DEPARTMENT OF LAND UTILIZATION
89/SMA-59(BW)
April 3, 1990

SPECIAL MANAGEMENT AREA ORDINANCE
CHAPTER 33, ROH
Environmental Assessment/Determination (FC, OF ENVIRON-
Negative Declaration QUALITY CONT.

Recorded Owner/ : Leroy V. Altz, Revocable Living Trust;
Applicant : Ruth E. Altz, Trustee
Agent : Robert C. Altz
Location : 68-474 Crozier Drive, Waialua, Oahu
Tax Map Key : 6-8-06: 15
Request : Removal of eight (8) feet of sand and replacement
with soil
Determination : Environmental Impact Statement (EIS)
Not Required

Attached and incorporated by reference is the environmental assessment
prepared by the applicant for the project.

On the basis of the environmental assessment, we have determined that an
Environmental Impact Statement is not required.

APPROVED DONALD A. CLEGG
DONALD A. CLEGG
Director of Land Utilization
City and County of Honolulu
State of Hawaii

DAC:51
0335N/7
ENVIRONMENTAL ASSESSMENT

I. GENERAL INFORMATION

A. Applicant:
   Leroy V. Altz, Jr. Revocable Living Trust
   Trustee - Ruth E. Altz
   68-482 B Crozier Drive
   Waialua, HI 96791
   Phone: 808 637-6732

B. Recorded Fee Owner:
   Leroy V. Altz, Jr. Revocable Living Trust
   68-482 B Crozier Drive
   Waialua, HI 96791
   Phone: 808 637-6732

C. Agent:
   Robert C. Altz
   68-482 B Crozier Drive
   Waialua, HI 96791
   Phone: 808 637-6732

D. Tax Map Key: 6-8-06-15

E. Lot Area: 2.0 Acres - Zoned AS-2

F. Agencies consulted in making assessment:
   1. City and County Agencies
      a. Department of Land Utilization
      b. Board of Water Supply
      c. Department of Public Works, Refuse Collection
         and Disposal Division
   2. State Agencies
      a. Department of Land and Natural Resources, Historic Sites Section
      b. Department of Health, Sanitation Division
   3. Other Agencies, private sector:
      a. Hawaiian Electric Company
      b. North Shore Crane Service
      c. Walker-Moody Construction Company, Ltd.
      d. Archaeological Consultants of Hawaii, Inc.
      e. Waialua Sugar Company
      f. University of Hawaii, College of Tropical Agriculture
II. DESCRIPTION OF PROPOSED ACTION

A. General Description

1. The proposed action concerns a two acre parcel along Crozier Drive, situated at Mokuleia, Waialua, City and County of Honolulu, Island of Oahu. The subject property is more particularly identified as Tax Map Key No. 6-8-06-15. It is presently zoned AG-2 and is covered with California grass, haole Koa and few a ironwood trees near the northern (makai) perimeter lines.

An SMP permit is being applied for in order to proceed with improving the property to make it more conducive to growing long term, deep rooted crops. The permit would allow the replacement of the existing sandy soil with good top soil. Approximately twelve other AG-2 lots on Crozier Drive have already completed this process. An accompanying map provided by Walker-Moody Construction Company, Ltd. will verify this.

This top soil will be obtained from Waialua Sugar Company. It will enhance the ability to grow crops that require good soil for optimum fruit production. Presently Walker Moody Construction Company has an agreement with Waialua Sugar Company to obtain top soil when they need it.

2. The parcel in question is entirely within the SMA, however it is not a shoreline property. It is approximately 150 feet or more from the shoreline. It is located on the mauka (southern) side of Crozier Drive approximately 5 miles from Waialua and 10 miles from Haleiwa shopping and employment facilities.
3. A map showing the location of the project site and its relation to the surrounding area is included with the documents of this package.

4. To date no land use approvals have been granted, however the Department of Land Utilization has indicated that an SMP or SMA will need to be obtained, hopefully with a "minor" classification.

A CUP Type I permit may also be required. After meeting with Deputy Director Benjamin Lee and Robin Foster on 8 December 1989 it was advised that a minor classification may be in order. After necessary agency reviews, a minor classification permit may be issued pending the outcome of those reviews.

An archaeological site survey will also be necessary for permit approval.

B. Technical Characteristics

1. Use characteristics: The property is zoned AG-2 and the intent is to use the property for agricultural purposes. Supplemental income will be derived from crops both long and short term.

2. Physical characteristics: As was earlier stated, please see the attached maps and drawings where applicable. The physical characteristics of the property, property lines, lot size, ground elevations and existing structures are clearly marked for easy identification.

3. Construction, removal, or modification of existing structures/terrain: Initially, the property will be cleared and grubbed and then, with proper approvals and permits, will have
the sand extracted and replaced with top soil and back fill. The present grading has already been determined and will be maintained in the soil replacement process. Walker Moody Construction Company will be doing the actual day to day work. The proposal is to extract sand to a depth of 8 feet and the agent for the trustee will comply with obtaining permits for that purpose.

