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GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF LAND MANAGEMENT
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REF:LD:EH

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
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CONSERVATION AND
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FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCE MANAGEMENT

FEB 24 1997

MEMORANDUM

TO: Mr. Gary Gill, Director
Office of Environmental Quality Control

FROM: ~~For~~ Michael D. Wilson, Chairperson *Edward A. Coloma-Agaran*
Board of Land and Natural Resources

SUBJECT: Finding of No Significant Impact (FONSI), Construction
of a Single Family Residence at Pali, Oahu, Joseph
Wasco, III (TMK: 1-2-11: 28)

The department has reviewed the attached Final Environmental Assessment (FEA) and finds that the proposed action will have no significant impact to the environment. Please publish this as a Finding of No Significant Impact (FONSI) in the next Environmental Notice.

Four copies of the subject Final Environmental Assessment report are enclosed, as well as the project description.

Thank you for your attention regarding this matter. Should you have any questions, please contact Ed Henry of the Land Division, Planning Branch, at 587-0380.

Enclosures

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

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1997-03-08-0A-FEA-Pali Property
Residential Site

MAR 8 1997

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FINAL
ENVIRONMENTAL ASSESSMENT
FOR
PALI PROPERTY RESIDENTIAL SITE
HONOLULU, OAHU, HAWAII
TMK 4-2-11:28

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DIVISION OF
LAND MANAGEMENT
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February 1997

FINAL
ENVIRONMENTAL ASSESSMENT
FOR
PALI PROPERTY RESIDENTIAL SITE

HONOLULU, OAHU, HAWAII
TMK 4-2-11:28

Prepared For:

Mr. Joseph Wasco, III
67-257 Kaliuna Street
Waialua, Hawaii 96791

Prepared By:

CHAPMAN CONSULTING SERVICES
P.O. Box 383723
Waikoloa, Hawaii 96738

February 1997

**FINAL
ENVIRONMENTAL ASSESSMENT**

FOR

PALI PROPERTY RESIDENTIAL SITE

HONOLULU, OAHU, HAWAII

TMK 4-2-11:28

FEBRUARY 1997

APPLICANT:

Mr. Joseph Wasco, III
P.O. Box 300
Haleiwa, Hawaii 96712

APPROVING AGENCY:

State of Hawaii, Board of Land and Natural
Resources

**AGENCIES CONSULTED
IN MAKING ASSESSMENT:**

State of Hawaii, Department of Land and Natural
Resources, Historic Sites Section

State of Hawaii, Department of
Transportation, Highways Division

City and County of Honolulu, Department of
Public Works

City and County of Honolulu, Department of
Transportation Services

Hawaiian Electric Company, Ltd.

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1. INTRODUCTION

1.1 PURPOSE AND CONTENT OF THIS DOCUMENT

This Environmental Assessment (EA), is in support of a Conservation District Use Application (CDUA) for the construction of a single family residence in Honolulu, Hawaii. This EA has been prepared in accordance with the provisions of Hawaii Revised Statutes (HRS), Chapter 343, Title 11, Department of Health, Chapter 200, Environmental Impact Rules, Sections 11-200-9 through 11-200-13 as amended and Department of Land and Natural Resources (DLNR) Chapter 13-5, Hawaii Administrative Rules (HAR), September 6, 1994. This EA represents the initial assessment of potential environmental effects of the proposed single family residence project.

A description of the proposed project (action); the affected environment; alternatives considered to date; proposed mitigation measures; preliminary impact determinations based on the information presented herein; and the reasons supporting those determinations are provided. The information contained herein has been drawn from site visits, environmental surveys and preliminary planning and engineering studies for the proposed project. Information has also been drawn from generally available sources regarding the environmental characteristics of the project site and surrounding area.

1.2 REGIONAL SETTING

The proposed project, which consists of the construction of a single family residence on TMK 4-2-11-28, would be located on the northeastern (windward) side of the Koolau Mountains above Kailua and Kaneohe Towns and the Pali Golf Course on the Island of Oahu, City and County of Honolulu, State of Hawaii (Figure 1). Adjoining or nearby property owners are the State of Hawaii, Teixeira Family Trust, and Mr. Henry Wong. Adjoining property owners were notified of the proposed project by the Draft EA and/or via letters.

The project building site would be located within an irregularly shaped land parcel that is generally bordered on the east, south and west by the Pali Highway and on the north by Auloa Road (the "Old Kalaniana'ole Highway") (also referred to as Kianaole Road), mauka and above the Pali Golf Course (Figure 2). Other than one other single family residence on the makai side of Auloa Road (owned by Mr. Henry Wong) approximately 400 feet east of the project site and outside the proposed project boundaries, there are no other residences in the immediate project area.

Kailua Town is located about three miles north of the project site and downtown Honolulu is located about six miles south of the project site. The Maunawili residential subdivision is located about one mile to the east of the proposed project location (Figure 1).

Access to the project site is via Auloa Road turnoff from the Pali Highway, approximately one-quarter mile south of the Pali Highway-Kamehameha Highway junction (Figure 1). There is no access directly from the Pali Highway due to the steep slopes of the property along its Pali Highway border.

FIGURE 1 LOCATION AND VICINITY MAP

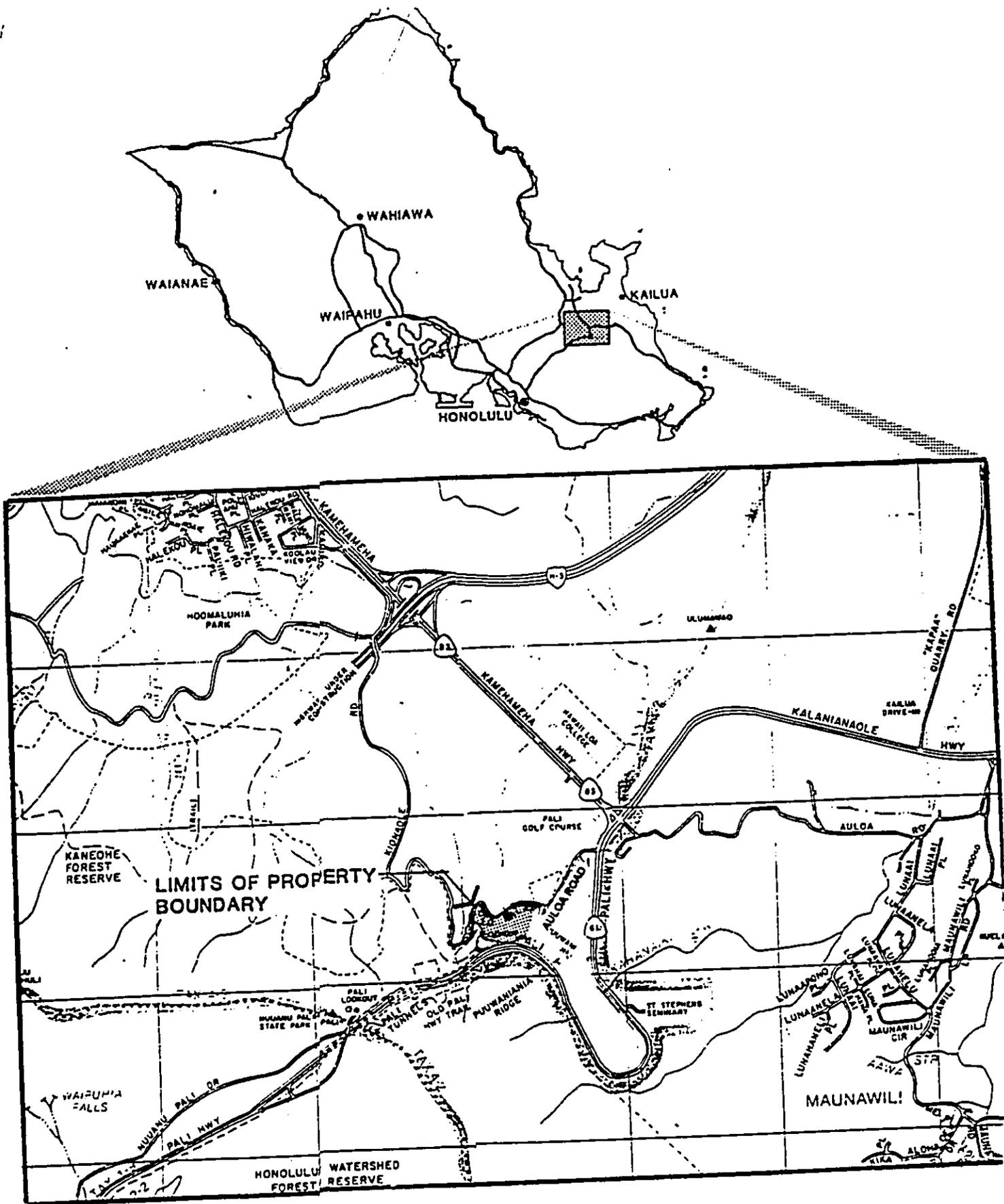
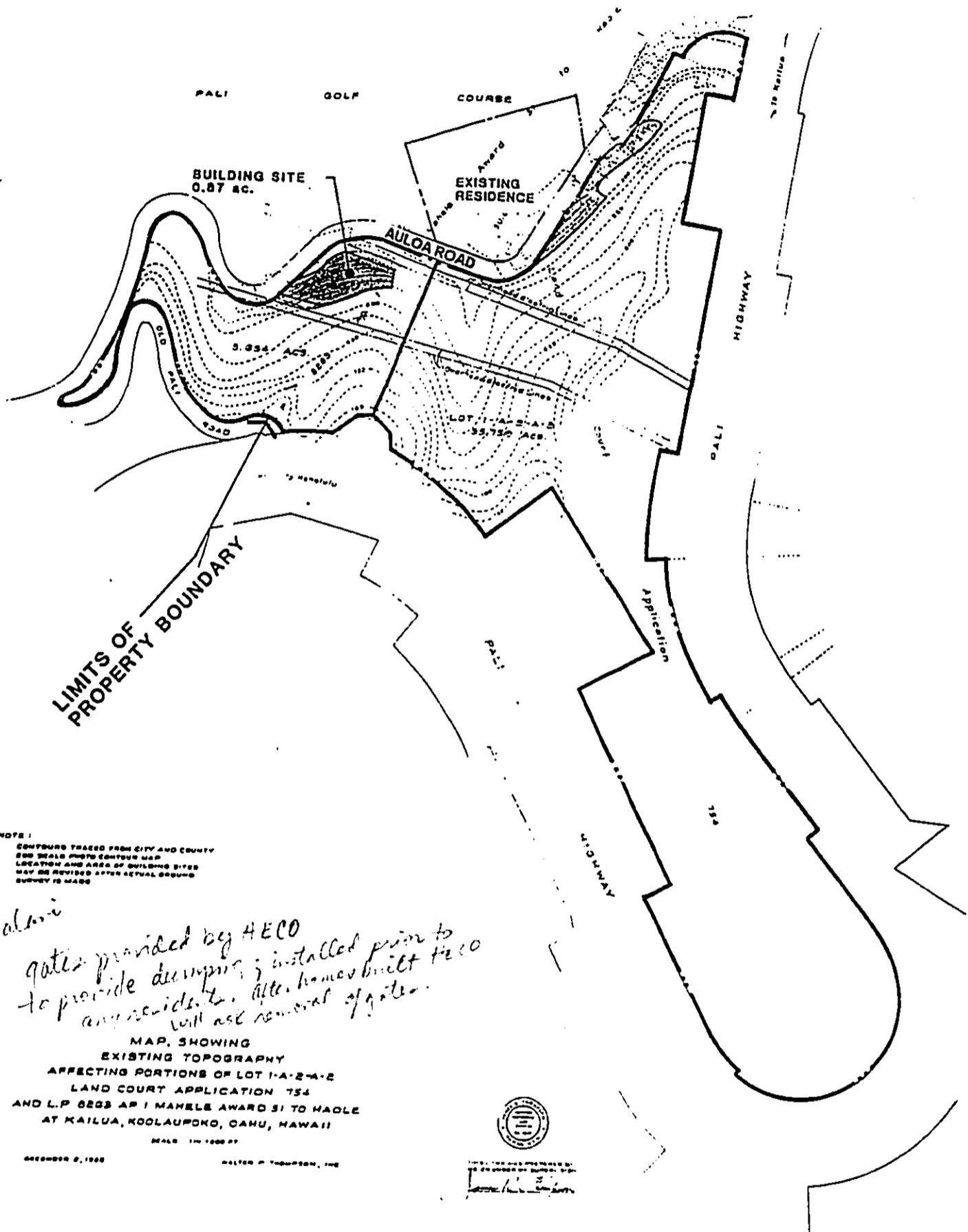


FIGURE: 1
LOCATION AND VICINITY MAP
PALI PROPERTY
ENVIRONMENTAL ASSESSMENT

GORDON A. CHAPMA
 CONSULTING SERVICE





1.3 REQUESTED GOVERNMENTAL ACTION

The present State Land Use classification of the property is Conservation - General Subzone and the present county zoning is Preservation (P-1). To allow construction of the single family residence, the property owner is requesting that the state Board and Department of Land and Natural Resources issue a Conservation District Use Permit (CDUP) for the proposed residence. This action is in keeping with DLNR Chapter 13-5 HAR. Similarly, following issuance of the requested CDUP, the property owner will be requesting appropriate permits from the City and County of Honolulu for construction of the residence.

1.4 DESCRIPTION AND PURPOSE OF PROPOSED ACTION

1.4.1 Description of Property and Proposed Action

The proposed project includes the following items:

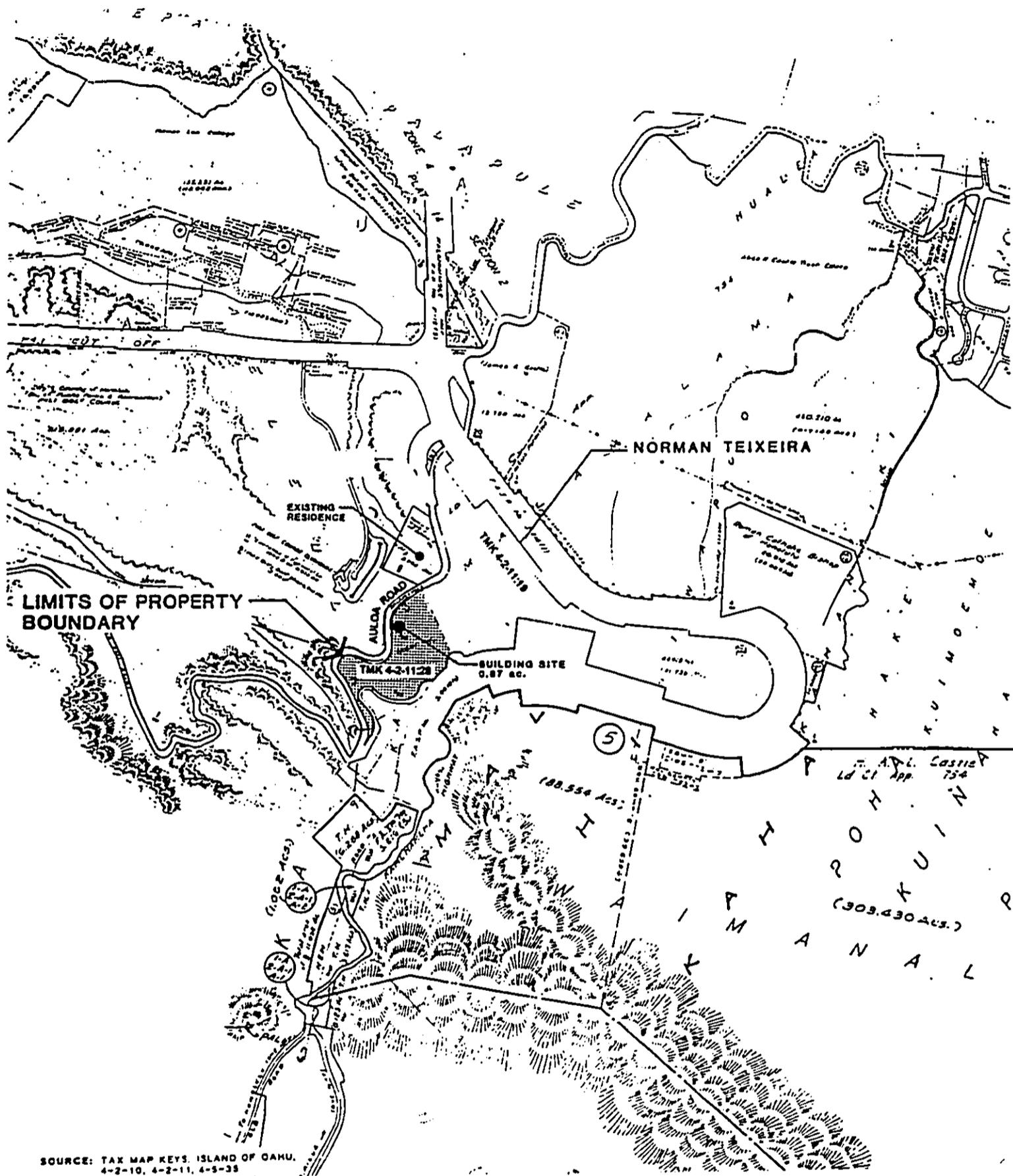
- Acquisition of a Conservation District Use Permit (CDUP) for the construction of a single family residence; and
- Design, construction and habitation of the residence.

The project site is located on tax map key (TMK) parcel 4-2-11:28 (Figure 3), which is presently owned in fee by Mr. Norman Teixeira and is being purchased by Mr. and Mrs. Joseph Wasco, III, pending issuance of the requested CDUP. The total property, i.e., TMK 4-2-11:28, is 8.654 acres.

The proposed project would include the construction of one, two-story, single family residence on the 8.654 acre parcel. The residence would have a ground floor foot print of approximately 1,565 feet and a detached garage with a foot print of approximately 1,340 square feet. The intended height of the home is 35 feet. A paved driveway and turn-around area will be approximately 4,700 square feet and the home will have a landscaped area of almost 14,000 square feet.

The entire built-up area of the parcel, i.e., home, garage turn around, and landscaped area, will be approximately 0.17 acre (7,660 square feet). That is, the home site will occupy less than 2 percent of the 8.654 acre parcel. The home and detached garage will be set back from Auloa Road at least 80 feet and none of the structures will be visible from Auloa Road. It is the intent of the owners to retain as much of the existing natural vegetation as possible to screen the home from Auloa Road, as well as to maintain the existing natural surroundings of the home and site. A site plan and dimensioned elevations of the proposed home are included in Appendix A.

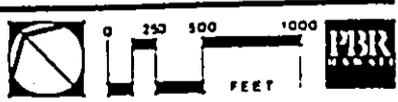
The entire parcel is presently forested and unused with the exception of two sets of Hawaiian Electric Company (HECO) overhead transmission lines (138kV) that traverse the property in a northwesterly/southeasterly direction (Figure 2). The building site would be bordered on the northerly and southerly sides by the HECO powerline easements.



SOURCE: TAX MAP KEYS, ISLAND OF OAHU, 4-2-10, 4-2-11, 4-5-33

FIGURE: 3
TAX MAP KEY/OWNERSHIP MAP
PALI PROPERTY
ENVIRONMENTAL ASSESSMENT

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Note: HECO has perpetual easements from the property owner for the powerlines and these easements flow with the land. The 75-foot wide easements do not contain relocation clauses. HECO field crews regularly examine the towers and lines for signs of damage or potential damage and take immediate corrective actions if required. Also, the easement areas are regularly cleared of trees and brush to insure that the land below the towers and lines is clear at all times. Information regarding the potential hazards associated with the powerlines is presented below in Section 2.2.1.5. The power lines are the most visible man-made structures on the property and will remain so, because of their height, following construction of the single family home.

The property is presently designated Conservation, General Subzone, under the State Land Use Classification. Other Conservation and Agriculture designated lands border the property (Figure 4). The property is also presently designated Preservation (P-1) on the City and County of Honolulu Koolaupoko Development Plan Land Use Map (Figure 5) and zoned P-1, Restricted Preservation District on Zoning Map No. 22 (Heeia-Kaneohe-Maunawili). There are no public facilities planned for the property as indicated on the City and County of Honolulu Koolaupoko Development Plan Public Facilities Map (Figure 6). The existing residence east of the proposed project is also located on Conservation District and Preservation designated land. The project site is located outside the Special Management Area, as defined by the City and County of Honolulu, Department of Land Utilization (see DLU letter in Appendix F).

Single family homes are a permitted use within the Conservation District upon Board of Land and Natural Resources approval. Additional information regarding the relationship of the proposed single family home to the Conservation District rules (HAR, Title 13, Chapter 5) is presented in Section 7 of this EA.

1.4.2 Purpose of the Proposed Action

The proposed action is to provide a privately owned single family residence for the pending owner's use and disposition. The residence would allow the pending owner to realize economic and personal gains that are not currently available. Additionally, the proposed project would assist in the provision of privately constructed single family housing on the island.

2. GENERAL DESCRIPTION OF THE PROPOSED ACTION'S TECHNICAL, SOCIAL, ECONOMIC AND ENVIRONMENTAL CHARACTERISTICS

2.1 DESCRIPTION OF THE SOCIAL AND ECONOMIC CHARACTERISTICS OF THE PROPOSED ACTION

2.1.1 Existing Conditions

The project site is located inland (mauka) of Kailua Town and the eastern portion of Kaneohe. For the most part the area is vacant, watershed, recreational (golf course and parks) land or wildlife habitat. As noted previously, there is one single family residence to the north and makai of the proposed building site (Figure 2). This residence is the home of four to five persons.

