing slope using gunite. With similar reasons as installing new retaining walls, guniting may be effective in preventing soil loss on the slope but will be very costly. In addition to the expense, this option may cause an unsightly view from the ocean.

Geotechnical Netting or Tie-back system

Placing geotechnical netting on the slope or a tie-back system installed into the face of the slope was also considered. Existing vegetation on the slope must be cleared out before installation of the geotechnical netting. This may cause a visual impact on the slope when viewed from the ocean. This alternative will be very effective in preventing further erosion into the bay and keeping the existing one-story dwelling safe and stabilized. This option was also turned down because of installation costs.

As mentioned at the beginning of this section, the preferred alternative was selected and discussed in Chapter 2.

5.0 PROJECT IMPACTS

5.1 Construction Related Jobs

Construction of the mentioned project improvements should have a minor short-term positive economic impact associated with the creation of short-term construction related jobs. Direct construction jobs would typically consist of on-site laborers, tradesmen, mechanical operators, supervisors, etc. These new jobs created would generate additional personal income for construction workers. However, the creation of short-term construction jobs is not expected to generate any in-migration of workers to the Island of Oahu to fill these jobs. It is anticipated that qualified licensed local contractors on the island or within the State of Hawai'i would be used for the project's construction. Consequently, the construction of this project would not have any long-term or permanent secondary effects on the number of resident construction workers in the City or State. Thus, the proposed project is not expected to change the social context of the area.

5.2 Fiscal Factors

Fiscal impacts associated with this project would primarily involve some additional tax revenue generated to the State due to construction costs expended for this project. Tax

revenue sources for State government are composed primarily of general excise taxes (GET) on development costs and construction materials, along with corporate income tax, and personal income tax from construction workers. Construction related tax revenues would be one-time or short-term increases in revenue since they are only associated with construction activities.

The improvements planned for the project should contribute to the increased property value of the residential site. Since City revenues are primarily derived from property tax revenues, there should be a small increase to the City revenues from this project. The project site is a privately-owned property that is not exempt from paying City property tax. Therefore, with the project improvements, there should be a slight increase to City property tax revenues.

5.3 Social Impact Factors

The shoreline project is not expected to significantly change the existing resident population in the community or surrounding region. Implementation of the project would not displace any residents or businesses since construction would be limited to the project site already designated for residential use. As a result, there would be no significant impacts on the existing resident population. This project would not alter or change the character of the community because this project does not propose changes in conflict with existing uses in the surrounding area or have a significant impact on surrounding land uses.

5.4 Cumulative and Secondary Impacts

Cumulative impacts are effects on the environment which result from the incremental impact of a project when added to past, present, and reasonably foreseeable future actions. The cumulative impacts associated with this project includes assessing the implementation of the shoreline improvements to evaluate it, and incorporating other known planned improvements within the area and study year that would affect or be affected by the project. There are no major cumulative impacts associated with this project.

If the existing concrete deck was removed and the proposed shoreline improvement was denied, negative impact would result, including increased erosion of the soil and other vegetative debris into the bay. This would harm animal life surrounding the shore and would create hardship for the landowners, who would lose their soil and compromise the safety of their home. The alternative options discussed above would be ineffective at best and, at worst, would damage the environment and cause hardship to the landowners.

Secondary impacts, or indirect effects, are effects which are caused by an action and are later in time or farther removed in distance, but are still reasonable foreseeable. Such

effects may include growth-inducing impacts and other effects related to changes in land use patterns, population density or growth rate, and related effects on air, water, and other natural systems.

The proposed shoreline improvements are associated with residential use of a property within an established rural neighborhood within Kahaluu. The current condition of population and demography is not expected to be significantly affected by the nature of the project. This project is not expected to significantly affect the City's resident population growth for the community and surrounding region, and thus would not generate the associated secondary effects on infrastructure, public facilities, and housing. These being said, there is no reasonable basis to expect that adverse secondary impacts would occur.

6.0 Conformance with County Plans

6.1 State Land Use District

The project site is located within the State's Urban District as indicated in the State Land Use Boundary Map for the Kahaluu region as shown in Figure 1-2. Permitted uses or activities within the Urban District are provided by ordinances or regulations of the county within which the Urban District is situated. Thus, Urban District lands on the Island of Oahu are regulated by the ordinances and regulations of the City and County of Honolulu. The single-family residential use of the project site is a permitted land use in the Urban District. Thus, the proposed shoreline improvements are also permitted as ancillary uses of the residential dwelling.

6.2 State Environmental Policy

Environmental Policy

HRS Chapter 344 established this policy which will encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the ecological systems and natural resources important to the people of Hawaii.

The project would be consistent with this environmental policy because the proposed improvements would utilize existing land and open space area within the owner's property. These improvements will be designed and constructed to minimize effects on

natural resources, pollutant discharge during construction by implementing best management practices, and include review and approval by pertinent regulatory agencies. This project will conserve natural resources such as open space lands and is not anticipated to significantly impact the shoreline and the ocean waters beyond.

Guidelines

Population

The shoreline project will be consistent with population guidelines because the proposed improvement is not expected to significantly change the existing resident population in the community or surrounding region.

Land, water, mineral, visual, air, and other natural resources

The shoreline project will be consistent with these guidelines because the proposed improvements would not impact natural resources such as watersheds, forest preserves, wildlife preserves, or unique ecological preserves. The project would not have an adverse impact on areas that are valuable open spaces since the property is located in an existing residential community. To minimize erosion and address drainage requirements to help conserve and protect natural resources, appropriate measures would be incorporated.

Flora and Fauna

This project will not introduce new plants or animals to the area which may have an ecological hazard. No known endangered plant species have been identified in or near the project site. Birds, mammals, reptiles, and amphibians that may frequent the site are expected to be alien or indigenous species that are commonly found in urban residential environments. Fauna species present within the project site are not expected to be negatively affected since development of this project should not drastically alter the existing environment.

Parks, Recreation, and Open Space

The project is situated within a residential lot, and will have a positive impact on existing public and recreational uses within the area. The project will provide protection of the shoreline from manmade improvements and activities. Accessibility of the open space will improve by allowing owner's safe access to Kaneohe Bay. The project is not expected to impact significant historic properties or cultural resources and practices since there are no known sites or cultural resources and practices present.

Citizen participation

This project allowed for a meeting with the Kahaluu Neighborhood Board and the project was assured of consistency with the vision, land use policies, and guidelines relating to the shoreline areas in Ko'olaupoko Sustainable Communities Plan.

6.3 Ko'olaupoko Sustainable Communities Plan

The development of this project cannot avoid being located within a coastal area. However, appropriate design measures will be implemented to allow the proposed shoreline improvements to be compatible with the shoreline environment.

The project is not expected to impact significant historic properties or cultural resources and practices as previously discussed. In the event that any iwi kupuna or cultural deposits are uncovered, work will be immediately stopped and the State Historic Preservation Division will be contacted immediately. Furthermore, the project site has been previously disturbed from construction of a previous residential structure. Therefore, the project would be consistent with these policies addressing historic and cultural resources.

7.0 Justification for Shoreline Setback Variance

The Souza family will suffer hardship if the shoreline setback variance is not granted and the after-the-fact concrete deck must be removed. This application is evaluated on three criteria for hardship set forth in the ROH Section 23-1.8(b)(3)(A).

1. Deprivation of Reasonable Use – Section 23-1.8(b)(3)(A)(i):

The soil on the exposed steep face of the slope is composed of fractured, loose, and unstable materials. Although a factor of safety larger than 1.0, indicating a stable condition was calculated, values less than 1.50 are deemed potentially hazardous and unacceptable. As explained in the soils report, in the situation where the existing concrete deck is removed, more soil will be exposed to infiltration from rainfall and therefore, would cause more erosion to the bay. In addition to this, continued loss of soil will begin to undermine the porch and will compromise the structural integrity of the house as well as the homeowners. The proposed set of stairways would help the homeowners access the slope to allow for proper maintenance from overgrown weeds that cause rodents and other unwanted animal life to live in the area. The purpose of this project is not only to protect the house, but to permit the property owners to gain

reasonable use of their land. This would not be possible if the after-the-fact concrete deck and lightweight wooden stairs were denied.

2. Unique Circumstances – Section 23-1.8(b)(3)(A)(ii):

The request to retain the existing concrete deck is due to unique circumstance. According to the soils report prepared by Applied Geosciences LLC, the existing concrete deck provided an essential role in stabilizing the slope. Because of the concrete deck, infiltration of rainwater to the soil was minimized. This helped prevent erosion and landslides from worsening and happening. See Appendix D for an extended analysis report that explained this in detail. Other alternatives to the concrete deck were also evaluated and were found inadequate. Because there is no other near lateral access to the hill side from the house, the proposed set of stairways would be a great help to the homeowners. This would provide them access to the slope to monitor the slope's state and condition and provide proper and necessary maintenance to vegetation overgrowing on the slope. If this is achieved, unwanted rodents and animal life will be reduced.

Due to the unique set of circumstances, the existing concrete deck will need to remain. The project would not only help stabilize the slope and provide additional safety to the house and homeowners, but would also provide the owners access to the cliff side of their property for maintenance and stabilization.

3. Practicable Alternative – Section 23-1.8(b)(3)(A)(iii):

The proposed retention of the existing concrete deck is necessary to help stabilize the slope of the property. This was concluded from the report prepared by Applied Geosciences, LLC. The removal of the concrete deck would result in lower factors of safety in the slope that is considered hazardous due to large amounts of volcanic soil that would go into the bay. In addition, an extended analysis was prepared and found several alternatives to the concrete deck to be inadequate. The wooden deck on posts that was considered would provide insufficient protection to the slope because water can seep through wood and reach the soil underneath. A cantilevered structure was also inadequate unless waterproofing measures were done but would have visual impact on the existing structure. Because, there is no other near lateral access to the hill side, the best solution in maintaining the slope is the proposed set of stairways. This would provide direct access to the hillside and the homeowners would be able to maintain the slope and prevent weeds, grasses, and rodents from overgrowing and living on the slope. Due to the other alternatives to slope stabilization being expensive, unsightly, and

nonconforming, the proposed slope stabilization measure would be the most practicable alternative to the erosion problem in the property.

After evaluation of the mentioned alternatives, the most feasible alternative to be done on the project is retention of the existing concrete deck to prevent increased rainfall infiltration and providing stairway access to the slope for monitoring and maintenance of the slope.

8.0 Findings and Determination

The information presented in this Draft EA demonstrates that legalizing the after-the-fact concrete deck and slope stabilization system would have no significant impact on the environment. There are no environmental impacts related to the applicant obtaining a shoreline setback variance. An Environmental Impact Statement is not required for this action and a Finding of No Significant Impact is anticipated.

Reasons for Supporting Declaration

This determination is based on an assessment of the significance criteria listed in 11-200-12 of the Environmental Impact Statement Rules. Information related to each of the criteria is presented below:

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

The proposed improvements would not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. Chapter 2 of this Draft EA discusses the intention of the improvements to protect the bay and the owner's life and property.

With respect to archaeological or cultural resources, there are no known historic or culturally significant sites within or surrounding the project. In the event historic resources are encountered, all work would be stopped immediately and the SHPD will be notified.

The project would not restrict access to surrounding areas that may be potentially used for traditional native Hawaiian cultural practices. This project would not prevent shoreline access that may be used for traditional gathering or other cultural practices.

2. Curtails the range of beneficial uses of the environment

The project would not curtail the range of beneficial uses of the environment at the project site. The planned improvements would not change the existing uses of the land or surrounding lands and will not limit or significantly impact existing uses or the surrounding areas.

This project is anticipated to improve the water quality of the bay by reducing continual erosion and landslides, therefore, increasing the beneficial uses of the environment.

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 improvements would not conflict with the State's long term environmental policies or goals and guidelines as expressed in Chapter 343, HRS. The probable impacts associated with the project are primarily associated with short-term construction activities.

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

The project would not have any significant negative impacts on the economic structure of the Ko'olaupoko District, or the social welfare of the Kahalu'u community. The project would create a short-term, minor economic benefit generating construction jobs and personal income for local construction workers.

5. Substantially affect public health

The project is not expected to affect public health since it would involve improvements to the residential lot. The proposed project would address public health by implementing mitigation measures in the shoreline area.

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

The project would not have secondary impact on the environment because no new construction is being proposed. The existing structure will remain in place, causing no population or public facilities changes.

7. Involves a substantial degradation of environmental quality

The project would not degrade the quality of the environment and is anticipated to improve environmental quality through elimination of debris and dirt from erosions and landslides to Kaneohe Bay. Necessary measures would be implemented during construction to minimize erosion and other short-term impacts.

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

The project would not have a significant effect on the environment. This project does not involve the commitment for larger actions in the Kahaluu community.

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

There are no known endangered flora and fauna present on the project area. Short-term impacts associated with construction activity would be minimized by implementing necessary control measures and best management practices.

10. Detrimentially affects air or water quality or ambient noise levels

The project would not detrimentally affect air and water quality and noise levels. Best management practices and other necessary measures would be implemented to minimize short-term effects of construction activity on site. The project is anticipated to improve the quality of Kaneohe Bay once the slope stabilization measures are implemented.

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

The project area is not located within an environmentally sensitive area such as a flood plain, tsunami zone, or erosion-prone or geologically hazardous land. However, the project area is subjected to increased erosion due to its location on the shoreline.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies

The project would not have a significant negative impact on scenic vistas or viewplanes. Construction of this project is expected to have minimal or no effect on public viewing points.

13. Requires substantial energy consumption

The project does not include any component that requires substantial energy consumption.

9.0 Public Agency Review and Consultation

Early consultation with various government agencies regarding the proposed project for stabilization was conducted. The copies of these consultation efforts are included in Appendix B.

Federal Agencies

- U.S. Army Corps of Engineers – Honolulu District

State of Hawaii Agencies

- Department of Land and Natural Resources
- Department of Land and Natural Resources, Office of Conservation and Coastal Lands
- Department of Land and Natural Resources, State Historic Preservation Division
- Department of Land and Natural Resources, Land Division - Oahu
- Department of Land and Natural Resources, Division of Aquatic Resources
- Department of Health
- Office of Hawaiian Affairs
- Department of Transportation

City and County of Honolulu

- Department of Planning and Permitting

Kahaluu Neighborhood Board Meeting

A presentation on the proposed shoreline improvements was made to the Kahaluu Neighborhood Board No. 29 on August 13, 2008 as part of the early consultation efforts. A short presentation was done by Kristen Souza to provide background of the project and proposed improvements to the Board. The Board had no objections and mentioned that they did not have any negative comments because the project and the neighboring property are the only two properties without slope protection.

10.0 References

City and County of Honolulu. "Revised Ordinances of Honolulu, Official Web Site for the City and County of Honolulu." 13 May 2011. City and County of Honolulu, Council and Council Services. 8 June 2011 <<http://www1.honolulu.gov/council/ocs/roh/>>.

City and County of Honolulu, Department of Planning and Permitting. City and County of Honolulu, Parcels and Zoning. 2011. 8 June 2011 <<http://gis.hicentral.com/FastMaps/ParcelZoning/>>.

—. Department of Planning and Permitting > Planning > Koolaupoko. 2010. 8 June 2011 <http://honoluluhpp.org/planning/DevSust_Koolaupoko.asp>.

Dr. Paul L. Jokiel, Hawaii Institute of Marine Biology. "Jokiel's Scientific Guide to Kaneohe Bay." 8 June 2011 <http://cramp.wcc.hawaii.edu/Downloads/Publications/OD_JOKIELs_Scientific_Guide_to_K-Bay.pdf>.

State of Hawaii. (1996). Hawaii Administrative Rules. Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules.

State of Hawaii. (1998). Hawaii Revised Statutes. Chapter 343, Environmental Impact Statements.

State of Hawaii. (2000). Hawaii Revised Statutes. Chapter 205, Land Use Commission. Planning and Economic Development.

United States Federal Emergency Management Agency. National Flood Rate Map, Flood Insurance Rate Map. Community Panel Number 15003C0260 F. September 30, 2004.

APPENDIX

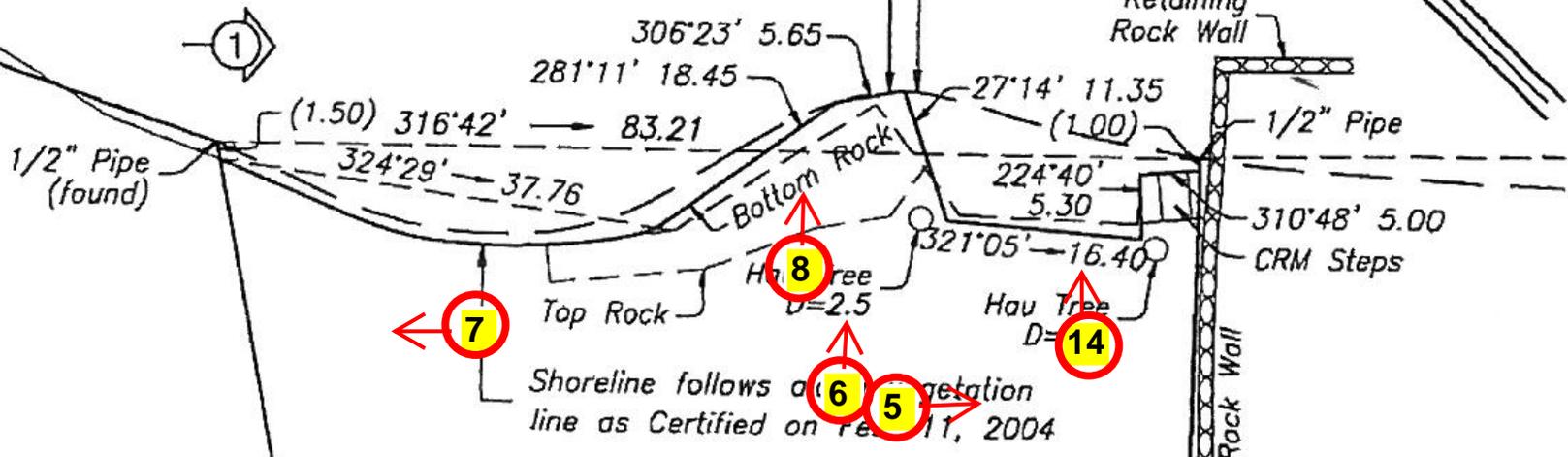
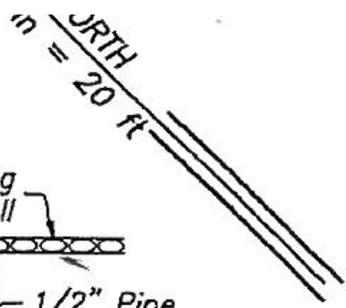
Appendix A	Photos of Project site and Surrounding Areas
Appendix B	Early Consultation Efforts
Appendix C	Geotechnical Engineering Exploration by Applied Geosciences, LLC (September 15, 2008)
Appendix D	Extended Analysis for Geotechnical Engineering Report (February 25, 2010)
Appendix E	Certified Shoreline Map (April 26, 2008)
Appendix F	Proposed Stair and Retaining Wall Addition for Souza Residence

APPENDIX A

Photos of Project site and Surrounding Areas

on Land Court Application 979 (Map 3)

Shoreline follows along bottom of rock and vegetation line as located on April 26, 2008



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PHOTO KEY MAP

Lot 65
TMK: 4-7-019: 050

Lot 63
TMK: 4-7-019: 048

215'56" 30"
(136.50)
138.00

One-Story Dwelling

131.00
(130.00)
47'51" 16"

APPENDIX A - PHOTOS

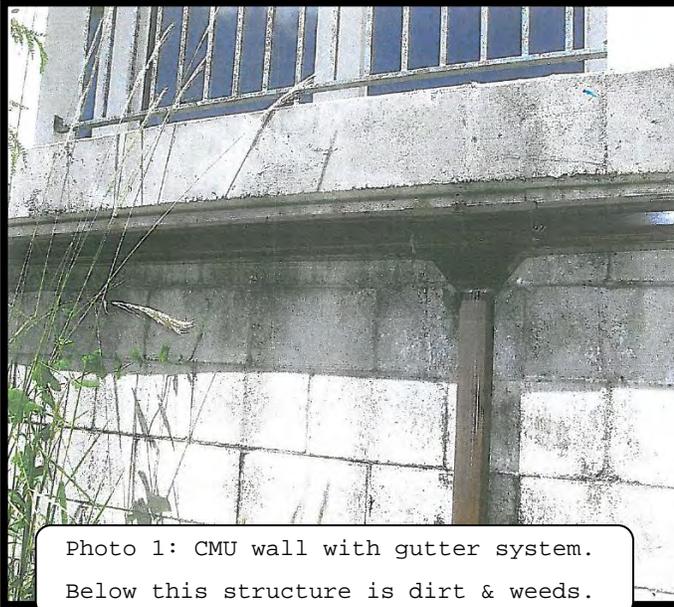


Photo 1: CMU wall with gutter system. Below this structure is dirt & weeds.