4. **Utility requirements:** County water will be provided and obtained through the placement of a new water meter on Crozier Drive by the Board of Water Supply. Electricity will be applied for and obtained on an "as needed" basis. Hawaiian Electric Company has acknowledged that overhead wires are permissible and access is easily obtained from existing utility poles and lines along Crozier Drive.

5. **Liquid waste disposal:** Per the present city, county and state regulations, a cesspool and/or septic tank will be installed to handle liquid waste disposal if and when a home is built. North Shore Crane Service will be contracted for this installation. Approximately 10-12 other lots in the immediate area have also obtained cesspools and/or septic tanks after completing the sand removal/soil replacement process. The Department of Health, Sanitation Division confirmed that TMK 6-8-06-15 is below the UIC line and a cesspool may be approved, following proper application.

6. **Solid waste disposal:** is currently handled by the City and County with collection service provided on Tuesdays and Fridays. No change in this service is anticipated in the near future.
7. Access to site: Access to the property is easily obtained from Crozier Drive. This is where the driveway will be located. However, during the sand extraction/soil replacement process, Waialua Sugar Company will provide access from their lands. The subject property abuts Waialua Sugar Company lands on the south and east property lines. Therefore, no trucks or machinery will cause a negative impact along Crozier Drive.

C. Economic Characteristics

Estimated cost and time: The estimated cost of the project is contained in the accompanying letter provided by Walker-Moody Construction Company, LTD.

Basically, this is an exchange agreement between the owner and Walker-Moody Construction Company, LTD. In exchange for the sand, back fill and top soil will be received so that agricultural goals can be pursued.

Day to day site work will be performed by Walker-Moody Construction Company, LTD. Truck hauling will be handled by B & C Trucking. Mr. Nori Fukuda of B & C Trucking commented that much of the sand they obtain is used to maintain city and county golf courses and other projects.

The normal timetable for completing a project of this size is approximately three to five months, working Monday through Friday, 8:00 am to 4:00 pm. As indicated by the accompanying grading maps, no work would be performed on Saturdays, Sundays or holidays.

The other A6-2 lots in the immediate vicinity that have completed this same process have adhered to this timetable. This project would hope to duplicate that process.
D. Environmental Characteristics

1. Soils:

The U.S. Department of Agriculture, Soil Conservation Service (SCS) classifies the soils of the subject property as Jaucus series soils. According to the SCS Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii (August 1972) Jaucus soils are poorly suitable for topsoil and for roadfill, with a low fertility rating and are highly erodible. The capability classification for Jaucus soils is Class IVs if irrigated and Class VIE if non irrigated. Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both. Subclass IVs soils have very severe soils limitations because of stoniness, shallowness, unfavorable texture or low water holding capacity. Class VI soils have severe limitations that make them generally unsuited to agriculture and limit their use largely to pasture on range, woodland or wildlife habitat. Subclass VIE soils are further severely limited by the hazard of erosion.

The Land Study Bureau classifies the soils of the subject property as Regosols in its publication Detailed Land Classification - Island of Oahu. (L.S.B Bulletin No. 11, December 1972). These are represented on Oahu by Jaucus (catano) coral sands as previously mentioned. They are found primarily along the beaches and a short distance inland. The sands are light brown, coarsely textured, deep, non expanding, excessively drained, machine tillable, variably stony and not suitable for cultivation.
Waialua Sugar Company has never grown sugar cane on its lands directly abutting the subject property on the east end. This land is much the same as the subject property - too sandy for optimum yield. Mr. Milton Agader, field manager, from Waialua Sugar Company verified that this property had too much sand to have high yields. They too, plan to excavate their sand and replace it with topsoil so that they can then plant those fields. They will use the sand for concrete flue production and dust control on their field roads. A portion of the strip of land abutting subject property has already had sand removed for that purpose.

The land type classification of the Jaucus soils is E-7. These soils have an overall productivity rating of "E" and Selected Crop Productivity Rating of "e" for all uses except forage and grazing, for which a "d" rating applies. The soil of the subject property is poorly suited for agriculture and was not included within an area designated as agricultural lands of importance by the State Department of Agriculture.

2. Topography:

The subject property is flat, unimproved land approximately 150' from the ocean. The proposed action does not affect any headlands, mountains, valleys streams or marshes.

3. Surface runoff:

The elevation of the subject property is between 5 to 10 feet above sea level with a very low slope of zero to 5 per cent. Annual rainfall averages approximately 20 inches for the general area. As indicated by the accompanying grading maps, the
proposed sand removal/soil replacement process will not alter the existing natural drainage pattern of the area which is in the south/southeast direction. There should be no erosion hazard once the project is completed.