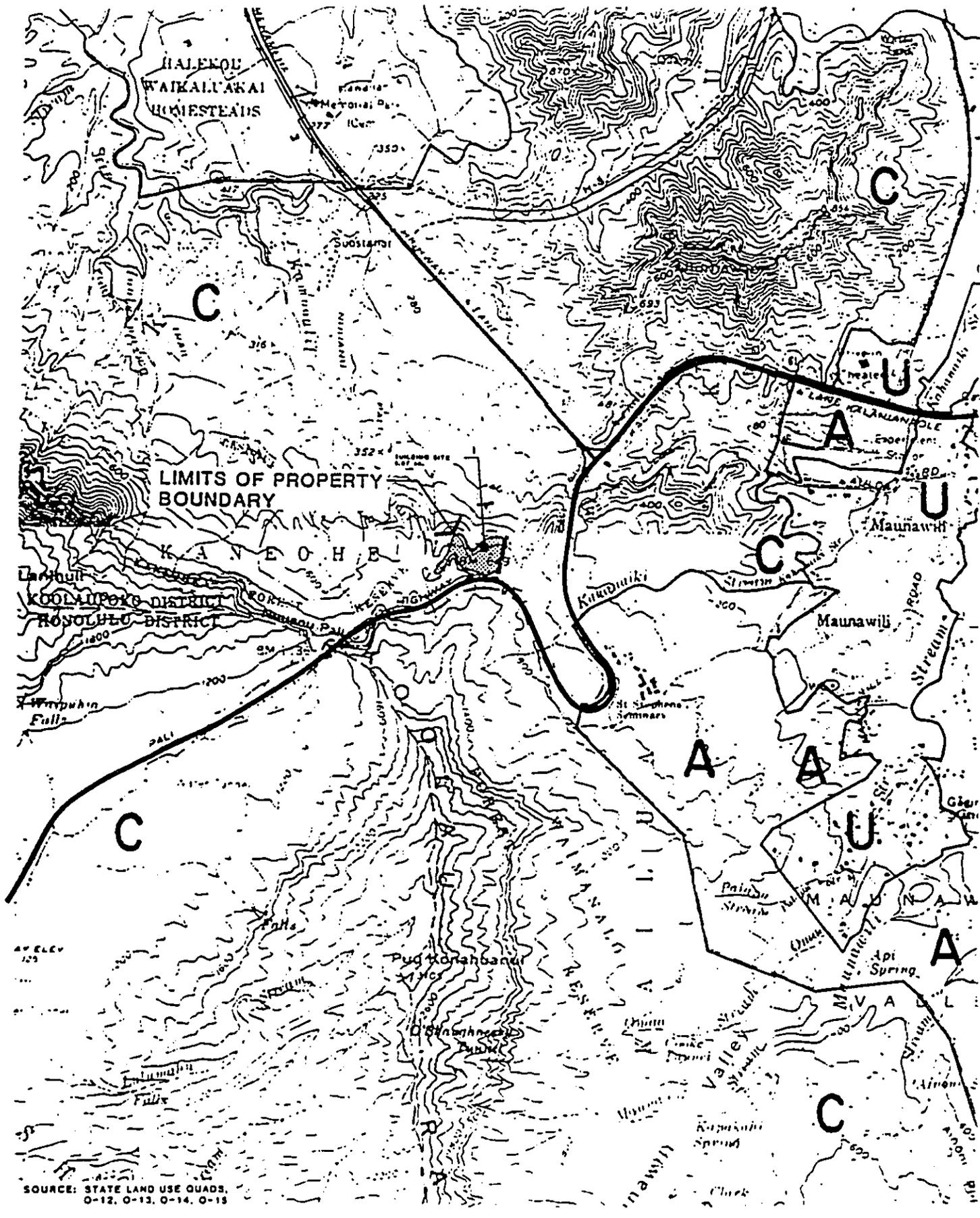


FIGURE: 4
STATE LAND USE CLASSIFICATION
PALI PROPERTY
ENVIRONMENTAL ASSESMENT

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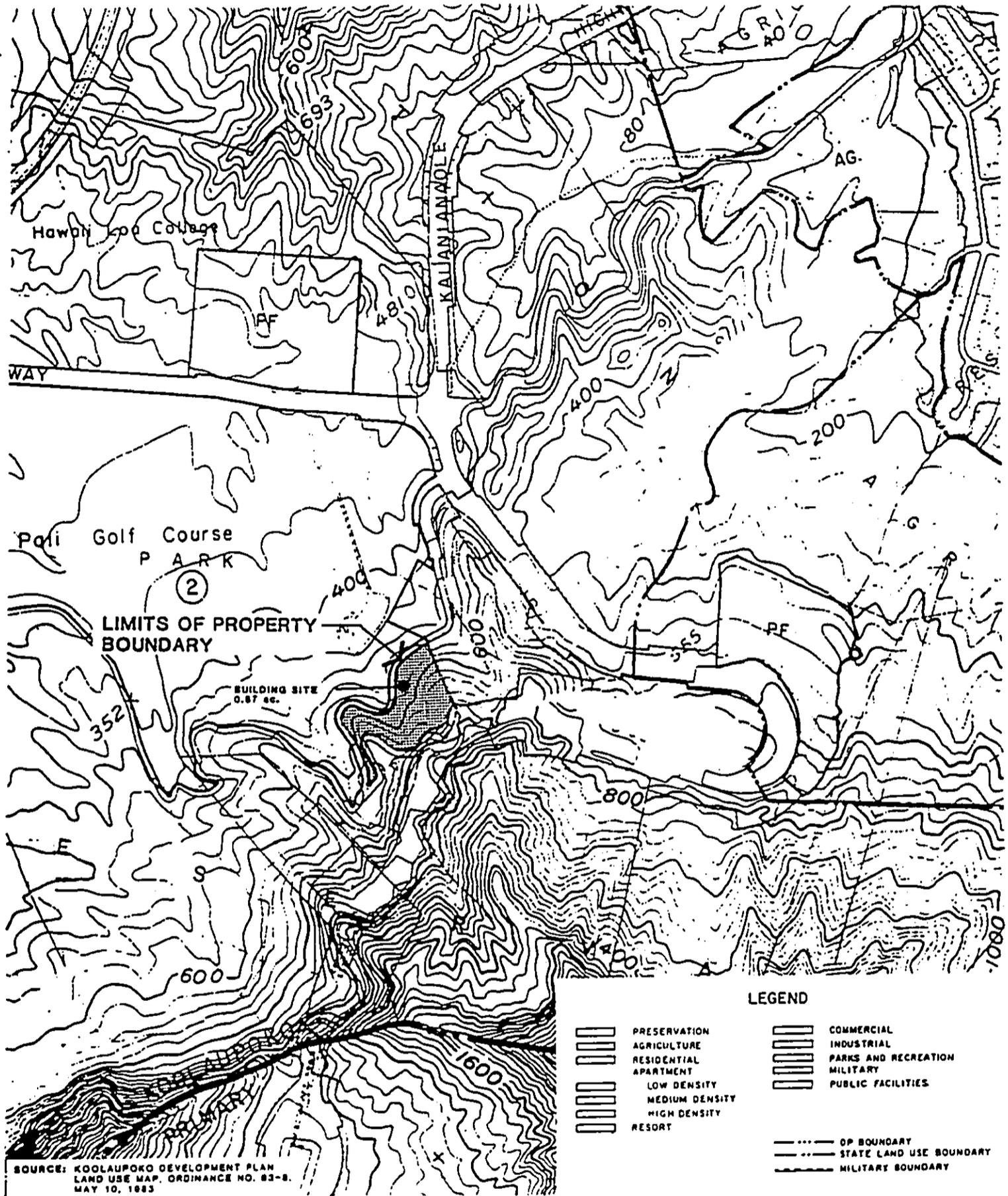
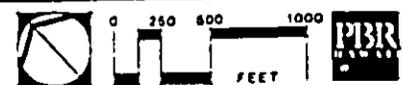


FIGURE: 5
DEVELOPMENT PLAN LAND USE
PALI PROPERTY
ENVIRONMENTAL ASSESSMENT

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CONSULTING SERVICES



The economic characteristics of the proposed project area and site are generally indistinguishable from the overall economic characteristics of the windward side of the island. The area primarily serves as a "bedroom" community in which the majority of residents work in downtown Honolulu or other areas of the island. Pali Golf Course and Hawaii Loa College, located on Kamehameha Highway below the project site, are the nearest major economic generators in the immediate project area.

2.1.2 Social and Economic Characteristics of the Proposed Action

The social characteristics of the proposed project would be minimal in that only one new residence would be added to the area. The home could be expected to add about four or five persons to the area. These persons would be moving from another area on Oahu, (Waialua) and as such, not increase the overall population of the island or significantly change the social characteristics of the island or area.

The economic characteristics of the new construction that is proposed would be limited to the costs of the construction activities. These costs are minor in comparison to the overall economic characteristics of the City and County of Honolulu and/or state. Employment impacts from the proposed project are expected to be positive during the construction phase but are considered relatively minor when compared to the overall employment patterns of the state or City and County of Honolulu.

2.2 DESCRIPTION OF THE ENVIRONMENTAL CHARACTERISTICS OF THE PROPOSED PROJECT

2.2.1 Existing Conditions and Proposed Actions

2.2.1.1 Geology, Physiography, and Topography

The geology of the project site, and all of the Koolau Range in which the proposed project is located, is characterized by weathered and heavily eroded volcanics that originated from the Koolau Volcano. The project building site is between an elevation of about 565 to 575 feet and above mean sea level (MSL). A natural drainageway that proceeds downslope, is located to the east of the property boundary on an adjacent lot. Surface water runoff is directed naturally downslope. Except for the building site, the slope of the property is generally greater than 70 percent. The slope of the building site is between 2 to 5 percent.

In keeping with the provisions of the State Coastal Zone Management Program, best management practices will be used during construction to minimize runoff during construction. These practices will include the use of earthen swales upslope and down slope of the construction site, as well as runoff retention basins. It is expected that the home construction will occur primarily during the summer months, thereby reducing the risk of rainwater runoff.

2.2.1.2 Soils and Agriculture Potential

The U.S. Department of Agriculture, Soil Conservation Service (*Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii*, 1972), has identified the land types of the project site and building location as Alaeloa silty clay (ALF), 40 to 70 percent slopes, Alaeloa silty clay, 15 to 35 percent slopes (AeE) and Helemano silty clay, 30 to 90 percent slopes (HLMG). These land types are

characterized by moderate to rapid to very rapid runoff in which the erosion hazard is moderate to severe. The land types have capability classifications of VIe and VIIe, non-irrigated; pasture groups 3, 6 and 15 and woodland groups 6 and 15. These land types are commonly used for pasture, woodland, wildlife habitat and home sites. The building site is located on land type ALF.

The soils of the project area building site have also been examined, primarily for their overall agricultural productivity and designated importance to the state. According to the *Detailed Land Classification, Island of Oahu*, University of Hawaii Land Study Bureau, 1972, the project building site is classified as E109. The E rated soils are considered virtually impossible to work because of excessive rocks and/or steep slopes.

Agriculturally, the project lands are not classified within the State Department of Agriculture, *Agricultural Lands of Importance to the State of Hawaii (ALISH)*.

2.2.1.3 Climate and Meteorology

The climate of the project area is typical of Hawaii's climatic conditions in mid-level elevations and/or at the base of steep mountain ridges. Generally, there is greater seasonal and diurnal temperature variation than at lower elevations. Although monthly temperature averages vary only by a few degrees from the warmest months (July and August) to the coolest months (January and February), daily daytime and nighttime temperatures can fluctuate greatly. Daytime temperatures can range from the low 80's (degrees F.) to low 70's (degrees F.).

In general, due to the tall vegetation that limits the amount of sunlight at ground level and hence retards evaporation of surface water, as well as the location of the property near the base of the Pali, relative humidity is high, i.e., mid-80's to mid 90's (percent). The project area rainfall averages between 75 and 100 inches per year (University of Hawaii, 1983).

Winds in the project area are typically northeast trades with some evidence of sea breezes during the evening period. Down drafts and winds swirling off of the Pali above the project site tend to create varied and/or light wind patterns in the project area. The lack of and reduced velocity of winds, is reflected in the high relative humidity of the project site.

2.2.1.4 Natural Hazards

Potential natural hazards to which the project property could be subjected include flooding due to rain water surface runoff and earthquakes.

Flooding in the gulches and natural drainageways adjacent to the project site might occur as a result of intense prolonged rains mauka of the subject property. Flooding of portions of the property are not expected to occur because they are above and outside natural drainageways. The project area is designated on the Flood Insurance Rate Map (FIRM) as Zone D: Areas in which flood hazards are undetermined. As such, special care will be taken in the final design to assure construction and grading plans accommodate potential sheet flow flooding of the site and downslope properties. The measures that will be taken to prevent sheet flooding are described later in this EA (see Section 3.3).

Earthquake and/or volcanic hazards in the project site area are no greater than they are for the island in general (Mullineaux, *et al*, 1987). Adherence to appropriate design and building codes and standards would reduce potential damage from earthquakes.

The project site does not include lands designated within the coastal high hazard area subject to tsunami inundation along the northeast Oahu shoreline.

2.2.1.5 Man-Induced Hazards

The man-induced hazards to which the proposed residence would be subjected include possible electromagnetic field (EMF) effects, vibrations and sounds due to the close proximity of the overhead electrical transmission lines and the potential for the powerlines and/or towers to fall in heavy storms. EMF from high- and low-voltage electrical transmission lines have been investigated in detail in numerous areas of the mainland US as well as in Hawaii. In general, these studies have demonstrated that no adverse effects are indicated for ecosystems, wildlife, agricultural crops or livestock production (see Florida Electric and Magnetic Fields Research Commission, 1985 and references thereto; ITT Research Institute, 1979; Llauro, *et al*, 1974; and CH2M Hill, 1988). Similarly, the potential adverse effects on certain brands of cardiac pacemakers do not result from transmission lines, rather electromagnetic fields encountered in the home and workplace generally pose more serious problems than do transmission lines (Florida Electric and Magnetic Fields Research Commission, 1985). A study (CH2M Hill, 1988) of a similar HECO 138 kV transmission line also indicated that there are no adverse effects on humans, wildlife or ecosystems due to these types of transmission lines. A similar, recent (1996) study by the National Academy of Sciences led to the conclusion that high voltage power lines do not have any adverse effects on the health and welfare of people or other animals living near or below those lines.

Although sounds and vibrations do emanate from the overhead transmission lines, these effects tend to blend in with background sounds and vibrations and are not noticeable at ground level. The hazards associated with the potential falling of the powerlines and/or towers appears negligible. The lines and towers have withstood several severe storms in the past, including hurricanes Ewa and Iniki, without any apparent damage or problems. In addition, the towers and lines are examined by HECO, on a regular basis, for signs of damage or potential damage and repaired, if necessary, immediately.

2.2.1.6 Air and Noise Quality

The proposed project would be classified as an "indirect source" of air pollution as defined in the federal Clean Air Act of 1977, as amended, because its primary association with air pollution would be due to its potential generation of mobile source, i.e., motor vehicle air pollutants. There would be minor short-term impacts during construction due to construction vehicular movement. Although there are no State Department of Health air quality monitoring stations in the vicinity of the proposed project site, it is presumed that the existing air quality of the project area is similar to other mid-level elevation areas on Oahu and primarily influenced by vehicular traffic and, possibly, salt spray from the ocean. Given the lack of stationary air pollutant sources in the vicinity of the project site and the actions of upslope/downslope wind patterns, it seems safe to presume that all air quality standards in the project area are within state and federal standards.

The existing noise quality of the proposed project site is dominated by natural factors including wind moving through the vegetation on the site and vehicular noise from traffic along the Pali Highway above the project site. Based on noise level measurements taken in other areas on Oahu (see Hawaii, DBED, 1987, page 183), existing noise levels in the project area could be expected to be approximately 40 to 50 dBa, or less at night; well within state noise quality standards. The proposed project is not expected to significantly add to existing noise levels.

2.2.1.7 Visual Attributes

The present visual character of the project site is one of secluded, mountain vegetation with tall eucalyptus and paper bark trees and shrubbery, interrupted by overhead electrical transmission lines on steel structures. The vegetation at ground level is such that at present ocean views to the north or northwest are not available. However, limited clearing of the vegetation would provide northward views of the ocean between Kaneohe Town and Mokapu Peninsula as well as Mt. Ulumawao above and behind Hawaii Loa College.

A visual impact assessment of mauka and makai views from public places (in conformance with Section 24-6.2.(a)(2), Public Views of the Development Plan Special Provisions for Koolaupko, was conducted and is included in Appendix E. As indicated in the view photographs, the project home site is not visible from the Pali Lookout, the Pali Highway, the Pali Golf Course, or any other public place. Further, because the home site will be set back from Auloa Road at least 80 feet, the home will not be visible from Auloa Road because of the existing vegetation that will be retained. As indicated previously, the only man-made structures that are visible on the property are the HECO transmission line towers.

The State of Hawaii Department of Land and Natural Resources, Division of State Parks has indicated (see Appendix F) the proposed home will not be seen from the Nuuanu Pali Lookout and is not likely to be seen from the Old Pali Road. The visual analysis performed for this EA confirmed that the home site is not visible from the Old Pali Road.

2.2.1.8 Terrestrial Flora and Fauna

A baseline botanical survey of the project site (see Appendix B, "Building Site B"), indicated that the terrestrial flora consists of exotic (introduced) species that are primarily forestry plantings by the Hawaiian Division of Forestry in the late 1930's.

On the building site, brush box (*Tristania conferta*) with an adjacent stand of paper bark trees (*Melaleuca quinquenervia*) forms the forest cover. A large patch of ginger [probably yellow ginger (*Hedychium flavescens*)], borders the old highway along with syngonium (*Syngonium auritum*) and wedelia (*Wedelia trilobata*). Christmas berry shrubs (*Schinus terebinthifolius*) are found on a portion of this site. Species frequently found throughout building site include basket grass (*Oplismenus, compositus*), downy wood fern (*Christella parasitica*), thimble berry (*Rubus rosifolius*), saplings of kukui (*Aleurites moluccana*) and octopus tree (*Schefflera actinophylla*), strawberry guava (*Psidium cattleianum*), guava (*Psidium guajava*) and laua'e (*Phymatosorus scolopendria*).

A few native plants are found on the site or on the steep banks of the road cut outside the building site. These are the pakahakaha fern (*Pleopeltis thunbergiana*), the mat-forming uluhe fern (*Dicranopteris linearis*), the pala'a fern (*Sphenomeris chinensis*) and small saplings of 'ohi'a (*Metrosideros polymorpha*).

No U.S. Fish and Wildlife Service or Department of Land and Natural Resources listed or candidate plant species, under the Endangered Species Act, occur on the site, nor are any of the plants found considered to be rare. All of the native species occurring on the site occur elsewhere throughout the Hawaiian Islands in similar environmental conditions.

A faunal survey of the project site was also conducted (see Appendix C). During the faunal survey, no resident endemic (native) birds were observed at the site. The Common Amakihi (*Hemignathus virens*), Apapane (*Himatione sanguinea*), and Elepaio (*Chasiempis sandwichensis*) might occur in the area due to the nature of the habitat and its proximity to forested land upslope. However, none were sighted during the faunal survey.

The only migratory indigenous (native) bird sighted during the survey was one individual Pacific Golden Plover (*Pluvialis fulva*). No resident indigenous birds were sighted during the survey. A total of 12 exotic (introduced) species were sighted during the survey. These included the Japanese White-eye (*Zosterops japonica*), Red-vented bulbul (*Pycnonotus cafer*), Red-wiskered Bulbul (*Pycnonotus jocosus*), House Finch (*Carpodacus mexicanus*), Spotted Dove (*Streptopelia chinensis*), Zebra Dove (*Geopelia striata*), White-rumped Shama (*Copsychus malabaricus*), Common Myna (*Acridotheres tristis*), Northern Cardinal (*Cardinalis cardinalis*), Red-crested Cardinal (*Paroaria coronata*), Japanese Bush Warbler (*Cettia diphone*), and Nutmeg Mannikin (*Lonchura punctulata*). Table 1 in Appendix B indicates the relative abundance of the exotic birds observed on the project site.

The only feral mammals observed during the survey were the Small Indian Mongoose (*Herpestes auropunctatus*) and cats. No rats, mice dogs or pigs were observed, but they probably frequent the site, especially given the probability of food being available in the rubbish and garbage of the residence across Auloa Road. Also, records of the endemic and endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*) indicate that the species has been reported on Oahu. None were observed at the site during the field survey.

No U.S. Fish and Wildlife Service or Department of Land and Natural Resources listed or candidate animal species, under the Endangered Species Act, were observed during the field fauna surveys.

2.2.1.9 Historical and Archaeological Resources

A review of state historic/archaeologic sites data has indicated that one archaeological site (80-14-1174) exists on the project property. This site, which was listed on the Hawaii Register of Historic Sites, but later removed, is known as the Pali Complex and consists of agricultural or habitation features (heiau or house platform) and is located in the upper portion of the property in the sharp bend of the Pali Highway. Other archaeologically significant sites are known to exist in the general area but are outside of and to the west of the project property and proposed building location.

Prior to construction an archaeological inventory survey of the proposed project area will be performed to determine if any historic sites are present, and if so, to gather sufficient information to evaluate their

significance. An inventory survey report will be prepared and submitted to the State Historic Preservation Division for review. If significant sites are found during the survey, a mitigation plan, as appropriate, will be prepared and implemented in conformance with state and federal guidelines. The owner would preserve or record archaeologically significant sites that might be found within the building site as appropriate and as required by applicable federal, state and county rules and regulations. It appears unlikely that archaeologically or historically significant sites would be found within the building sites, given the extent of forestry planting and other recent human activities in the area.

2.2.1.10 Access

The only access into the project site is via Auloa Road (the "Old Kalaniana'ole Highway"). Auloa Road is under the jurisdiction of the City and County of Honolulu Department of Transportation Services. Access via the Pali Highway is not possible due to the steep slopes immediately below the highway.

Access to the building site would be improved by the proposed construction activities, i.e. construction of a driveway into the building site. At present, a portion of Auloa Road east of the project property is subjected to overtopping by rainwater runoff, rocks and mud during long periods of intense rainfall. The road has been closed to through traffic by the City and County of Honolulu Department of Transportation Services for safety purposes. The present roadway closure barrier may be relocated to a point just west of the access driveway into the building site or other access arrangements made between the City and County of Honolulu Department of Transportation Services and the applicant. The roadway would remain closed to general vehicular traffic but would remain passable to hikers. The proposed single family residence project will not affect public access and/or parking for any trails or other natural features on public lands within the project area.

2.2.1.11 Water Resources

The proposed project site is located below the Underground Injection Control (UIC) line in the area, indicating there are no developable potable water supplies below the property. The (potable) water resources of the project area and/or Honolulu would not be affected by the proposed action. Potable water to the building site would be provided via appropriately designed catchment systems. Similarly, in accordance with City and County of Honolulu Fire Code requirements, fire protection capabilities would be provided as required. Given that rainfall in the area ranges from 75 to over 100 inches per year, there is sufficient rainfall for catchment, as well as emergency fire protection purposes.

2.2.1.12 Wastewater Disposal

The project site is located within the No Pass Zone and within the critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. The existing Honolulu wastewater collection, treatment and disposal system will be unaffected by the proposed project. The pending owner is proposing to use Envirolet low water toilets that have been approved for use in single family residences by the City and County of Honolulu Building Department (see Appendix D). The Envirolet system has been determined by the State Department of Health to meet the provisions of HAR, title 11, Chapter 11-62-35(a). Other wastewater generated by the residence would be collected, treated and disposed of in accordance with applicable state (HAR, Chapter 11-62, Wastewater Systems) and county building code requirements. At this time, preliminary engineering studies have indicated that a septic tank system

(individual wastewater system - IWS) would be capable of handling the wastewaters. The IWS design and location would be approved by the State Department of Health prior to installation.

2.2.1.13 Solid Waste Disposal

The present City and County of Honolulu and/or private solid waste collection and disposal systems in effect on Oahu will be unaffected by the proposed project. It is expected that solid wastes generated by the residence would be collected and disposed of by the applicant at approved county landfill sites. The Kailua landfill is less than two miles from the project site.

2.2.1.14 Electrical Power and Communication Systems

The existing Hawaiian Electric Company and Hawaiian Telephone Company systems will be unaffected by the proposed project. Electrical power to the building site would be provided via a drop from the pole line that runs along the makai side of Auloa Road and feeds the existing residence. Similarly, Hawaiian Telephone Company lines on the same pole line would provide telephone service to the residence. The owner would coordinate service hook-ups with the two utilities.

2.2.1.15 Public Schools

The public schools serving the project area (Maunawili Elementary, Kailua High School) will be unaffected by the proposed project. It is expected that no more than two to three school age children would live in the residence.

2.2.1.16 Health Care Facilities

Public and private health care facilities and services in the project area and/or greater Honolulu area will not be affected by the proposed project.

2.2.1.17 Police and Fire Protection Services

Police and fire protection services in the project area will be unaffected by the proposed project. As noted previously, fire protection for the proposed residence would be provided as required by the City and County of Honolulu fire code.

2.2.1.18 Recreational Resources

There are no State or City and County of Honolulu public parks in the immediate vicinity of the proposed project site. Pali Golf Course is located approximately 500 feet below the site. The recreational resources and services in the project area will be unaffected by the proposed project. Pedestrian access and parking on Auloa Road will be continued to provide hikers access to the public areas west of the project site.

3. SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.1 EXISTING CONDITIONS

As indicated previously, the present natural environment of the proposed project site is characterized as a relatively secluded woodland that is vacant and serves as wildlife habitat and the site of HECO overhead power transmission lines.

The proposed residential construction project will generally not significantly affect the existing environmental characteristics of the project site. There will be some minor alterations to the general topography of the site and some limited, (i.e., approximately 7,600 square feet) clearing of vegetation, but these are expected to be minimal, limited to the building site and not significantly affect the overall environmental characteristics of the area.

3.2 PROBABLE SOCIAL AND ECONOMIC IMPACTS AND MITIGATION MEASURES

The proposed project is not expected to significantly affect the social or economic characteristics of the project area. It is expected that the residence would house four to five persons who would be relocating from another area of Oahu (Waialua). The economic impacts of the proposed project would be limited to the value of the new construction, the value that the new residence would accrue to the owner and the possible increase in real estate taxes that the owner would pay.

3.3 PROBABLE ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The proposed project is not expected to significantly affect the environmental characteristics of the project area. During construction of the residence there will be some minor clearing and grading for the home site. This action would be limited to only that which is necessary for construction and would be confined to the building site. Landscaping for the home will replace much of the existing vegetation that will be removed for construction. The lack of significant potential adverse environmental impacts negates the need for mitigation measures other than the standard construction precautions that would be taken and the measures noted below. This will include the use of best management practices to minimize downslope flooding.

All work would be performed in compliance with applicable federal, state and county environmental protection and building rules and regulations. To prevent sheet flooding of the home site, earthen or concrete drainage swales, as required, would be constructed around the building site and on the upper boundary of the building site. Surface water from these drainage structures would be directed into natural drainageways such that adjoining properties are not adversely affected by the surface water runoff.

An archaeological inventory survey, per the requirements of the State Historic Preservation Division, will be performed prior to construction activities. Should culturally significant sites, as determined by applicable federal or state guidelines, be found within the building site during construction, appropriate

preservation and recordation measures would be taken in compliance with applicable federal, state and county rules and regulations and/or permit conditions.

4. IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS AND ALTERNATIVES CONSIDERED

4.1 MAJOR IMPACTS

The major impacts that are expected to result from the proposed project are minor alterations to the topography of the building site; minor clearing of vegetation from the building site; and relatively minor direct and indirect economic gains to be realized from the construction of the single family residence. Additionally, other impacts that could result from the proposed project include short-term impacts to the air and noise quality of the immediate proposed construction area.

4.2 ALTERNATIVES CONSIDERED

In keeping with applicable EIS rules and regulations and in keeping with sound land use planning practices, those alternatives which could feasibly meet the objectives of the proposed action, even though more costly, have been examined. The alternatives investigated have included other possible building sites within the property boundary; and the alternative of "no-action".

The alternative of utilizing other possible building sites within the property boundary was investigated and rejected due to the lack of other feasible building sites, i.e., steep slopes. Other possible building locations are on slopes too great to economically overcome; have potential erosion or flooding problems; and/or have serious access problems. The costs of overcoming any of these building problems would be prohibitive, thereby rendering the proposed residence construction uneconomical. Also, it is possible that significant archaeological sites might be found on other possible building sites upslope from those selected, further hindering implementation of the proposed project.

The alternative of no-action would result in the objectives of the proposed project not being met, the continued underutilization of the land and possibly result in the continued unchecked erosion of the property.

5. PROPOSED MITIGATION MEASURES

The mitigation measures proposed to ensure that potential adverse environmental impacts are minimized include limiting construction activities to daytime hours and adherence to federal, state and county environmental protection, health, safety and construction rules and regulations. Other mitigation measures include the construction of appropriate drainage structures to alleviate sheet flooding of the building site, limiting clearing and grading operations to the building site, and the preservation and/or recordation of culturally significant sites that might be found within the building sites.