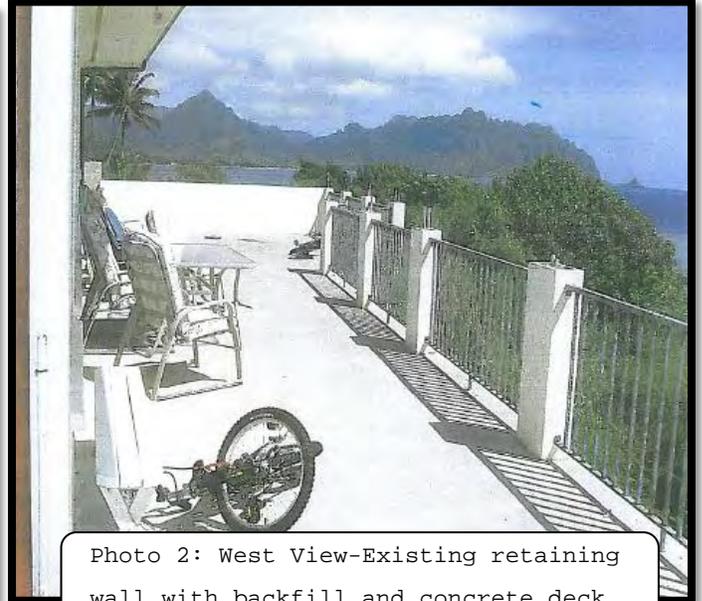


Photo 2: West View-Existing retaining wall with backfill and concrete deck.



Photo 3: East View-Existing retaining wall with backfill and concrete deck.



Photo 4: North View-View of cliff from retaining wall.

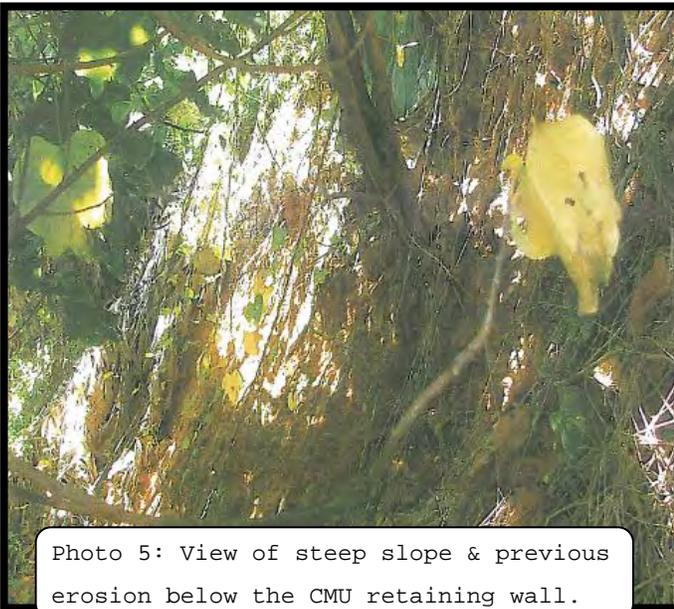


Photo 5: View of steep slope & previous erosion below the CMU retaining wall.



Photo 6: View of cliff from half way up to retaining wall from the water line.



Photo 7: View of landslide on cliff from left side of the property.

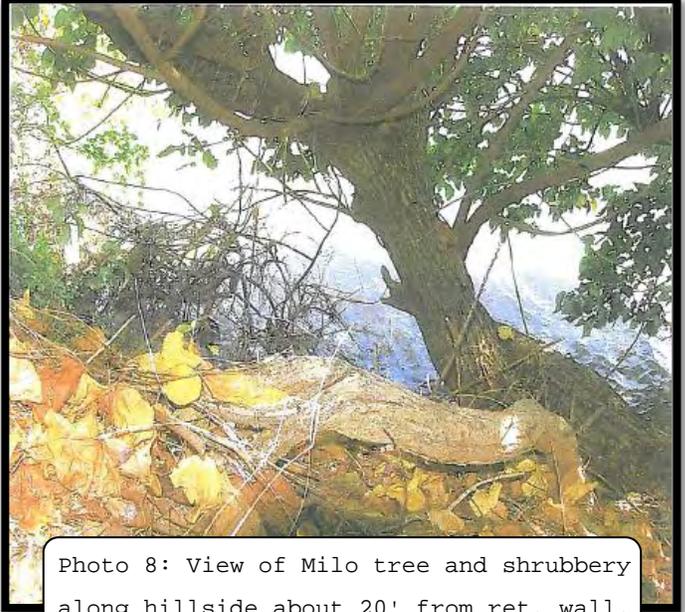


Photo 8: View of Milo tree and shrubbery along hillside about 20' from ret. wall.

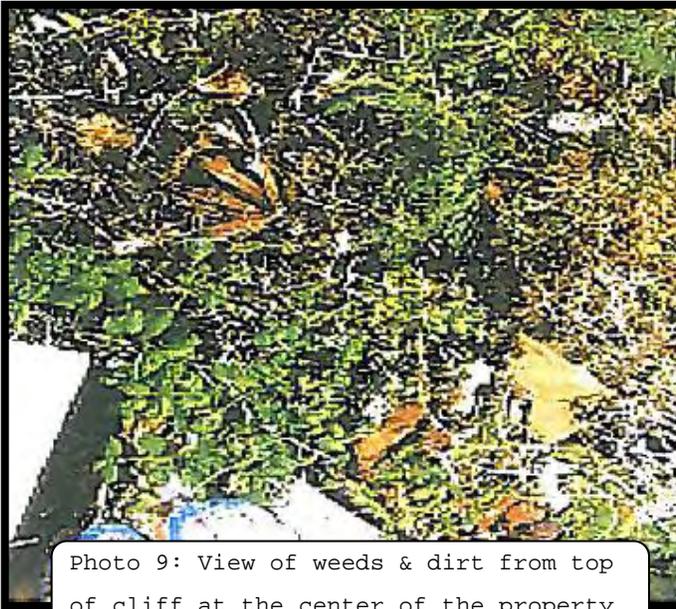


Photo 9: View of weeds & dirt from top of cliff at the center of the property.

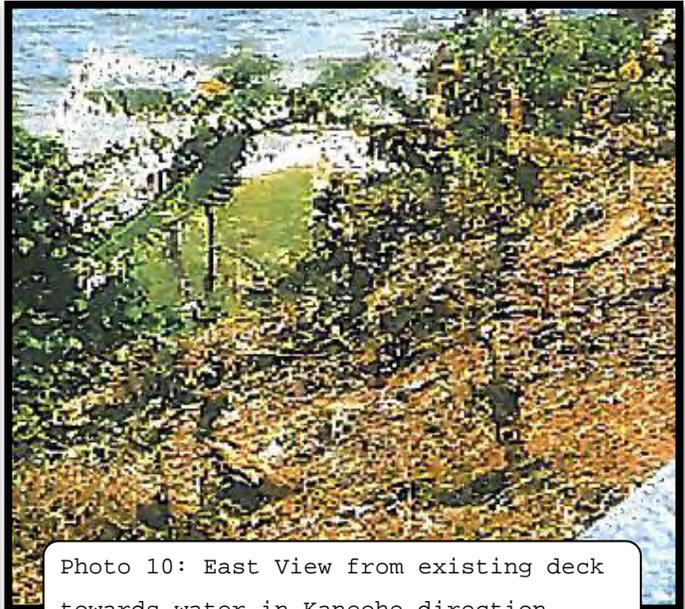


Photo 10: East View from existing deck towards water in Kaneohe direction.

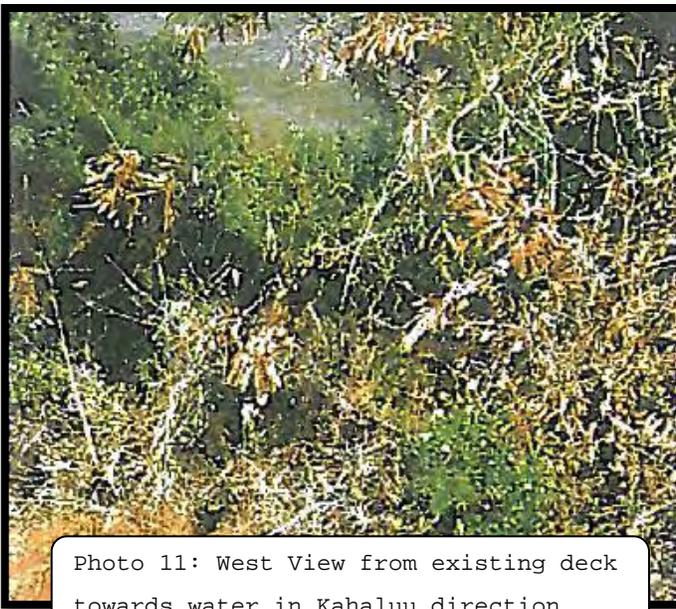


Photo 11: West View from existing deck towards water in Kahaluu direction.

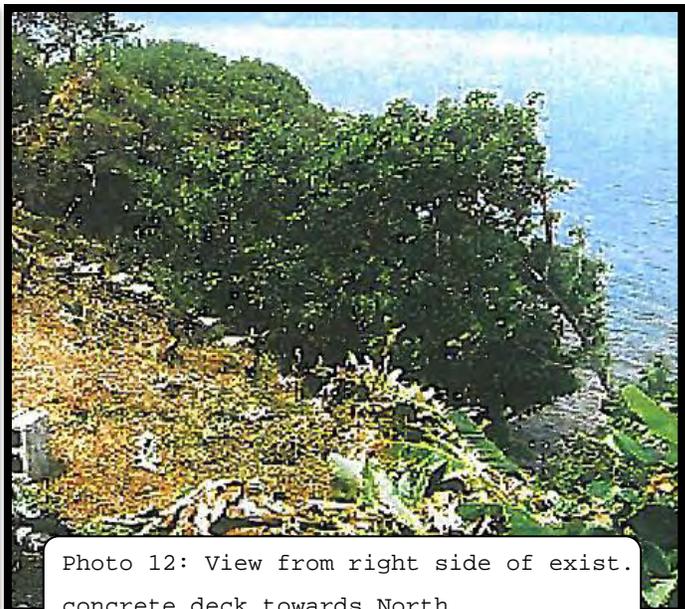


Photo 12: View from right side of exist. concrete deck towards North.



Photo 13: Far right view of neighbor's fence & wall on Kaneohe side.



Photo 14: View of red dirt about 3/4th way down the hill at center of property.



Photo 15: East view of neighboring property along Kamehameha Highway. Property gate visible on far left.



Photo 16: West view of neighboring property along Kamehameha Highway. Property wall visible on far right.



Photo 17: View of property taken from Kamehameha Highway.



Photo 18: View of project site in relation to neighboring sea walls.

APPENDIX B

Early Consultation Efforts

Environmental Assessment

Retaining Wall TMK: 4-7-019-049, 47-079 Kamehameha Hwy, Kaneohe, Hawaii

April 19, 2009

Joseph N. Souza
Kristen L. Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

TMK: 4-7-019-049

City and County of Honolulu
Department of Planning and Permitting
650 South King Street
Honolulu, HI 63813

Aloha,

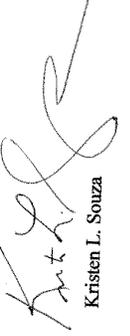
Enclosed is an updated environmental assessment. A notice of incomplete application was received in 2004, 2007 and 2008 which are included in this packet. We have made all the specified adjustments. Due to the nature of our existing application we decided to add the plans for slope stabilization. In this application you will find numerous letters, photos and documents supporting our proposal.

We appreciate your review of our Environmental Assessment requesting a shoreline variance. This is an updated EA which we have made the suggested changes. It is completely understood that our situation is unusual. The limited amount of space from the home to the property line is very minimal. It is necessary to utilize all of our land in order to properly build the recommended retaining walls for stabilization. We did look at other alternatives which were not feasible. We also looked at bringing the walls closer together and remaining in the shoreline. This again was not feasible. It raised numerous safety issues and the walls need to comply with the engineers recommendations. Complying with City, State, Army Corp. DLNR regulations is understood and we have noted our situation the best of our ability while trying to meet all regulations.

Please let us know if you have any questions. We are always happy to assist you. We look forward to your favorable response.

Mahalo,


Joseph N. Souza III


Kristen L. Souza

April 18, 2009

Department of Planning and Permitting
City and County of Honolulu
650 South King St. 7th Floor
Honolulu, HI 96813

Mr. & Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: Draft Environmental Assessment (EA)
Shoreline Setback Variance
Souza Concrete Deck and Slope and Shoreline Stabilization
47-079 Kamehameha Highway Kahaluu
Tax Map Key 4-7-19-49

Aloha Mr. Eng,

Thank you for your review and comments concerning our project. Your response is greatly appreciated.

We have made all of the necessary corrections and additions to our environmental assessment. We have also responded to each individual commenter. All letters and comments are included in our final EA.

Should you have any questions you can reach me at 236 -2480.

Sincerely,


Kristen L. Souza
Property owner

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
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INTERNET: www.honolulu.gov • DEPT. WEB SITE: www.honolulu.gov



MUFU HANNEWMANN
MAYOR

HENRY ENS, PAICP
DIRECTOR

DAVID K. TANIGUE
DEPUTY DIRECTOR

2008/ED-11(ST)

November 26, 2008

Mr. and Mrs. Joseph Souza
47-079 Kamehameha Highway
Kaneohe, Hawaii 96744

Dear Mr. and Mrs. Souza

Subject: Draft Environmental Assessment
Shoreline Setback Variance
Souza Concrete Deck and Slope and Shoreline Stabilization
47-079 Kamehameha Highway - Kahaluu
Tax Map Key 4-7-19: 49

Our comments on the Draft Environmental Assessment (EA) for the above project are as follows:

Section 1.0 General Information

1. The single "Retaining Wall" title is misleading and should be revised to more accurately describe the proposal (e.g., After-the-fact Concrete Deck and Slope and Shoreline Stabilization).
2. The Department of Planning and Permitting (DPP) must also be identified as the accepting authority for the environmental assessment and that the preparation of the EA is required for a shoreline setback variance (SV) application pursuant to Section 343-5(a)(3), Hawaii Revised Statutes (HRS).
3. The location of the site is in Flood Zone D. "Areas which flood hazards are undetermined, but possible" pursuant to the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM) should be indicated.
4. The reference to the community development plan should be corrected to the "Koolau-poko Sustainable Communities Plan."
5. The list of Permits Required should include a grading permit from the City and County of Honolulu and a Conservation District Use Permit (CDUP) from the State Department of Land and Natural Resources (DLNR).
6. Regarding the Special Management Area (SMA) requirements, this item should be expanded to state that although the site is in the SMA, the proposal is associated with a single-family dwelling, and therefore, exempt from SMA approvals pursuant to Section 25-1.3(2)(A) and (N), Revised Ordinances of Honolulu (ROH).

Mr. and Mrs. Joseph Souza
November 26, 2008
Page 2

Section 2.1 Location

1. This section should focus on describing the location of the proposal i.e., the structural elements for which an SV will be requested. The technical construction details in the last paragraph should be moved to the subsequent section. The Final EA should also include a brief background discussion that accurately describes the sequence of events which led to the preparation of the draft EA. Although you indicate that the existing (unauthorized) concrete deck was built in 2004, that date conflicts with the citations that were issued by the Department of Planning and Permitting (DPP) in mid- and late 2003 (Notice of Violation Nos. 2003/NOV-08-118 and 2003/NOV-09-021 and Notice of Order, No. 2003/NOO-223). Copies of the citations should be attached to the appendix of the Final EA.
2. The location maps referenced as Figures 1 and 2, which are actually from the Geotechnical Engineering Exploration prepared by Applied Geosciences, LLC, are unnecessarily difficult to find. The Final EA should be revised to include location maps which are clearly labeled and attached to this section. We also find that the "Figures" listed in the Table of Contents are actually documents and correspondence from other parties (i.e., geotechnical firms, structural engineers, government agencies.). These "Figures" should more accurately be referenced as Attachments. Although they can remain appended to the end of the document, these documents should be labeled as an Appendix. Each appendix item should be separated by an identifying title page.

Section 2.2 Project Description

1. This section of the Final EA should be revised to clearly describe that there are two (2) separate actions sought under the application: A) Retaining the existing deck structure; and B) Constructing three (3) proposed structures, which include a seawall and two (2) retaining walls.
2. This section should describe the entire site (outside the shoreline setback), including the size and type of dwelling construction, its orientation on the site in relation to other setbacks, as well as other improvements (i.e., drive and walkways, drainage features, fences or other retaining walls). A brief history of the site should also be provided (i.e., when was it subdivided, when was the dwelling built, etc.). Additional exhibits, including a site plan as well as photographs would be useful.

Section 3 Environmental Setting

This section should be relabeled Technical Characteristics as suggested by the "Content Guide for Preparing an Environmental Assessment."