4. Flood plain zone:

The subject property is in the Federal FIRM zone designated XS. Mr. Mario Siu from the Department of Land Utilization provided this information on 12-26-89. Because of this designation, the subject property is not within the LUD Flood Hazard District. Therefore, additional certification is not necessary.

III. AFFECTED ENVIRONMENT

A. Subject Site in Relation to Surrounding Area:

The proposed sand removal/soil replacement process should not affect the immediate environment. The subject property has vacant sugar cane lands on two sides (south and east). The north side of the subject property is adjacent to Crozier Drive with beachfront homes on the opposite side of that street. Those homes are presently zoned R7.5. The west perimeter boundary abuts the property on which agent for the trustee presently resides and the proposed project will not adversely affect day to day routine. Prevailing northeast tradewinds would blow dust away from the residential property on the north side.

No change in existing land use is anticipated. The present General Plan and Development Plan land use designations will be maintained.
The property is zoned AG-2, but the existing soil is not conducive to growing good crops. The sand removal/soil replacement process will allow the land to be used as it was originally intentioned and zoned.

B. Relation to Publicly Owned Resources:

The proposed project will not significantly or adversely affect the environmental ecology of the area. There are no rare or endangered species of flora or fauna on the subject site. Therefore, no habitats, preserves, wetlands, lagoons or tidal areas will be affected.

The project site is across the street from the ocean and proposed project will not result in any loss of recreational facilities or areas. There is a public right of way to the beach approximately one quarter mile away.

C. Relation to Coastal Views:

Coastal views and public viewpoints will not be adversely affected. The subject property does not contain any unique or unusual scenic amenity. The subject property is currently overgrown with California grass, haole koa and other scrub grasses so the proposed project would enhance the areas beauty, not detract from it. Better mauka views would result from the proposed action. The 12 or so other agriculture lots that have completed this same proposed process have improved the general appearance of the area.

D. Relation to Historic, Cultural and Archaeologic Resources:

On the surface the project site does not appear to have
anything of historical or archaeological value. However, Dr. Joyce Bath of the Historic Site Section of the Department of Land and Natural Resources has determined that subsurface site surveys are necessary. This is because there is a possibility or likelihood of human burials and/or human habitation remains.

Therefore, as part of the commitment to acquiring the necessary permits for the project, Joseph Kennedy, an archaeologist with Archaeological Consultants of Hawaii, Inc., has been contracted to perform the necessary work. He has been advised to contact Dr. Joyce Bath to ensure that the work performed satisfies her requirements for a complete and competent survey.

At the same time, Mr. Benjamin Lee and Mr. Robin Foster of the Department of Land Utilization, informed the agent for the trustee in the meeting of 12-8-89 that this survey could be performed when and if other approvals are granted for the "minor" classification. If granted those approvals, funds will then be made available for this survey.

E. Location Site Maps:

Included in this packet are sufficient drawings and maps to allow examination of the permit request.

IV. PROJECT IMPACTS:

Impacts relative to coastal Zone Management Objectives:

The proposed sand removal/soil replacement process will not adversely affect any coastal zone management objectives. The parcel in question is not a shoreline property. Other lots on both sides (east & west) of the subject property have completed
this process. The present zoning will be enhanced even more because agricultural crops do inherently better when planted in good top soil as opposed to sand.

Development of the subject property will not create any appreciable impact to the employment and economic considerations of the state.

The petitioner would like to use the property for supplemental farming, as it was zoned. Presently, the existing soil will not permit this to be done. Hopefully, the information provided in this environmental assessment provides you with enough data to make a favorable decision. If any other information which may be helpful and/or necessary for this permit is missing please contact the agent for the trustee.

Submitted by:

[Signature]

Robert C. Altz
Agent for:
Leroy V. Altz Jr. Revocable
Living Trust
AGRICULTURAL USE PLAN

I. GENERAL INFORMATION

A. Intended Use

The subject property will be used primarily for agricultural purposes. Fruit trees, specific crops and ornamental/cut flowers will be grown on approximately one acre of the two acre parcel.

B. Prospective Goals

Supplemental income will be derived from certain specific plantings. Other plantings are intended for home use only and will be planted on an "as needed" basis. The harvest from the supplemental income crops will hopefully be marketed at local establishments in Waialua and Haleiwa.

II. CROP ACREAGE

A. Supplemental Income Crops

1. Papayas - Approximately 1/2 acre will be planted. The Sunrise variety has been recommended for the subject property by Dr. Leng Chia, an extension specialist with the University of Hawaii, College of Tropical Agriculture, Department of Horticulture.

2. Bananas - Approximately 1/4 acre of bananas will be planted. The Williams variety has been recommended as a superior type by Dr. Leng Chia, extension specialist at the University of Hawaii, College of Tropical Agriculture, Department of Horticulture.