6. DETERMINATION

Based on the information available and the type of governmental action requested at present and in the future, it has been preliminarily determined that because the proposed project would result in positive social, economic and environmental impacts and would not have a significant negative impact on the environment, an environmental impact statement is not required for the proposed project. It is recognized that compliance with the environmental impact statement process, as defined in HRS Chapter 343 and Chapter 200, Department of Health Environmental Impact Statement Rules, is required and is one of the primary reasons that this EA has been prepared.

7. FINDINGS AND REASONS SUPPORTING DETERMINATION

7.1 Findings Relative to Environmental Impact Statement Rules (HAR Title 11, Chapter 200, Section 11-200-12)

In considering the significance of potential environmental effects, per the requirements of HAR Title 11, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 11-200-12, the applicant has considered the sum of effects on the quality of the environment and evaluated the overall cumulative effects of the proposed action. The applicant has considered every phase of the proposed action, the expected consequences, both primary and secondary and the cumulative as well as the short- and long-term effects of the proposed action. As a result of these considerations, the applicant has determined that:

1. The proposed action does not involve an irrevocable commitment to loss or destruction of any significant natural or cultural resource;
2. The proposed action increases the range of beneficial uses of the environment;
3. The proposed action is in concert with the State and County's long-term environmental policies, goals and guidelines as expressed in Chapter 343 HRS, and any revisions and amendments thereto, court decisions and executive orders;
4. The proposed action does not substantially adversely affect the economic or social welfare of the community or state;
5. The proposed action does not substantially affect public health;
6. The proposed action does not involve substantial secondary impacts, such as population changes or effects on public facilities that are not already contemplated;
7. The proposed action does not involve substantial degradation of environmental quality;
8. The proposed action is individually limited and cumulatively has little effect upon the environment and does not involve a commitment for larger actions;

9. The proposed action does not substantially affect rare, threatened or endangered species or habitats;
10. The proposed action does not detrimentally affect air or water quality or ambient noise levels;
11. The proposed action does not affect or is likely to suffer damage by being located in an environmentally sensitive area such as flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters; and,
12. The proposed action does not substantially affect scenic vistas and view planes identified in county or state plans or studies; and
13. The proposed action does not require substantial energy consumption either during construction or habitation following construction.

Further, the proposed action is compatible with the locality and surrounding project area and appropriate to the physical conditions and capabilities of the area to be served; the existing physical and environmental aspects of the subject area will be preserved; the proposed action will not result in any significant adverse effects to the environment; and the proposed action is in keeping with the objectives and purposes of the project site and area. The applicant will be responsible for and comply with all applicable statutes, ordinances and rules of the federal, state and county governments.

7.2 Findings Relative to Department of Land and Natural Resources Conservation District Rules (HAR Title 13, Chapter 5, Sections 13-5-30 and 13-5-41)

The proposed single family residence meets all of the standards as set forth in HAR Title 11, Chapter 13-5, Sections 13-5-30 and 13-5-41 respectively, in that:

1. The proposed residence is consistent with the purpose of the Conservation District;
2. The proposed land use is consistent with the General subzone;
3. The proposed land use complies with provisions and guidelines contained in Chapter 205A, HRS, entitled "Coastal Zone Management";
4. The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region;
5. The proposed land use, including buildings, structures, and facilities will be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel;
6. The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon;

7. The land will not be subdivided to increase the intensity of land uses in the conservation district; and
8. The proposed land use will not be materially detrimental to public health, safety, and welfare.

Additionally:

1. The lot size is greater than 10,000 square feet;
2. Setbacks will be at least 80 feet in front, more than 100 feet in back and more than 100 feet on each side of the residence; and
3. The maximum developed area of the residence will be approximately 7,660 square feet, of which over 6,000 square feet will be a detached garage and parking and turn around area;
4. The landscaping and paint color of the single family residence will be compatible with the surrounding environs;
5. Wastewater collection, treatment and disposal will be in conformance with the State Department of Health standards and regulations;
6. Grading and contouring of the property will be kept to a minimum with consideration of slope;
7. The single family residence will be designed and constructed in conformance with the requirements of the City and County of Honolulu Building Code; and
8. The single family residence will only have one kitchen.

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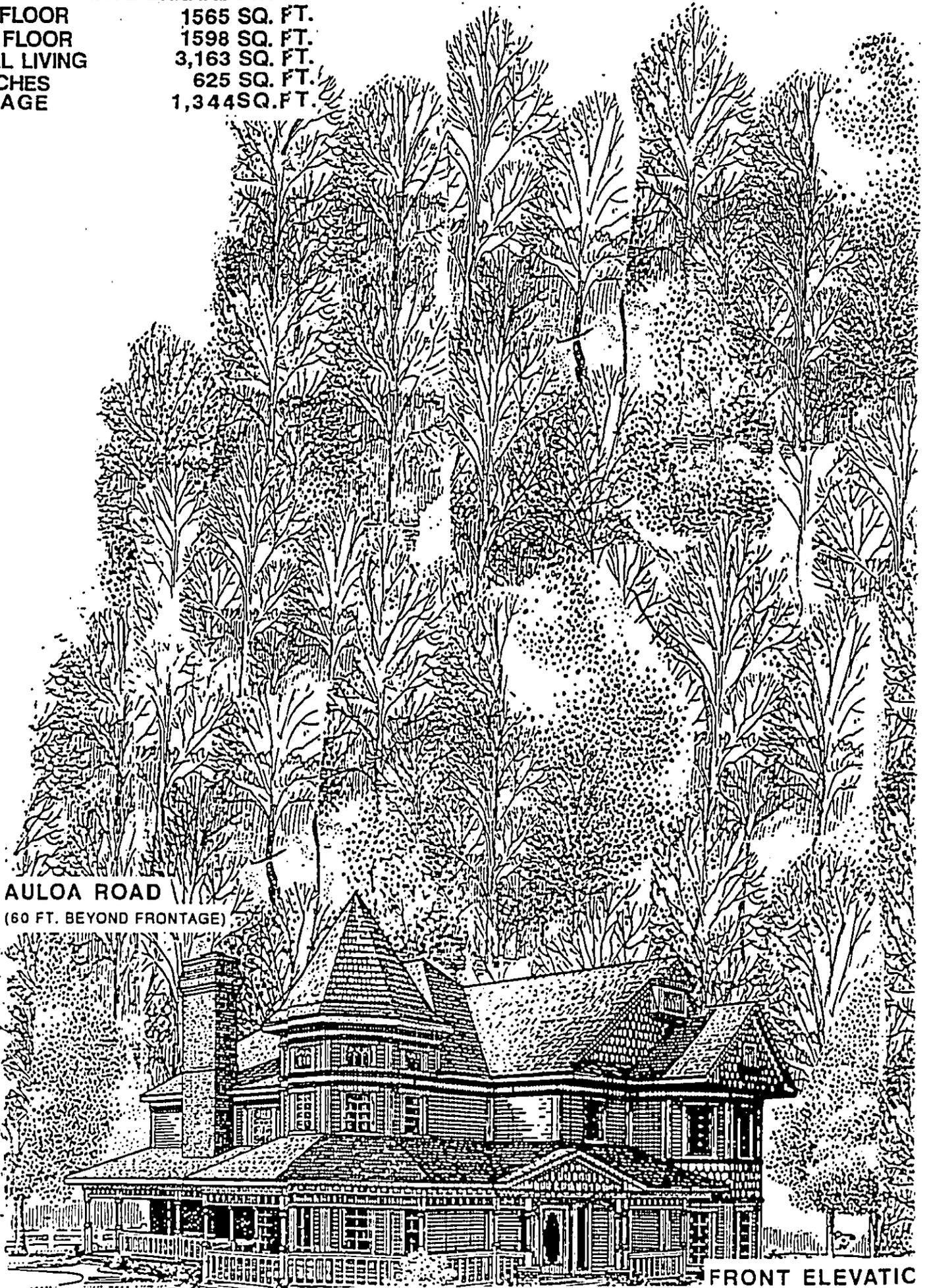
APPENDIX A
PROPOSED SINGLE FAMILY HOME PLANS

DOCUMENT CAPTURED AS RECEIVED

PROPOSED SINGLE FAMILY DWELLING

SQUARE FOOTAGE BREAKDOWN:

1ST. FLOOR	1565 SQ. FT.
2ND. FLOOR	1598 SQ. FT.
TOTAL LIVING	3,163 SQ. FT.
PORCHES	625 SQ. FT.
GARAGE	1,344 SQ. FT.



AULO ROAD
(60 FT. BEYOND FRONTAGE)

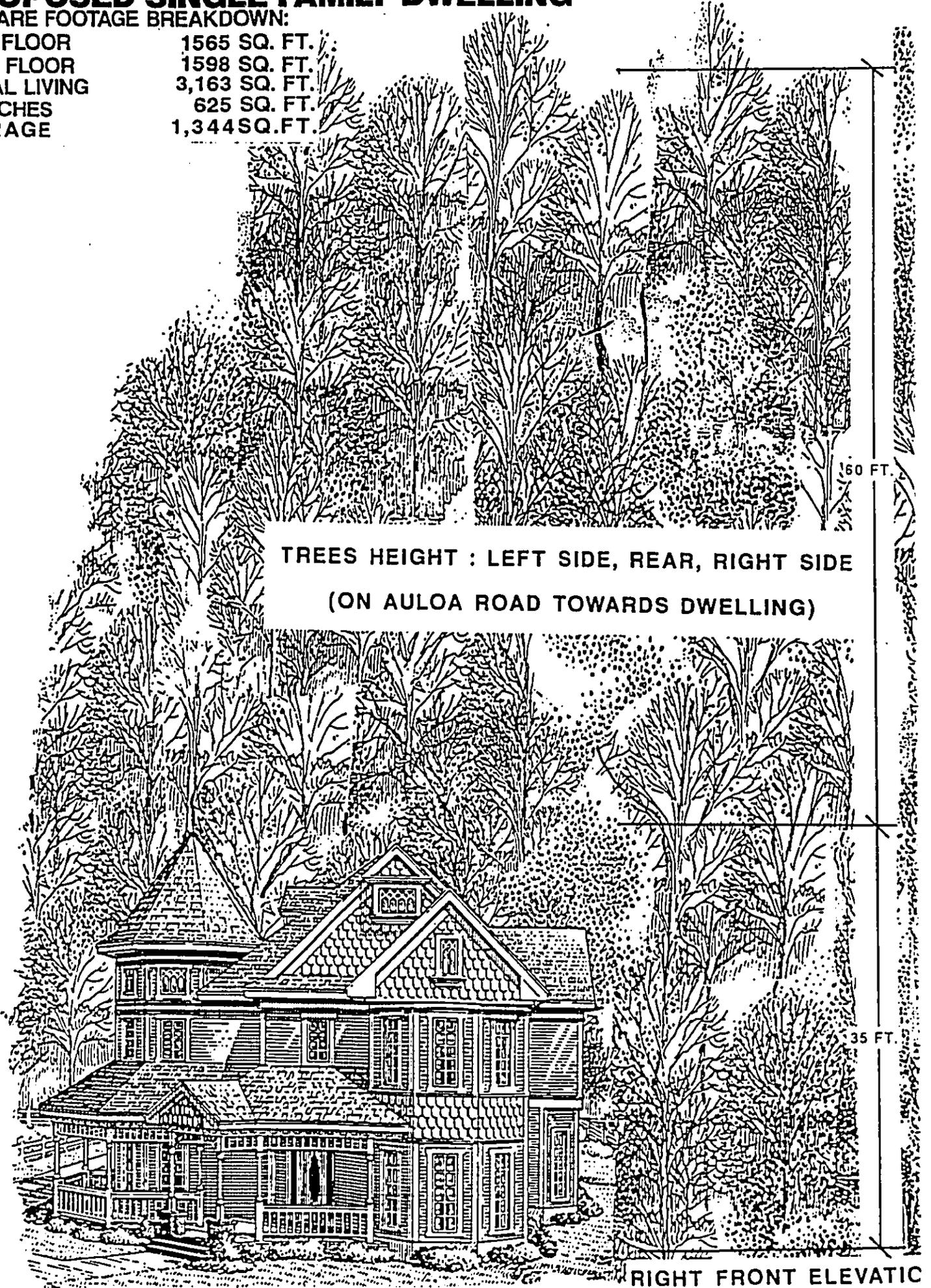
FRONT ELEVATIC

DOCUMENT CAPTURED AS RECEIVED

PROPOSED SINGLE FAMILY DWELLING

SQUARE FOOTAGE BREAKDOWN:

1ST. FLOOR	1565 SQ. FT.
2ND. FLOOR	1598 SQ. FT.
TOTAL LIVING	3,163 SQ. FT.
PORCHES	625 SQ. FT.
GARAGE	1,344 SQ. FT.



TREES HEIGHT : LEFT SIDE, REAR, RIGHT SIDE
(ON AULOVA ROAD TOWARDS DWELLING)

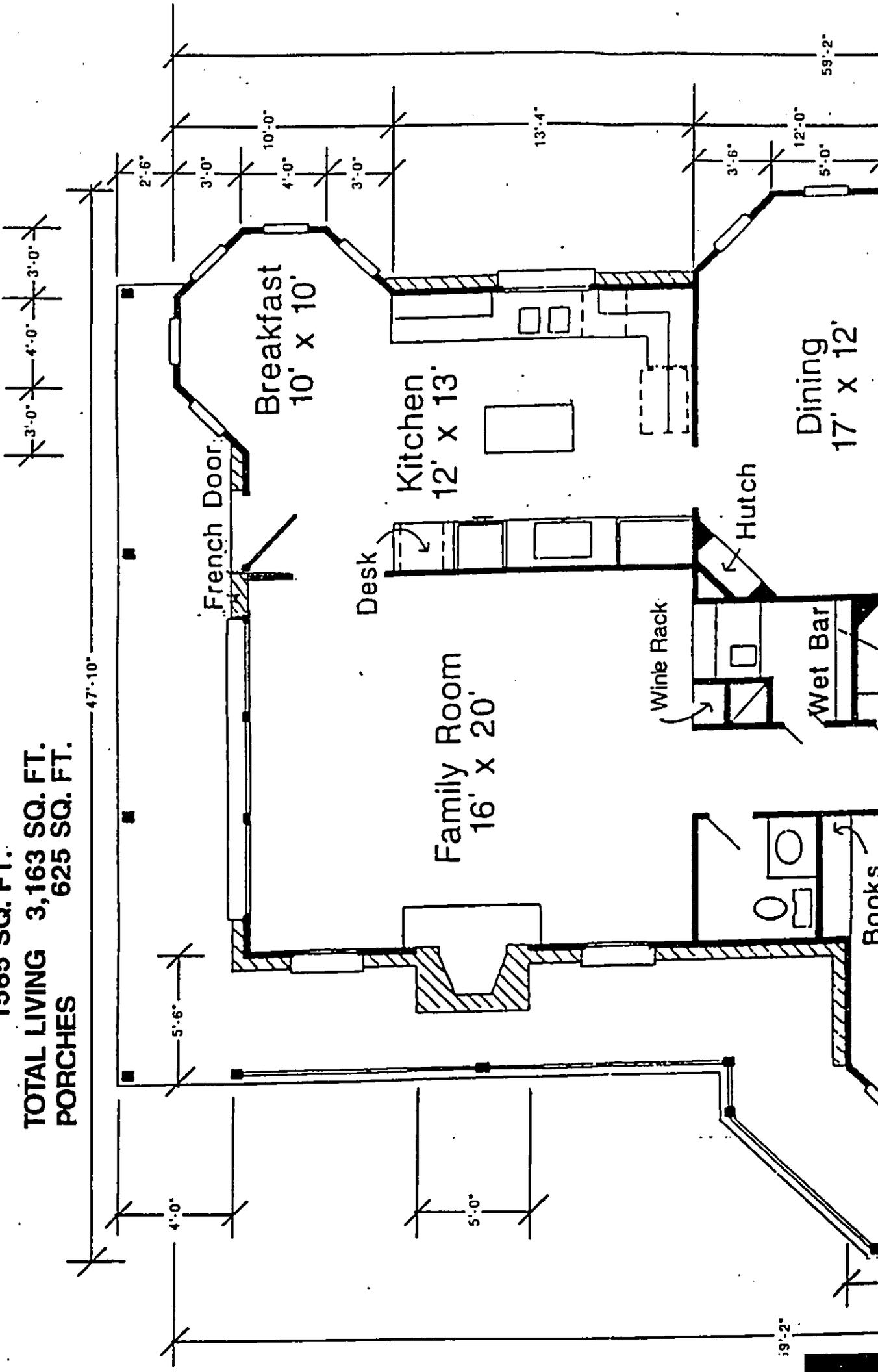


FIRST FLOOR PLAN

1565 SQ. FT.

TOTAL LIVING 3,163 SQ. FT.

PORCHES 625 SQ. FT.



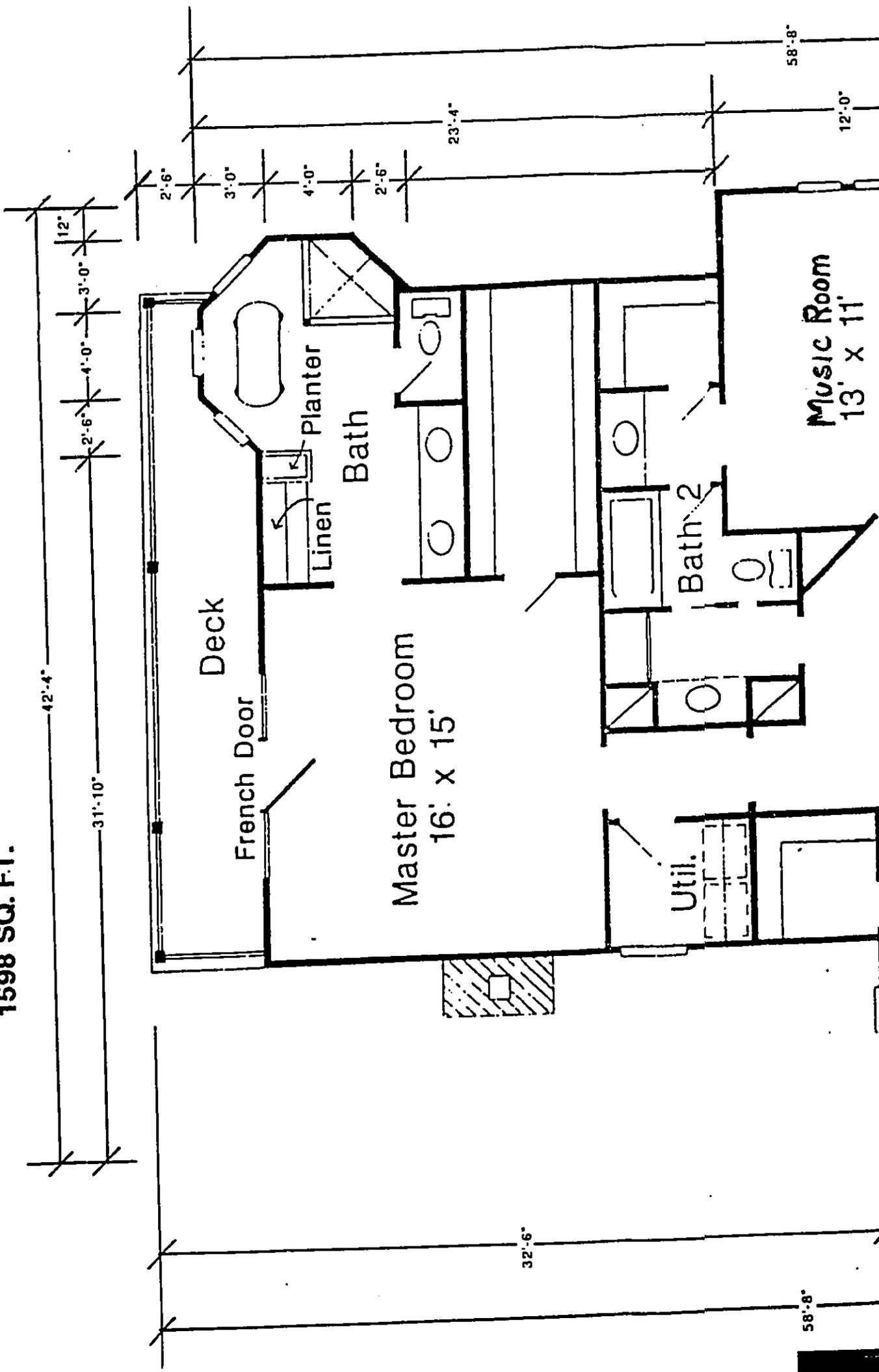
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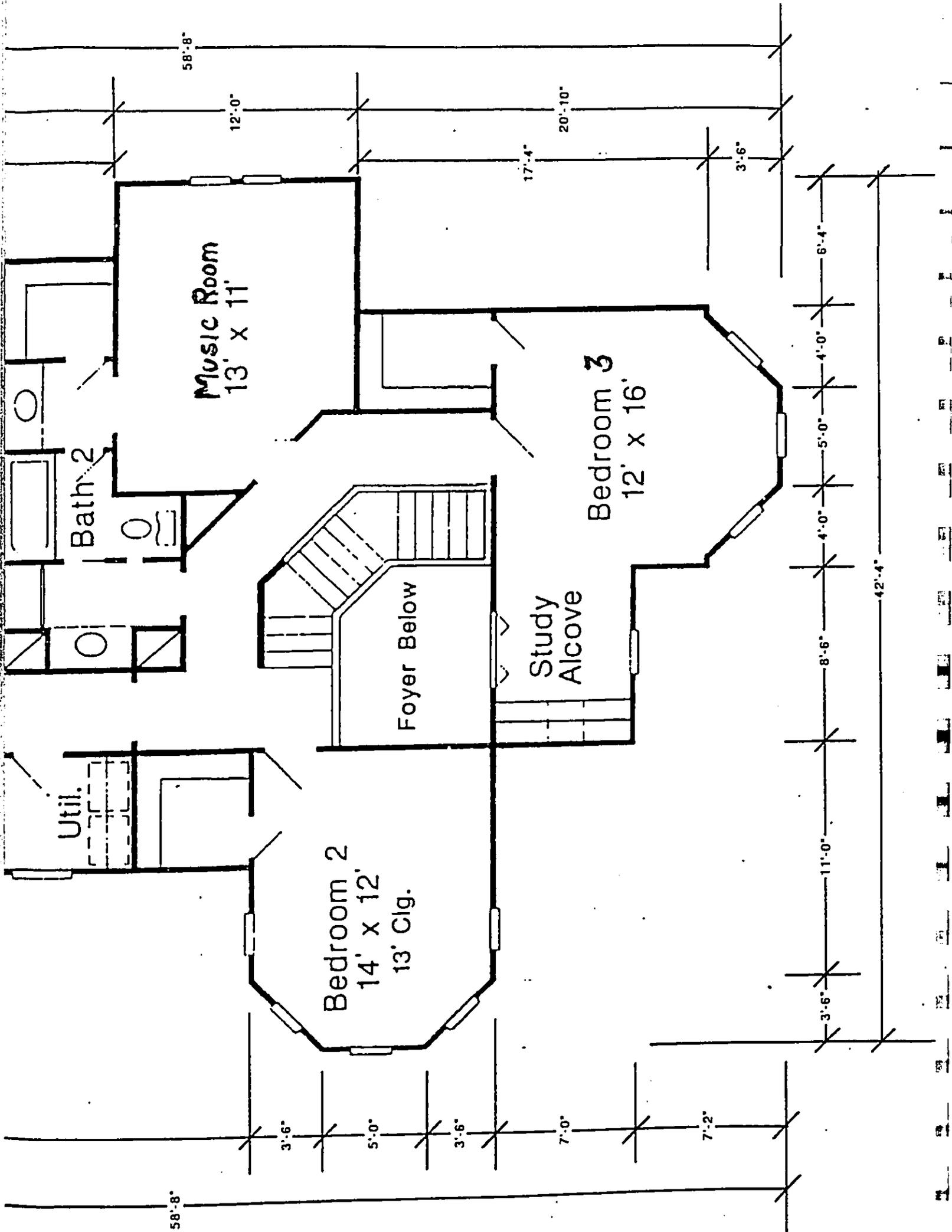
59'-2"