Section 3.1 Shoreline Characteristics

This section should be expanded to describe the current shoreline along this portion of the Kaneohe Bay. It should describe the type of shoreline and associated conditions, including profile, off-shore depths, and littoral conditions, including transports, cycles, or abnormal changes. Both tidal conditions and shoreline erosion history should also be included (e.g., whether it's receding, accreting or stable). Historical aerial photographs of the shoreline would be useful.

An additional subsection should be added which describes existing public recreational resources of the area (i.e., is there swimming, fishing, diving, surfing, etc.). This section should include a discussion of lateral access along this shoreline.

Section 3.1 Summary of Impacts

This section focuses on the retention of the existing concrete deck and does not describe those structures associated with the proposed construction of the two (2) new retaining walls and a seawall that will alter the existing shoreline. We strongly suggest that the Final EA be revised and substantially expanded to provide separate and distinct discussions related to the new construction. The revised summary should discuss the short-term impact associated with the excavation required and the potential shoreline erosion and nearshore pollution which may occur during construction. Other potential impacts related to construction, including equipment and construction material mobilization and storage, and post-construction stabilization (i.e., re-vegetation, landscaping) should be addressed. In addition, long-term effects such as visual impacts, changes in drainage patterns, near-shore water quality and shoreline erosion, as well as public recreational access, should be addressed. We note that for visual impact evaluation, area photographs and simulations of post project photos with the structure(s) superimposed would be useful.

Technical Issues

Shoreline Setback Line - The shoreline setback line illustrated on the previous certified shoreline survey dated February 11, 2004, is incorrectly shown. Please note that the 40-foot shoreline setback line is measured from every point along the shoreline (the intersection of radii), pursuant to Section 13-1, "Rules Relating to Shoreline Setbacks and the Special Management Area." See attached illustration.

Engineering Analysis - Our Site Development Division noted the following: In addition to the engineer stamp and signature, the report (Geotechnical Engineering Exploration) should have included the authentication statement and expiration date of the engineer's license pursuant to Section 11-115-9, Hawaii Administrative Rules. The engineer should also provide a soils report conformance letter stating that he has reviewed the plans for the proposed improvements and that those plans are in conformance with the recommendation of his report. In addition, although the report states that some sort of tie-back system will need to be installed in order to provide the necessary stability, no recommendations were presented. In addition, please clarify if the terraced retaining system addresses slope stability. If so, what is the factor of safety of slope stability after the improvements are constructed? If not, why are recommendations not included to address slope stability?

Conformance with County Plans

A section should be added to the Final EA that addresses how the proposal is consistent with the vision, land use policies, principles and guidelines relating to shoreline areas in the Koolauopoko Sustainable Communities Plan (SCP) (Ordinance 00-47).

Shoreline Setback Variance Justification

The Final EA must include a separate section that describes the objectives and criteria under which a shoreline setback variance may be granted. It must specifically address the three (3) tests of the Hardship Standard, pursuant to section 23-1.8(b)(3), ROH. We strongly suggest that a very thorough discussion of all alternatives that were considered be included. We note the recommendation in the technical study done by the sub-consultant does not thoroughly elaborate on all alternatives. The Final EA should explain why other alternatives, including smaller (shorter) retaining walls or hillside encapsulation were not considered, and why such alternatives are not practicable alternatives that better conform to the purpose of the SV regulations.

Significant Impact on the Environment

The Final EA must also be expanded to include a section which addresses the 13 "significance criteria" that are required pursuant to the content requirements of the EA, Section 11-200-12, Hawaii Administrative Rules.

If you have any questions, please contact Steve Tagawa of our staff at 768-8024.

Very truly yours,


Henry Eng, FAICP, Director
Department of Planning and Permitting

HE:cs

Encl:

cc: DLNR-OCCL
OEQC

G:\Steve\TEDs\DEASouza.com

May 9, 2009

City & County of Honolulu
Department of Planning and Permitting
650 South King St. 7th Floor
Honolulu, HI 96813

Mr. & Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: Draft Environmental Assessment
Shoreline Setback Variance
Souza Concrete Deck and Slope and Shoreline Stabilization
47-079 Kamehameha Highway Kahaluu
Tax Map Key 4-7-19-49

Aloha Mr. Eng,

Thank you for your review and comments concerning our project. Your response is greatly appreciated. We have made the suggested corrections, additions and took into consideration your viewpoints. I am addressing all of your points in this letter and have made the adjustments to our Environmental Assessment requesting a shoreline variance.

Section 1 General Information

1. Title has been revised.
2. Identified Planning & Permitting as the accepting authority for the EA.
3. The flood zone D has been addressed.
4. The reference to the community development plan has been changed to "Koolaupoko Sustainable Communities Plan".
5. We will be applying for permits for grading from both city and county and Department of Land and Natural Resources.
6. The proposal is stated to be associated with a single family home.

Section 2.1 Location

1. All points have been addressed and included in the EA. We have included a step by step process.
2. We have included the maps in the body of the EA. Hopefully this makes it easier to find.

Section 2.2 Project Description

1. This final EA has clearly differentiated between the two projects.
2. A new site plan has been included along with the photos for your reference. The shoreline and property line are clearly noted. Information regarding the dwelling has been included.

Section 3 Environmental Setting

1. Section has been relabeled to Technical Characteristics

Section 3.1 Shoreline Characteristics

1. The shoreline has been clearly described along Kaneohe Bay.

Section 3.1 Summary of Impacts

1. The two projects have been more clearly described and separated. We have also noted the long term and short term affects of both structures.

Technical Issues

Shoreline setback line has been clearly noted.

Engineering Analysis: The Geotechnical Engineer has placed his stamp on his report. He also viewed the plans and stated that they are in conformance with his recommendations. The terraced retaining system definitely addresses slope stability and it has been stated in the EA. The slope stability will clearly address the safety factor. The number will be significantly higher than it is now (1.0).

Conformance with County Plans

The EA has a section now that states the plans are in conformance with the vision, land use policies, principles and guidelines relating to shoreline areas.

2008/ELOC-282

LAURA H. THIREN
BOARD OF LAND AND NATURAL RESOURCES
COMMISSIONER ON WATER RESOURCES MANAGEMENT
RUSSELL Y. TSUI
DEPUTY DIRECTOR, WATER
RESOURCES
AGRICULTURE
BOATING AND OCEAN RECREATION
COMMISSIONER ON WATER RESOURCES MANAGEMENT
CONSERVATION AND RESOURCES DEVELOPMENT
INDUSTRY AND WILDLIFE
HAWAIIAN ISLAND RESERVE COMMISSIONER
STATE TREASURER



RECEIVED
08 NOV 19 P 3:31
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Office of Conservation and Coastal Fisheries
POST OFFICE BOX 2108
HONOLULU, HAWAII 96809

DLNR:OCCL: DE
November 13, 2008

Correspondence: OA-09-94

NOV 17 2008

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

SUBJECT: After the Fact Shoreline Setback Variance (Souza) 47-079 Kamehameha Hwy.
Kaneohe. TMK(1) 4-7-19:049

The Department of Land and Natural Resources' (DLNR) Office of Conservation and Coastal Lands (OCCL) is in receipt of the September, 2008 Environmental Assessment (EA) for the proposed After the Fact (ATF) Shoreline Setback Variance (SSV). We understand the SSV is for the existing retaining wall and for three proposed terrace walls to prevent further bluff failure on the seaward portion of the property.

We have found numerous deficiencies in the EA however based on the limited amount of information provided the OCCL offers the following comments and recommendations.

1. The chronic coastal erosion along the bluff appears to be a potential threat to the existing dwelling in the future if left unabated.
2. The OCCL has no objections to the proposed design or intent of the terraced walls with the exception for the lower (sea) wall. The OCCL regulates land uses seaward of the shoreline and would therefore be responsible for regulating any of the proposed activities in this area. It is noted the proposed seawall at the base of the bluff partially encroaches on state land and is also seaward of the proposed April, 26, 2008 shoreline (not certified).
3. It is recommended the proposed plan be revised to locate the lower seawall landward of the shoreline and the property line. These activities would require applying to the DLNR for a CDDA and an easement for land uses on state land. Typically the reclaiming of land seaward of the shoreline is highly scrutinized and would require additional regulatory review before any approvals could be issued.
4. The OCCL is unable to provide concrete recommendations until the shoreline is certified however we understand the applicant is attempting to obtain a certified shoreline and resolve the shoreline debris removal through a performance bond with the DLNR.
5. The current site and project description is lacking details on the purpose and intent as well as the justification for the variance.
6. All figures and appendix in the EA should be labeled and referenced in the text.

Shoreline setback Variance Justification

The EA includes the objectives and criteria which a variance should be granted. It is evident that there is great hardship and has been clearly discussed in the EA.

Other alternatives were discussed. Also the only practical one which is being put forth has been clearly shown.

Significant Impact on the Environment

This final EA has been expanded to include the 13 "significant criteria" which is required pursuant to the content requirements of the EA, Section 11-200-12, Hawaii Administrative Rules.

It is greatly appreciated that you viewed our draft EA. We apologize for not getting a permit when building the existing deck. We are trying our best to do this the correct way.

We look forward to hearing a favorable response. Thank you for your time it is greatly appreciated.

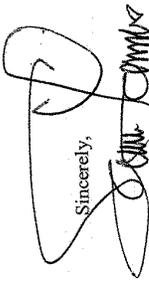
Should you have any questions you can reach me at 236 -2480.

Sincerely,

Kristen L. Souza
Property owner

7. The EA should comply with HRS Chapter 343 for format and content. We suggest you review the Office of Environmental Quality Control (OEQC) guidelines at <http://hawaii.gov/health/environmental/oeqc/index.html>
8. The site plan needs to be labeled and referenced with clearly demarked property boundary and shoreline locations. It is difficult to read site plan A-1. Cross section S1 of the Site plan should clearly demark the shoreline and property line.
9. The project description should more clearly explain the distinction between the existing (unauthorized) retaining wall and the proposed new retaining walls as explained in the April 12, 2007 letter from the City and County Planning Department.
10. The EA should include a project sequence and timeline as to how and when each stage of construction will take place. For example at what point will the debris along the shoreline be removed?

Thanks you for the opportunity to comment on this DEA. Should you have any questions, please contact the Office of Conservation and Coastal Lands, at (808) 587-0377.

Sincerely,


Samuel J. Lemmo, ADMINISTRATOR
 Office of Conservation and Coastal Lands

CC:
 Morris Atfa, Land Division
 Chairperson
 Oahu Board Member

May 4, 2009

Department of Land and Natural Resources
 Office of Conservation and Coastal Lands
 650 South King St. 7th Floor
 Honolulu, HI 96813

Mr. & Mrs. Joseph Souza
 47-079 Kamehameha Hwy
 Kaneohe, HI 96744

Subject: After the Fact
 Souza Concrete Deck and Slope and Shoreline Stabilization
 47-079 Kamehameha Highway Kahaluu
 Tax Map Key 4-7-19-49
 Draft Environmental Assessment (EA)

Aloha Mr. Lemmo,

Thank you for your review and comments concerning our project. Your response is greatly appreciated. We have made the suggested corrections, additions and took into consideration your viewpoints. I am addressing all of your points in this letter and have made the adjustments to our Environmental Assessment requesting a shoreline variance.

1. Currently the coastal erosion is a potential threat to the existing dwelling. Like you mentioned, thank you for noticing.
2. It is greatly appreciate that you do not object the proposed design or intent of the terraced walls. It is noted that you are concerned about the lower (sea) wall. Due to the severity of the slope and limited amount of space we are forced to utilize all of our property. The shoreline survey has been certified by your department. It is included in this draft of the EA.
3. We will be applying to the DLNR for a CDUA and an easement for land uses on state land permit.
4. The performance bond was completed. We have obtained a certified shoreline survey.
5. The purpose and intent for the slope stabilization is to protect the sea life and the existing dwelling. The current hardship is very evident and if left unabated the hardship will only worsen. The justification for our variance is to allow proper slope

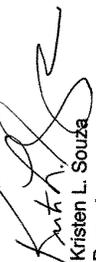
6. stabilization and discontinue debris and foreign particles from entering Kaneohe Bay. In addition to these positive attributes the terraced walls will grant us access to our property and allow us to maintain it properly.
7. All figures and appendices in the EA have been labeled and referenced in the text. The EA is in compliance with HRS Chapter 343 for format and content.
8. A new site plan has been included along with the photos for your reference. The shoreline and property line are clearly noted.
9. The Project description has been clearly distinguished between the two requests. We have clearly noted the **existing retaining wall** and the **new slope stabilization coral rock walls**. We hope it is easier to follow this time.
10. We have included a project sequence and timeline in that EA which will show each stage of construction. As soon as construction begins the debris (coral rocks) will be removed. We will be utilizing these rocks for the wall.

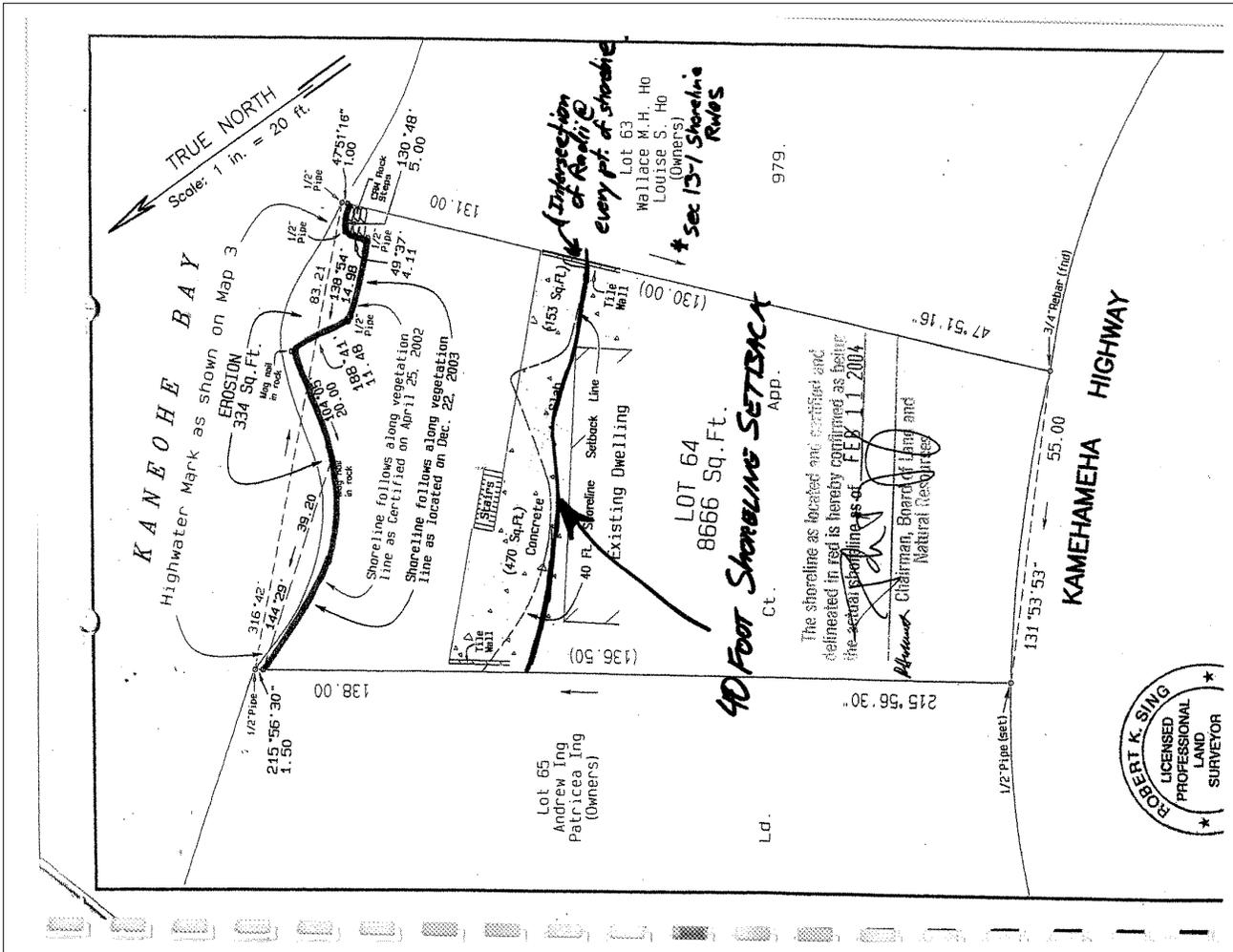
It is greatly appreciated that you viewed our draft EA. We have put in a lot of hard work into this report. Joe is a firefighter with the City and County of Honolulu in addition to running our own business. I work full time in our business. This is partly why it took us so long to prepare this document. We apologize for not getting a permit when building the existing deck. We are trying our best to do this the correct way.

We look forward to hearing a favorable response from DLNR. Thank you for your time it is greatly appreciated.

Should you have any questions you can reach me at 236-2480.

Sincerely,


Kristen L. Souza
Property owner



February 9, 2009

State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, HI 96801-3378

Mr. and Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: Draft Environmental Assessment and
Shoreline Setback Variance Application
(After the fact) for a Retaining Wall
47-079 Kamehameha Highway, Kahaluu, Oahu, Hawaii
TMK: (1) 4-7-019: 049

Aloha Mr. Sunada,

Thank you for your review and comments concerning our DEA and Shoreline Setback
Variance for the subject shoreline-seawall project and after the fact retaining wall.

Your response is greatly appreciated. We will gladly follow and adhere to applicable
procedures listed on your website while the construction our sea wall is underway.

Should you have any questions please contact Kristen Souza at (808) 234-2868.

Very truly yours,


Kristen L. Souza
Property Owner

LINA'UNIKU
GOVERNOR OF HAWAII



'08 NOV STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378
CITY & COUNTY OF HONOLULU
November 19, 2008

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

Dear Mr. Eng:

SUBJECT: Draft Environmental Assessment and Shoreline Setback Variance Application
(After-the fact) for a Retaining Wall
47-079 Kamehameha Highway, Kahaluu, Oahu, Hawaii
TMK: (1) 4-7-019: 049

Thank you for allowing us to review and comment on the subject document. The document was
routed to the various branches of the Environmental Health Administration. We have no
comments at this time. We strongly recommend that you review all of the Standard Comments
on our website: www.hawaii.gov/health/environmental/env-planning/landuse/landuse.html. Any
comments specifically applicable to this project should be adhered to.

If there are any questions about these comments please contact Jacai Liu with the Environmental
Planning Office at 586-4346.

Sincerely,



KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO

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

In reply, please refer to:
EPO-08-159

PHONE (808) 594-1888



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

08 DEC 10 P 3:38

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

HRD08/4059

November 24, 2008

Steve Tagawa
City and County of Honolulu
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

**RE: Request for comments on the proposed after-the-fact shoreline setback variance,
Kāne'ōhe, O'ahu, TMK: 4-7-19: 049.**

Aloha e Steve Tagawa,

The Office of Hawaiian Affairs (OHA) is in receipt of the above-mentioned letter dated September 19, 2008. OHA has reviewed the project and offers the following comments.