3. Lettuce - Approximately 1/8 to 1/4 acre of lettuce will be planted. The Manoa variety was recommended as a proven
product. Also suggested was the newer Anuenue variety which is a tighter, head type of lettuce. Initially, only the Manoa variety will be planted.

This information was obtained from extension specialist Steve Fukuda at the University of Hawaii, College of Tropical Agriculture, Department of Horticulture.

4. Pikake - Approximately 1/8 acre will be planted. Dr. Ken Léonhardt at the University of Hawaii, College of Tropical Agriculture, Department of Horticulture was questioned on information about pikake. He has no definitive information at this time.

Local and neighbor island producers have not been willing to provide information on a statistical basis. Therefore, this will be a trial crop.

B. Home Use Crops

1. Citrus - A variety of certain citrus will be planted. Among them are lemon, orange, tangerine and tangelo. Acreage planted will be limited to two or 3 of each type, intended for family use only.

2. Avocado - Some avocado will be planted, possibly 5 or 6 trees. The Sharwil variety will be used as it is most resistant to fruit fly infestation.

3. Vegetables - A wide range of vegetables will be planted. These will include beans, peas, eggplant, tomatoes, and cucumbers. These too, are to be for family use only, so specific acreage is not applicable.
III. TIME SCHEDULE FOR PLANTING AND HARVESTING

A. SMP Application

1. Any planting that is to take place is conditional upon receiving the request for an SMP.

2. It will take approximately 3 to 5 months to prepare the property (sand extraction/soil replacement process) once the SMP approval is obtained.

3. First planting of supplemental income crops would commence approximately two months after completing the sand extraction/soil replacement process.

B. Supplemental Income Crops

1. **Panavas** - First planting would begin 2 to 3 months after completing lot preparation. Plants will be spaced approximately 10-12 feet apart with nearly 200 plants on a 1/2 acre plot. Harvest should begin approximately 10-12 months after initial planting. Estimated yield is 10,000 to 15,000 pounds per 1/2 acre per year according to Dr. Leng Chia at the University of Hawaii, College of Tropical Agriculture, Department of Horticulture.

2. **Bananas** - First planting would begin 3-4 months after completing lot preparation. Plants will be spaced approximately 10 to 15 feet apart with between 50 to 60 plants in a 1/4 acre plot. Harvest should begin approximately 12 months thereafter. Information provided by Dr. Leng Chia, suggests yields of about 25,000 pounds per acre per year. (1/4 acre = 8750 pounds per year). A conservative estimate for the initial crop would be lower than this figure with increased yield as the field grew to maturity.
3. **Lettuce** - First planting would begin 1 to 2 months after completing lot preparation. Individual plants will be spaced approximately 8 inches apart, in rows that are 8 inches apart. A conservative estimate for harvest, provided by Mr. Steve Fukuda at the University of Hawaii is 18,000 pounds per acre per crop. He also indicated a possibility of six crops a year with a more realistic goal of 5 crops per year. Growth cycle for the Manoa variety of lettuce is 45 to 50 days.

4. **Pikake** - First planting would occur approximately 3 to 4 months after lot preparation. Individual plants would be approximately 5 feet apart with approximately 200 plants in an area of 1/8 acre. No definitive figures are available for harvest or yield so this will be an experimental crop to be marketed at local florist shops.

C. **Home Use Crops**

The home use crops described in Section II of this land use plan will not constitute a major portion of the overall plan. Therefore, no timetable for planting has been established. The supplemental income crops will be a priority before home use crops are planted.

Expected numbers of home use type crops should be a few to several or more. Citrus and avocado are both longer term crops. Harvest from these is expected to take from two to five years. Expected yield from these plants should be adequate for home consumption only.

Vegetables, including beans, peas, eggplant, tomatoes
and cucumber will be planted for family consumption only. These short term crops will be planted and replanted as needed. Yield from these short term crops should be adequate enough for home use only and will have no commercial value.
This document given
Robert C. Cody, authorization
of agent of
the Henry V. Cody Living
Trust.

Ruth Altz

W.S. Altz

12-12-89

State of California
County of Orange

On this the 12th day of December, 1989, before me,

Marilyn J. Jones

the undersigned Notary Public, personally appeared

Ruth Emich Altz

On the basis of satisfactory evidence,
the person whose name is
subscribed to the
within instrument, and acknowledged that SHE executed it
WITNESS my hand and official seal

Notary's Signature

GENERAL ACKNOWLEDGMENT

ATTENTION NOTARY: Although the information requested below is OPTIONAL, it could prevent fraudulent attachment of this certificate to another document.

THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED AT RIGHT.

Title or Type of Document

Date of Authorization

Number of Pages

Date of Document

Signer(s) Other Than Named Above

NO

CERTIFICATE
Other R6-2 lots which have completed the sand removal/soil replacement process.