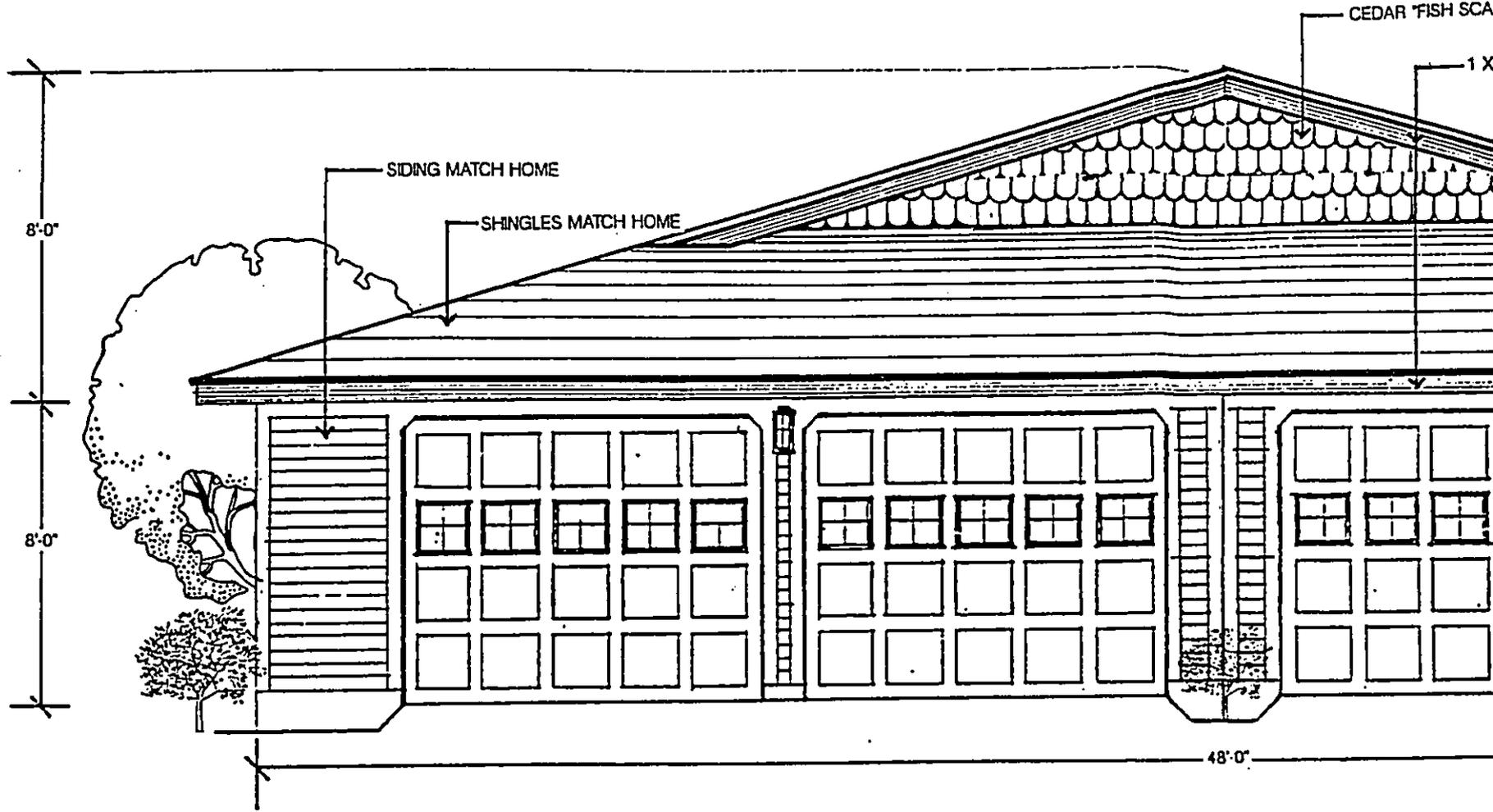
SECOND FLOOR PLAN

1598 SQ. FT.

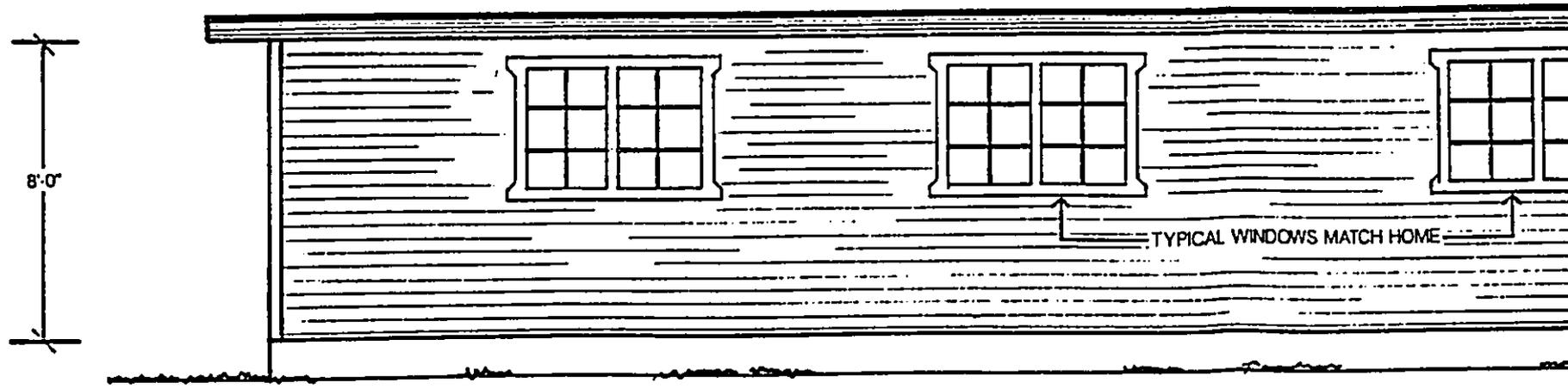




NOTE: HEAVY (EXIST'G.) FOREST / 60'-0" TO 75'-0" IN HEIGHT BEYOND

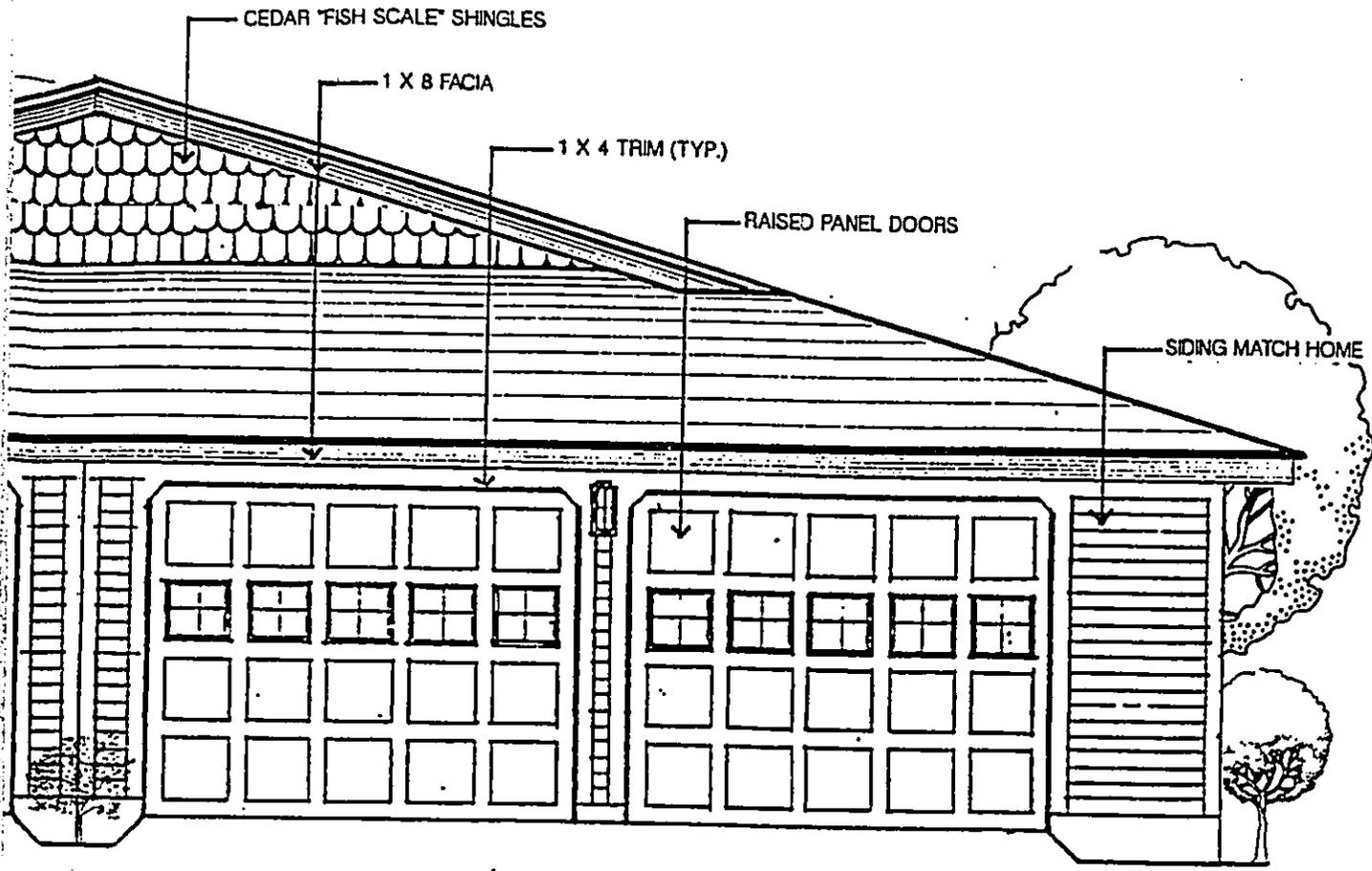


GARAGE FRONT ELEVATION



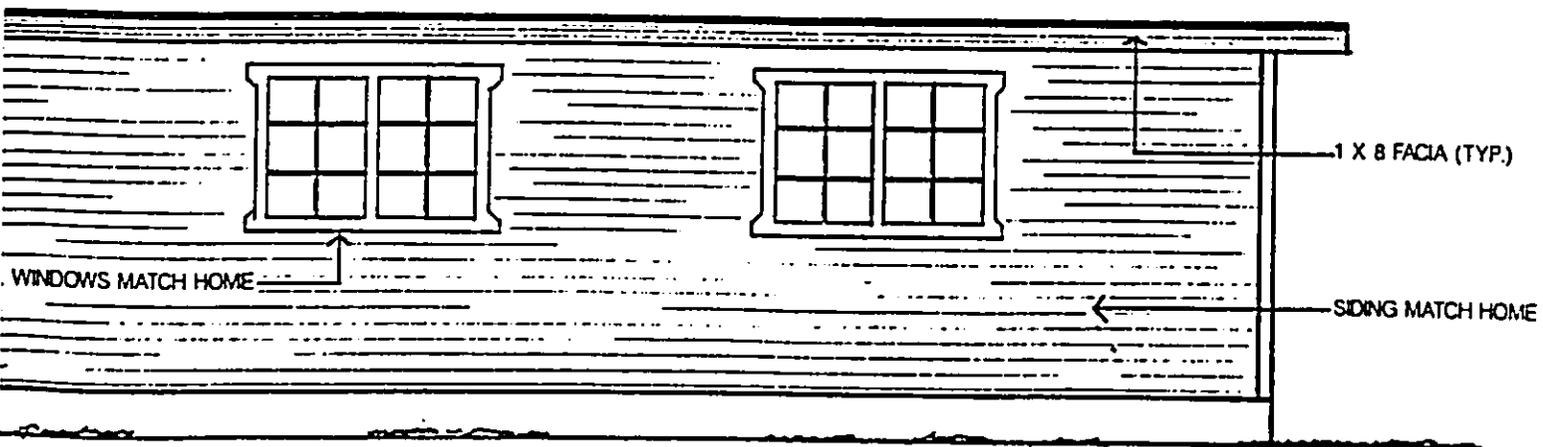
REAR ELEVATION

REST / 60'-0" TO 75'-0" IN HEIGHT BEYOND

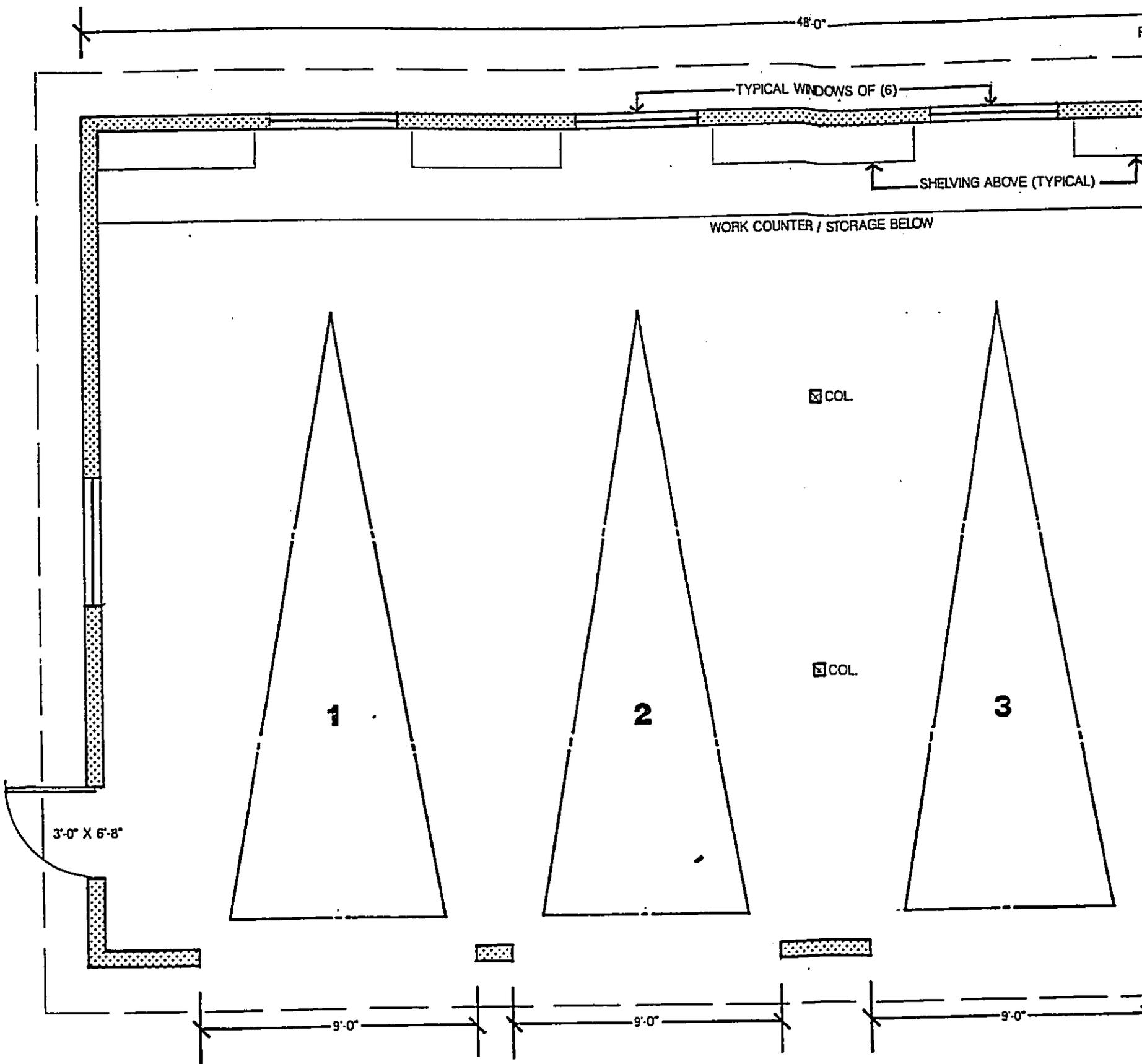


FRONT ELEVATION

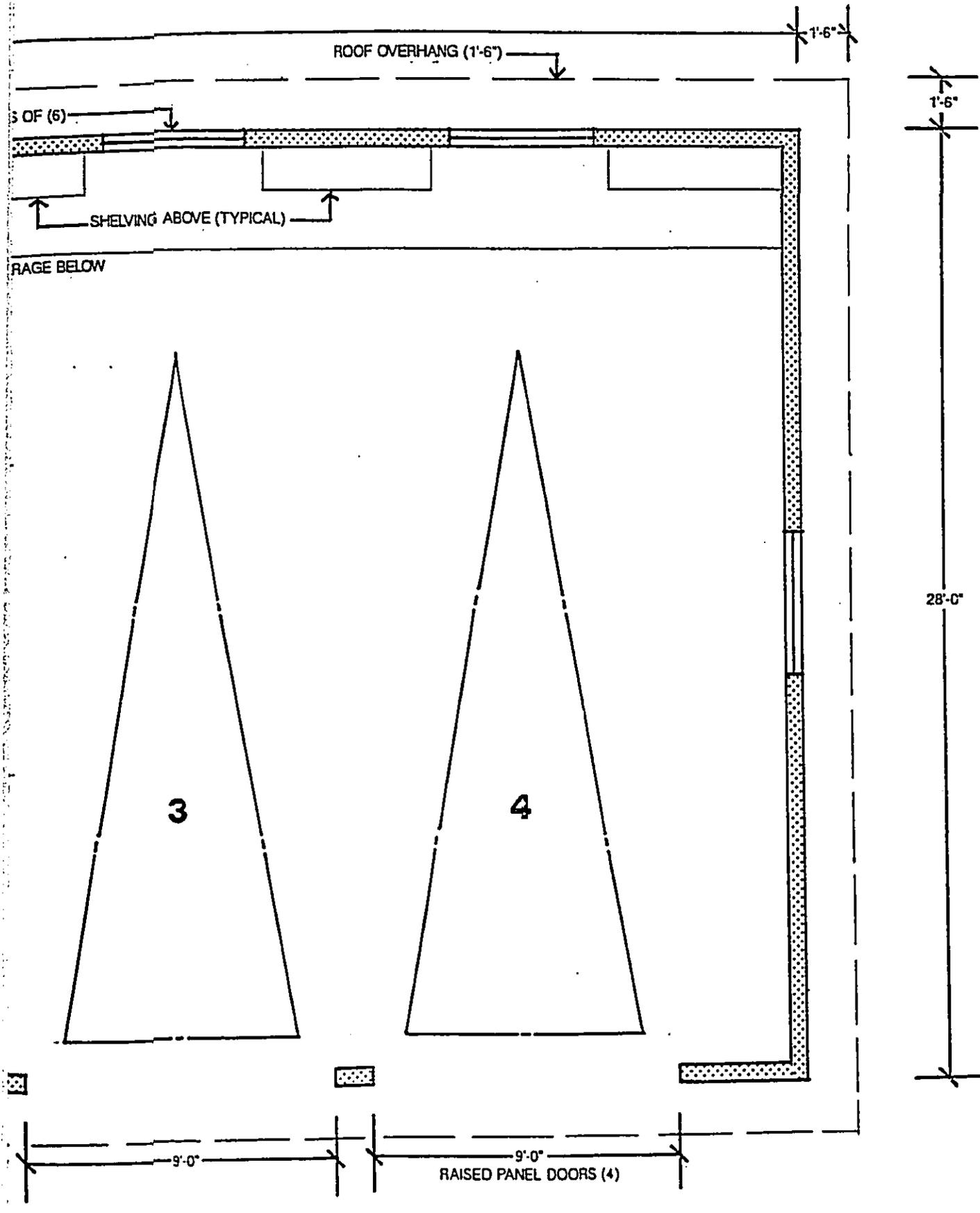
NOTE: PAINTING EARTH TONE COLORS



SIDE ELEVATION



GARAGE FLOOR PLAN



OR PLAN

APPENDIX B
BOTANICAL SURVEY

Prepared By:
Winnona P. Char
Char & Associates
Botanical/Environmental Consultants
Honolulu, Hawaii

BOTANICAL ASSESSMENT
TWO PARCELS ADJACENT TO OLD KALANIANA'OLE HIGHWAY
KO'OLAUPOKO DISTRICT, O'AHU

INTRODUCTION

A field survey of two parcels of land adjacent to the Old Kalaniana'ole Highway was conducted on 29 January 1989. The first parcel, "Building Site A", consists of 0.74 acres while the second parcel, "Building Site B", covers 0.87 acres.

A report on the botanical resources found on the two subject parcels follows. The report is to be incorporated into an environmental assessment to be prepared in support of a Conservation District Use Permit application to the State Department of Land and Natural Resources. The primary objectives of the survey were to provide a general description of the vegetation and to search for threatened and endangered plant species.

SURVEY METHODS

Prior to the field survey, maps of the subject parcels were examined to familiarize the principal investigator with access, terrain characteristics, boundaries, and reference points. Both sites are easily accessed directly from the old highway on relatively sloping lands. Site A is located across from an existing home while Site B lies between two HECO overhead transmission lines.

In this report, the nomenclature of the flowering plants follows Wagner *et al.* (in press); fern names are in accordance with Lamoureux (1984).

DESCRIPTION OF THE VEGETATION

The vegetation on the island of O'ahu has been greatly disturbed by humans; first by the Polynesian settlers, and, later by other immigrants to the islands. Almost all the vegetation types commonly seen below 1,500 ft. elevation on O'ahu are dominated by introduced or alien species (Fosberg 1972). These are plants which were brought to the islands by humans either intentionally or accidentally after Western contact.

On the two parcels, the vegetation consists principally of blocks of forestry plantings. Since its beginnings in 1903, the Hawaii Division of Forestry has been actively involved in forestation efforts especially on lands which have been heavily impacted by human activities and browsing animals (Skolmen undated). Introduced trees have been planted primarily as they grow rapidly on degraded sites. These are usually timber trees although fruit and ornamental species have occasionally been tried.

"Building Site A" (0.74 acres)

A large stand of brush box (Tristania conferta) with a few smaller clumps of lemon-scented gum (Eucalyptus citridora) covers most of Site A. Taro vines (Epipremnum pinnatum) are common on the trunks of many trees.

Because the site is heavily shaded, the shrub layer is not dense and ground cover is sparse in most places. About 50% of the ground is leaf litter, branches, and bare soil. Vegetated areas occur where the tree canopy is more open and sunlight can reach the forest floor. Shrubs of clidemia (Clidemia hirta), 3 to 6 ft. high, are locally common. The more shade-tolerant species such as Hilo grass (Paspalum conjugatum), downy wood fern (Christella parasitica), sword fern (Nephrolepis multiflora), basket grass

7

(Oplismenus compositus), and palm grass (Setaria palmifolia) form scattered patches.

"Building Site B" (0.87 acres)

Brush box with an adjacent stand of paper bark trees (Melaleuca quinquenervia) forms the forest cover on this site. The site is fairly level and the understory open.

A large patch of ginger, probably yellow ginger (Hedychium flavescens), borders the old highway boundary along with syngonium (Syngonium auritum) and wedelia (Wedelia trilobata). Christmas berry shrubs (Schinus terebinthifolius) are found on this portion of the site. Species frequently encountered throughout the site are basket grass, downy wood fern, thimble berry (Rubus rosifolius), saplings of kukui (Aleurites moluccana) and octopus tree (Schefflera actinophylla), strawberry guava (Psidium cattleianum), guava (Psidium guajava), and laua'e (Phymatosorus scolopendria).

A few native plants are found either on the site or on the steep banks of the road cut just outside the site. These are the pakahakaha fern (Pleopeltis thunbergiana), the mat-forming uluhe fern (Dicranopteris linearis), the pala'a fern (Sphenomeris chinensis), and small saplings of 'ohi'a (Metrosideros polymorpha).

THREATENED AND ENDANGERED PLANT SPECIES

No listed, proposed or candidate threatened or endangered plant species designated by the federal and/or state governments (U. S. Fish and Wildlife Services 1985; Herbst 1987) occur on the two parcels. Nor are any of these plants considered rare (Fosberg and Herbst 1975).

All those native species found on the subject parcels occur elsewhere throughout the Hawaiian Islands in similiar environmental habitats.

DISCUSSION

There is no botanical reason or concern to impose any restrictions or conditions on the development of the two parcels for residential use. Introduced species composed largely of forestry plantings predominate. The few native plants found on or adjacent to the two properties are not considered rare, threatened or endangered.

However, it is recommended that the two parcels be revegetated, that is landscaped, as soon as possible to prevent soil erosion.

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APPENDIX C
AVIFAUNA AND FERAL MAMMAL SURVEY

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Laie, Hawaii

SURVEY OF THE AVIFAUNA AND FERAL MAMMALS OF
TWO PARCELS OF LAND ADJACENT TO OLD
KALANIANAOLE HIGHWAY, WINDWARD, OAHU

INTRODUCTION

The purpose of this report is to summarize the findings of a one field day (26,31 January 1989) bird and mammal field survey of two parcels of land located adjacent to Old Kalanianaole Highway in Windward Oahu (See Fig.1). Also included are references to pertinent literature.

The objectives of the field survey were to:

- 1- Document what bird and mammal species occur on the property or may likely occur given the range of habitats available.
- 2- Provide some baseline data on the relative abundance of each species.
- 3- Evaluate these findings in light of published and/or unpublished data.
- 4- Assess the possible changes, if any, in the bird and mammal communities that might occur as a result of the proposed development.

GENERAL SITE DESCRIPTION

The two properties (site A and B) are located in secondary exotic forest at 500-600 feet elevation. (see Fig.1). The total combined acreage of the two properties is less than two acres. Vegetation on the two properties consists of large trees (mostly eucalyptus species) with an understory of exotic shrubs and weeds. The contour of the two properties is quite steep. Pali Highway is located up slope and traffic noise from this highway is noticeable particularly during early and late rush hour periods. Property down slope across Old Kalaniana'ole Highway, contains a dense tangle of introduced plants including bamboo.

Weather during the field survey was relatively cool and clear. Winds were light NE tradewinds.

STUDY METHODS

Field observations were made with the aid of binoculars and by listening for vocalizations. These observations were concentrated primarily during the peak activity periods of early morning. Attention was also paid to the presence of tracks and scats as indicators of bird and mammal activity.