OHA understands that the applicant built an after-the-fact vanity deck within the shoreline setback in April, 2004. We see from the materials sent to us that the subject property is quickly eroding. We ask if the unpermitted structure has increased or affected the erosion rate, especially considering the additional weight and related strain downward of it on the nearby cliff face.

Additionally, we ask if there is now lateral access across the subject property and if not, we inquire if lateral access could be made a condition of this action, perhaps in the form of an easement. We ask because the accompanying environmental assessment (EA) does not provide any information regarding cultural impacts related to this project. We see that the Department of Planning and Permitting (DPP) in their Notice of Incomplete Application to the applicant did not enclose a copy of the "Content Guide for Preparing and Environmental Assessment." However, OHA cannot find that a Cultural Impact Assessment (CIA) was prepared for this EA, as required by Act 50, Session Laws of Hawaii, 2000. Additionally there are no biological surveys for flora or fauna.

Steve Tagawa
November 24, 2008
Page 2

We understand that DPP required an EA from the applicant, which is supposed to be an informational document used to better guide decisions for proposed actions. In line with this purpose is the requirement that DPP "shall assess at the earliest practicable time the significance of potential impacts of its actions, including the overall, cumulative impact in light of related actions in the region and further actions contemplated." (Hawaii Administrative Rules § 11-200-5) This EA does not include the type or quality of information to allow reviewers to properly assess potential impacts from the applicant's proposal. We also request assurance from the applicant that if iwi kīpuna or other cultural deposits are uncovered, work will stop and the applicant will contact the State Historic Preservation Division immediately.

OHA does understand that the applicant has limited time and resources; however, we also see that they chose to use some of both of them to make an aesthetic improvement to their house rather than correct the issues which they now say are threatening their home. OHA further asks if the applicant had not extended their house makai by building their lanai, then would this "emergency" action be necessary. While we do not have all of the information and have never been to the property, it does seem that the applicant has made some poor choices and added to their predicament by doing so. OHA also asks if the applicant has been subject to any fines to date.

We also suggest, in preparing for the advent of sea level rise, that if the proposal goes forward, DPP make it a condition that no further works within the shoreline setback are to be permitted.

Thank you for the opportunity to comment. If you have further questions, please contact Grant Arnold by phone at (808) 594-0263 or e-mail him at grania@oha.org.

'O wau iho nō me ka 'oia'i'o.

Clyde W. Nāmu'o
Administrator

April 18, 2009

State of Hawaii
Office of Hawaiian Affairs
711 Kapi'olani Blvd, Suite 500
Honolulu, HI 96813

Mr. & Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: Request for comments on the proposed after the fact shoreline setback variance, Kane'oh'e, O'ahu, TMK 4-7-19:049

Aloha Mr. Namu'o,

Thank you for your review and comments concerning our project. Your response is greatly appreciated.

We understand you have several concerns regarding the construction of our existing retaining wall and our new project of slope stabilization. We can assure you that we will follow all of your guidelines. In reference to the after-the-fact vanity deck within the shore line setback it has not caused additional erosion. In fact it has stabilized the soil road side on our property as well as stabilizing our home. Majority of the erosion is occurring at the Shoreline which is caused by the wave action. Another cause was a large landslide which occurred a few years ago due to our neighbors milo tree calling during the many days of heavy rain. The hillside is a vertical cliff and any dirt not held down by vegetation will wash down due to gravity.

While living on the property over the last 11 years it is always subjected to many types of weeds and rodents. The cultural impact assessment which is required by Act 50, session in laws of Hawaii, 2000 are noted. Our family has been living on this property for 11 years and the property has been in the family since the early 1900s. The only living creatures that have been spotted on the property are rats, centipedes and geckos. The only vegetation is hale Koa, milo, miscellaneous weeds and pill grass. By controlling the slope and conducting a beautification of our property it will be very beneficial to our neighbors, our family and the ocean.

Hawaiian culture is very important to our family. Being Hawaiian and growing up in Hawaii we understand completely the protection of our ancestors. We assure you that if we find any iwi Kupuana or other cultural deposits work will stop the immediately and we will contact the State Historic Preservation Division immediately.

This emergency action is necessary regardless of the house or deck being built. The erosion has been occurring over centuries and will continue for the coming centuries. Our family which lives in the home right now, in the moment needs to be safe. Regardless if the existing structure is in place we still need to protect our family. It is our hope that OHA and the City and County of Honolulu will see that this is a situation that needs attention now! Yes, the City and County could tell us that they will not grant us the variance but what will that solve? This is our family we are talking about which will still be in danger and the reality is we can't remove our home.

We are currently accruing fines at a daily rate of \$50 for the last five years. We believe the total amount is up to \$80,000. I, Kristen, have put together this environmental assessment over the last few years. My husband and I are in our 30s and we have three children as you can assume that the reason I am doing this EA is due to the lack of funds.

Joe and I thank you for reviewing our document. We have put in a lot of hard work into this report. Joe is a firefighter with the City and County of Honolulu in addition to running our own business. I work full time in our business. This is partly why it took us so long to prepare this document. We apologize for not getting a permit when building our house for the deck. We are trying our best to do this the correct way.

We look forward to hearing a favorable response from OHA. Thank you for your time it is greatly appreciated.

Should you have any questions you can reach me at 236 -2480.

Sincerely,



Kristen L. Souza
Property owner

February 9, 2009

State of Hawaii
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Boulevard Room 555
Kapolei, HI 96707

Mr. and Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: Chapter 6E-42 Historic Preservation Review
Shoreline Setback Variance Chapter 23 Revised Ordinance of Honolulu
Draft Environmental Assessment
Kane'oh'e Ahupua'a, Ko'olaupoko District, Island of O'ahu
TMK: (1) 4-7-019: 049

Dear Ms. McMahon,

Thank you for your review and comments concerning our DEA and Shoreline Setback Variance for the subject shoreline-seawall project and after the fact retaining wall.

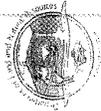
Your response is greatly appreciated. We will gladly follow and adhere to applicable procedures listed in your letter while the construction of our sea wall is underway. Preserving the current property the best we can in addition to preserving any historic land is one of our primary goals.

Should you have any questions regarding this letter please contact Kristen Souza at (808) 234-2868.

Aloha,


Kristen L. Souza
Property Owner

LINDA LINGLE
ARCHAEOLOGIST



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

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

November 20, 2008

Mr. Henry Eng-Director
Department of Planning and Permitting
City and County of Honolulu
Honolulu Municipal Building, 650 South King St.
Honolulu, HI 96813

Dear Mr. Eng:

SUBJECT: Chapter 6E-42 Historic Preservation Review --
Shoreline Setback Variance Chapter 23 Revised Ordinances of Honolulu
Draft Environmental Assessment
Kane'oh'e Ahupua'a, Ko'olaupoko District, Island of O'ahu
TMK: (1) 4-7-019:049

Thank you for the opportunity to provide comments on the aforementioned project, which we received on November 3, 2008.

We determine that **no historic properties will be affected** by this undertaking because:

- Intensive cultivation has altered the land
- Residential development/urbanization has altered the land
- Previous grubbing/grading has altered the land
- An accepted archaeological inventory survey (AIS) found no historic properties
- SHPD previously reviewed this project and mitigation has been completed
- Other: *The property is located along the Kane'oh'e shoreline along a steep bank. There are no known historic properties located on the parcel or nearby. The Kane'oh'e area was filled in during earlier times, therefore we believe that any unknown significant historic properties will not be affected by the undertaking.*

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

Please contact Lauren Morawski (O'ahu Archaeologist) at (808) 692-8015 if you have any questions or concerns regarding this letter.

Aloha,



Nancy McMahon, Archaeology and Historic Preservation Manager
State Historic Preservation Division
LM

NATURAL RESOURCES
DEPARTMENT OF LAND AND NATURAL RESOURCES
RUSSELLA KUIHI
HONOLULU, HI

08 NOV 24 10:33 AM '08

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

LOG NO: 2008.4953
DOC NO: 0811LM40
Archaeology

LINDA LINGLE
GOVERNOR



RECEIVED

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'08

IN REPLY REFER TO:

STP 8.3051

DEPT. OF PLANNING AND PERMITTING

CITY & COUNTY OF HONOLULU

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

869 PUNCHBOWL STREET

HONOLULU, HAWAII 96813-5097

November 13, 2008

CITY & COUNTY OF HONOLULU

Mr. Henry Eng
Director

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

Dear Mr. Eng:

Subject: Shoreline Setback Variance
Chapter 23 Revised Ordinances of Honolulu
Draft Environmental Assessment (DEA)
TMK: 4-7-19: 49

Thank you for your letter requesting State Department of Transportation (DOT) comments concerning the DEA for the subject shoreline-seawall project.

The proposed project is not anticipated to significantly impact any State Transportation facilities.

DOT appreciates the opportunity to provide comments. Please contact Mr. David Shimokawa of the DOT Transportation Planning Office at (808) 587-2356 if there are any questions.

Very truly yours,

BRENNON T. MORIOKA, PH.D., P.E.
Director of Transportation

February 9, 2009

State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813-5097

Mr. and Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: Shoreline Setback Variance
Chapter 23 Revised Ordinances of Honolulu
Draft Environmental Assessment (EA)
TMK: 4-7-19:49

Aloha Mr. Morioka, PH.D., P.E.,

Thank you for your comments concerning the DEA for the subject shoreline-seawall project.

Your response is appreciated and we are glad to know that our project will not significantly impact any State Transportation Facilities.

Should you have any questions please contact Kristen Souza at (808) 234-2868.

Very truly yours,

Kristen L. Souza
Property Owner



LAVALE THORNER
DIRECTOR OF LAND AND NATURAL RESOURCES
OFFICE OF THE GOVERNOR OF THE STATE OF HAWAII

RECEIVED

08 NOV 25 11:28

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



November 21, 2008

Department of Planning & Permitting
City & County of Honolulu
650 South King Street 7th Floor
Honolulu, Hawaii 96813

Attention: Mr. Steve Tagawa

Ladies and Gentlemen:

Subject: After-the-fact Shoreline Setback Variance, Joseph and Kristen Souza

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

Other than the comments from Land Division-Oahu District, Division of Aquatic Resources, the Department of Land and Natural Resources has no other comments to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Charlene E. Linnell
Charlene E. Linnell
Morris M. Atta
Administrator

February 9, 2009

State of Hawaii
Department of Land and Natural Resources
Land Division
P.O. Box 621
Honolulu, HI 96809

Mr. and Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: After the Fact Shoreline Setback Variance
Draft Environmental Assessment
Kahala'u, O'ahu
TMK: (1) 4-7-019: 49

Aloha Mr. Atta,

Thank you for your review and comments concerning our DEA and Shoreline Setback Variance for the subject shoreline-seawall project and after the fact retaining wall.

Your response is greatly appreciated.

Should you have any questions regarding this letter please contact Kristen Souza at (808) 234-2868.

Sincerely,

Kristen L. Souza
Kristen L. Souza
Property Owner

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 130
HONOLULU, HAWAII 96813

MEMORANDUM

TO: Morris M. Atta, Administrator
Land Division

FROM: Dan Polhemus, Administrator
Division of Aquatic Resources

SUBJECT: After-the-Fact Shoreline Setback Variance

LOCATION: Kahaluu, Island of Oahu, TMK: (1) 4-7-19-49

APPLICANT: Joseph and Kristen Souza

General Comment:

The Division of Aquatic Resources (DAR) has the following comments on the after-the-fact shoreline setback variance application for a retaining wall at 47-079 Kamehameha Highway in Kaneohe, Oahu. Since the retaining wall has already been constructed and does not pose a threat to the aquatic resources in that area, DAR has no objection to the after-the-fact variance. DAR does have concerns about the three (3) additional stabilization walls that are also in this application.

DAR is concerned over runoff (sediment) from the area during construction of the additional stabilization walls and would recommend that sediment traps or barriers be in place to minimize the amount of sediment that enters Kaneohe Bay.

Thank you for the opportunity to comment on this application.

LINDA LINGLE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
POST OFFICE BOX 521
HONOLULU, HAWAII 96809

MEMORANDUM

TO: DEPT Agencies:
x Div. of Aquatic Resources
Div. of Boating & Ocean Recreation
Engineering Division
Div. of Forestry & Wildlife
Div. of State Parks
Commission on Water Resource Management
x Office of Conservation & Coastal Lands
x Land Division - Oahu

FROM: Morris M. Atta
SUBJECT: After-the-Fact Shoreline Setback Variance
LOCATION: Kahaluu, Oahu, TMK: (1) 4-7-19-49
APPLICANT: Joseph & Kristen Souza

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by November 19, 2008.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact my office at 587-0433. Thank you.

Attachments

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

Signed: *[Signature]*
Date: 19 Nov 2008



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DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

1927

LINDA LINGLE
GOVERNOR OF HAWAII
AMV

February 9, 2009

State of Hawaii
Department of Land and Natural Resources
Division of Aquatic Resources
P.O. Box 621
Honolulu, HI 96809

Mr. and Mrs. Joseph Souza
47-079 Kamehameha Hwy
Kaneohe, HI 96744

Subject: After the Fact Shoreline Setback Variance
Draft Environmental Assessment
Kahalu'u, O'ahu
TMK: (1) 4-7-019: 49

Aloha Mr. Atta and Mr. Polhemus,

Thank you for your review and comments concerning our DEA and Shoreline Setback Variance for the subject shoreline-seawall project and after the fact retaining wall. Your comments are taken well and have been addressed in our Environmental Assessment.

To help minimize sediment runoff during the walls construction we will utilize a turbidity curtain. A turbidity barrier will contain the silt and sediments stirred by our water or near-water construction activities and during the building operations. Our turbidity control will conform to all regulations and requirements that apply to our project, including the Clean Water Act, National Pollution Discharge Elimination System (NPDES), and state (D.O.T.) and local regulations.

The primary goal in this project is it to protect our family, property and the ocean life. Kane'oh'e Bay is one of our most needed resource and we do not want to jeopardize it in any way.

Your response is greatly appreciated. Thank you for pointing the sediment runoff concern. Should you have any questions regarding this letter please contact Kristen Souza at (808) 234-2868.

Sincerely,


Kristen L. Souza
Property Owner

APPENDIX C

Geotechnical Engineering Exploration by Applied Geosciences, LLC

(September 15, 2008)



**GEOTECHNICAL ENGINEERING EXPLORATION
47-79 KAMEHAMEHA HIGHWAY
TMK: 4-7-019:049**

Project No. SRSS00108

September 15, 2008

Prepared for:

JOE AND KRISTEN SOUZA

September 15, 2008
Project No. SRSS00108

Joe and Kristen Souza
47-079 Kamehameha Highway
Kaneohe, HI 96744

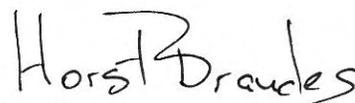
Dear Joe and Kristen:

Applied Geosciences, LLC is pleased to submit our report entitled *Geotechnical Engineering Exploration, 47-79 Kamehameha Highway, TMK: 4-7-019:049*.

Our work was performed in general accordance with our agreement of April 4, 2008.

This report presents our findings from a field and laboratory investigation program. Specific recommendations are presented in the body of the report. Should you have any questions, please contact our office.

Very truly yours,

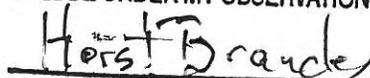


Horst G. Brandes, Ph.D., P.E.
President



Exp. 4/30/2010

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



1. Introduction

This report presents the results of a geotechnical engineering field investigation carried out at 47-79 Kamehameha Highway, located in Kaneohe on the Island of Oahu, Hawaii. The general vicinity, topography and location of the project are shown in Figure 1. The intent of this report is to characterize surface and subsurface soil conditions for the specific purpose of evaluating the steep slope that exists at the seaward end of the property and to make recommendations for its stabilization. Drilling and sampling were conducted on April 18, 2008, followed by laboratory testing and analysis. The findings and recommendations presented herein are subject to the limitations noted at the end of this report.

2. Scope of Work

Work carried out as part of this project consisted of:

- A review of available soil and geologic data related to the project site
- Coordination of field work with the drilling subcontractor
- Drilling and sampling of three borings to a maximum depth of 10.5 feet
- Performing a field reconnaissance to identify and characterize surface features
- Field sampling and laboratory testing of selected specimens to assist with classification and characterization of engineering properties
- Analysis of field and laboratory results to formulate a set of geotechnical recommendations
- Preparation of this report summarizing our work

The boring logs and sampling locations are presented in Appendix A. Specific results from the laboratory testing program are included in Appendix B. The experimental findings are discussed throughout the report.

3. Geologic Setting

The project site is located on an elevated bluff between Kamehameha Highway and Kaneohe Bay. It is situated within the caldera of the Koolau volcano and close to the northwest-trending rift zone through which massive eruptions occurred some 1.8 to 2.6 million years ago. The Koolau volcano was unusually elongate. Steep cliffs surrounding the Kailua and Kaneohe basins represent one side of the old caldera. Dike complexes and lava fills dominate the area within this caldera. The lava flows have been weathered and laterized extensively near the surface. Immediately offshore lies the Kaneohe Bay reef complex, which is much younger and laps against the older volcanic formations. Kamehameha Highway rises from sea level at the Kaneohe Fishing Pier to about 30 feet at the property lot, where the road and the coastline take a sharp turn to the west (Figure 1). The elevated headland upon which the property is located sticks out into Kaneohe Bay and has resisted erosion better than the lower-laying adjacent areas. The reason for this may very well be the presence of hard dike formations below the surface soils, as can be observed at some locations along the shoreline. The natural surface soils are generally brick red to brown in color due to a high degree of laterization and due to alteration of the original lava fills by heat.

4. Surface and Subsurface Conditions at Project Site

The property stretches from Kamehameha Highway to the Kaneohe Bay shoreline. The lot grades downward gently from street level to the edge of the seaward cliff. The cliff itself descends sharply from about 32 feet elevation to sea level at an average slope of approximately 45°. A residence occupies the majority of the lot and includes a rear concrete porch extending to within about 5 feet of the head of the steep shorefront slope. A set of narrow stairs leads partly down to the ocean. The steep slope is overgrown with trees and low-laying vegetation (Figure 2).



Figure 2. Rear portion of property with steep seaward cliff on the right.