Information obtained from Walker-Hoody Construction Company. They performed the actual day-to-day work and obtained all necessary permits.
Mr. Robert Altz  
68-474 Crozier Drive  
Waialua, HI 96791

Re: Grading and Excavation of Agricultural Lot  
T.M.K.: 6-8-06-15 Lot 2A

COST ESTIMATE

Gentlemen:

As you have requested, the following is a cost estimate of the work to be performed on your lot:

1. Clearing and grubbing of lot.......................... $2,500.00
2. Stockpile existing soil for reuse...................... 3,000.00
3. Remove and replace approximately 15,173 c.y. of sand... 38,500.00
4. Finish grade lot using existing soil.................. 5,000.00

TOTAL ESTIMATED COST........................................ $49,000.00

If you have any questions regarding the above or if we can be of further service, please do not hesitate to contact us.

Sincerely,

WALKER-MOODY CONSTRUCTION CO., LTD.

[Signature]

Lyle R. Moody, Vice President
GENERAL SOIL MAP
OAHU ISLAND, HAWAII

SOIL ASSOCIATIONS

Luqualei-Fill land-Ewa association: Deep, nearly level to nearly sloping, well-drained soils that have a fine textured or moderately fine textured subsoil or underlying material, and of fill land, on coastal plains.

2. Halaumana-Waiawa association: Deep, nearly level to nearly sloping, well-drained soils that have a fine-textured subs

3. Tephromunts-Dystropepts association: Gently sloping to steep, well-drained soils that are underlain by soft weathered rock, volcanic ash, or alluvium; on narrow ridges and side.

4. Rough mountainous land-Kapa association: Very steep land broken by numerous drainageways and deep, well-drained so that have a fine textured or moderately fine textured subsol, gulches and on narrow ridges.

5. Rock land-Stony steep land association: Steep in precipitous well-drained to excessively drained, rocky and stony land.

6. Kaena-Waialua association: Deep, mainly nearly level and slope, poorly drained to excessively drained soils that have fine-textured to coarse-textured subsoil or underlying materials on coastal plains and talus slopes and in drainageways.

7. Laihao-Kalakane association: Deep, nearly level to nearly well-drained soils that have a dominantly fine-textured subs on fans, terraces, and uplands.

January 1971

NOTE:
This map is intended for overall land use management and is not intended to reflect detailed soil types.
amount ranges from 70 inches at the lowest elevations to 250 inches near the mountain summit. The mean annual soil temperature is between 60° and 71° F. The natural vegetation is ohio lehua, koa, treefern, false staghound fern, hluTRUE, and sedges.

Rough mountainous land makes up about 80 percent of the association and Kapaa soils about 15 percent. Rock land and Rock outcrop make up the rest.

Rough mountainous land consists of very steep gullies and narrow ridges. The soil material is very shallow, very dark grayish-brown, smearable silty clay. Kapaa soils are in very steep gullies and on narrow ridges at the northern end of the island. They have a surface layer and subsoil of dark reddish-brown silty clay that contains gibbsite nodules.

This association is inaccessible except for a few trails used by hunters and hikers. It is used for watershed and wildlife habitat. Gently sloping areas of Kapaa soils are suited to timber. The heavy rainfall is an important factor in recharging the supply of ground water. The most important wildlife species is wild pigs.

5. Rock land-Stony steep land association

Steep to precipitous, well-drained to excessively drained, rocky and stony land

This association consists of stony and rocky, steep to precipitous slopes. It occurs on Oahu and makes up about 15 percent of the island.

The elevation ranges from sea level to 3,800 feet. The annual rainfall is 15 to 50 inches in most areas but is as much as 600 inches along the windward cliffs of the Ko'olau Range. The mean annual soil temperature is between 67° and 75° F. Kilaue, buffelgrass, and finger-grasses grow in the drier areas, and ohia lehua, ferns, and sedges in the wetter areas.

Rock land makes up about 60 percent of the association, and Stony steep land 15 percent. Rock outcrop, Stony land, and areas of Kaiulapai, Lualualei, and Pulapu soils make up the rest.

Rock land is 25 to 50 percent rock outcrop. It is very steep and occurs in gullies and on mountainsides. The soil material is very shallow. Stony steep land is a mass of boulders and stones deposited by water or gravity in valley bottoms or on side slopes of drainageways. Slopes are very steep.

This association is used mainly for pasture, wildlife habitat, and recreation. Some areas are used for homesites. Upland game birds and wild pigs are the principal kinds of wildlife.

6. Kaeo-Walalua association

Deep, mainly nearly level and gently sloping, poorly drained to excessively drained soils that have a fine-textured to coarse-textured subsoil or underlying material; on coastal plains and talus slopes and in drainageways.

This association occurs as a narrow band along the northern and eastern coastline on the island of Oahu. The soils occur in drainageways, on coastal plains, and on talus slopes. They are nearly level and gently sloping for the most part but are steeper on talus slopes. They formed in alluvium and vary widely in texture and
drainage. The association makes up about 10 percent of the island.