At various locations (see Fig.1.) eight minute counts were made of all birds seen or heard. Between these count stations walking tallys of birds seen or heard were also kept. These counts provide the basis for the relative abundance estimates given in this report. Census data on birds contained in the annual Honolulu Christmas Count bird surveys conducted by the Hawaii Audubon Society were also consulted in order to acquire a more complete picture of the birdlife activity in the general area (Pyle 1987,1988). Observations of feral mammals were limited to visual sightings and evidence in the form of scats and tracks. No attempts were made to trap mammals in order to obtain data on their relative density and distribution.

Scientific names used herein follow those given in the most recent American Ornithologist's Union Checklist (A.O.U. 1983), Hawaii's Birds (Hawaii Audubon Society 1984), A Field Guide to the Birds of Hawaii and the Tropical Pacific (Pratt et al. 1987) and Mammals Species of the World (Honacki et al. 1982).

RESULTS AND DISCUSSION

Resident Endemic (Native) Birds:

No endemic birds were recorded during the survey. The Common Amakihi (Hemignathus viren), would be the

most likely endemic species to occasionally utilize these properties for foraging. This small green bird is a member of the unique honeycreeper subfamily (Drepanidinae). Unlike many species that belong to this group Amakihi are still quite common (Berger 1972, Scott et al. 1988). This species forages in both native and exotic forest searching for insects and nectar. Recent reports of this species foraging on the slopes at Punchbowl crater may indicate that it has developed some ability to deal with the limiting factors of mosquito transmitted avian diseases which here-to-fore have restricted it to higher less mosquito infested habitat (Pyle, ornithologist and compiler of bird observations for Hawaii Audubon Society pers. comm., Eddinger 1984).

Two other species of endemic birds, Apapane (Himatione sanguinea) and Elepaio (Chasiempis sandwichensis), might also infrequently occur in the area given the nature of the habitat and its proximity to forested land up slope.

Migratory Indigenous (Native) Birds:

Pacific Golden Plover (Pluvialis fulva)-
Only one plover was recorded during the field survey. This bird was observed on Old Kalaniana'ole Highway fronting site "B". Plovers prefer open areas such as mud flats and lawns. They arrive in Hawaii in early

August and depart to their arctic breeding grounds during the last week of April (Johnson et al. 1981). Johnson et al. (1981) and Bruner (1983) have also shown plover are extremely site-faithful on their wintering grounds and many establish foraging territories which they defend vigorously. Such behavior makes it possible to acquire a fairly good estimates of the abundance of plover in any one area. These populations likewise remain relatively stable over many years. No other migratory shorebirds were observed nor would any be expected in this habitat.

Resident Indigenous (Native) Birds:

No resident indigenous species were observed. The only possible species in this category would be the Short-eared Owl (Asio flammeus). This species, however, occurs more frequently in grasslands than forested habitat.

Exotic (Introduced) Birds:

A total of 12 species of exotic birds were recorded during the field survey. Table One shows the relative abundance of these species. The most numerous species during the one day survey were Japanese White-eye (Zosterops japonicus), Red-vented Bulbul

(Pycnonotus cafer) and House Finch (Carpodacus mexicanus). Red-whiskered Bulbul (Pycnonotus jocosus) was not reported on the windward side of Oahu by Williams (1982) Williams and Giddings (1984) and Williams and Evenson (1985). The discovery of Red-whiskered Bulbul on the project sites marks the first verified record for this species in windward Oahu. With the exception of the Common Barn-Owl (Tyto alba), Melodious Laughing-Thrush (Garrulax canorus) and Red-billed Leiothrix (Leiothrix lutea) all of the exotic species that would be expected in this type of habitat and at this elevation on Oahu were recorded during the survey (Pratt et al. 1987).

Feral Mammals:

The only feral mammals observed during the survey were the Small Indian Mongoose (Herpestes auropunctatus) and cats. Two mongooses and three cats were seen and scats of others were found. No rats or mice were recorded but it would be highly unusual if these ubiquitous mammals did not occur on the properties. Without a trapping program it is difficult to conclude anything about the relative abundance of rats, mice, mongooses and cats. However, it is likely that their numbers are similar to what one would find elsewhere in similar habitat on Oahu. No feral pig were observed

but they may possibly be present in the area.

Records of the endemic and endangered Hawaiian Hoary Bat (Lasiurus cinereus semotus) are sketchy but the species has been reported from Oahu (Tomich 1986). None were observed on this field survey.

CONCLUSION AND RECOMMENDATIONS

A brief field survey can at best provide a limited perspective of the wildlife present in any given area. Not all species will necessarily be observed and information on their use of a site must be sketched together from brief observations and the available literature. The number of species and the relative abundance of each species may vary throughout the year due to available resources and reproductive success. Species which are migratory will quite obviously be a part of the ecological picture only at certain times during the year. Exotic species sometimes prosper for a time only to later disappear or become a less significant part of the ecosystem (Williams 1987). Thus only long term studies can provide the insights necessary to acquire both a broad view as well as a more definitive perspective of the bird and mammal populations in a particular area. However, when brief

APPENDIX D

ENVIROLET TOILET SYSTEMS INFORMATION

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH
P O BOX 3378
HONOLULU HAWAII 96801

LAWRENCE MIKE
DIRECTOR OF HEALTH

In reply please refer to
EMD/WB

January 23, 1996

960106
ENVIROLE.HKY

Mr. Joseph Wasco III
President, Wasco Builders
68-701 Crozier Drive
Waialua, HI 96791

Dear Mr. Wasco:

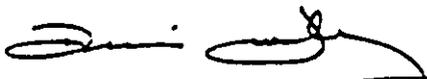
Subject: Individual Wastewater Systems
"Envirolet" Composting Toilet Systems
Sancor Ltd.

We have reviewed the material submitted to the Department on the "Envirolet" Composting Toilet testing conducted by the Canadian Standards Association (CSA). The testing conducted by the CSA appears to be equivalent to NSF's performance evaluation criteria Standard No. 41.

As such, the Department finds that the "Envirolet" Composting Toilet meets the provisions of Hawaii Administrative Rule (HAR), Title 11, Chapter 62, entitled "Wastewater Systems", Section 11-62-35(a). Although the "Envirolet" Composting Toilet complies with Section 11-62-35(a), wastewater plans for building utilizing the device must still be submitted to the Department for review and approval. Such plans must be designed by an engineer and meet all other applicable provisions of Chapter 11-62, HAR.

Should you have any questions, please feel free to contact the Wastewater Branch at telephone no. 586-4294.

Sincerely,


DENNIS TULANG, RE. CHIEF
Wastewater Branch

Subject Designation

(Material-Method Request No.)
() Resubmission; () Renewal

(x) Initial;
Building Department
City and County of Honolulu
Honolulu Municipal Building
650 South King Street
Honolulu, Hawaii 96813

FEB 8 1996

REPORT OF ACTION ON REQUEST FOR APPROVAL OF METHODS AND MATERIALS
UNDER BUILDING DEPARTMENT CODES AND REGULATIONS

TO: Mr. Joseph Wasco, III
Wasco Builders
68-701 Crozier Drive
Waialua, Hawaii 96791

SUBJECT: Request for Approval of "Envirolet" Composting Toilet
System Manufactured by Sancor Industries Ltd., Ontario,
Canada

After due consideration and study of the information
submitted in conjunction with your request for approval of the
subject materials and/or methods for use in installations and
structures governed by our codes, the use of the materials and/or
methods is hereby:

- (x) Approved
- () as requested.
- (x) with the conditions outlined below.
- () Disapproved
- () Withheld for further study pending submission of additional data.

Conditions of Approval: (1) Should the Building Department find the
operation of the system unsatisfactory, the owner shall promptly
repair or modify the system, or replace it with another acceptable
system (DOH Para. 11-62-35(b)(3)).

Basis for (x) approval; () disapproval:

(x) Favorable) test report and/or recommendations by

() Unfavorable)
() ICBO; () U. L., Inc.; () WPOA; (x) Canadian Stds. Assn.
Cert. No. LM52757-2, -3,
052757x0000 and DOH Ltr.
Dated 1/23/96 from
D. Tulang to J. Wasco
Others

Reference or Remarks: February 1, 1996 letter from J. Wasco to
R. Fujiki.

The approval granted herein shall expire on February, 2001 and
shall be resubmitted for approval if use is to be continued after
that date. This approval is also subject to revocation at any time.

J. M. H. H. H.
Director & Building Superintendent

Envirolet™

WATERLESS AND LOW WATER TOILET SYSTEMS INSTALLATION AND OPERATION INSTRUCTIONS

Envirolet™ is a biological or composting toilet system that evaporates water and breaks down waste by natural bacterial action. This patented toilet system accelerates the decomposition process and converts waste material into natural soil residue. Envirolet™

is easy to install. The many features offered with Envirolet™ make the toilet system easy to operate. Read the following **INSTALLATION AND OPERATION INSTRUCTIONS** carefully to ensure that your Envirolet™ toilet system will function properly.

INSTALLATION OF YOUR ENVIROLET™ TOILET SYSTEM

NOTE:

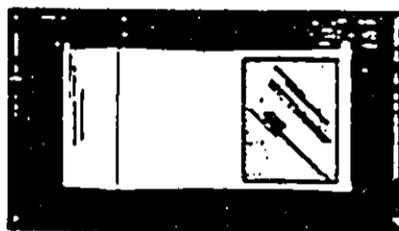
Do not remove Paper Mat in toilet system.

1. Position Envirolet™ in bathroom
2. Install Vent Kit - installation instructions are located in Vent Kit.
3. Add Premix Starter - special soil mixture (1) bag supplied with toilet system. Remove Toilet Bowl and open Bowl Trap cover and spread contents of soil bag evenly across Paper Mat. Sprinkle gently one (1) pint of water evenly over Premix Starter in toilet system. Replace Toilet Bowl and close Bowl Trap.
4. Switch the 2-Position Neon Switch to Position 1-Fans and Heater
5. Plug in Power-Plug to 3 prong plug outlet (receptacle should be connected to 120V, 60Hz 15 amp fuse service in electrical box). **UNPLUG** toilet when leaving system more than 2 weeks or when servicing.

YOUR ENVIROLET™ IS INSTALLED AND READY FOR USE.

SPECIAL FEATURES MAKE OPERATION EASY!

2-POSITION NEON SWITCH



Position II -
Fans Only

Position I -
Fans & Heater

Use position 1 - NORMAL USE

Position 1 - Fans & Heater
When toilet is in daily use. On & off
red neon indicates heater on & off

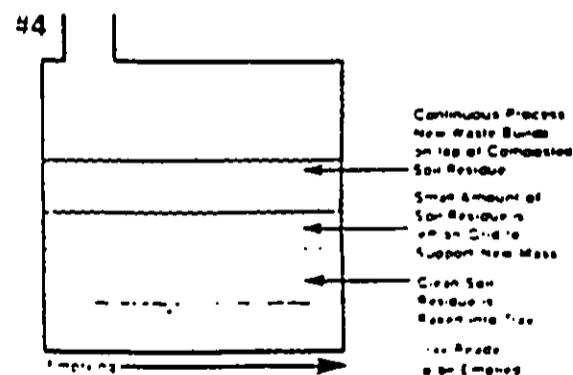
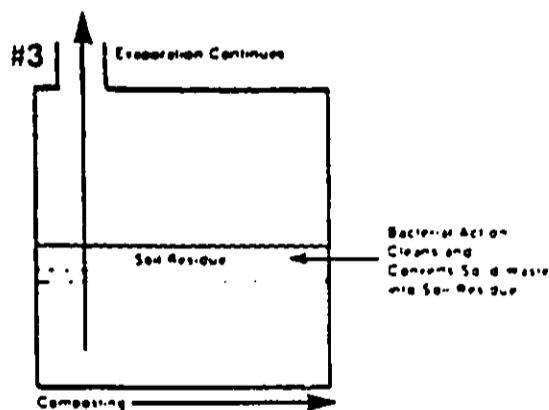
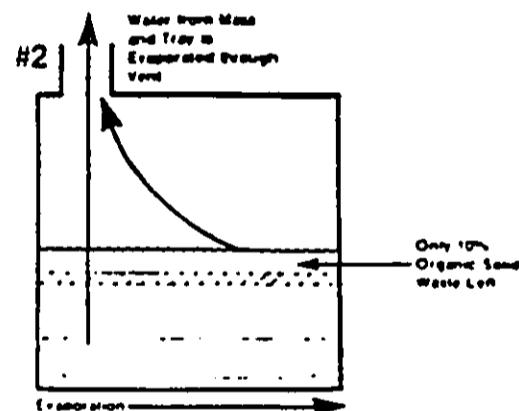
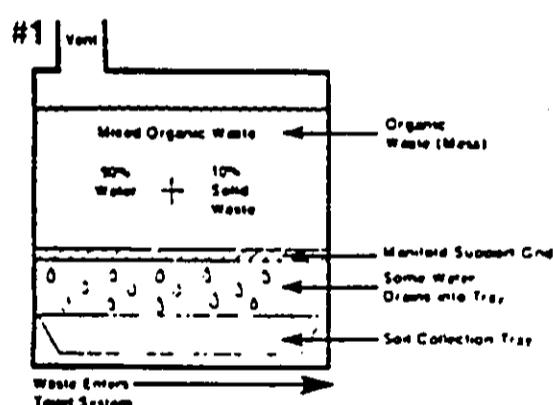
Position II - Fans Only
When leaving toilet for short periods
of non-use (2 days or more - 2 weeks
or more)

ENVIROLET™ DAY TO DAY OPERATION MADE EASY!

1. Switch the 2-position Neon Switch to Position 1 Fans & Heater for normal use of your Envirolet™ toilet system
2. Add 1/4 of a cup of peat moss per person per day. The peat moss will help cover the mass below the Bowl Trap, keep the mass from becoming too hard, dry or compacted, and help feed the natural bacterial action continuing in the toilet system. Use regular fine peat moss or ask your dealer for Envirolet™ Premix Starter.
3. Try and keep the mass in the toilet system moist-not dry or soaked for proper composting to take place. If the mass becomes too dry add a small amount of water and peat moss or Envirolet™
4. Use biodegradable or single-ply toilet paper in Envirolet™
5. The Bowl below the toilet seat is a sanitary enclosure for the

- toilet system. The Bowl is easily removed for regular sanitary cleaning with soap and water. The Bowl Trap covers the bottom of the Bowl and acts as a sanitary cover above the mass. The Bowl Trap can be opened and closed using the Leveler Bar Handle on top of the toilet system.
6. Use the Airator Handle often to move the Airator in the toilet system. The airator is a series of blade-like cutters that will help break up the mass, distribute waste across the system and help aerate the composting process.
7. The Envirolet™ is ideal for winter usage. Ensure bathroom is warm. Check that outside Roof Ventilator is clear. Operate Envirolet™ as you would normally. Add 1 TBSP of Sancer® Fast Acting Enzyme Accelerator once every two weeks with 1 pint of water. Unplug Envirolet™ if leaving system in cold or freezing temperatures.

HOW DOES YOUR ENVIROLET™ COMPOSTING TOILET WORK



Envirolet™ is a unique aerobic and evaporation toilet system. Envirolet™ also incorporates a natural organic breakdown process (composting). Envirolet™ requires no water (no water connection), no chemicals, and no septic tank. Envirolet™ is not an incinerating toilet. Human waste, toilet paper, organic material and urine is transformed by Envirolet™ into water vapour and environmentally clean soil. Approximately

90% of mass or liquid entering the toilet is composed of water. Envirolet™ evaporates water out of the toilet. The mass is of an engineered aeration system. An attached Air Vent carries the water vapour to the outside. Any remaining waste material (dramatically reduced in volume and weight by the removal of water) is transformed into clean, dry soil. The process is accomplished by the continuous action of the forced warm

air supply and natural organic breakdown process (composting). The Envirolet™ Premix Starter is sufficient to start the process. Organic material (peat moss) should be added to the toilet system to assist the breakdown process. The composting system operates naturally and requires no maintenance. The only maintenance required is the regular cleaning of the bowl from Envirolet™.

BOTTOM PANEL INSTRUCTIONS

Your Envirolet® Toilet System is equipped with a new "easy to remove and install" bottom panel.

Security Fastener Knobs (4) ensure that your Envirolet® bottom panel is well sealed against leakage or accidental removal of the bottom panel.

Includes:

- 2 "outside" Security Fastener Knobs w/ bolts
- 2 "center" Security Fastener Knobs w/ bolts
- 4 rubber washers
- 1 bottom panel w/ four (4) holes
- 1 metal fastening plate w/ 2 attached nuts

Removing Bottom Panel

First undo and remove all Security Fastener Knobs (turn to left) along with rubber washers. Remove the plastic bottom panel and the metal fastening plate located behind. The Soil Collecting Tray can now be removed for emptying. Replace tray before installing Bottom Panel

Installing Bottom Panel

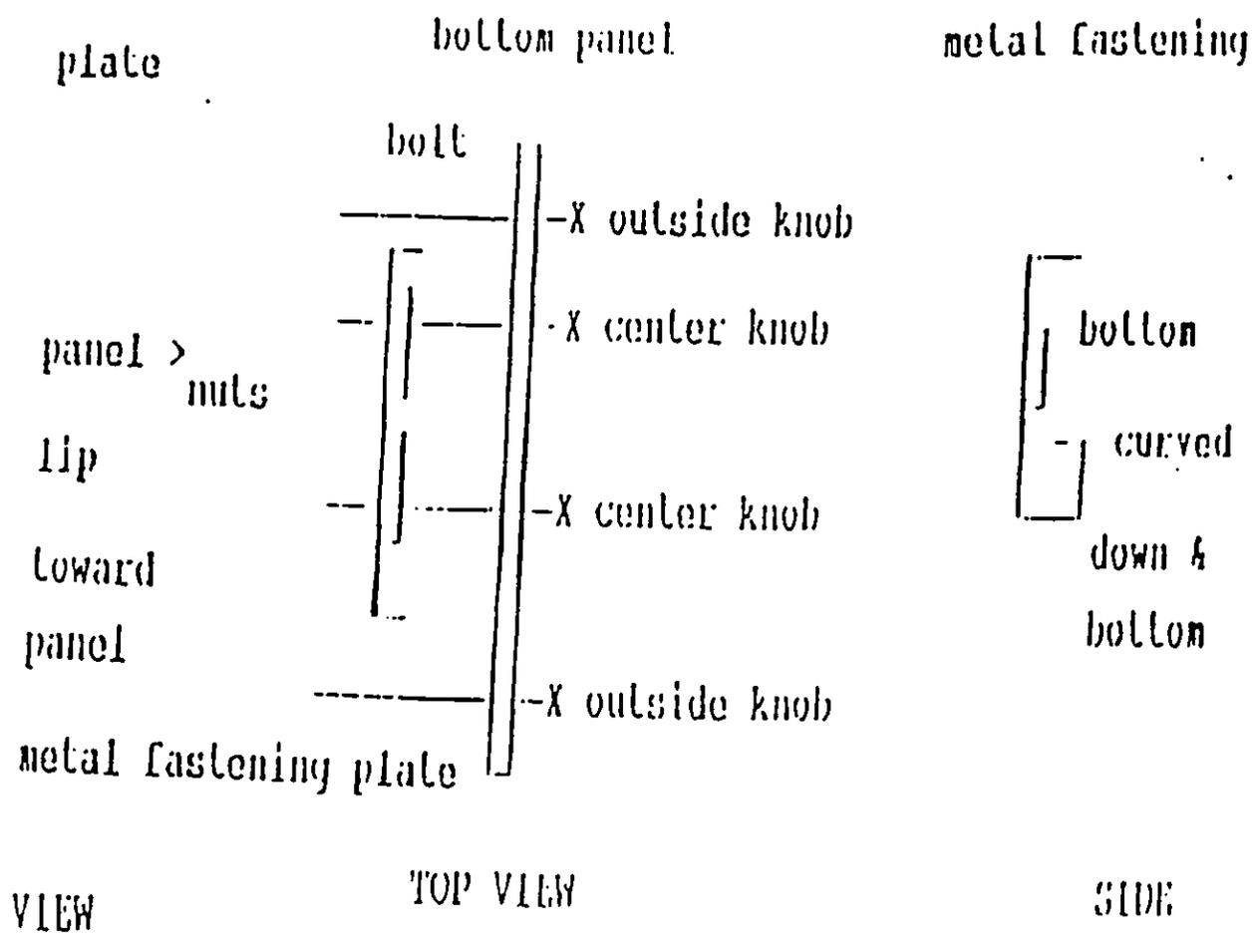
Ensure a rubber washer is placed over each bolt protruding from each Security Fastener Knob (4) before installing Bottom Panel.

Attach "loosely" the metal fastening plate, with "curved" lip on metal fastening plate facing toward the bottom panel and in the down position, to the plastic bottom panel and through the two(2) metal nuts attached to the metal fastening plate (turn knobs to the right only a couple of turns).

Holding the plastic bottom panel, slide the attached metal fastening plate "down and up" and through the bottom panel opening. Center the plastic bottom panel and "gently" tighten the two(2) center Security Fastener Knobs. Install the two(2) outside Security Fastener Knobs with their attached metal bolts and the attached rubber washers through the two outside holes in the bottom plastic panel (turn to the right) "straight" through into the threaded nut inserts in the body of the system.

Tighten all Security Fastener Knobs securely.

BOTTOM PANEL AND METAL FASTENING PLATE DIAGRAM



**STANDARD FLUSH TOILET SYSTEM
AND
ENVIROLET™ ENVIRONMENTAL
LOW WATER TOILET SYSTEM**

Fresh Water Use "In" Comparison

<u>System Type</u>	<u>Fresh Water Use Per Day</u>	<u>Fresh Water Use Per Year</u>	<u>% In Fresh Water</u>
Flush Toilet	30.000 gal / day	10,950 gal / yr	100%
Envirolet™ Low Water Toilet	05.625 gal / day	2,053 gal / yr	19%
Net Benefit Savings Envirolet™ Toilet	24.375 gal / day	8,897 gal / yr	81%

Note:

Based on 5 users or 15 uses per day

Standard Flush - 3 uses per day per person -

(3 gpd solid (1 x3) + 3 gpd liquid (1.5 x 2)

Envirolet™ Toilet - 3 uses per day per person.

(0.84 gpd solid (1 x 54 oz) + 0.25 gpd liquid (2 x 8 oz)

**STANDARD FLUSH TOILET SYSTEM
AND
ENVIROLET™ ENVIRONMENTAL
LOW WATER TOILET SYSTEM**

Sewage Waste Water "Out" Comparison

<u>System Type</u>	<u>Sewage Water Per Day</u>	<u>Sewage Water Per Year</u>	<u>% Out Sewage Water</u>
Flush Toilet	30.000 gal / day	10,950 gal / yr	100%
Envirolet™ Low Water Toilet	0 - 0.3 gal / day	0 - 109.5 gal / yr	1%
Net Benefit Savings Envirolet™ Toilet	30 - 29.7 gal / day	8,897 gal / yr	99% - 100%

Note:

Based on 5 users or 15 uses per day

Standard Flush - 3 uses per day per person -

(3 gpd solid (1 x3) + 3 gpd liquid (1.5 x 2)

Envirolet™ Toilet - 3 uses per day per person.

(0.84 gpd solid (1 x 54 oz) + 0.25 gpd liquid (2 x 8 oz)

DOCUMENT CAPTURED AS RECEIVED

LIFETIME **ENVIROLET** THE WORLD'S FINEST COMPOSTING TOILET SYSTEMS WARRANTY

PLEASE READ YOUR LIFETIME LIMITED WARRANTY CAREFULLY AND RETURN YOUR REGISTRATION CARD TODAY

FOUR YEAR LIMITED WARRANTY ALL COMPONENTS:

All ENVIROLET™ component parts including the ABS Exterior Body (herein "ABS Body") are warranted to be replaced or repaired free of charge for a period of 4 (four) years from date of purchase (proof of purchase is required), unless due to owner's negligence.

LIFETIME LIMITED WARRANTY ABS BODY:

In addition to the above four year warranty, the ENVIROLET™ ABS body is warranted to be replaced or repaired as long as owned and operated by the original purchaser. (proof of purchase is required), unless due to owner's negligence

WARRANTY CONDITIONS:

The limited warranty(s), described above, apply to the replacement or repair of component parts of the ABS body only. The ABS body is protected with a special Ultra Violet Coating which protects against sunlight damage for maximum protection. However, SANCOR™ is not responsible for any discoloration of the ABS body under the warranty(s). This warranty shall become void upon any of the following: (A) upon expiration of any of the Limited Warranties described herein. (B) At the time the ENVIROLET™ toilet system is damaged or not maintained as reasonable and necessary (C) Modified (D) Improperly installed or operated. (E) Repaired by someone other than the warrantior for defects or malfunction covered by the warranty. (F) Used in a manner or purpose for which the product was not intended.

EXCLUSIONS:

The following items are not covered under this warranty:
Toilet seat(s), vent and drain kit(s), fibreglass and ceramic toilets(s) connected to Remote Systems

NOTE: Fibreglass and ceramic toilets are warranted to be free from defects in materials and workmanship for a period of one year (from date of purchase) to the original owner for home use, and for 90 days for commercial use

PERSONAL HYGIENE PRODUCT:

The ENVIROLET™ toilet system is a "personal hygiene product" and therefore cannot be returned for credit if used by the customer. SANCOR™ will repair any defective ENVIROLET™ toilet system. Part(s) to be returned must be packed securely to avoid damage in shipping. Part(s) to be returned must be cleansanitized for shipping and handling. (warranty or non-warranty conditions apply)

RETURN OF WARRANTY OR NON-WARRANTY PART(S) FOR SERVICE BY SANCOR™.