At the base of the cliff is a narrow shore bench that is underlain by calcareous sand and reef limestone. High tides and storm surges from Kaneohe Bay can submerge all of the shoreline and reach the base of the cliff. Fill material to a depth of 2 to 3 feet extends from the edge of the cliff backward beneath the porch (Figure 2). Blue-gray rock, characteristic of dike formations, is exposed along a portion of the toe of the slope. Some of this rock is very hard and essentially un-weathered. However, the bulk of the exposed steep face that descends to sea level consists of highly to moderately weathered reddish volcanic

flows and sapolite. These materials are fractured, loose and unstable. In many places the soil is held in place only tenuously by vegetation. It is clear that substantial erosion and shallow sliding have taken place in the past, contributing unwanted volcanic soils to the waters of Kaneohe Bay. This process is exacerbated by ocean tides that wash directly against the toe of the cliff and are therefore contributing to its progressive undermining. Continued erosion and sliding are causing progressive headcutting at the top of the slope, which may soon start to undermine the porch area and even the residential foundation.

Three soil borings were drilled at the crest of the seaward slope in a narrow bench adjacent to the porch (Figure 3). Because of space and accessibility restrictions, a hand-operated drill rig was used. The soil profile at the site indicates about 1 to 2 feet of gravelly to silty fill of high plasticity, underlain by typical residual soil consisting of silt of high plasticity (MH) with a fine fraction between 57% and 74%. This residual soil profile is underlain by a hard rock formation that is visible along a portion of the toe of the slope. The depth to this hard rock can be expected to vary from one side of the property to the other. Free swell indices and Atterberg Limits suggest moderate to high swell potential in the residual soil layer beneath the surface fill.

5. Slope Stability Analysis

Deep-seated potential slope instability was investigated by examining the shoreline cliff area and by conducting a series of limit equilibrium stability calculations. Two representative cross sections, referred to as sections AA and BB, were considered for the stability analysis (Figures 3, 4 and 5). The profiles for these lines were determined from the topographic survey provided Gil Surveying Services, Inc. (Figure 3). The soil was modeled using the Mohr Coulomb soil model with strength properties determined from direct shear testing, with soil layering compiled from the borings, and from observation of surface features along each of the sections. Computations were carried out using the Spencer method of limit equilibrium analysis. In the Spencer method inter-slice forces are considered in the analysis and both force and moment equilibrium are satisfied, thus providing a rigorous solution. Numerous computer-assisted trials were conducted in the search of the critical failure surface, i.e. the surface associated with the most probable failure mode.

Figure 4 indicates a minimum factor of safety of 1.19 for line AA. The calculations assume hard rock at a relatively shallow depth, as determined from surface outcrops and borings taken both on this property and the neighboring one on the left. A high water elevation is assumed, as shown in Figure 3. This accounts for substantial ground saturation under extenuating circumstances. Although the computed factor of safety is larger than 1.0 and therefore indicates a stable condition, values less than 1.50 are generally deemed potentially hazardous and unacceptable. A deep-seated failure would be limited in depth by the hard basalt rock beneath. Since the depth and extent of this basalt is expected to be non-uniform, the potential for substantial soil movement in the case of a large failure cannot be discounted with confidence. It is therefore conceivable that under severely adverse condition such a failure could compromise the structural integrity of the existing porch and the main house. A similar conclusion can be drawn from considering the stability analysis results depicted in Figure 5 for section BB. Here the factor of safety is much too close to the threshold of 1.0 for the initiation of deep sliding. Both analysis cross

sections assume a relatively high water table, as may be expected during a severe and sustained rainfall event.

In addition to deep-seated sliding, the potential for shallower soil wasting processes such as erosion and thin sliding need to be considered as well. Indeed, the seaward slope is undergoing continued surface erosion. Limited shallow sliding and soil have already occurred at a number of places. Similar mass wasting processes have taken place on sections of the same seaward cliff located on the property that adjoins to the left. That lot has suffered at least one recent moderate sliding event of the type that may also occur on the property under study. Clearly these types of soil movements are ongoing and can be expected to continue in the future.

It should be mentioned that the effects of earthquake shaking were not included explicitly in the calculations because the level of ground motions at the site are not well understood. In general, shaking will reduce overall stability either during an earthquake or shortly thereafter.

6. Need for Slope Stabilization

The steep slope that constitutes the seaward edge of the elevated cliff is unstable and in dire need of stabilization. Clearly the seaward cliff is undergoing progressive soil loss, mainly in the form of surface erosion and shallow sliding. These processes can be expected to continue, while a more serious deep-seated failure is not out of the question. Presently the exposed soil on the slope is loose, fractured and much of it is on the verge of descending toward the ocean. In many places soil material is barely held in place by weak root systems and the vegetation that covers the slope. This type of quasi-retention is unreliable and not acceptable from an engineering perspective.

Sooner or later the continued loss of soil will begin to undermine the porch and begin to compromise the structural integrity of the house. Aside from structural concerns regarding the porch and the house, the continued transport of volcanic soil from the cliff area into the waters of Kaneohe Bay is undesirable from an environmental perspective. Kaneohe Bay is a fragile ecosystem that in the past has suffered from excessive inflow of volcanic soils. Of particular concern is the underwater reef ecosystem that exists nearby which can easily be damaged by volcanic soils that wash into the bay and are then transported by nearshore currents and tides. The potential negative environmental consequences from soil transport into Kaneohe Bay are sufficient to warrant the construction of an effective retention system.

7. Slope Stabilization Alternatives

The most effective remediation alternative would consist of one or a set of terraced retaining walls with proper backfill and effective drainage provisions, much as it exists on the property adjoining on the right. Such a system can be effective in preventing additional soil loss into Kaneohe Bay and at the same time provide necessary support to the porch and the house that exist on the property. Given the steepness of the slope and the limited amount of space available, other options such as grading or slope reinforcement without a rigid wall may not be feasible. These alternatives are often not fully effective in preventing

surface soil from washing down the slope, particularly during severe rainfall events. In any case, given the height and steepness of the existing slope, and given the limited amount of space on the property to build a retention system, it is likely that some sort of tie-back system will need to be installed in order to provide the necessary stability.

A single retaining wall on the order of 30 feet in height may be quite expensive and unsightly. A set of tiered walls would appear to be a more reasonable choice. However, the details of the retention system need to be designed with care and should be reviewed by Applied Geosciences to insure that it is stable and compatible with the site conditions and this report. Design parameters for retaining walls are presented below.

8. Site Clearing and Construction

Due to the proximity of the slope to the ocean and the generally loose condition of the surface soils on the slope, great care needs to be exercised during site clearing and construction. Best practices for soil erosion control need to be implemented and these should include a turbidity fence immediately offshore of the construction site, among other measures.

After obtaining the proper permits and installing suitable erosion control measures, all loose soils, vegetation, concrete and other debris should be removed from the slope to expose firm soil or rock materials. Clearing and grubbing should be observed by a qualified geotechnical engineer. Utilities, if any, should be located and shut off prior to any grading. If existing utilities are to be abandoned, they should be removed, and the resulting excavation should be properly backfilled with select granular fill material compacted to a minimum of 90 percent relative compaction. The final grade prior to commencing backfilling and/or construction of the new retention system should be approved by a qualified geotechnical engineer.

Given the proximity of the rear porch to the head of the slope, the need for underpinning or providing other means of temporary support for existing structures needs to be assessed to avoid damaging them. Again, this should be done by a qualified engineer.

9. Design of Retaining Structures

Select fill material should be used for backfilling purposes. It should consist of non-expansive select granular soil of coralline or basaltic origin. It should be well graded from coarse to fine, with no particles larger than 3 inches in largest dimension and between 10 and 30 percent particles passing the No. 200 sieve. Fill material should be free of vegetation, deleterious materials and clay lumps. It should have a laboratory CBR value of 20 or more and a maximum swell of 1 percent or less. Imported fill materials should be tested for conformance with these recommendations prior to delivery to the project site.

Fill materials should be placed in level lifts not exceeding 8 inches in loose thickness, moisture-conditioned to above the optimum moisture, and compacted to at least 90 percent relative compaction.

The compaction requirement should be increased to 95 percent relative compaction for fills placed within 3 lateral feet and 2 feet beneath any proposed foundation element. Filling operations should start at the lowest point and continue up in level horizontal compacted layers in accordance with the above fill placement recommendations. Backfilling may occur in tandem with construction of the retention system proceeding from sea level to the head of the slope.

Surface flows on the property should be evaluated so insure that they are collected and properly discharged to minimize seepage into the subsurface where they can cause slope stability problems. These flows should be conveyed to areas off the property in such a manner that they do not add to the groundwater levels.

Retaining structures may be required as part of the slope stabilization remediation. The following recommendations are offered for the design of low retaining structures. If the height of any retaining structure is to exceed 4 feet, additional input should be sought from Applied Geosciences.

- The footing of any retaining structure should be embedded a minimum of 24 inches below the lowest adjacent grade. Retaining structures may be designed assuming an allowable bearing pressure of 2,000 pounds per square foot (psf). Lateral loads may be resisted by frictional resistance developed between the bottom of the wall footing and the bearing soil and by passive earth pressure acting against the vertical face passing through toe of the wall footing. A coefficient of friction of 0.30 may be used for concrete footings in contact with the bearing soil. Resistance due to passive earth pressure may be estimated using an equivalent fluid pressure of 200 pounds per square foot per foot of depth (pcf) assuming that the soils around the footings are well compacted. The passive resistance in the upper 12 inches of the soil should be neglected.
- Retaining structures should be designed to resist lateral earth pressures due to the adjacent soils and surcharge effects. The on-site soils are not suitable as backfill material. It is assumed that any backfill material will have the characteristics of the imported select fill listed above and will be compacted to 90% relative compaction. However, care should be taken not to over-compact the backfill. Recommended lateral earth pressures for design of earth retaining structures are as follows:

	Level Backfill		Maximum Backfill Slope 2H:1V	
	Horizontal	Vertical	Horizontal	Vertical
Active	45	0	65	35
At-Rest	60	0	80	45

- These lateral earth pressures do not include hydrostatic pressures that may be caused by trapped groundwater. Retaining walls that are not free to deflect laterally should be designed for the at-rest condition.

- All retaining walls should be well-drained to reduce the build-up of hydrostatic pressures. Either granular material or a prefabricated drainage product should be used in the back of every retaining wall, in conjunction with a perforated collector pipe along the bottom and regularly spaced weep holes. If granular material is to be used as the means of draining the backfill, it should consist of #3B fine aggregate extending a minimum of 12 inches from the back of the wall. This drainage aggregate should be separated from other soils by a properly selected geotextile to provide adequate separation and cross-plane drainage functions. Alternatively, a suitable drainage geocomposite may be used in place of the granular material. The collector pipe at the bottom of the drainage aggregate or geocomposite should consist of a perforated pipe with a minimum diameter of 4 inches and should be inclined to drain by gravity to an appropriate discharge location. Weep holes should be at least four inches in diameter and should be spaced no more than 4 feet apart and no more than 8 inches above ground. Overall filtration and drainage performance of the drainage system should be evaluated during the design stage.
- Surcharge stresses due to areal surcharges, line loads, and point loads, within a horizontal distance equal to the overall height of the adjacent portion of any wall, should be considered in the design. Corresponding lateral surcharge soil pressures should be selected in consultation with a representative from Applied Geosciences.

10. Final Comments

Preliminary and final drawings and specifications for the proposed project should be forwarded to Applied Geosciences for review and written comments prior to advertisement for bids. This review is necessary to evaluate general conformance of the plans and specifications with the intent of the foundation and earthwork recommendations provided herein. If this review is not made, Applied Geosciences cannot be responsible for misinterpretation of our recommendations.

It is also recommended that Applied Geosciences be retained to provide geotechnical engineering services during all phases of earth and foundation work. Key monitoring elements include observation of subgrade preparation, fill placement and compaction, review of selected slope stabilization measures for adherence to specifications and recommendations in this report, and construction of the retention system. Monitoring by this office should also expedite suggestions for design changes that may be required in the event that subsurface conditions differ from those anticipated at the time this report was prepared. The recommendations provided herein are contingent upon such observations.

If actual exposed subsurface conditions encountered during construction are different from those assumed or considered in this report, appropriate modifications to the design should be made.

11. Limitations

The comments and recommendations presented in this report are based, in part, on the soil conditions encountered in three borings and upon information obtained from literature research and field exploration.

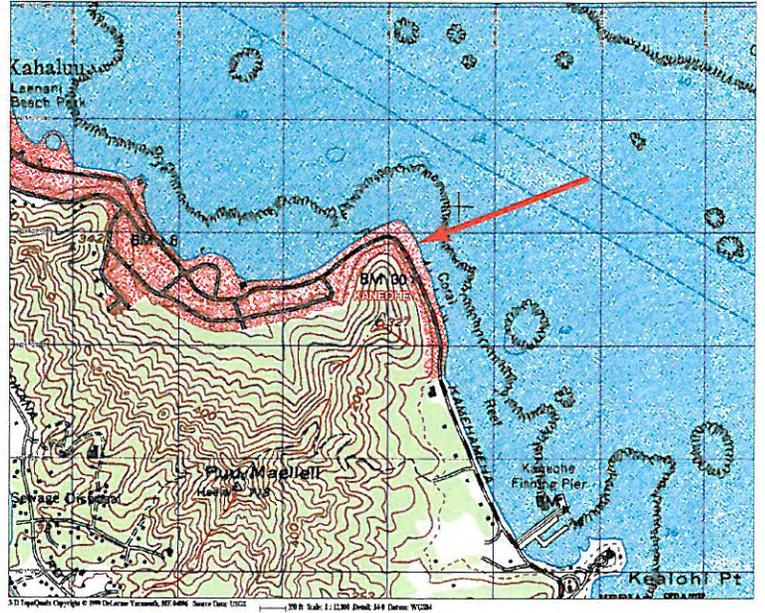
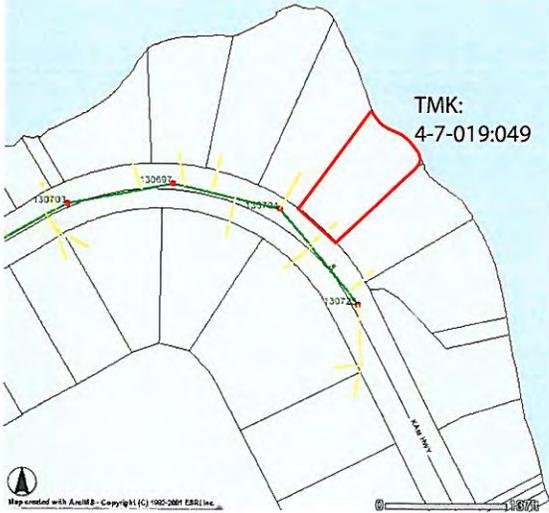
Actual conditions beyond the location of the principal borings may differ from those described in this report. The nature and extent of these variations may not become evident until construction is underway. Applied Geosciences should be notified and retained to check if modifications to the recommendations presented in this report are needed if variations appear evident. The comments and recommendations presented in this report shall not be considered valid unless the changes are reviewed by Applied Geosciences and the recommendations of this report are verified by us in writing.

The stratification lines shown on the graphic representation of all the borings depict the approximate boundaries between the various soil and rock units, and as such may denote a gradual transition. Fluctuations in the groundwater level may occur due to variations in rainfall, temperature, tides and other factors that may be different from the conditions that existed at the time the boreholes were drilled. This report does not reflect variations that may result in the subsurface and groundwater conditions. Such subsurface and groundwater conditions may not become evident until construction.

The field exploration portion of this study may not have disclosed the presence of underground structures such as cesspools, drywells, storage tanks, sumps, pits, landfills, buried debris, cavities, voids, etc., that may be present at the site. Should these items be encountered during construction, Applied Geosciences should be notified and retained to provide recommendations for their disposal and/or treatment. Assessment of the presence or absence of these structures was not included in the scope of this study. The scope of Applied Geosciences exploration services was limited to conventional geotechnical engineering services and did not include any environmental assessment or evaluation of potential subsurface and groundwater contamination. Silence in this report regarding any environmental aspects of the site subsurface and groundwater materials does not indicate the absence of potential environmental problems.

This geotechnical report has been prepared for the use of the clients, Joe and Kristen Souza, and their designated engineering consultants in accordance with generally accepted soils and foundation engineering practices. No other warranty, expressed or implied, is made as to the professional advice included in this report and none should be inferred. This report has been developed for the purpose of developing a slope stabilization system as described elsewhere in this report. It does not contain sufficient information for purposes of other parties or for other uses. In addition, this report may not contain sufficient data or proper information to serve as the basis for preparation of construction estimates. A contractor wishing to bid on this project is urged to retain a qualified geotechnical engineer to assist in the interpretation of this report and/or in the performance of additional site-specific exploration for bid estimating purposes.

The owner/client should be aware that unanticipated subsurface conditions are commonly encountered. Unforeseen subsurface conditions, such as perched groundwater, soft deposits, hard layers, or cavities, may occur in localized areas and may require additional probing or corrections in the field (which may result in construction delays) to attain a properly constructed project. Therefore, a sufficient contingency fund is recommended to accommodate these possible extra costs.