The elevation ranges from sea level to 500 feet. The annual rainfall is generally 30 to 45 inches, but ranges from 20 to 80 inches. Most of the rain falls in winter. Summer showers are common. The mean annual soil temperature is about 76° F. Kiawe, koa haole, and finger-grasses grow in the drier areas, and guava, java plum, and californiagrass in the wetter areas.

Kaena and Waialua soils make up about 60 percent of the association. Hanalei, Kawaihao, Jauca, Haleiwa, Kaloko, Keau, Mokuleia, Pearl Harbor, and Pulehu soils, and areas of Coral outcrop and Marsh make up the rest.

Kaena soils are poorly drained, dark-colored silty clays or clays underlain by alluvium. Waialua soils are moderately well drained, dark reddish-brown silty clays or clays underlain by alluvium. This association is used for sugarcane, truck crops, pasture, orchard, recreation, and urban development. Kaena soils need to be drained before they can be cultivated.

7. Loleka-Waikane association

Deep, nearly level to very steep, well-drained soils that have a dominantly fine-textured subsoil; on fans, terraces, and uplands

This association consists of well-drained, fine textured and moderately fine textured soils on uplands, fans, and terraces on the island of Oahu. These soils are nearly level to very steep. They formed in old alluvium and material weathered from basic igneous rock. The association makes up about 15 percent of the island.

The elevation ranges from near sea level to 1,500 feet. Rainfall is fairly well distributed throughout the year. The annual amount is 40 to 80 inches. The mean annual soil temperature is between 70° and 75° F. The natural vegetation is guava, java plum, hilo grass, and ricegrass.

Loleka soils make up 20 percent of the association and Waikane soils about 20 percent. Paumalu, Kameo, Loleka, Aholea, Kanehoa, Paulea, Phukupu, and Manana soils make up the rest.

Loleka soils have a surface layer of dark-brown silty clay and a dominantly silty clay subsoil. Their sub-stratum is gravelly alluvium. Waikane soils have a surface layer of dark-brown silty clay and a subsoil of dark reddish-brown silty clay. Their sub-stratum is gravelly alluvium.

This association is used mainly for pasture. Small areas are used for homesites, truck crops, and orchard crops. Areas of the minor soils in the association are used for sugarcane and pineapple. The potential for timber is high.

Island of Maui

Maui, the second largest island in the State, is 48 miles long and 26 miles wide. The land area is 655,650 acres, or 785 square miles. The island formed through the merging of two volcanoes—the East Maui volcano, or Haleakula, and the West Maui volcano. It is divided into three main areas—West Maui, East Maui, and Central Maui, or the isthmus.

West Maui is a deeply dissected volcano that rises to 5,786 feet at Puu Kukui. The central part of West consists of canyons and steep ridges and is not accessible. It is surrounded by a moderately fertile narrow belt. There are a few gulches.

East Maui is dominated by the 10,605-foot Haleakula volcano. The volcano is dormant. The last eruption was about 1780. In the summit and on the eastern edge the land is rough and rocky. Western and northern slopes are relatively smooth and sloping to moderately steep.

Central Maui, the isthmus that connects West and Maui, is smooth and nearly level. It is used mainly for sugarcane. Much of the isthmus is covered with alluvial land. Rainfall is heavy in the mountainous areas. Ground water occurs at the eastern end of East Maui across the isthmus and along the coast of West Maui. Purified water also occurs on East Maui.

The business activity, the population, and the government are centered in Wailuku and Kahului. Kahului has an airport and a deep-water harbor.

1. Pulehu-Ewa-Jauca association

Deep, nearly level to moderately sloping, well-drained and accessibly drained soils that have a moderately fine-textured subsoil or underlying soil; on alluvial fans and in basins

This association consists of well-drained and accessibly drained, medium-textured, moderately fine textured, and coarse-textured soils on alluvial fans in basins on the island of Maui, mainly Central Maui. Soils are nearly level to moderately sloping. They differ from alluvium weathered from basic igneous rock, and their sub-stratum is well-drained and accessibly drained. The association makes up about 10 percent of the island.

The elevation ranges from near sea level to 600. The annual rainfall is 10 to 20 inches. The mean annual soil temperature is about 75° F. The natural vegetation is bermudagrass, bristly foxtailgrass, kawe, and lanai grass.

Pulehu soils make up about 40 percent of the association, Ewa soils about 15 percent, and Jauca soils 10 percent. Also, Iau, Kealia, and Puuone soils make up the rest.

Pulehu soils have a surface layer of dark-brown alluvium that has a moderately fine-textured subsoil. Their sub-stratum is dark-brown and yellowish-brown alluvium weathered from basic igneous rock. Ewa soils have a surface layer and subsoil of reddish-brown, friable silty clay loam. Their sub-stratum is yellowish-brown sand west from coral and sea shells.