- Return **PREPAID** (via insured mail or freight) warranty or non-warranty part(s) for servicing by SANCOR™ or to designated service centre.
 - Make sure your name, address, and telephone number are enclosed with your part(s) along with an explanation of the problem.
 - Customers returning ENVIROLET™ part(s) must send proof of purchase
- Customers outside Canada: must indicate "MADE IN CANADA" when sending ENVIROLET™ part(s) back to Canada. Warranted parts will be inspected and replaced or repaired free of charge at the discretion of SANCOR™ INDUSTRIES LTD. Non-warranty part(s) will be replaced or repaired at our prevailing parts and labor price list (if applicable). SANCOR™ or a designated service centre will return to customer all warranted or non-warranted part(s) **DELIVERY COLLECT** (charge for postage or freight, handling and insurance).

SELF REPLACEMENT OF PART(S):

To order the replacement part(s), send proof of purchase if covered by warranty. Your part(s) will be sent to you immediately. Send your name, address and telephone number.
In USA some States do not allow the exclusion or limitation of incidental or consequential damage so the above limitations or exclusions may not apply to you

IMPORTANT:

Please **IMMEDIATELY** forward completed Warranty Card to the address shown below. Failure to do so does not invalidate your Limited Warranty. Registration of Warranty Card ensures notification of new product and part(s) information or service protection which may become available.

AN EXTENDED WARRANTY (OVER 4 YEARS) IS ALSO AVAILABLE FOR THE COMPONENTS. PLEASE CALL FOR DETAILS

FOR WARRANTY OR PARTS SERVICE PLEASE CALL

SANCOR INDUSTRIES LTD. 140-30 MILNER AVE. SCARBOROUGH, ONT. CANADA, M1S 3R3
TEL 416-299-4818 FAX 416-299-3124 CANADA 1-800-387-5245, USA 1-800-387-5128



SANCOR™

ENVIROLET™ WARRANTY REGISTRATION CARD

PLEASE DETACH AND RETURN BY MAIL TODAY

DATE OF PURCHASE

D	M	YR
---	---	----



OWNERS NAME _____
 STREET _____
 STATE / PROVINCE _____
 ZIP / POSTAL CODE _____
 DEALERS NAME _____

TELEPHONE () _____
 CITY _____
 COUNTRY _____
 ADDRESS _____



Certificate of Compliance

Certificate Number: LM 52757-2

Date Issued: July 25, 1994

Issued To: SANCOR LTD.
140 Milner Ave., Unit 30
Scarborough, Ont. M1S 3R3

The products listed below are eligible to bear the CSA Mark.

Issued By: E. Ho, P. Eng.
Toronto, Ontario, Canada

Signature

PRODUCTS

"Envirolet" Composting Toilet System:

Models: Basic Plus, Multi System 10, DC12, Remote System 2/WNE, Remote System 2/W12, Remote System 2/W110, Remote System 2/LWNE, Remote System 2/LW110, Remote System 2/LW12, MS10, RS2W, RS2LW.

APPLICABLE REQUIREMENTS

NSF Standard 41

Wastewater Recycle/Re-Use and Water Conservation Devices



Certificate of Compliance

Certificate Number: LR 52757-3

Revision: LR 52757-3

Date Issued: July 22, 1994

Issued To: SANCOR LTD.
140 Milner Ave., Unit 30
Scarborough, Ont. M1S 3R3

The products listed below are eligible to bear the CSA Mark.

The "NRTL" indicator may appear adjacent to the CSA Mark.

Issued By: G. VanSaarloos, C.E.T.
Toronto, ON Canada

Signature

PRODUCTS

Envirolet composting toilet, Models MS10, RS2W and RS2LW.

APPLICABLE REQUIREMENTS

UL Std No. 499 - Electric Heating Appliances



Canadian Standards Association
Association canadienne de normalisation

CERTIFICATION RECORD

The company named below has been authorized by Canadian Standards Association to represent the products listed in this record as "CSA Certified" and to affix the CSA Mark  to these products according to the terms and conditions of the CSA Service Agreement.

NUMBR 052757X0000 July 22, 1994(Replaces:September 17, 1986)

CLASS 2871 02 (Re-examination Service)

SANCOR LTD.
140 Milner Ave., Unit 30
Scarborough, Ont. M1S 3R3

52757

SEE ALSO NRTL

HEATERS - Miscellaneous

- Electric evaporating toilet, cord connected for indoor use, Model "Multi System 10", 120V ac, 540W.

* * * * *

WASTEWATER TECHNOLOGY

Performance Evaluation Report:
Envirolet™ Composting Toilet System

CSA NSF - 41
Certified



CSA Certified:

*June 30, 1994 by Canadian Standards Association
To Meet NSF Standard 41 : Relating To Evaluation Of Wastewater
Recycle / Reuse & Water Conservation*

Canadian Standards Association

Canadian Standards Association (CSA) is a professional body, internationally recognized for the testing of products, including accreditation by both the Standards Council of Canada (SCC) and the U.S. Occupational and Health Administration (OSHA).

The Canadian Standards Association (CSA) and NSF International (NSF) alliance provides for the joint recognition of standards, testing, certification and marks of either organization.



Standards, Certification, and Quality Registration

For over 75 years, CSA has been dedicated to improving the integrity and safety of products in the marketplace. CSA develops standards nationally and internationally - for safety, performance and quality.

The CSA mark is recognized throughout Canada, the United States and around the world and appears on over 1 billion products sold every year.

Canadian Standards Association, 178 Rexdale Blvd, Rexdale (Toronto), Ontario, Canada M9W 1R3

Certification

Canadian Standards Association (CSA) has determined by performance evaluation, according to provisions of NSF Standard 41: Recycle / Reuse and Water Conservation Devices, that the Envirolet composting toilet system manufactured by Sancor Industries Ltd. ("Sancor"), Scarborough, Ontario, Canada has according to Canadian Standards Association ("CSA") met all the requirements of NSF Standard 41.

CSA monitored and tested an installed Envirolet composting toilet system. Loading of toilet waste during the test was made according to specified amounts described in this report. Observations and analyses included in this report are certified by CSA to be correct and true copies of the data recorded during the performance test conducted by CSA on the Envirolet composting toilet system described in this report.

This certified report of the Envirolet composting toilet system is the exclusive property of Sancor and can be released or reproduced only with the written permission of Sancor.

CSA hereby confirms and certifies that the Envirolet composting toilet system and the associated Envirolet models indicated below, as certified in this report, meet the NSF Standard 41 and are authorized to carry the following CSA mark:

CSA NSF - 41

Envirolet™ Models Certified:

(1) Basic Plus, (2) Multi System 10, (3) MS10, (4) DC12

(5) Remote System 2/WNE, (6) Remote System 2/W110, (7) RS2W,

(8) Remote System 2/LW12, (9) Remote System 2/LWNE,

(10) Remote System 2/LW110, (11) RS2/LW, (12) Remote System 2/LW12

Performance Evaluation

This report is applicable to the Envirolet composting toilet manufactured by Sancor (according to the various models indicated). Envirolet is an evaporation and aerobic composting toilet system. The maximum design rated capacity (tested by CSA according to Standard NSF41) is for full time use by six (6) persons per day (18 total uses). The device provides for continuous treatment of human waste by means of a composting process.

Specifications and design data are included in Appendix A.

Start-Up Evaluation

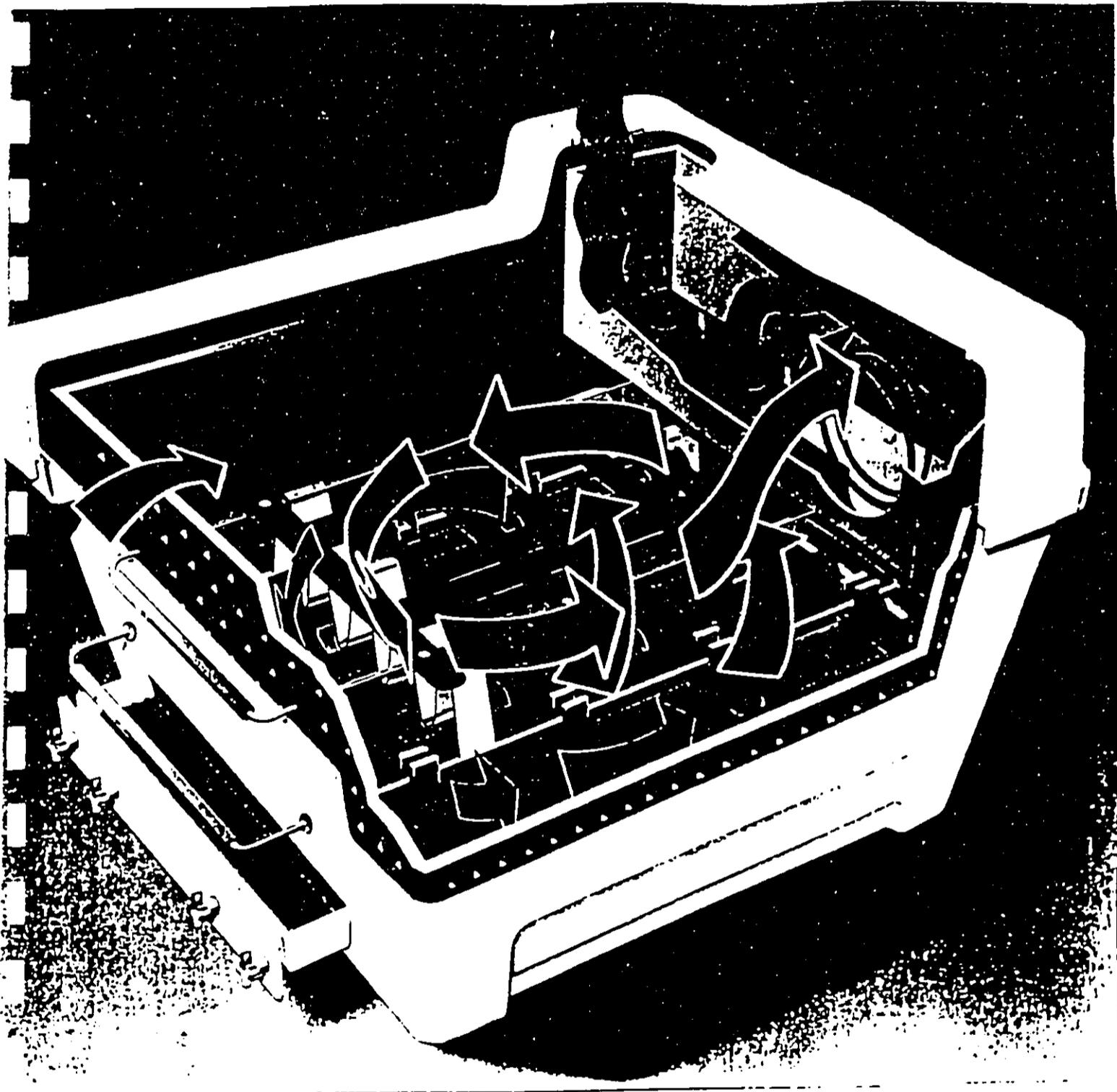
The Envirolet composting toilet system used for this test was installed in a CSR controlled test room. Installation of the Envirolet composting toilet system was made according to the manufacturer's instructions. CSR used The Standard Performance Evaluation Method (NSF) for composting (containment / biological) devices under NSF Standard 41: Wastewater Recycle/ Reuse and Water Conservation Devices was employed in the testing of the Envirolet. Points of sampling and associated evaluation parameters are shown in Figure 1 and Table 1 respectfully

Operation was commenced on October 25, 1993 and continued through April 25, 1994 when the evaluation period terminated. Each day during this period, raw human waste and urine was added to the Envirolet composting toilet system. The toilet system was loaded at the average rated capacity specified under the test protocol. Peat Moss and microbes were added to the toilet system according to the manufacturer's instructions.

During the preliminary 30 day period of operation extending from October 25 to November 24, 1993, loading of maximum design rated capacity (6 persons / 18 uses per day) of the Envirolet Multi System 10 was applied. From November 25 through December 21, 1993, the load applied was varied according to the pattern represented in Figure 2, which describes the vacation and overload stress testing protocol of the performance evaluation. Following the period of stress testing, routine operation at the design rated capacity was resumed and maintained for the duration of the performance test. Table 2 summarizes the loading experience and the performance of the device during the evaluation. Results presented in the following narrative are the results of the performance evaluation, with appropriate tabulation and graphical representation included in the text and Appendix B.

The test protocol for performance evaluation of the Envirolet composting toilet system for start-up operation does not require analytical testing of the performance. Rather the protocol stipulates weekly observation for liquid containment and odor at the bow and at ground level from the compost chamber. This is required during periods of normal operation and also during stress testing.

THE SCIENCE



DOCUMENT CAPTURED AS RECEIVED

Process Description

The Envirolet toilet system uses an aerobic, evaporation and composting process for the treatment of human or black waste products. The Envirolet composting process reduces and recycles waste. After opening a bowl trap, feces, urine and toilet paper are deposited directly into the waste chamber. A built-in Mulcherator mulches, aerates, mixes, and levels the compost.

Aerobic composting is a natural process that relies on evaporation, aeration and microbe activity (aerobic microbes are naturally present in black waste and organic material, or can be supplemented with the addition of specialized aerobic microbes designed to accelerate waste breakdown). Decomposition (composting) is carried out in a non-aqueous and aerobic conditions.

The process is further advanced by maintaining ambient temperatures above 13° C. (55° F.); a moisture content between 45 and 75 per cent, depending on the texture of the decomposing material; and providing sufficient quantities of air to maintain aerobic conditions and remove moisture and other gaseous products of the composting process. Decomposition is enhanced by the addition of a bulking agent, such as peat moss, to create a loose and easily aerated pile. This allows oxygen and additional nutritive to reach the organisms; carbon dioxide and water vapor to be removed; liquid wastes to be readily absorbed; and treated and excess liquid to drain to the bottom of the toilet system through a grid into a collecting tray to be evaporated.

A continuous supply of fresh air is provided to all sides (6) of the mass by means of two 20 watt fans located in a removable service compartment located at the top and rear of the toilet system. Fresh air enters the toilet system through the toilet bowl only ; the air, by way of an intake fan, circulates over the top, bottom and around a perforated aeration basket surrounding the waste chamber (6-sided automatic aeration) for maximum aeration and evaporation; the processed air is then exhausted, by way of an exhaust fan, through a vent to the outside. The positive air flow from the toilet bowl to the vent system assures that a negative pressure is maintained in the Envirolet toilet system. It is recommended for winter use that the toilet system should be installed in a heated space or other means of heating the intake air should be provided to maintain maximum capacity.

Liquid wastes entering the Envirolet toilet system are controlled by several means. (1) Liquid is absorbed by the compost pile, which helps maintain the proper moisture content of the mass; (2) Moisture is removed as water vapor from the compost pile; and (3) any excess liquid percolates through the compost pile and drains into the collecting tray where it is quickly evaporated by a high volume of forced air caused by a high speed 20 watt intake fan (the air is heated in this system by an automatic & thermostatically controlled 500 watt heater). The water vapor is exhausted by a 20 watt, high speed vent fan.

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Operating Instructions

Prior to start-up of the Envirolet toilet system, a Pre-Mix Starter Kit included with the toilet system and supplied by Sancor must be added to provide a proper medium for starting the composting process. The Pre-Mix Starter Kit consists of peat moss, rich organic soil, diatomaceous earth and microbes. The Mix is added to the toilet system through the toilet bowl and spread over a grid in the system. A power cord is plugged into a grounded electrical receptacle (110-120 volt service). A 2-position neon switch is moved to the "fans plus heater" position. The Envirolet toilet system is ready for use.

When in use about 1/4 cup of peat moss per person per day is added to the compost. Optionally once per month 1 TBS of Microbes were or can be added to the system to assist the composting process. Periodically, at least once a week, or more often if desired for even better results, a handle (top bar) is moved back and forth several times to activate the Mulcherator. The 4-in1 Mulcherator mulches, mixes, aerates and levels the compost. If the compost appears dry, a small amount of warm water can be added to the system and the system can be switched out of the normal "fans plus heater" position to a special "fans only" mode for one or two days.

It is time to rake down and empty the compost, when the compost (when compacted and fully distributed across the system) reaches just above the Mulcherator, located in the system. Depending on amount of use, emptying is required only about 1-4 times per year. To empty, use the Mulcherator (top bar) to break-up the compost, then move the bottom handle to activate the Rake Bar by moving it back and forth several times to rake down the compost through a grid into a collecting tray. A sealed bottom panel is removed by simply turning four fastener knobs. The collecting tray containing the compost is removed and depending on local regulations, disposed of in an acceptable site.

Evaluation Of Matured Device

Sections 7.1.1 of NSF Standard 41 requires that "The device operated for end product evaluation shall be tested when the manufacturer's operation and maintenance instructions require the user to first contact the solid end product". At the end of the six month performance evaluation, one compost collecting tray of decomposed material was removed for end product characteristics. Therefore testing of a matured device for end products characteristics of routine operation was conducted on the same device as the performance evaluation of a new device observed for start-up characteristics.

Solid end product was collected from the Envirolet toilet system on April 25, 1994 which represented six months of actual use. The samples were evaluated for fecal coliform, moisture content, and seven day storage characteristics. The samples were obtained from five different locations in the compost collecting tray. Sample collection and analysis was conducted in accordance with the Standards Methods for the Examination of Water and Waste water and the Microbiological Methods for Monitoring the Environment, Water and Wastes and Standards Performance Evaluation Method. The requirements and actual results of the analysis for solid product are presented in Table 3.

The results herein reported and presented in Tables 2 and 3 are consistent with the performance criteria contained in NSF Standard No. 41 for compost (biological / containment) devices. During the evaluation period, the Envirolet composting toilet system, being evaluated for start-up characteristics did not require any maintenance or other service intervention incidental to normal operation.

* See Appendix C for methods used.

TABLE 3.0

Canadian Standards Association
MICROBIOLOGICAL ANALYSIS RESULTS

Report Date: June 27, 1994

Samples Analyzed: 5

Envirolet™ Compost Test Results

<u>NSF-41 Compost Test Requirements</u>	<u>Envirolet Compost Fecal Coli</u>	<u>Envirolet Compost % Moisture Content</u>
< 200 Parts Per Gram Fecal Coli:	< 15	
Moisture Content < 75% By Weight:		42.4 %

Average data of samples of solid compost material taken from Compost Tray of Envirolet Multi System 10 at end of CSA NSF-41 Test.

Report Date: June 27, 1994

Samples Analyzed: 5

Envirolet™ Compost Test Results

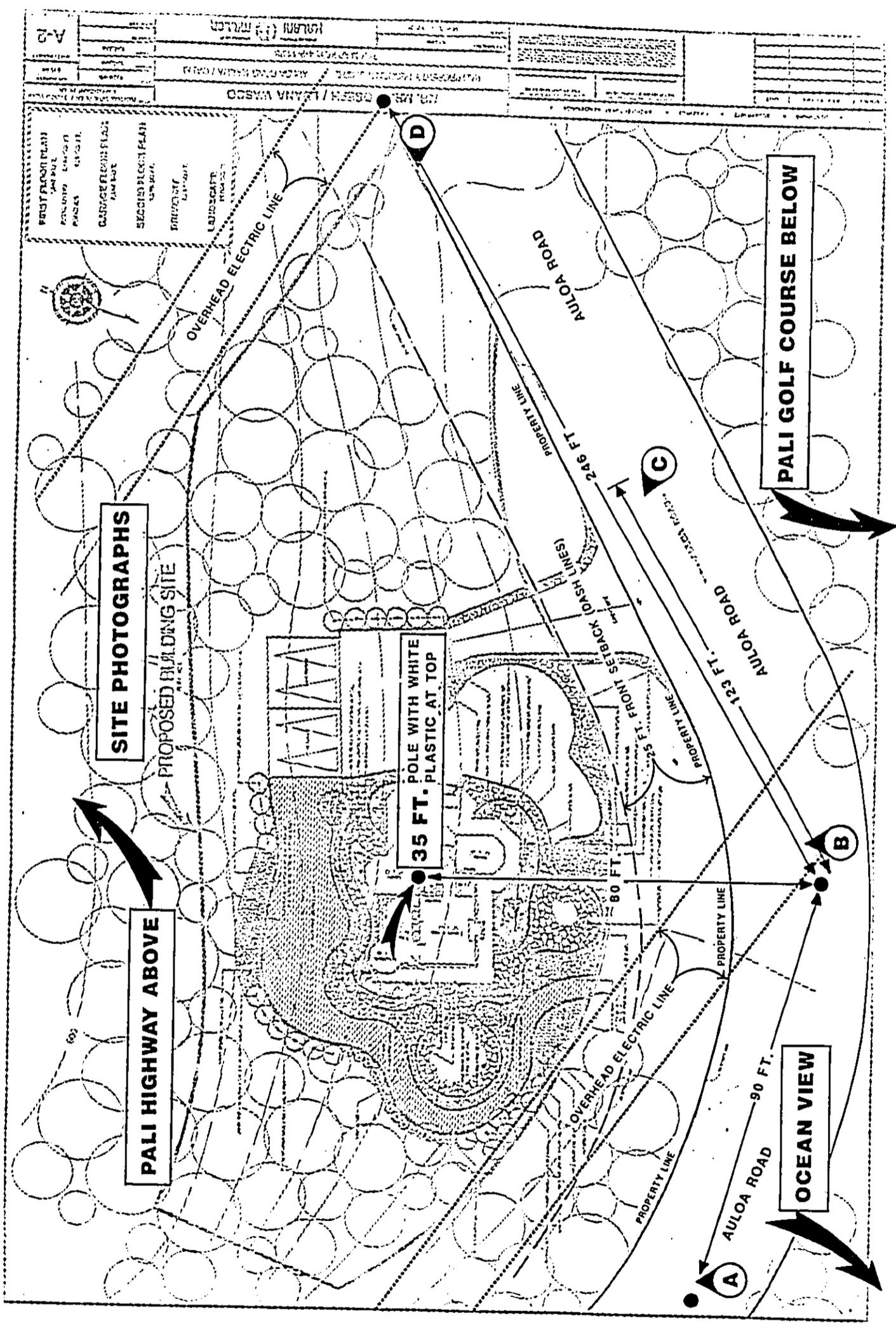
<u>NSF-41 Compost Test Requirements</u>	<u>Envirolet Compost Fecal Coli</u>	<u>Envirolet Compost % Moisture Content</u>
< 200 Parts Per Gram Fecal Coli:	< 15	
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Average data of samples of solid compost material taken from Compost Tray of Envirolet Multi System 10 at end of CSA NSF-41 Test.