Project Location

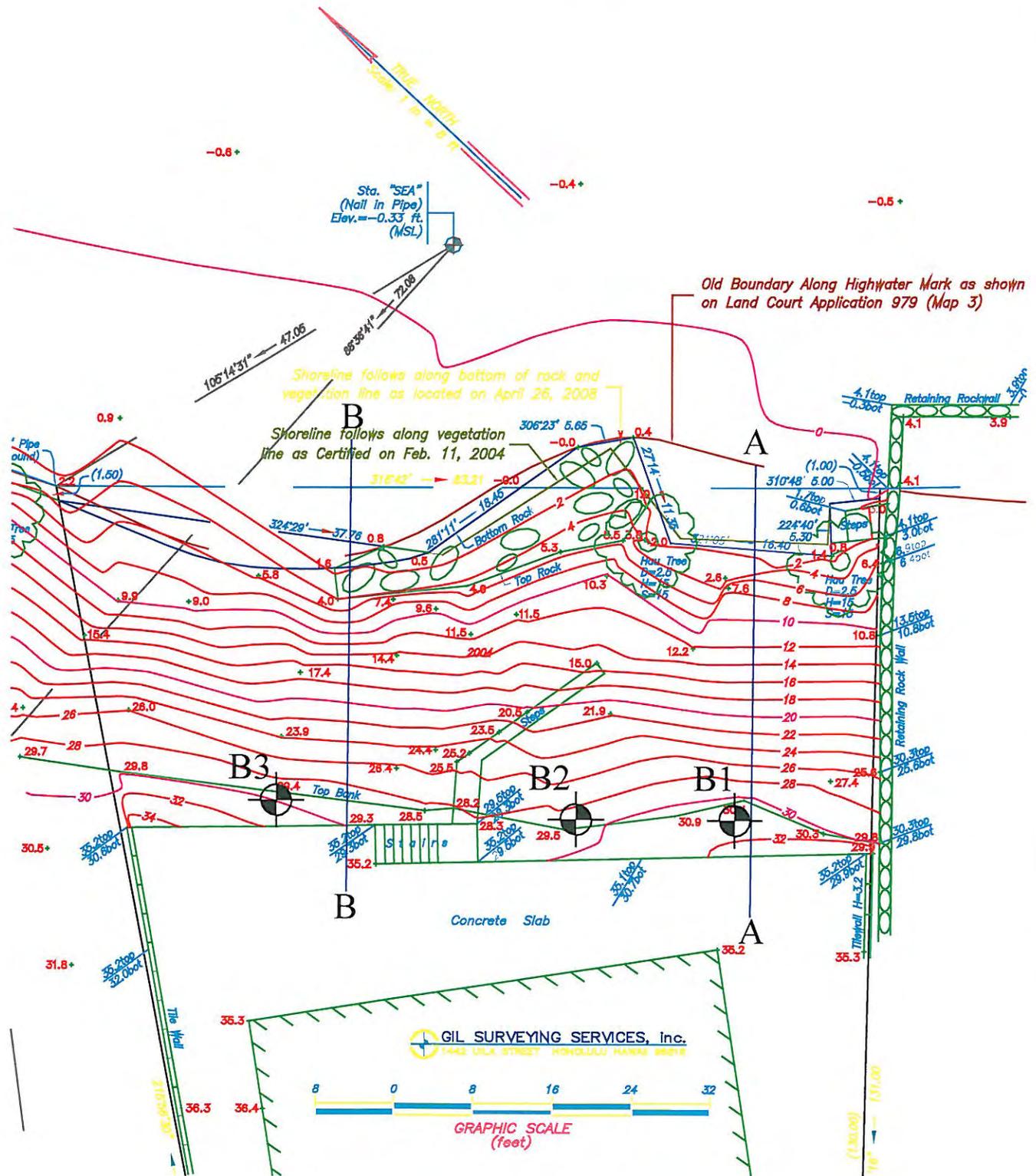


Client: Joe and Kristen Souza
Project: 47-079 Kamehameha Hwy.
TMK: 4-7-019:049

Project No: SRSS00108

Figure 1

KANE O H E B A Y

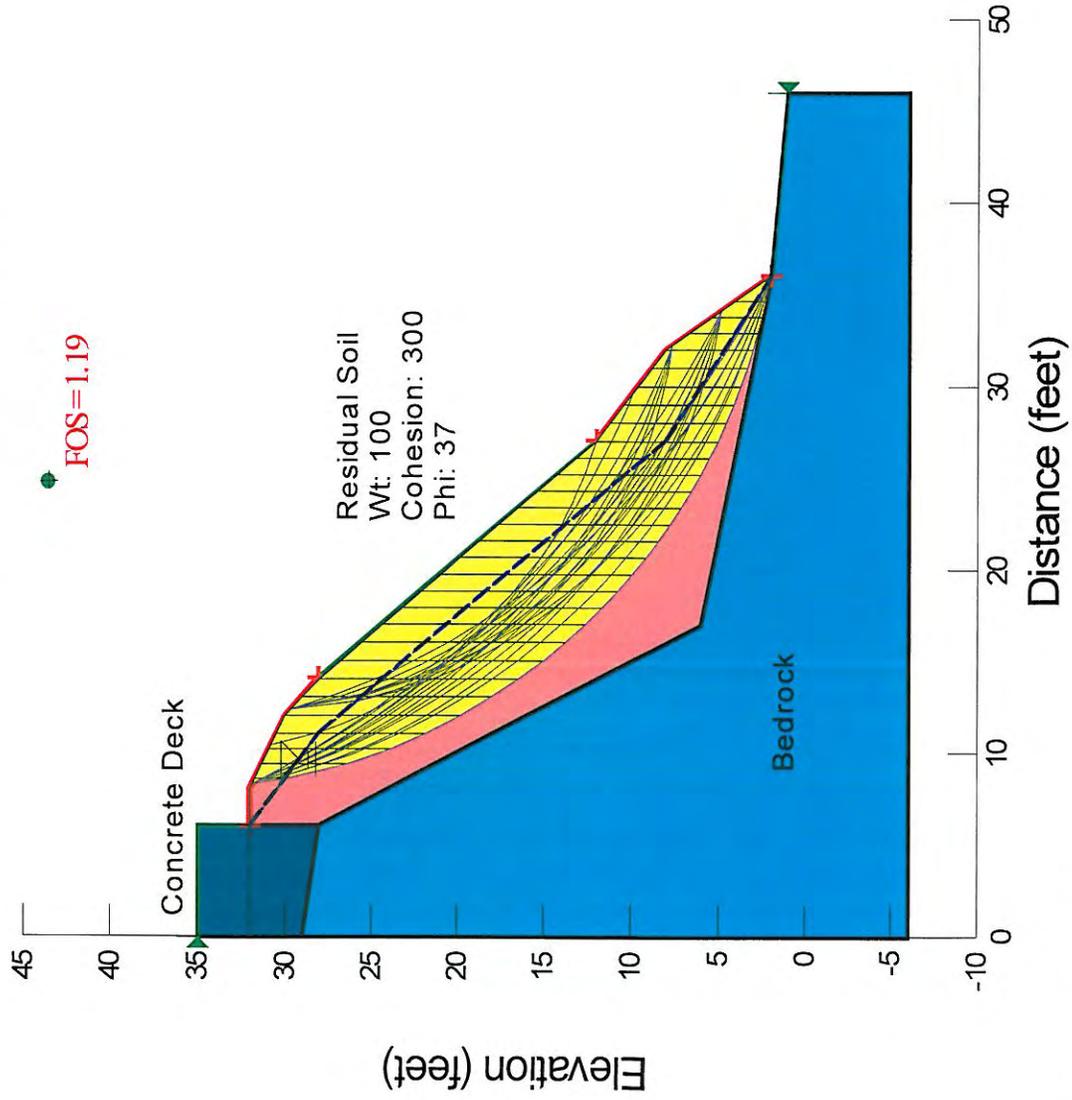


Client: Joe and Kristen Souza
 Project: 47-079 Kamehameha Hwy.
 Project No: SRSS00108

Figure 3



Stability Analysis - Line AA



Client: Joe and Kristen Souza
Project: 47-079 Kamehameha Hwy.

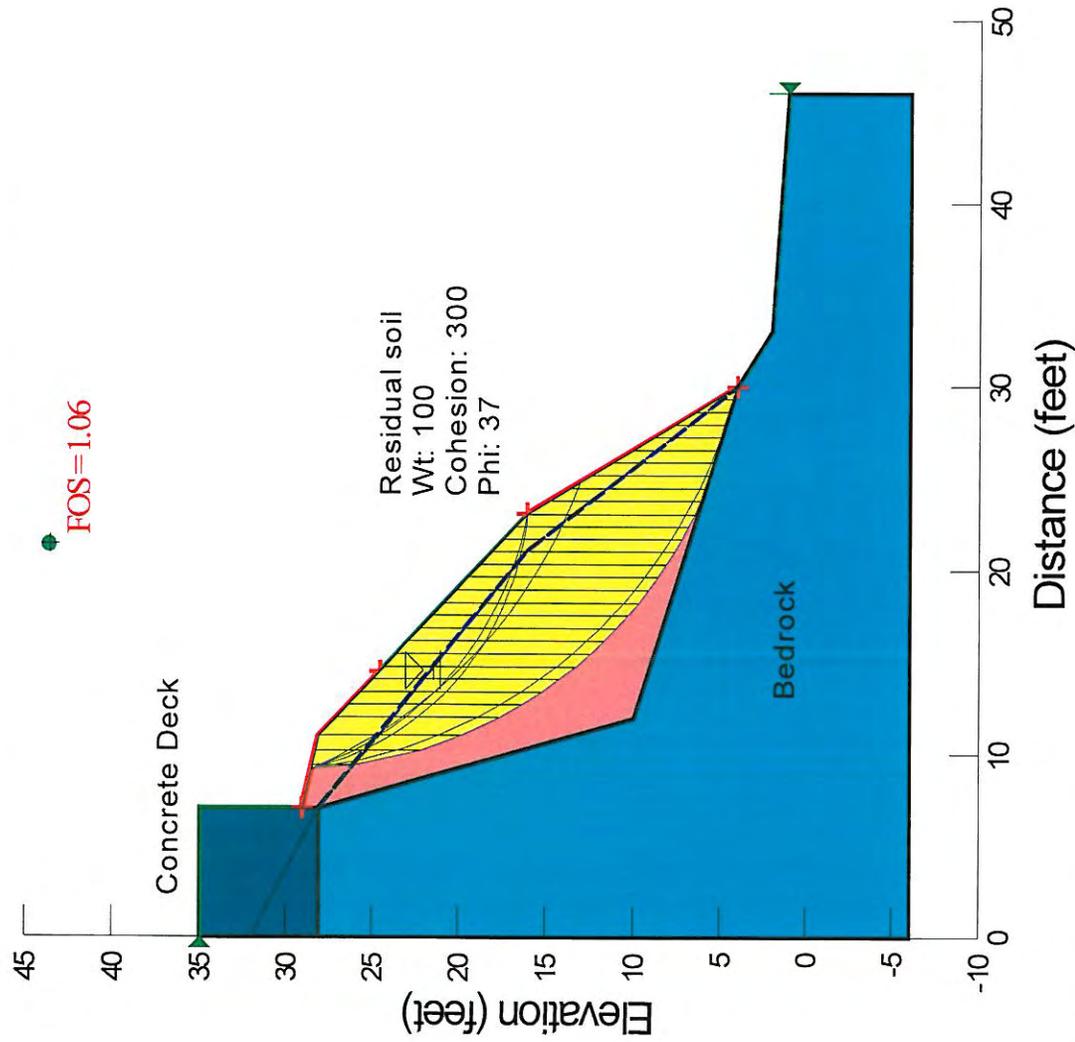
Project No: SRSS00108



Applied Geosciences, LLC

Figure 4

Stability Analysis - Line BB



Client: Joe and Kristen Souza
Project: 47-079 Kamehameha Hwy.

Project No: SRSS00108



Applied Geosciences, LLC

Figure 5

APPENDIX A
Field Exploration

The subsurface conditions at the project site were explored by drilling and sampling three borings, designated as B1 through B3.

All the borings were drilled using a hand-powered auger rig that advanced a 4-inch continuous-flight auger. Sampling tools were lowered after retrieving the auger lengths. Samples were obtained with a California sampler containing 2.4-inch brass rings, or with a standard 2-inch split-spoon sampler driven by a 35-lb weight descending a distance of 48 inches. Penetration numbers (blow counts) represent the number of blows needed to advance the sampler 12 inches, following an initial penetration of 6 inches (unless noted otherwise). Soil specimens collected with the split-spoon sampler were inspected, described visually, and stored in sealed bags for laboratory testing.

Laboratory testing (Appendix B) included determining moisture contents, Atterberg Limits, grain size distributions and shear strengths. Soil samples were classified according to the Unified Soil Classification System.

Figures A1-A3: Boring Logs B1-B3
Figure A4: Boring Log Legend

BORING NO. B1

PROJECT: 47-079 Kamehameha Hwy.

PROJECT NO.: SRSS00108



CLIENT: Joe & Kristen Souza

DATE: 4/18/2008

LOCATION: 47-079 Kamehameha Hwy.

ELEVATION:

DRILLER: Ali Harada

LOGGED BY: HB

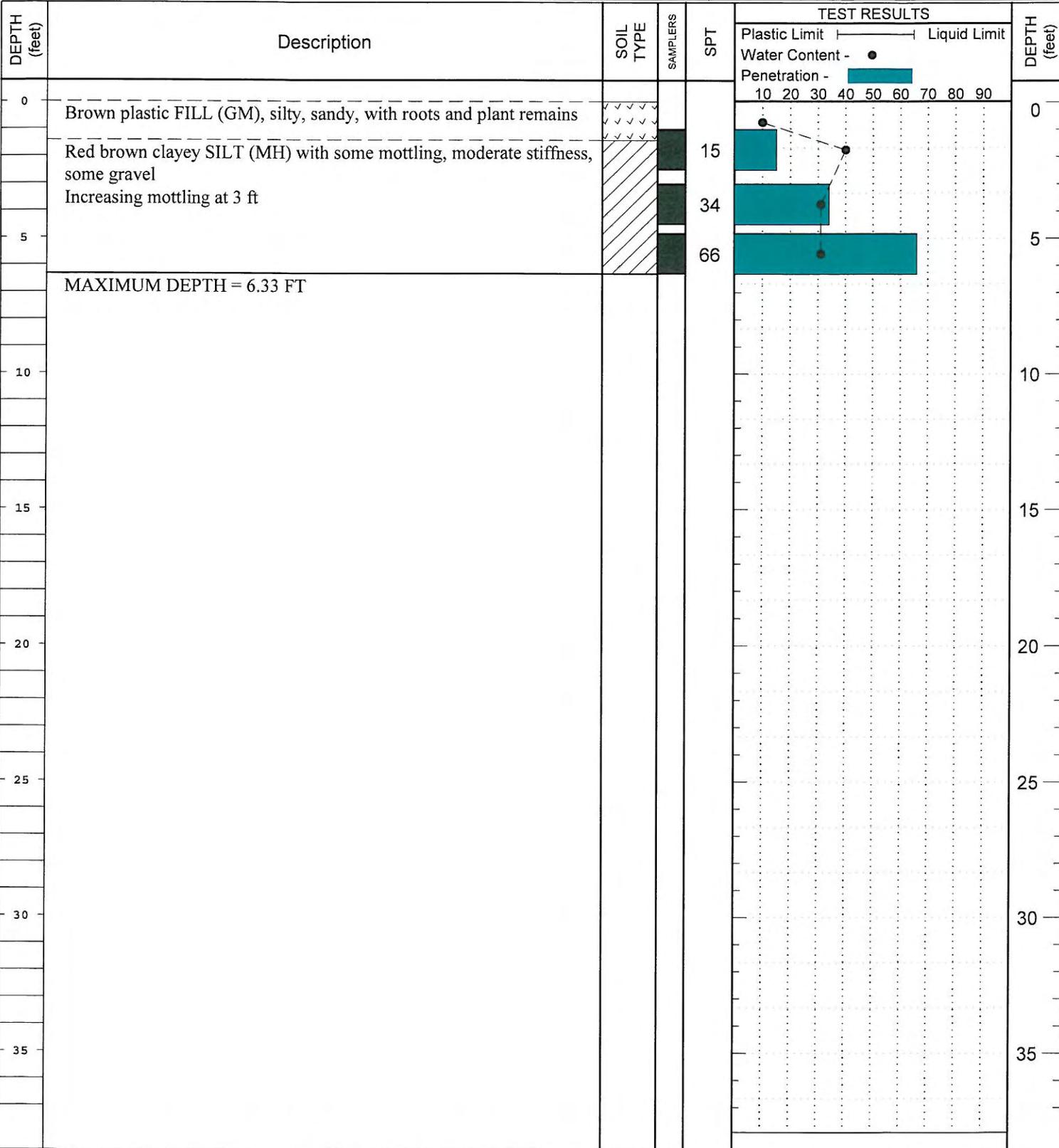
Applied Geosciences, LLC

DRILLING METHOD: Hand-operated rig

DEPTH TO - WATER> INITIAL: ∇ - **AFTER 0.5 HOURS:** ∇ - **CAVING>** C -

File: Drilling logs

Date Printed: 9/9/2008



Hand-held drilling rig with 35-lb hammer dropping a distance of 48"

This format is retained only to comply with state and federal regulations, and should not be used as a substitute for a site-specific drilling log.

BORING NO. B2

PROJECT: 47-079 Kamehameha Hwy.

PROJECT NO.: SRSS00108



Applied Geosciences, LLC

CLIENT: Joe & Kristen Souza

DATE: 4/18/2008

LOCATION: 47-079 Kamehameha Hwy.

ELEVATION:

DRILLER: Ali Harada

LOGGED BY: HB

DRILLING METHOD: Hand-operated rig

DEPTH TO - WATER> INITIAL: ∇ - **AFTER 0.5 HOURS:** ∇ - **CAVING>** C -

File: Drilling logs

Date Printed: 9/9/2008

DEPTH (feet)	Description	SOIL TYPE	SAMPLERS	SPT	TEST RESULTS		DEPTH (feet)
					Plastic Limit	Liquid Limit	
0	Brown plastic FILL (GM), silty, sandy, with roots and plant remains						0
	Increasing gravel at 1.5 feet						
	Blow count = 50 for first 4" at 3 ft			70			
	Layer of gravel and cobbles			50			
5	MAXIMUM DEPTH = 3.33 FT						5
10							10
15							15
20							20
25							25
30							30
35							35

This information is preliminary and is not intended to be used as a basis for any design or construction. It is provided for informational purposes only. The user of this information should consult with the engineer of record for a complete and accurate description of the site.

BORING NO. B3

PROJECT: 47-079 Kamehameha Hwy.

PROJECT NO.: SRSS00108



CLIENT: Joe & Kristen Souza

DATE: 4/18/2008

LOCATION: 47-079 Kamehameha Hwy.