This association is used for sugarcane, truck crops, pasture, wildlife habitat, and homesites. Most of the sugarcane is grown on Ewa, Jauca, and Pulehu. Upland game birds and native water birds are the principal kinds of wildlife.

2. Waikana-Keehau-Molokai association

Moderately deep and deep, nearly level to moderately deep, well-drained soils that have a moderately fine-textured subsoil; on low uplands

This association consists of well-drained, moderately fine textured soils on low uplands on Central Maui.
This soil is used for sugarcane, pasture, pineapple, orchards, and truck crops. This is a heavy soil, close to the sea. The overlying soil is under 32 feet, subsoil is 10 to 30 inches, bottom is 15 to 18 inches, and bedrock is 25 to 30 inches below the surface. The soil is well-drained and has a high water table. The soil is alkaline and the pH is 8.5 to 8.8. The organic matter content is low, and the cation exchange capacity is high. The soil is warm and has a high solar radiation. The temperature is high, and the humidity is moderate. The soil is suitable for sugarcane, pineapple, and pasture.

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January 12, 1990

Mr. Robert Altz
68-4828 Crozier Drive
Waialua, Hawaii 96791

Dear Mr. Altz:

SUBJECT: Archaeological subsurface testing on TMK 6-8-06: 15 Mokuleia, Waialua, O'ahu

This letter is in response to your phone call requesting a scope of work for subsurface testing on your two-acre lot in Mokuleia.

We believe that approximately 10 backhoe trenches, each about 20 feet long by a minimum of 6' deep, randomly distributed on the property will be sufficient to indicate the presence or absence of subsurface archaeological deposits and/or burials.

We recognize that keeping the sand deposits clean is a valid concern for you, but from our perspective, grubbing prior to testing is not acceptable. We have talked to Joseph Kennedy, whom you have designated as your archaeological consultant, about this problem. He assures us that he can mechanically clean as testing proceeds, and thus meet this concern.

Thank you for your cooperation in this matter.

Sincerely,

DON HIBBARD, Director
Historic Preservation Program

cc: Robin Foster, Department of Land Utilization
City & County of Honolulu
GRADING NOTES

1. All grading work shall be done in accordance with procedures set forth in the contract documents and any modifications or instructions in this or any other document.

2. The contractor shall remove all unwanted materials, including gravel, fill, and debris from the proposed site.

3. Grading of the site shall be performed in accordance with the site plan and specifications.

4. All grading work shall be inspected by the project manager or his representative before acceptance by the project owner.

LOCATION PLAN

SHEET: 18/L  MAKE: 2014

REVISED FOR GRADING ONLY:

DRAWN BY: DATES:

CHECKED BY: DATES:
NORTH (DESCRIPTION
Agricultural Planning
Development of the concept
to farms, improves land uses.
Diversifies farming along
its own unique potential.
5) ten clear tropical
5) would become the
perspective, for residents
benefit to the local
activities. Crops, corn,
maize, fruits, etc. will be
and hardwoods will thrive
10 feet deep and relatively
timber along with
then alternative crops: fruit
a combination of deep
shade and open in
cool humidity. A fruit
cool bearing program.
fruits harvested seasons.
various hardwoods
shaded by the oaks.
ability living environment
situations favored.
DESIGNATION OF ADEMENT "I" (12 FT. WIDE) INGRESS AND EGRESS PURPOSES AFFECTING PARCEL C

Portion of Oahu Railway and Land Company 40 ft. Railroad Right of Way

Portion of Grant 502 to J.S. Emerson

ND IN FAVOR OF LOT 2-A
February 15, 1990

At the request of your office, Archaeological Consultants of Hawaii, Inc. has conducted a subsurface testing program at Lot 2C, Crozier Dr. located at Waialua, Island of Oahu. The subject property, approximately two acres, is located immediately south (mauka) of Crozier Drive and the former Oahu 40 foot right-of-way.

Access is by way of an easement in the northwest corner of the parcel crossing the right-of-way (see map). The ocean is 75-100 meters north of the property line, prevailing winds are consistently onshore. Predominant vegetation is thick grass and scrub brush, the property having been cleared at least once within the last year. The landowner intends to mine and fill the property to remove sand down to the basal layer of coral limestone aggregate, which would result in the destruction of any historical remains on or below the surface. The purpose of this survey is to determine the presence or absence of cultural remains on the property and what, if any, mitigative measures might be necessary in accordance HRS6E considerations.

The USDA Soil Survey (1972) indicates the two main soil series found in this area are Jaucus Sand (JaC), and Fill dirt (Fd) from agricultural sources in areas where sand-mining has already occurred. Both types of profiles are represented in our survey. Jaucus Sand is a carbonatic isohyperthermic typic ustipsamment entisol normally appearing in 2-3 layers above the coral/limestone gravel base rock. In some places there is an A horizon, 5-15 cm thick, that is darkened by organic matter and alluvium; pebble-size fragments of coral and seashell are common.