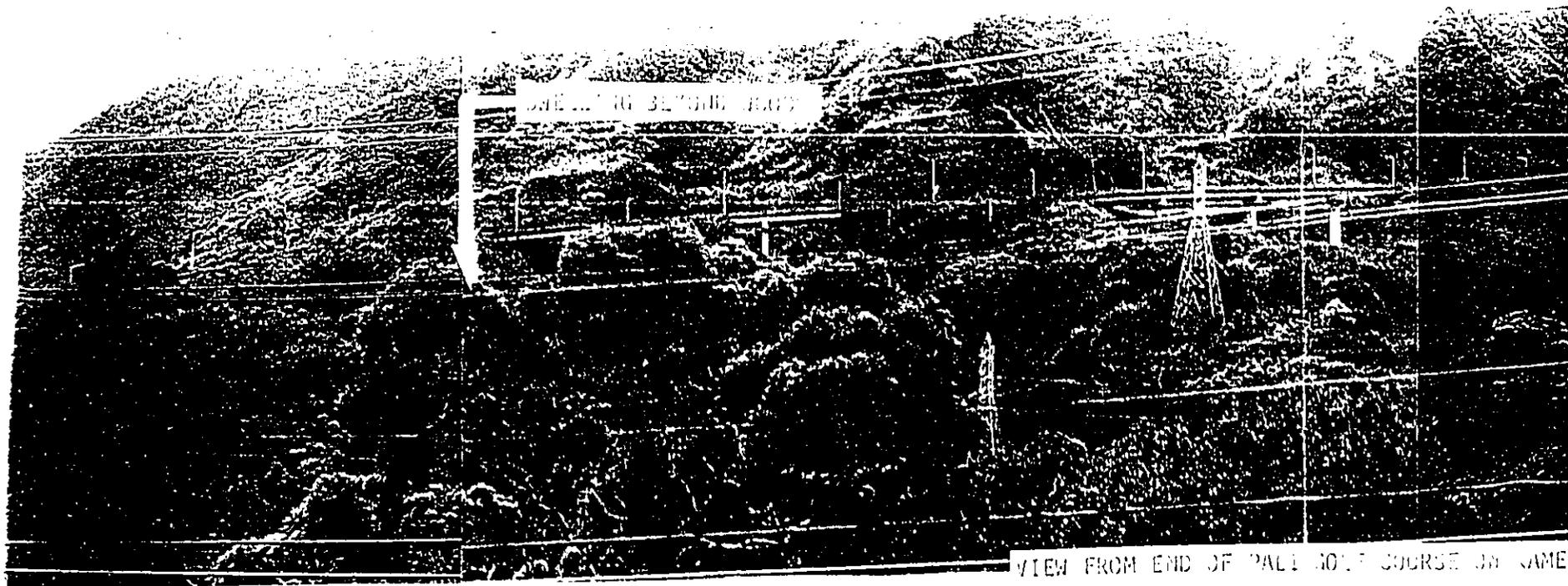
APPENDIX E

VISUAL ANALYSIS OF PROPOSED PROJECT

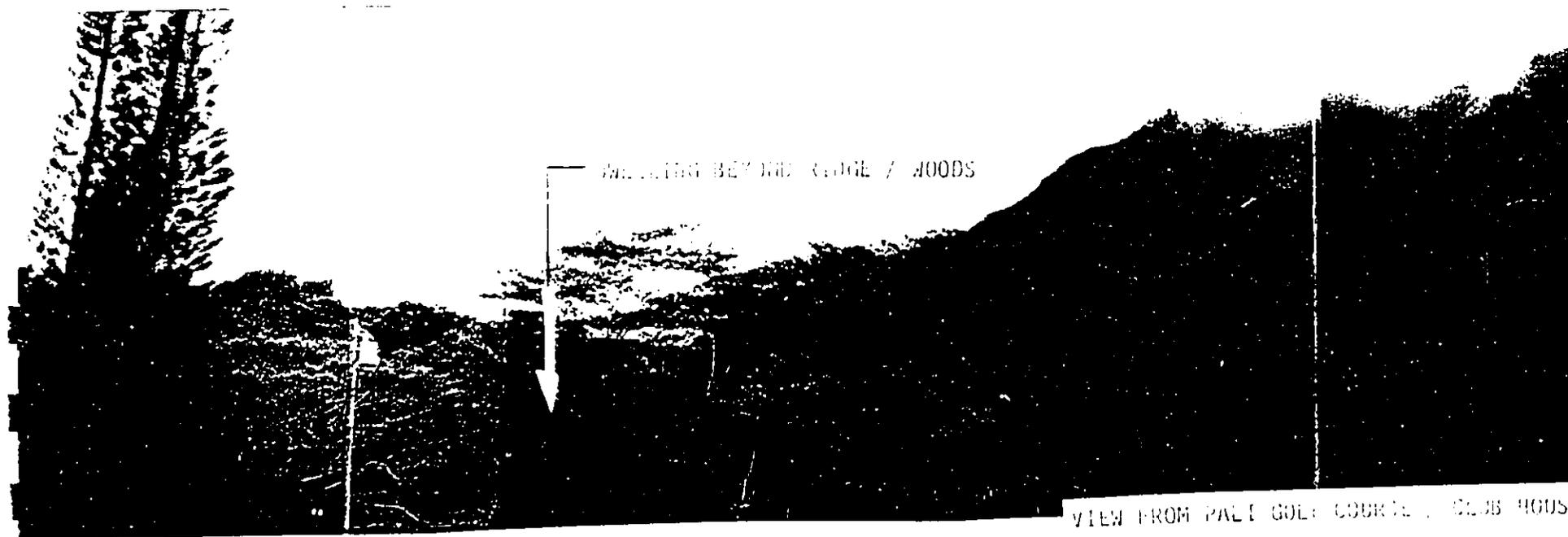
DOCUMENT CAPTURED AS RECEIVED



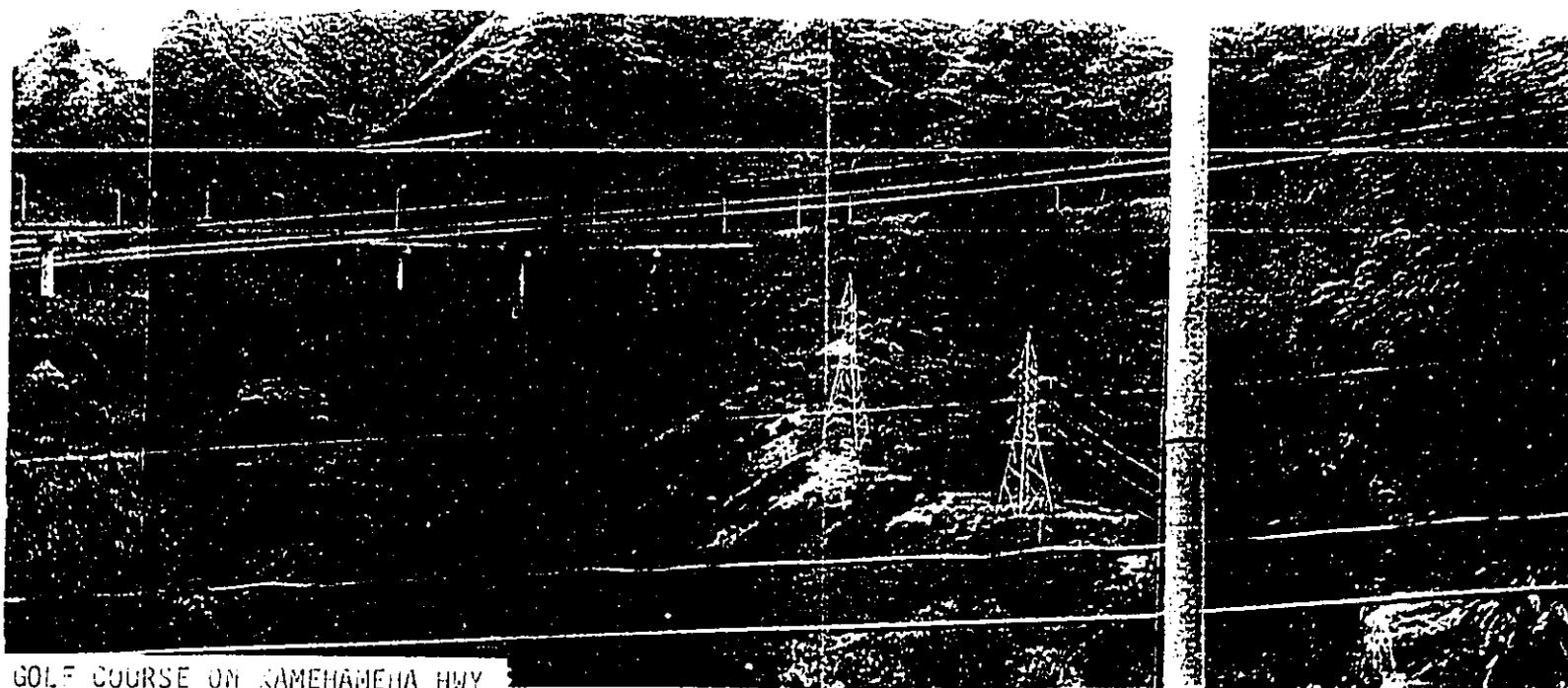
SITE PHOTOGRAPHS



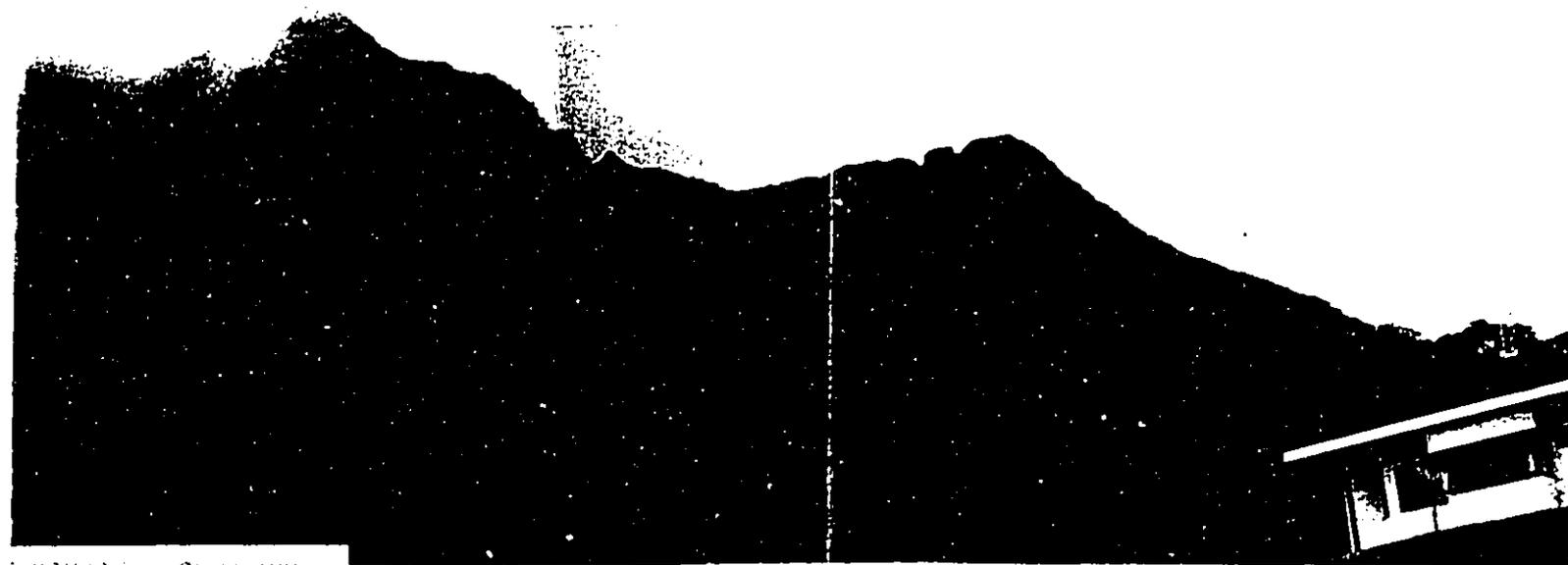
VIEW FROM END OF PALI GOLF COURSE ON SAME



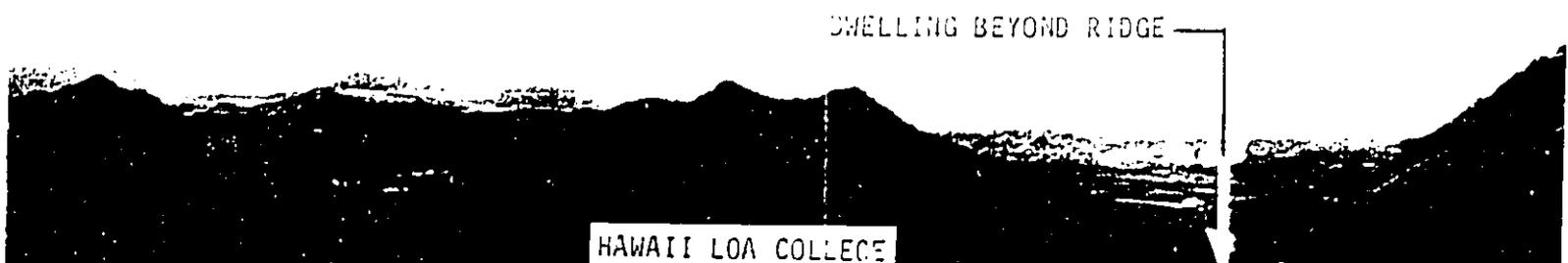
VIEW FROM PALI GOLF COURSE, CLUB HOUSE



GOLF COURSE ON KAMEHAMEHA HWY.



COURSE / CLUB HOUSE



Dwelling Beyond Ridge

HAWAII LOA COLLEGE

SEE PROPOSED SINGLE FAMILY DWELLING



END OF BUILDING SITE LOOKING TOWARDS PALI HIGHWAY



DWELLING

PIN "C" LOOKING TOWARD



80 FT. FROM PIN "B"

ROAD LOOKING TOWARDS SINGLE FAMILY DWELLING



DWELLING MARKER BEYOND RIDGE



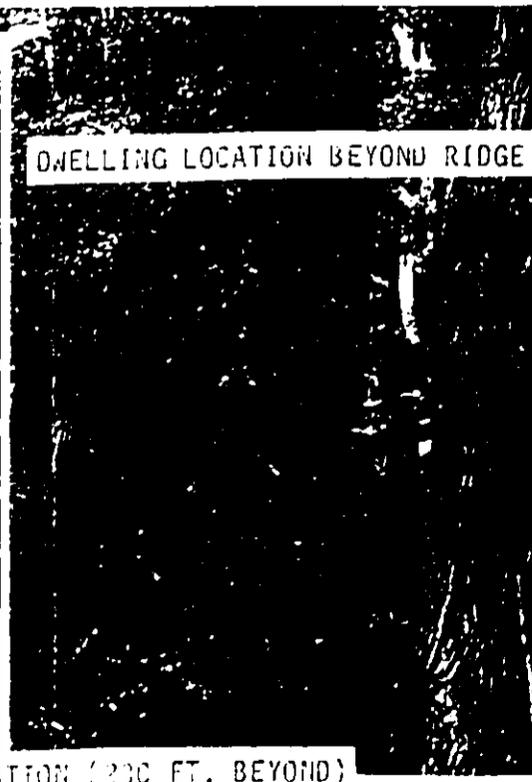
FORWARD DWELLING BEYOND RIDGE



RIGHT ON AULOA ROAD. 50 FT. TO 65 FT. HIGH WOODS.

○ PIN "D"

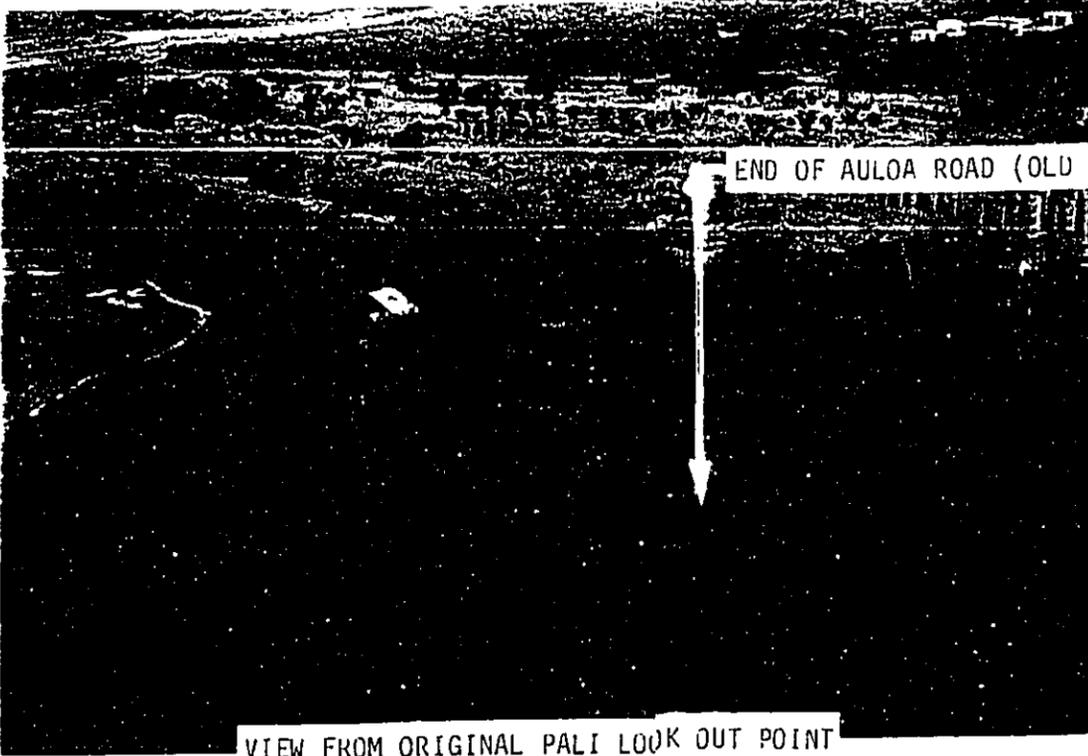
FROM PIN "B" TO PIN "D" 246 FT. LOOKING UP



DWELLING LOCATION BEYOND RIDGE / WOODS

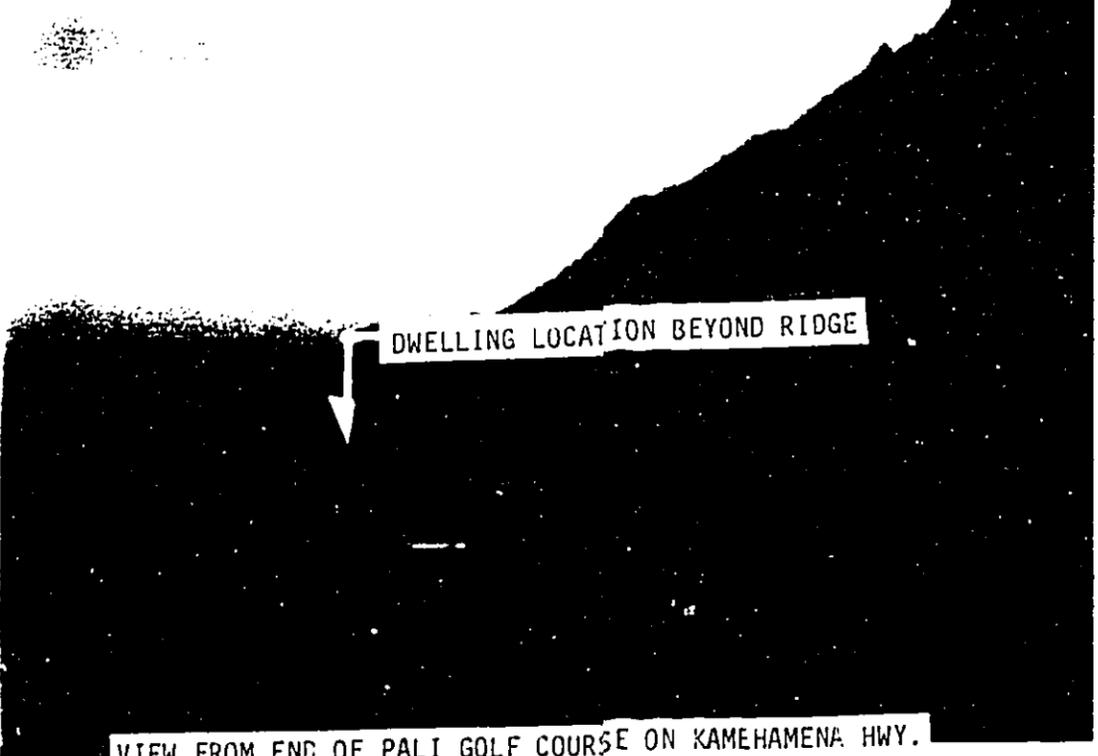
PIN "D" VIEW TO DWELLING LOCATION (200 FT. BEYOND)

NOTE: FROM ALL VIEWS, NOT ABLE TO SEE PROPOSED SINGLE FAMILY DWELLING



END OF AULOA ROAD (OLD PALI ROAD)

VIEW FROM ORIGINAL PALI LOOK OUT POINT

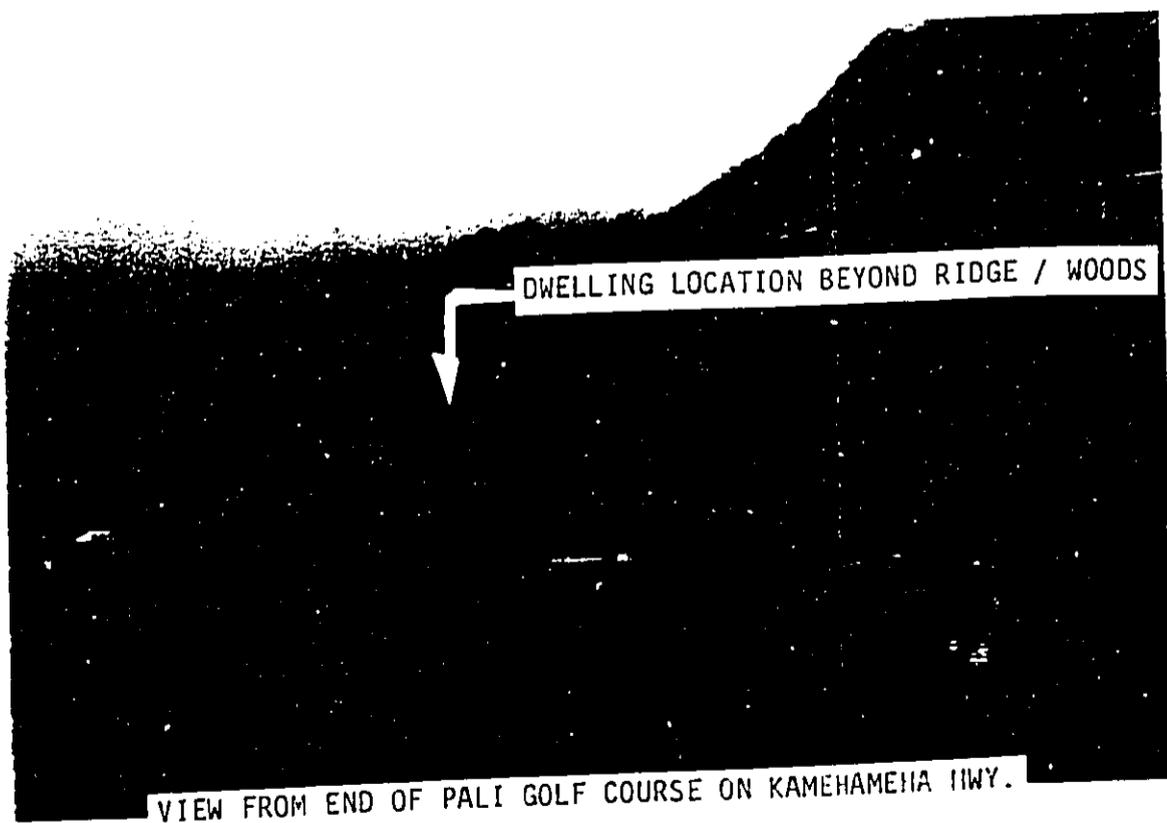
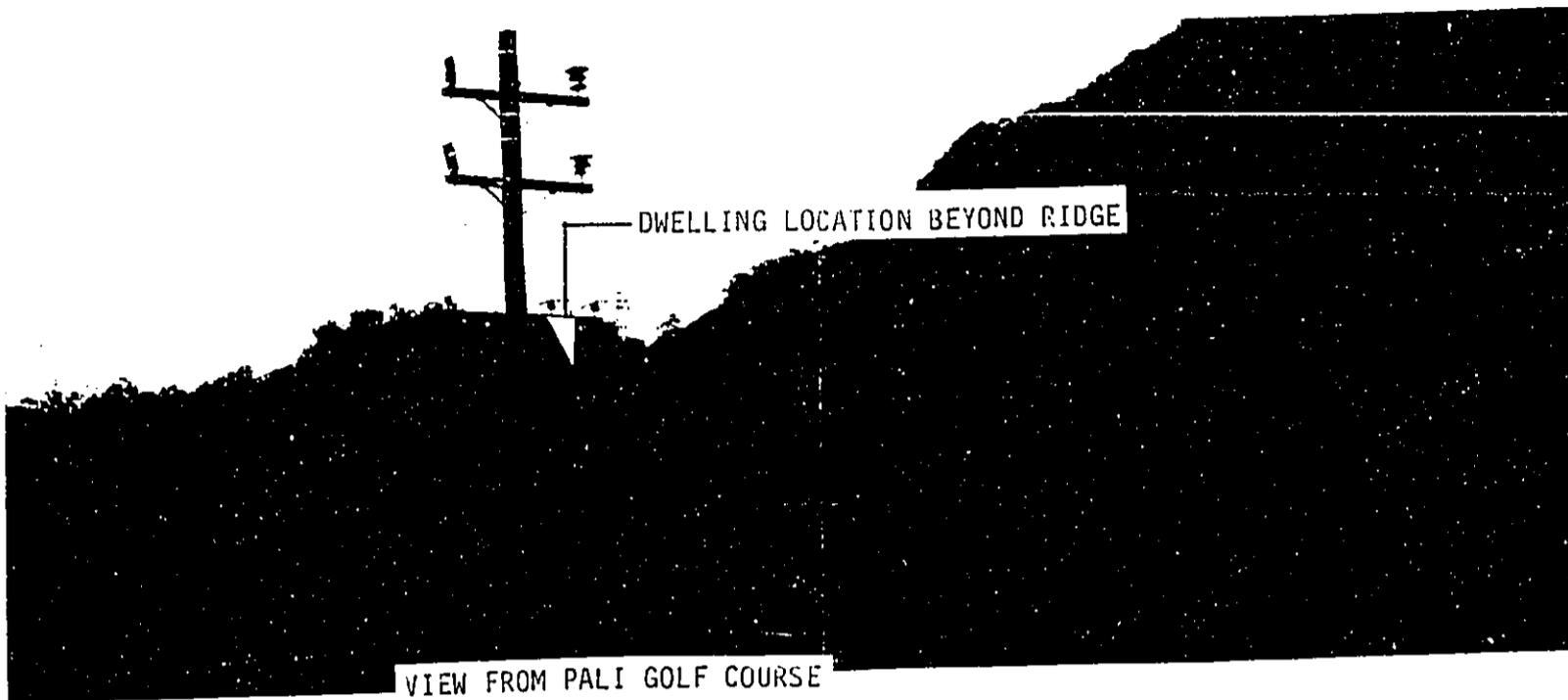


DWELLING LOCATION BEYOND RIDGE

VIEW FROM END OF PALI GOLF COURSE ON KAMEHAMENA HWY.