ELEVATION:

DRILLER: Ali Harada

LOGGED BY: HB

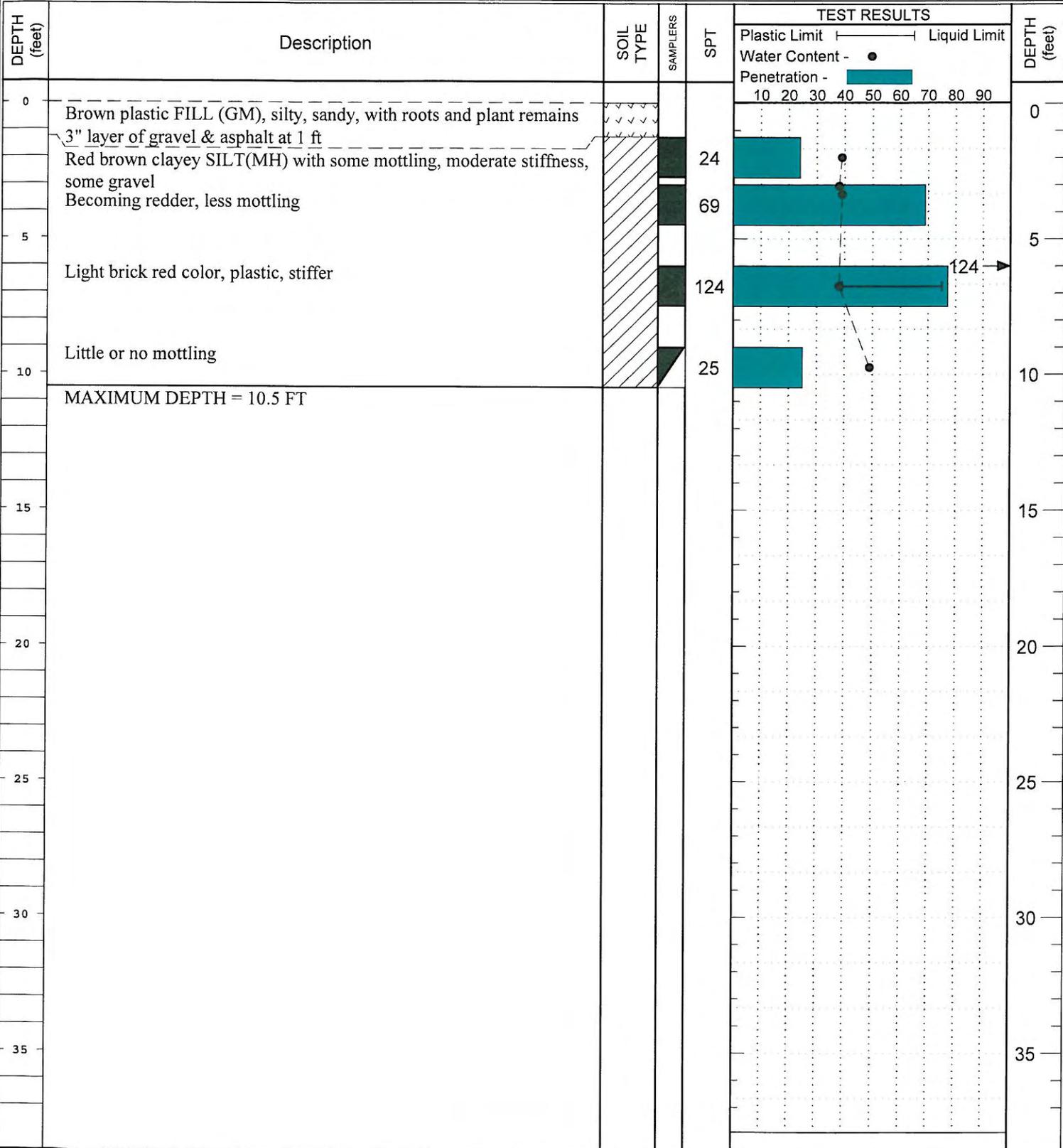
Applied Geosciences, LLC

DRILLING METHOD: Hand-operated rig

File: Drilling logs

Date Printed: 9/9/2008

DEPTH TO - WATER> INITIAL: - AFTER 0.5 HOURS: - CAVING> C



This format is only to be used for borings and samples not interfering as indicated on site.

KEY TO SYMBOLS

Symbol Description

Strata symbols



Fill



Residual silt and saprolite

Soil Samplers



California sampler



Standard penetration sampler

Notes:

1. Exploratory borings were drilled on 4/18/2008 using a hand-held auger.
2. No free water was encountered at the time of drilling.
3. Boring locations were taped from existing features and elevations extrapolated from the survey map.
4. These logs are subject to the limitations, conclusions, and recommendations in this report.
5. Results of tests conducted on samples recovered are reported on the logs.

APPENDIX B
Laboratory Testing

Water contents were determined on recovered specimens that were sealed in the field to preserve their in situ moisture (ASTM D2216).

Grain size distributions are based on the results from mechanical sieving (ASTM D422). It should be noted that some of these tests were carried out on samples recovered with a standard split-spoon sampler, which is unable to retrieve particles larger than 1-3/8 inches. Very coarse gravel, cobbles and boulders are not accounted for in the gradation curves, although they are not thought to comprise a substantial portion of the total soil mass.

Atterberg Limits were determined from specimens that were not allowed to dry below their respective plastic limits (ASTM D4318).

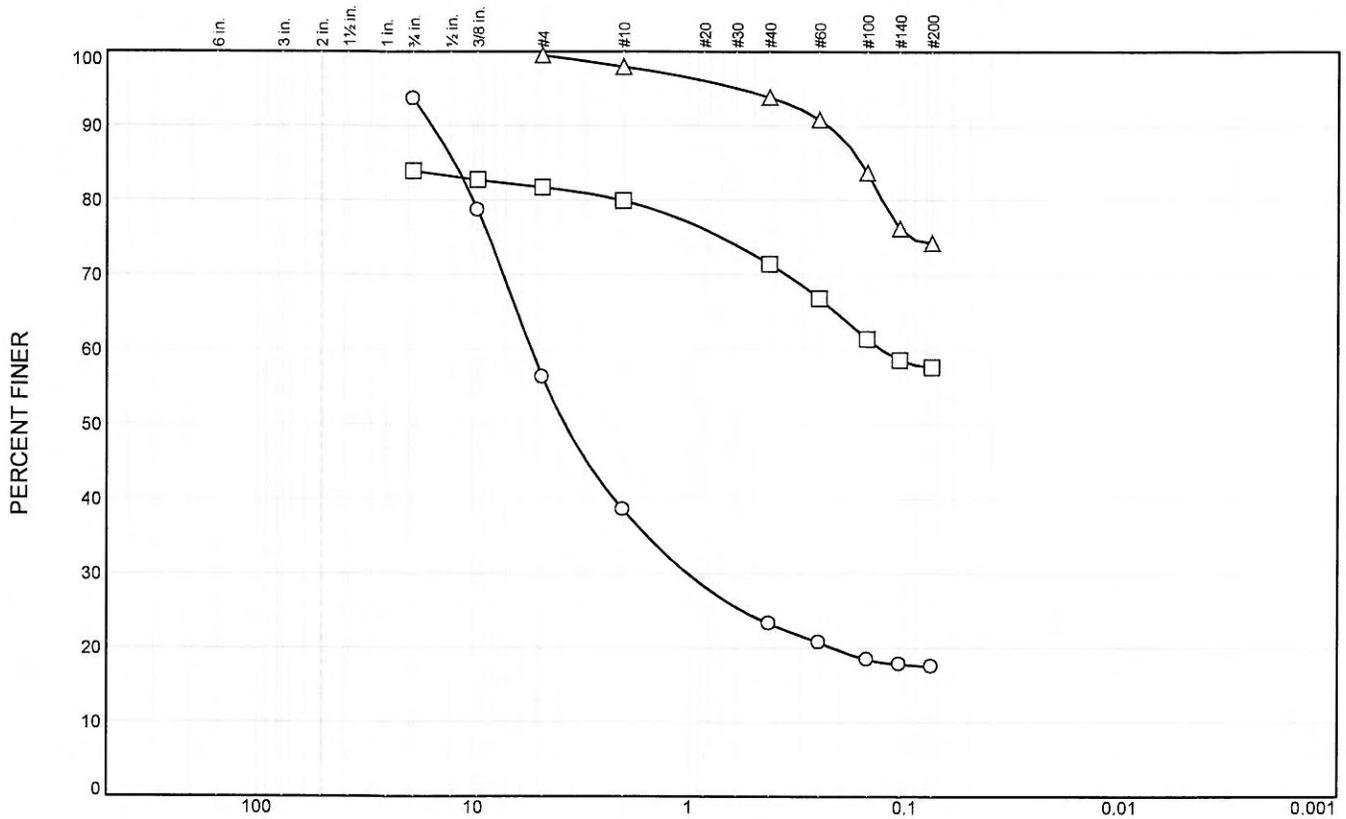
Direct shear tests were conducted on largely undisturbed ring samples obtained with a California sampler. Specimens were saturated prior to testing. Tests were conducted in general accordance with ASTM D3080.

Figure B1: Particle Size Distributions

Figure B2: Atterberg Limits

Figure B3: Direct Shear Test: B3 @ 6 feet

Particle Size Distribution Report



GRAIN SIZE - mm.

	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○			37.3	17.8	15.2	5.8		17.5
□			2.2	1.8	8.4	13.9		57.6
△				1.6	4.1	19.5		74.3

SOIL DATA

SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	B1		0.75	Gravel, sand and plastic silt	GM
□	B2		2.25	Sandy silt	MH
△	B3		6.75	Plastic residual silt	MH



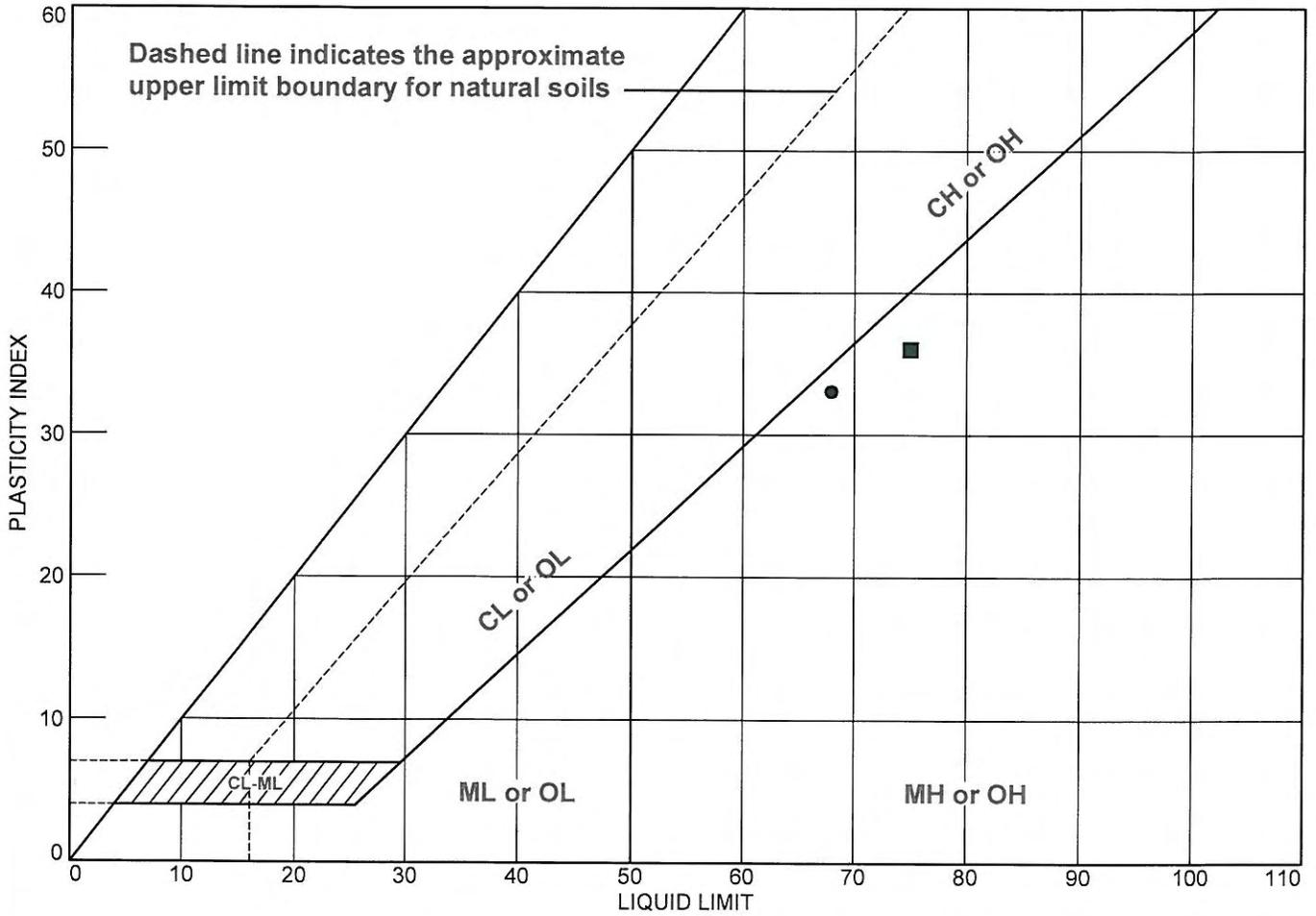
Applied Geosciences, LLC

Client: Joe & Kristen Souza
Project: 47-079 Kamehameha Hwy
Project No.: SRSS00108

Tested By: SW Checked By: HB

Figure B1

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B2		2.25	30	35	68	33	MH
■	B3		6.75	38	39	75	36	MH



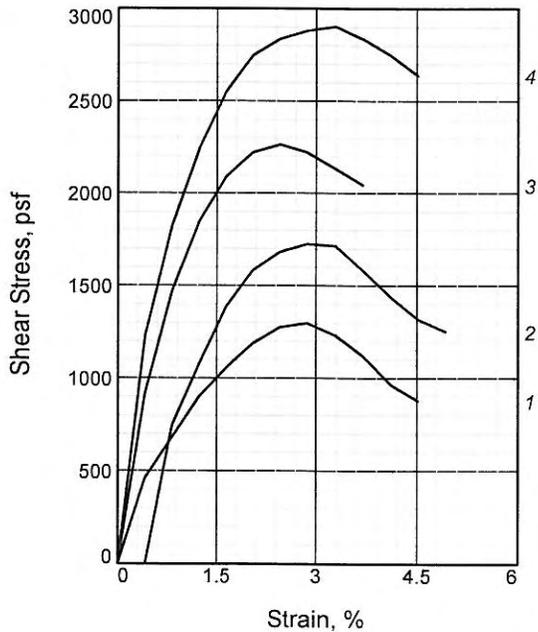
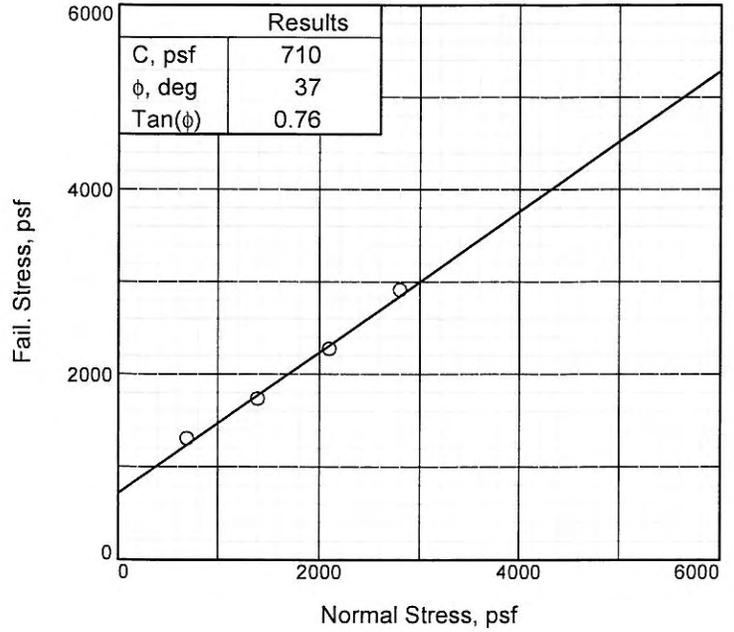
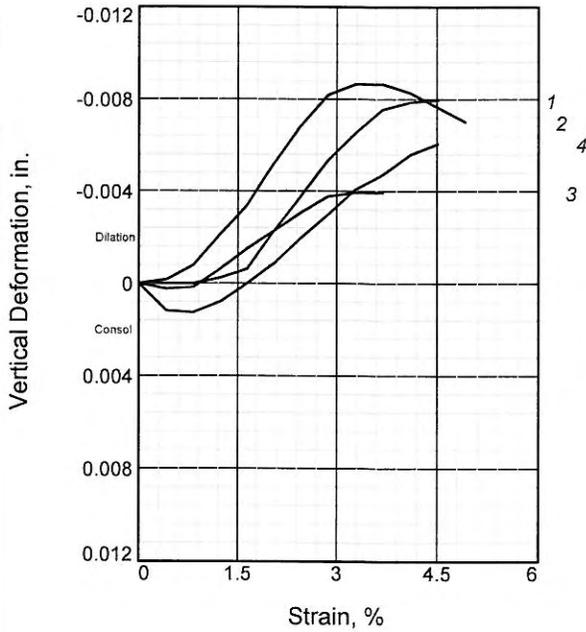
Applied Geosciences, LLC

Client: Joe & Kristen Souza
 Project: 47-079 Kamehameha Hwy
 Project No.: SRSS00108

Tested By: SW Checked By: HB

Figure B2

Direct Shear Tests: B3 @ 6'



Sample No.	1	2	3	4	
Initial	Water Content, %	41.0	40.0	38.7	38.2
	Dry Density, pcf	80.9	83.2	83.9	84.8
	Saturation, %	91.4	93.5	91.9	92.4
	Void Ratio	1.3915	1.3267	1.3059	1.2813
	Diameter, in.	2.40	2.40	2.40	2.40
	Height, in.	1.00	1.00	1.00	1.00
At Test	Water Content, %	44.2	42.6	41.3	41.0
	Dry Density, pcf	81.6	84.0	84.8	85.9
	Saturation, %	99.9	101.3	99.8	101.4
	Void Ratio	1.3723	1.3034	1.2828	1.2539
	Diameter, in.	2.40	2.40	2.40	2.40
	Height, in.	0.99	0.99	0.99	0.99
Normal Stress, psf	701	1403	2105	2807	
Fail. Stress, psf	1298	1727	2266	2903	
Strain, %	2.9	2.9	2.5	3.3	
Ult. Stress, psf					
Strain, %					
Strain rate, in./min.	0.04	0.04	0.04	0.04	

Assumed specific gravity = 3.1



Client: Joe & Kristen Souza
Project: 47-079 Kamehameha Hwy
Project No.: SRSS00108

Tested By: SW

Checked By: HB

Figure B3

APPENDIX D

Extended Analysis for Geotechnical Engineering Report

(February 23, 2010)

February 23, 2010

Kristen and Joe Souza
47-079 Kamehameha Highway
Kaneohe, HI 96744

Re: Stability of Shoreline Slope, 47-079 Kamehameha Highway

Dear Kristen and Joe:

We have extended our analysis regarding the stability of the shoreline slope, first addressed in our report *Geotechnical Engineering Exploration, 47-79 Kamehameha Highway, TMK: 4-7-019:049* (September 15, 2008). The purpose was to consider the effect on slope stability of removing the concrete porch that currently extends from the back of the house to the edge of the cliff.

Our original assessment found that the steep slope was marginally stable, with factors of safety of 1.19 and 1.06 for representative cross sections AA and BB, respectively (refer to Figures 4 and 5 in the original investigation, attached here for reference). That analysis considered a transient water table elevation within the slope resulting from severe rainfall, but nonetheless assumed no infiltration of water into the slope from areas in the back of the crest that are sealed off by the concrete deck. This structure is quite effective in reducing the overall amount of water that can seep toward the slope and therefore plays a beneficial role in reducing the potential for slope instability and soil erosion.

If the concrete deck were to be removed, a significantly larger amount of rainfall would infiltrate into the ground and soak up the slope area. The result would be a shallower transient water table within the slope compared to the case when the concrete deck remains in place. We considered such a condition in our follow-up analysis, which is summarized in Figures 4B and 5B. Whereas the original assessment indicated marginally stable conditions with safety factors above 1.0, the effect of removing the concrete deck results in computed factors that drop below 1.0, indicating an unstable condition. This implies that removing the concrete deck would result in a much higher probability of deep-seated sliding. The associated mass wasting in that case would result in large amounts of undesirable volcanic soil washing into the fragile waters of Kaneohe Bay. It would also compromise the structural integrity of the main house on the property. It should be noted that the weight of the concrete deck structure itself is minimal compared to relevant soil weights and does not play a significant role in the analysis.