A total of 9 trenches were excavated with a backhoe at various points to test for burials, midden deposits, or other evidence of human occupation.
These trenches are marked T-1 through T-9 on the site map. Average size of each trench was 7 meters x .75 meters, carried to sterile sand. A three meter section of each trench was drawn and a representative sample, profiles T-1, T-2, T-6, and T-9, are included with this report.

About one quarter of the area was reported to have been previously mined and filled, and trenches T-3 and T-5 in the southeast quadrant confirm this. Up to 2.5m of dark reddish brown (5 YR 3/2) agricultural fill directly overlies the hard packed base of coral gravel in this area (see map & section drawing, T-5). The stratigraphic profile of the seven remaining trenches is consistent with natural deposits of the above mentioned Jaucus Sand formation.

Top to bottom, the three basic layers include a pale brown (10 YR 6/3) sandy topsoil 10-20cm. thick, a slightly darker brown (10 YR 7/2) mix of sandy topsoil and leached organics 5-15cm. thick, and a very pale brown (10 YR 7/4) calcareous sand with lenses of coarser sand and shell 2 to 3 meters thick. This lowest layer is sterile sand, composed of broken down coral and shell, and extends to the gravel base rock.

Our survey produced no evidence of ancient human occupation on the subject property. Trench T-6 and T-7 exhibited anomalies in the form of a lens of very dark brown (10 YR 7/1) sandy soil, contiguous and mixed with the second layer and organic horizon. Two marine shells (1 turbo and 1 tellina) were recovered from the face of trench T-6, raising at least the possibility of a nearby midden deposit. This is considered unlikely, given the intermittent nature of this layer, its physical connection with the upper topsoil and lack of clear boundary definition. A more plausible explanation would be the recent grubbing of vegetation, tree molds, and the proximity of the site to the ocean to explain shell material.

The base rock of coral and limestone gravel was reached at a depth of 2.5m in one trench (T-5). Excavation in the other trenches was limited to 2.0m or less because of the instability and depth of the clean, apparently sterile third sand layer. For this reason, and because of the nature of statistical sampling methods, there is always a remote possibility of encountering undisturbed cultural remains during sand mining operations.
T-1 WEST FACE 7m x .75m scale -- 1:20

meters

Pale Brown Sandy Topsoil 10YR 6/3
Dark Brown Horizon A 10YR 7/2
Very Pale Brown Sand
10YR 7/4

unexcavated
Archaeological Consultants of Hawaii, Inc.
59-624 Pupukea Rd,
Haleiwa, Hawaii 96712

For: Robert Altz, Lot 2C, Crozier Dr., Waialua, Hawaii 96791

T-3 WEST FACE  5m x 0.75m  scale -- 1:20

Fill Dirt
Dark Reddish Brown
5YR 3/2

Base Rock
unexcavated

Coral Gravel
Very Pale Brown
10YR 6/2
Archaeological Consultants of Hawaii, Inc.
59-624 Pupukea Rd.
Haleiwa, Hawaii 96712

For: Robert Altz, Lot 2C, Crozier Dr., Waialua, Hawaii 96791

T-6 WEST FACE  7m x .75m  scale -- 1:20

0  1  2  3  meters

Pale Brown Sandy Topsoil  10YR 6/3
Dark Brown Sandy Mix
with some shells --
Turbo and Tellina collected
  10YR 7/1
Dark Brown Sand  10YR 7/2
Light Brown Sand  10 YR 6/4

Very Pale Brown Sand
  10YR 7/4

Coarse Sand Lens

unexcavated

-1.00

-1.50
Archaeological Consultants of Hawaii, Inc.
59-624 Pupukea Rd.
Haleiwa, Hawaii 96712

For: Robert Altz, Lot 2C, Crozier Dr., Waialua, Hawaii 96791

T-9 NW FACE 7m x .75m scale -- 1:20

meters

| SSW | 3 | 4 | NNE |

Pale Brown 10YR 6/3

Dark Brown 10YR 7/2

Very Pale Brown Sand 10YR 7/4

unexcavated
Along with the negative finding of adverse impact on archaeological resources, therefore, we recommend the developer contact an archaeologist and provide notification of excavation schedules to enable spot checks as the work proceeds.

If there are any questions regarding this report, please feel free to contact me.

Aloha,

[Signature]

Joseph Kennedy
Consulting Archaeologist
DESIGNATION OF EASEMENT 'I' (12 PT. WIDE) FOR INGRESS AND EGRESS PURPOSES AFFECTING PARCEL C

Being a portion of Oahu Railway and Land Company 40 Ft. Railroad Right of Way
Belonging a portion of Grant 500 to J.S. Emerson.

AID IN FAVOR OF LOT 2-A