In addition to increased subsurface seepage and the potential for deep-seated failure, removing the deck would also lead to greater surface runoff and soil erosion across the

face of the slope. This would be the case regardless of the amount of rainfall and would only exasperate the ongoing soil loss that is taking place.

The beneficial aspects of the deck regarding slope stability can also be appreciated with reference to the conditions that exist on the (currently) empty neighboring property to the left, at 47-84 Kamehameha Highway. There, a rather substantial slide has already taken place on the shoreline cliff and has resulted in the partial collapse of an old retaining wall and the washing of a fair amount of soil into the Bay. Mass wasting of that magnitude has not taken place at 47-079 Kamehameha Highway, in large part because of the effectiveness of the concrete deck as explained above.

Alternatives to the sealed deck were considered and found to be unsuitable. For example, a wooden deck on posts would have provided insufficient protection to the top of the slope since water can easily seep through a wood floor, and it can also reach the ground underneath through the sides. Similarly, a cantilevered structure, even one with a sealed floor, was considered to be inadequate, unless it also included waterproof walls on the sides (which would then have essentially the visual impact as the existing structure). In our opinion, the concrete deck that was built is the optimal solution precisely because it provides the most effective seal to the critical area in the back of the top of the slope. The retaining wall on the forward end serves to retain soil from the edge of the slope backward and this is essential in preventing slope instability and surface erosion. Given the overall marginal level of stability, even with the concrete deck in place, any of these alternatives would have resulted in unacceptably low safety factors.

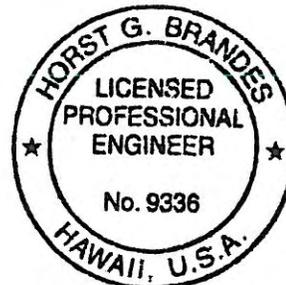
In summary, the concrete deck has played an important role in reducing the potential for slope instability and soil erosion. Its removal would expose critical areas in the back of the slope to additional infiltration from rainfall, and hence would result in a much higher likelihood of mass wasting. This would undoubtedly have a negative impact on Kaneohe Bay and is therefore undesirable from an environmental perspective. Large-scale slope instability could also compromise the safety of individuals if it were to be substantial enough to place the main house in jeopardy.

Please free to contact us in case you have any questions.

Sincerely,

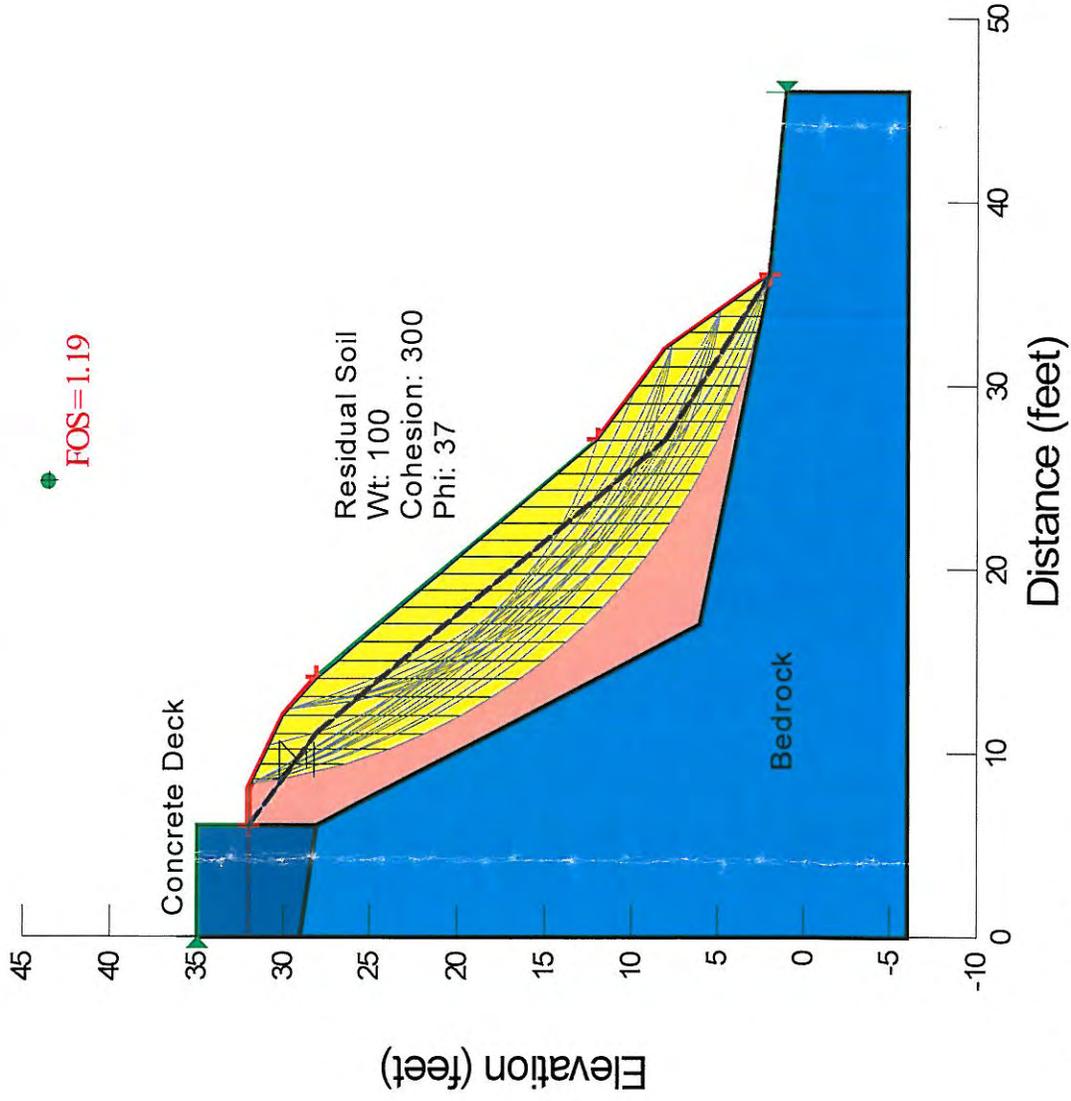
Horst Brandes

Horst Brandes, Ph.D., P.E.
President & Principal Geotechnical Engineer



Encl. Figures (4)

Stability Analysis - Line AA



Client: Joe and Kristen Souza
Project: 47-079 Kamehameha Hwy.

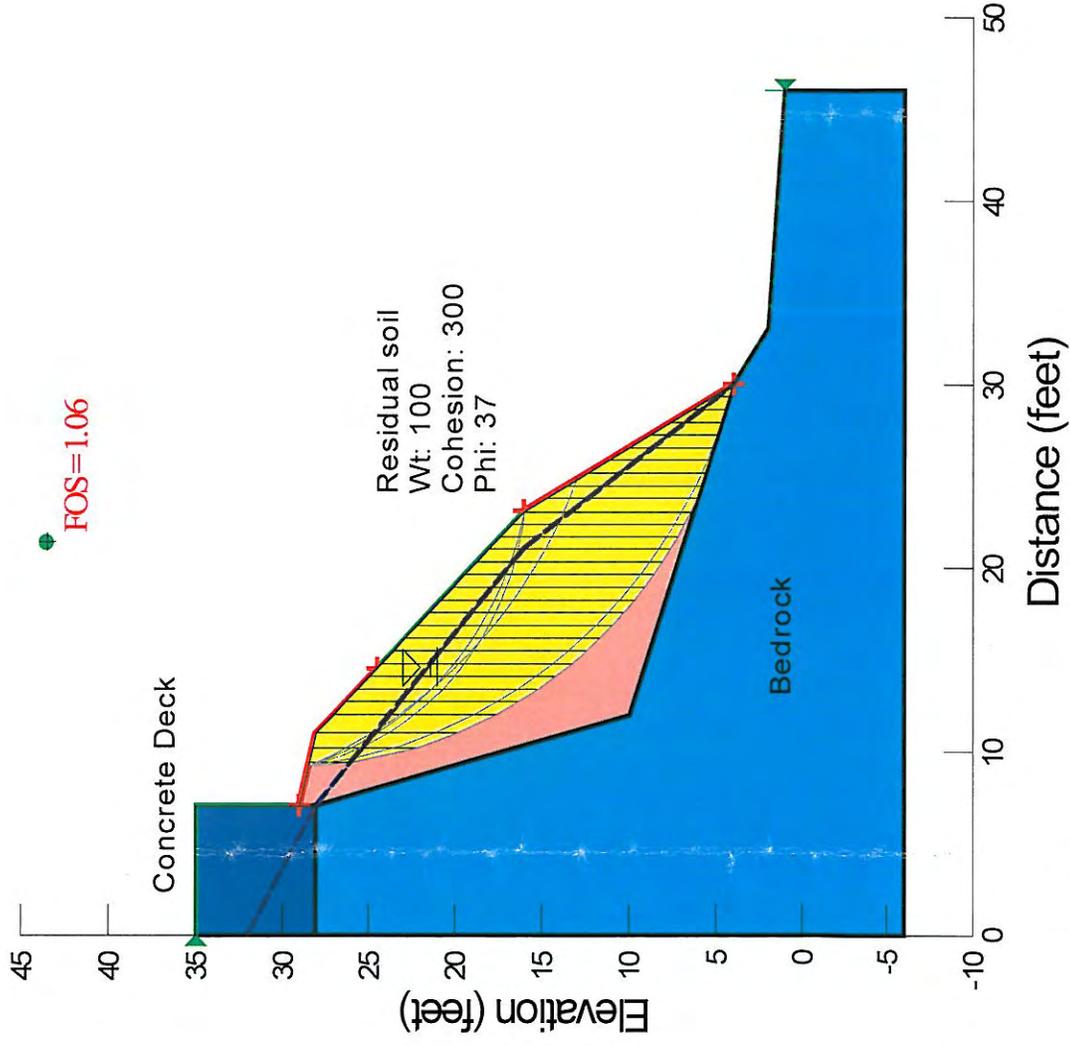
Project No: SRSS00108



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Figure 4

Stability Analysis - Line BB



Client: Joe and Kristen Souza
Project: 47-079 Kamehameha Hwy.

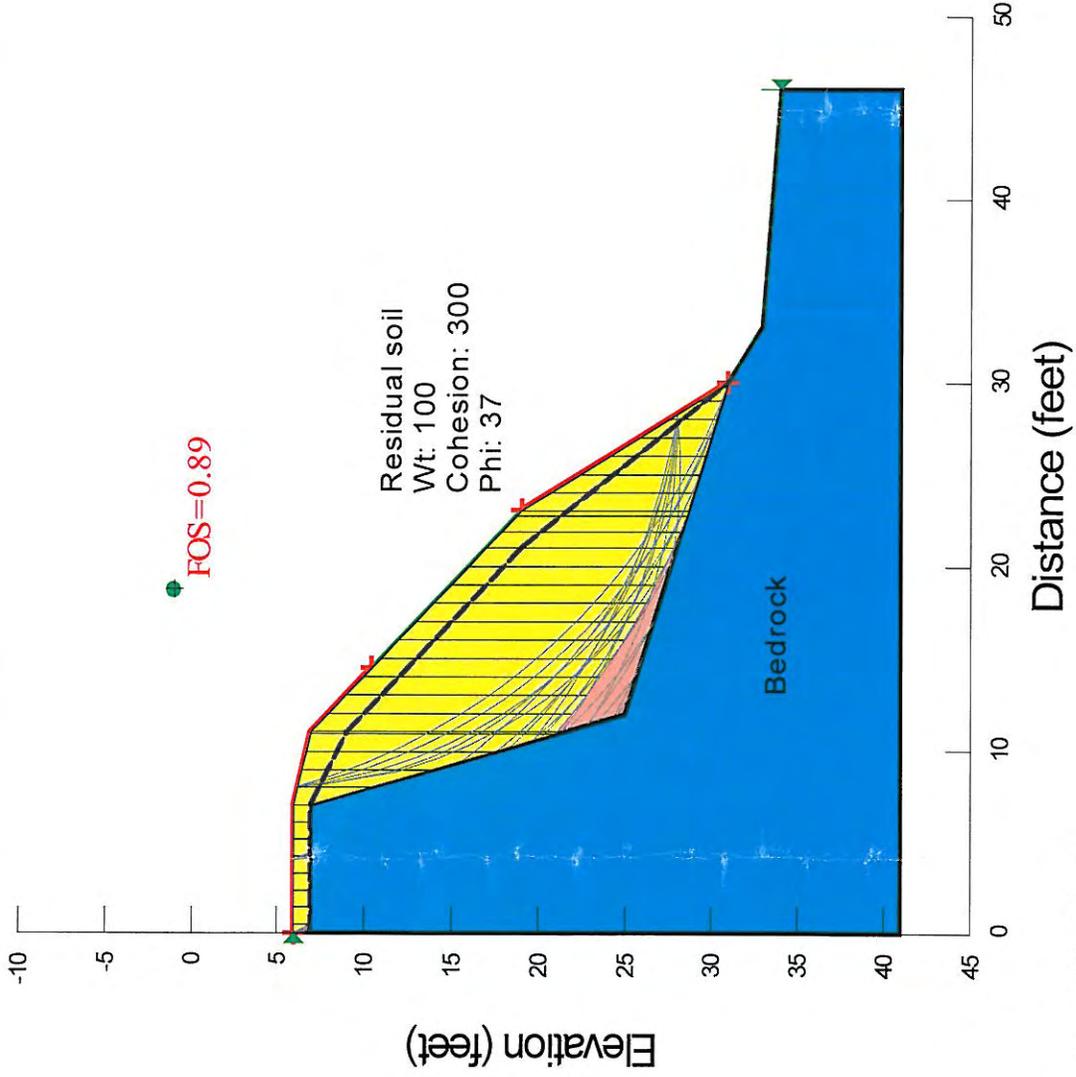
Project No: SRSS00108



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Figure 5

Stability Analysis Without Concrete Deck - Line BB



Client: Joe and Kristen Souza
Project: 47-079 Kamehameha Hwy.

Project No: SRSS00108



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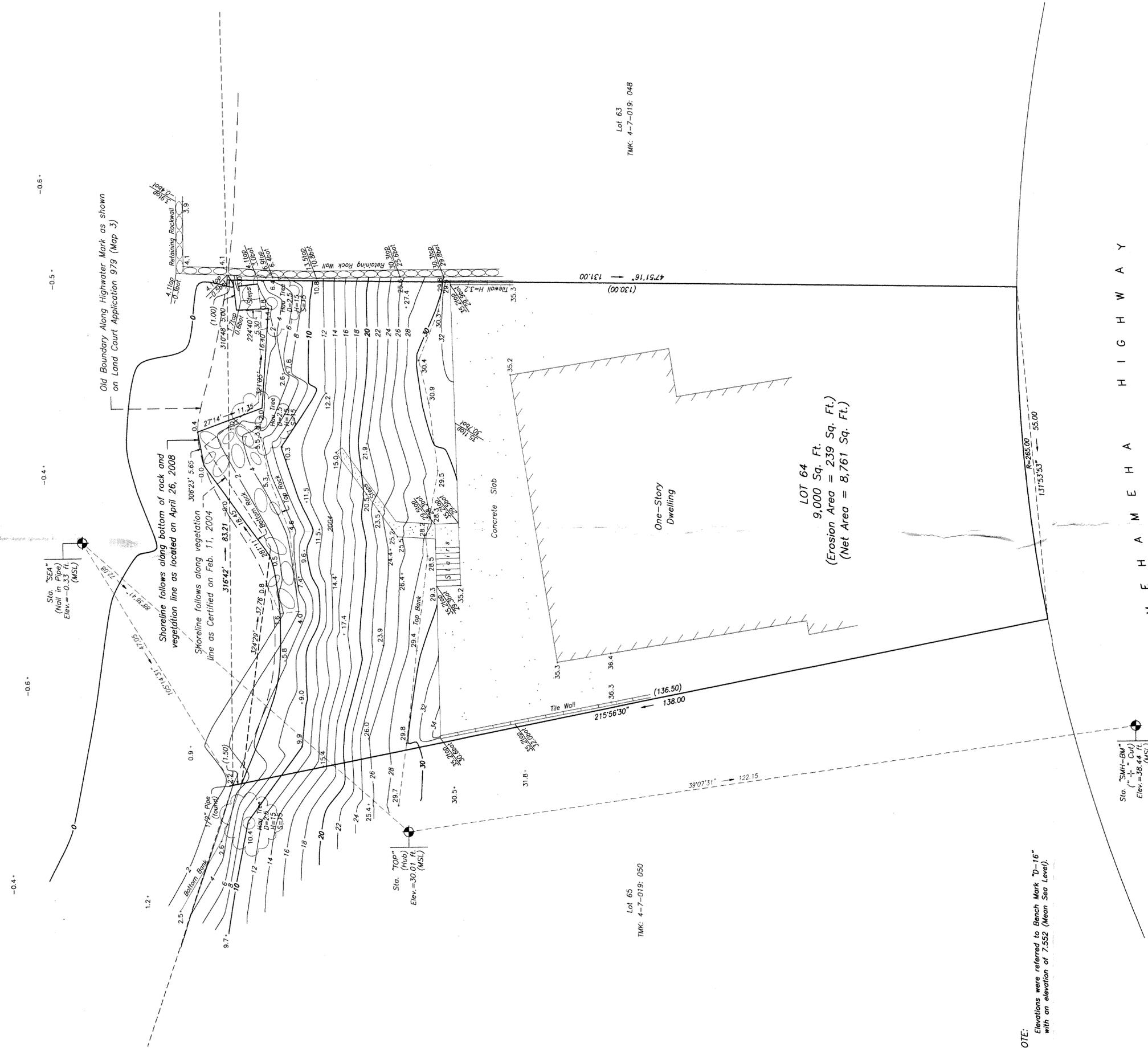
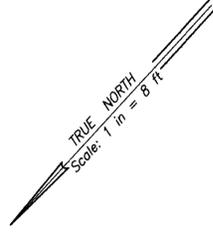
Figure 5B

APPENDIX E

Topographic Survey Map

(April 26, 2008)

K A N E O H E B A Y



Lot 65
TMK: 4-7-019: 048

Lot 65
TMK: 4-7-019: 050

LOT 64
9,000 Sq. Ft.
(Erosion Area = 239 Sq. Ft.)
(Net Area = 8,761 Sq. Ft.)

NOTE:
Elevations were referred to Bench Mark "D-16"
with an elevation of 7.552 (Mean Sea Level).



This work was prepared by me
or under my supervision

GIL P. BOMANGLAG
Licensed Professional Land Surveyor
Certificate Number 8948



TOPOGRAPHIC SURVEY MAP
LOT 64 OF MAP 3
LAND COURT APPLICATION 979
Tax Map Key: (1) 4-7-019: 049
AT KAHALUU, KOOLAUPOKO, OAHU, HAWAII

APPENDIX F

Preliminary Stair and Landing Layout for Souza Residence