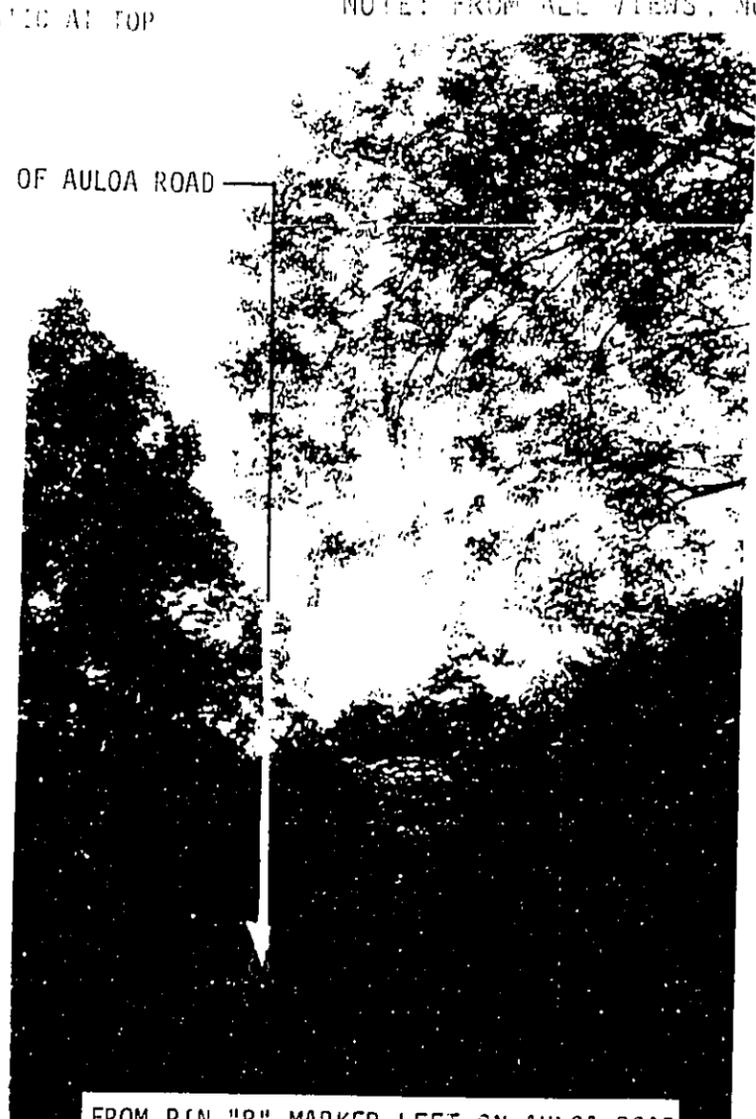
VIEW FROM END OF



35 FT. HIGH POLE WITH WHITE PLASTIC AT TOP

NOTE: FROM ALL VIEWS, NOT ABLE TO SEE

PIN "A" MARKER CENTER OF AULOA ROAD



FROM PIN "B" MARKER LEFT ON AULOA ROAD
90 FT. TOWARDS AULOA ENTRY TO PIN "A"

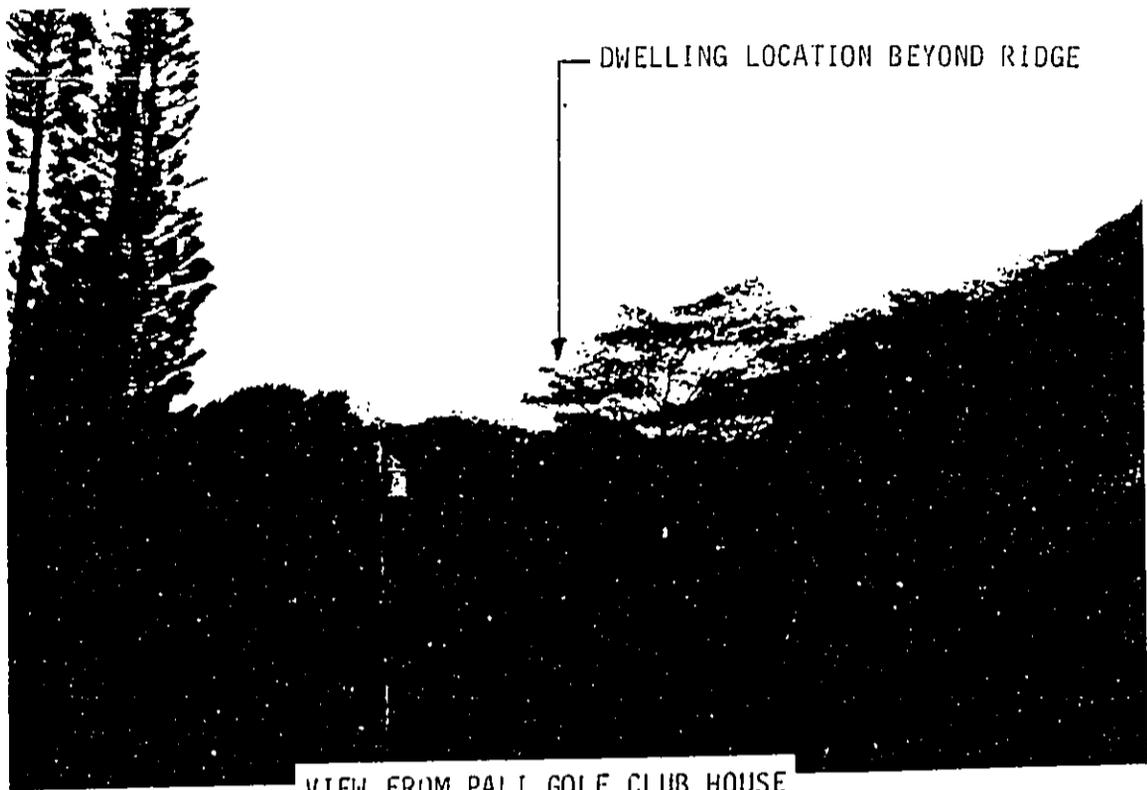


EXISTING CHAIN LINK FENCE / GATE
ON AULOA ROAD. WASCOS PROPERTY
100 FT. BEYOND GATE.

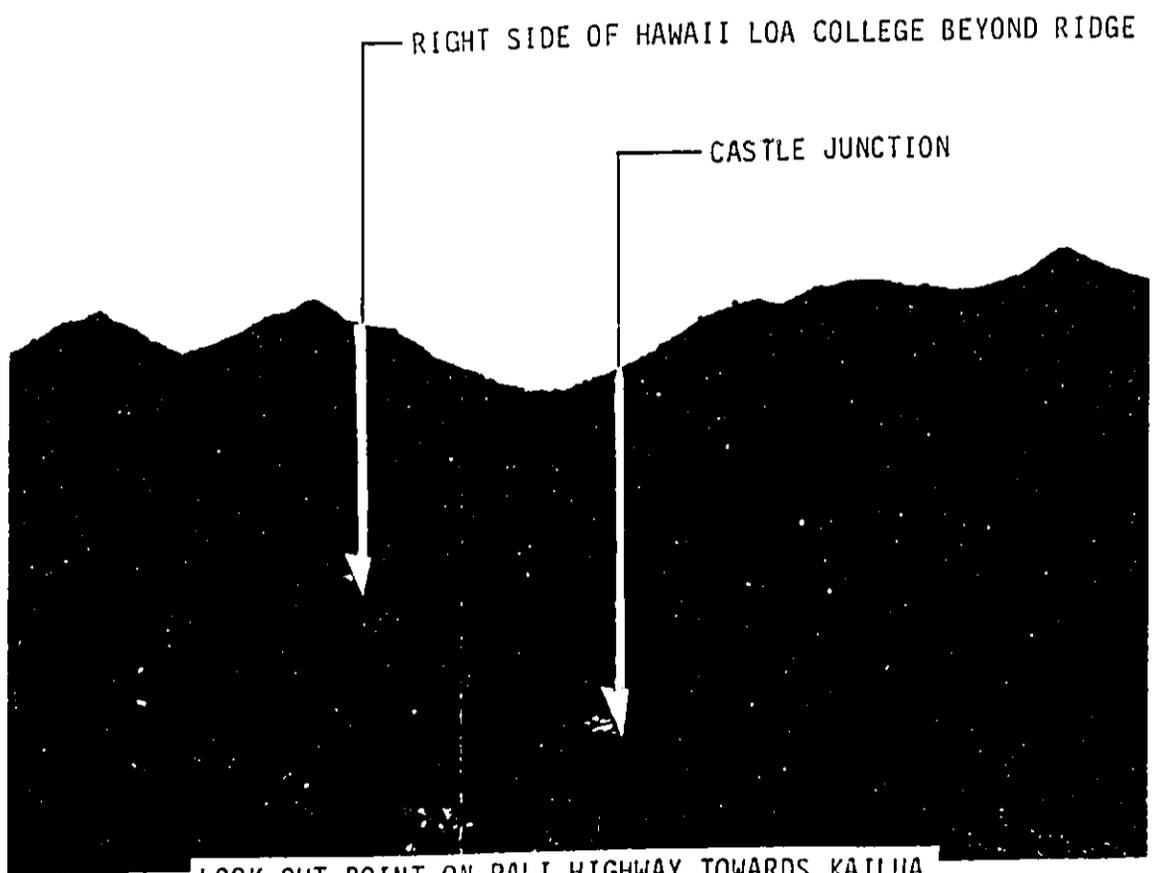
L VIEWS, NOT ABLE TO SEE PROPOSED SINGLE FAMILY DWELLING



LOA ROAD
PIN "A"



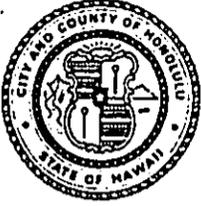
VIEW FROM PALI GOLF CLUB HOUSE



LOOK OUT POINT ON PALI HIGHWAY TOWARDS KAILUA

APPENDIX F

**DRAFT ENVIRONMENTAL ASSESSMENT
COMMENT LETTERS AND RESPONSES**



CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813-3065 / TELEPHONE 547-7000

STEVE HOLMES
Councilmember

Phone: (808) 547-7002
Fax: (808) 527-5737
E-mail: holmes@co.honolulu.hi.us

January 3, 1997

Mr. Gary Gill
Director
Office of Environmental Quality Control
235 S. Beretania, Suite 702
Honolulu, Hawai'i 96813

Dear Mr. ^{Mary}Gill:

Subject: Draft Environmental Assessment, Pali Property Residential Site

I have reviewed the Draft Environmental Assessment for a residence to be built at TMK 4-2-11:18, in an area commonly referred to as the "Pali Hairpin Turn." My key concern is for trail access from Auloa Road for hikers and bicyclists. The DEA does not address maintenance of trail access and parking for users of the trail.

Sincerely,

A handwritten signature in cursive script that reads "Steve Holmes".

STEVE HOLMES
Councilmember

SH:ac

xc: Department of Land and Natural Resources
Kailua Neighborhood Board
KM Associates, Inc.
Joseph Wasco, III
Kane'ohe Neighborhood Board

January 13, 1997

Councilmember Steve Holmes
City Council
City and County of Honolulu
Honolulu, Hawaii 96813-3065

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

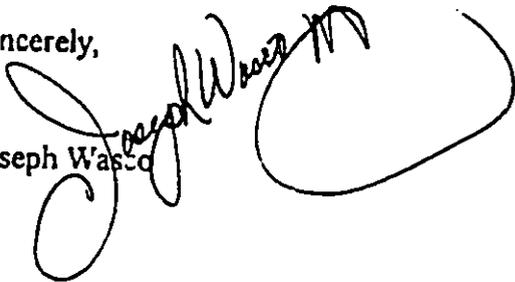
Dear Councilmember Holmes:

Thank you for your letter of January 3, 1997 regarding the subject project. In response to your question regarding the trail access from Auloa Road, the proposed project will have no effect on the existing public trail access or parking for users of the trail. This information will be included in the Final Environmental Assessment.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,

Joseph Wasco



BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



RECEIVED
DIVISION OF
LAND MANAGEMENT

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII 2 8 41 AM '97
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

In reply, please refer to:

December 26, 1996

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

96 DEC 30 P 1:35

RECEIVED

TO: The Honorable Michael Wilson, Chairperson
Department of Land and Natural Resources

FROM: Lawrence Miike
Director of Health *Lawrence Miike*

Subject: Conservation District Use Application
Applicant: Joseph Wasco, III, File No. OA-2841
Project: Construction of a Single Family Residence
TMK: (1) 4-2-11: 28 8.654 acre

Thank you for allowing us to review and comment on the subject Conservation District Use Application. We have the following comments to offer. The document proposes to construct a single family residence with a building lot size of 0.87 acres on an 8.654 acre parcel. The subject project is located within the No Pass Zone, below the Underground Injection Control (UIC) Line and within the critical wastewater disposal area as determined by the Oahu Wastewater Advisory Committee. No new cesspools will be allowed in the subject area. Any subdivision proposal will not be concurred with due to the location of the subject property, which is within the No Pass Zone.

As the subject project is not connected to the County sewer service system, the Department of Health recommends that a treatment individual wastewater system be constructed on-site serving no more than five (5) bedrooms or bedroom like rooms.

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules.

Should you have any questions, please contact Ms. Lori Kajiwara of the Wastewater Branch at telephone 586-4294.

c: Wastewater Branch

January 13, 1997

Dr. Lawrence Miike, Director
State of Hawaii
Department of Health
P.P. Box 3378
Honolulu, Hawaii 96801

Subject: Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

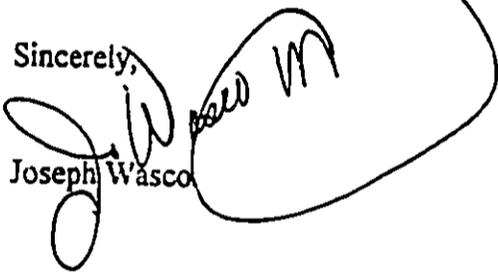
Dear Dr. Miike:

Thank you for your memorandum of December 26, 1996 to Mr. Michael Wilson regarding the subject project. The following is provided in response to your comments.

As described in the Draft Environmental Assessment, the subject project will utilize Envirolet low water toilets that have been approved for use in single family residences by the City and County of Honolulu and other wastewaters will be collected and disposed of per applicable State and City and County building code requirements. At this time, preliminary engineering studies have indicated that a septic tank system (individual wastewater system [IWS]) would be capable of handling the wastewaters generated by the single family residence. The IWS design and location would be approved by the State Department of Health prior to installation.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,


Joseph Wasco

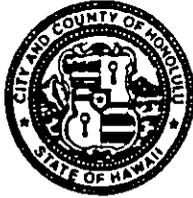
DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743

RECEIVED
DIVISION OF
LAND MANAGEMENT

JAN 3 1 47 PM '97

JEREMY HARRIS
MAYOR



PATRICK T. ONISHI
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

96-08115 (ST)

December 30, 1996

The Honorable Michael D. Wilson, Director
Department of Land and
Natural Resources
State of Hawaii
Kalanimoku Building
1151 Punchbowl Street, Room 130
Honolulu, Hawaii 96813

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

RECEIVED
JAN 2 3:41

Dear Mr. Wilson:

Conservation District Use Application (CDUA)
Pali Single-Family Residence (Applicant: Joseph Wasco)
Kailua (Pali), Oahu
Tax Map Key: 4-2-11: 28

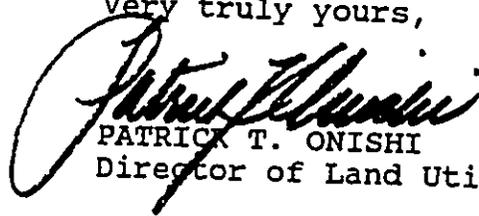
We have reviewed the CDUA and Draft Environmental Assessment (DEA) for the proposed development of a single-family residence and have the following comments:

1. The project site is not located within the Special Management Area (SMA).
2. We have concerns regarding drainage issues in the development of a residence in this area. High rainfall (70-100 in./yr.) and the steep sloping topography surrounding the project site may result in flooding or contribute to accelerated sheetflow which impacts the neighboring property. The project area is designated on the Flood Insurance Rate Map (FIRM) as Zone D: Areas in which flood hazards are undetermined. As such, we suggest that construction and grading plans be carefully reviewed prior to the approval of this CDUA.
3. We are also concerned over the limited access to the project site relative to the provision of emergency medical, fire, and police protection. The DEA indicates that access to the dwelling site has been closed by the State Department of Transportation. The provision of these services, or the possible lack thereof, should be addressed prior to the approval of this CDUA.

The Honorable Michael D. Wilson, Director
Page 2
December 30, 1996

We have no further comments to offer at this time. If you have any questions, please contact Steve Tagawa of our staff at 523-4817.

Very truly yours,



PATRICK T. ONISHI
Director of Land Utilization

PTO:am

cc: Department of Public Works

9608115.sht

January 13, 1997

Mr. Patrick Onishi, Director
City and County of Honolulu
Department of Land Utilization
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

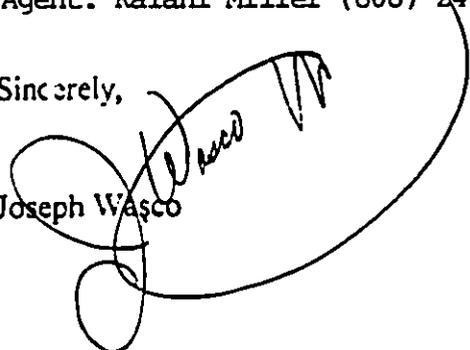
Dear Mr. Onishi;

Thank you for your letter of December 9, 1996 to Mr. Michael D. Wilson regarding the subject project. The following is provided in response to your comments.

1. The proposed project is not located within the SMA.
2. As indicated in the Draft Environmental Assessment, to prevent sheet flooding of the home site, earthen or concrete drainage swales, as required, would be constructed around the building site and on the upper boundary of the building site. Surface water from these drainage structures would be directed into natural drainage ways such that adjoining properties are not adversely affected by surface water runoff. Further, during construction, all applicable State and City and County of Honolulu building codes and standards, including those relating to erosion and sediment control, will be followed.
3. Preliminary discussions with the State Department of Transportation, Highways Division indicate access to the subject property will be allowed and unobstructed. Emergency medical, fire and police protection will be easily afforded the project site.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,


Joseph Wasco

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
P O BOX 871
HONOLULU, HAWAII 96809

January 6, 1997

CHAIRPERSON
MICHAEL D. WILSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY DIRECTOR
GILBERT S. COLOMA-AGARAN

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

MEMORANDUM

TO: Dean Uchida, Land Division

FROM: Ralston H. Nagata
State Parks Administrator

SUBJECT: CDUA Review - Mr. and Mrs. Cunanan and Mr. J. Wasco,
III, for Single Family Residences
TMK 4-2-11: 19 and 28 Kailua, Oahu
File Number OA-2842

There are no known State Parks concerns since neither proposed house can be seen from the Nuuanu Pali Lookout. The proposed house on TMK 4-2-11: 28 is not likely to be seen from the Old Pali Road. Since the other house on TMK 4-2-11: 19 is located on a ridge it could be seen, but only if the large trees located here are removed. Driveway access to this house should be addressed.

RECEIVED
DIVISION OF
LAND MANAGEMENT
JAN 10 3 24 PM '97

January 20, 1997

Mr. Ralston H. Nagata
State Parks Administrator
State of Hawaii
Department of Land and Natural Resources
Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

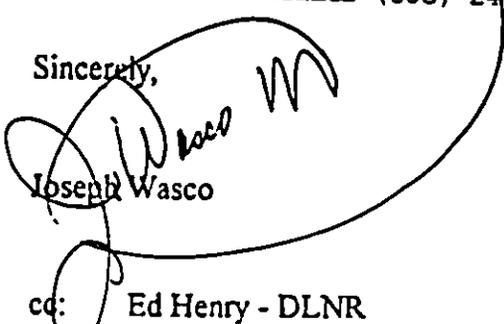
Dear Mr. Nagata:

Thank you for your Memorandum of January 6, 1997 to Mr. Dean Uchida regarding the subject project. The following is provided in response to your comments.

1. The proposed single family residence will not be visible from either the Pali Lookout or the Pali Highway due to the dense vegetation that will be retained as is.
2. The proposed single family residence will be minimally visible from the "Old Pali Road", now known as Auloa Road. Landscape screening will prevent direct views into the home site.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,


Joseph Wasco

cc: Ed Henry - DLNR



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

BENJAMIN J. CAYETANO
GOVERNOR
SEIJI F. NAYA
DIRECTOR
RICK EGGED
DIRECTOR, OFFICE OF PLANNING

Telephone: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-6414

36 DEC 12 P 1: 57
DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII
December 9, 1996

MEMORANDUM

TO: Michael D. Wilson, Chairperson
Department of Land and Natural Resources

FROM: Rick Egged *[Signature]*
Director, Office of Planning

SUBJECT: Conservation District Use Application - Wasco Residence and Related Improvements

RECEIVED
DIVISION OF
ZONE MANAGEMENT
DEC 13 10 23 AM '96

Thank you for the opportunity to review the Conservation District Use Application for the above subject.

We note that the slope of the building site is approximately 2-5% slope land and that the remaining property is generally greater than 70% slope with soil types characterized by an erosion hazard of moderate to severe. Therefore, we suggest that best management practices be required to minimize runoff during construction.

If there are any questions, please call Rebecca Alakai of our Coastal Zone Management Program at 587-2802.

January 13, 1997

Mr. Rick Egged, Director
Office of Planning
Department of Business, Economic Development and Tourism
P.O. Box 2359
Honolulu, Hawaii 96804

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

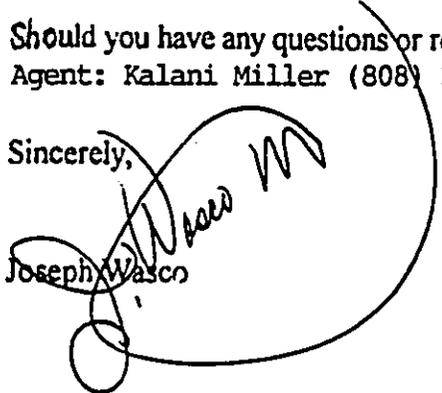
Dear Mr. Egged.

Thank you for your memorandum of December 9, 1996 to Mr. Michael D. Wilson regarding the *subject* project. The following is provided in response to your comments.

As indicated in the Draft Environmental Assessment, to prevent sheet flooding of ~~the~~ home site, earthen or concrete drainage swales, as required, would be constructed around the building site and on the upper boundary of the building site. Surface water from these drainage structures would be directed into natural drainage ways such that adjoining properties are not adversely affected by surface water runoff. Further, during construction, all applicable State and City and County of Honolulu building codes and standards, including those relating to erosion and sediment control, will be followed.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,


Joseph Wasco

BENJAMIN J. CAYETANO
GOVERNOR



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LAND MANAGEMENT
DEC 9 3 58 PM '96

GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
ROOM 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

December 4, 1996

Michael Wilson, Director
Department of Land and Natural Resources
PO Box 621
Honolulu, Hawaii 96809

Attention: Ed Henry

Dear Mr. Wilson:

Subject: Draft Environmental Assessment (EA) for Pali Property Single Family
Residence (Joseph Wasco), Koolaupoko, Oahu; TMK 4-2-11: 28

We have the following comments to offer:

1. Notify the nearest neighbors or neighboring landowners of the proposed project and document your contacts in the final EA.
2. In your archeological mitigation plan include notification of the State Historic Preservation Division of the Department of Land and Natural Resources in the event archeological remains are uncovered and indicate this in the final EA.
3. In the final EA include a description, site plan and/or drawings of the proposed structure that include detailed dimensions.
4. How is the property accessed from Pali Highway?

Michael Wilson
December 4, 1996
Page 2

5. Will the house be visible from Pali Highway, the Pali Lookout or any other public vantage point? If so, how will visual impacts be mitigated?
6. What are anticipated start and end dates of the project?

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

Sincerely,


GARY GILL
Director

c: Joseph Wasco, III
Kalani Miller

January 13, 1997

Mr. Gary Gill, Director
Office of Environmental Quality Control
State of Hawaii 235 South Beretania Street, Room 702
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Mr. Gill:

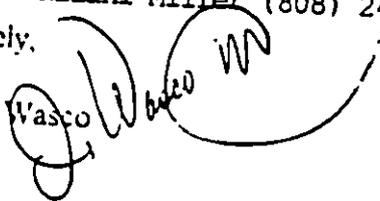
Thank you for your letter of December 4, 1996 to Mr. Michael D. Wilson regarding the subject project. The following is provided in response to your comments.

1. Adjoining property owners and neighbors have been advised of the subject project and the Final EA will include dates and method of notification.
2. As indicated in the Draft Environmental Assessment, should culturally significant sites, as determined by applicable federal or state guidelines, be found within the building site during construction, appropriate preservation and recordation measures would be taken in compliance with applicable federal, state and county rules and regulations. Additionally, at the request of the State Historic Preservation Office, an archaeological inventory survey will be conducted prior to construction and the results of that survey provided to the State Historic Preservation office for their information and approval.
3. Per your request, the Final EA will include drawings that provide more detailed information, including dimensions.
4. The subject property, as indicated in the Draft EA, is accessed from Auloa Road. There is no access from Pali Highway at present, nor is any planned due to the steep slopes of the property along the Pali Highway boundary.
5. The proposed residence will not be visible from either the Pali Highway, Pali Lookout or other public vantage points due to the terrain of the project site and the dense vegetation that will be left in place.
6. Construction of the proposed single family residence will begin within approximately 4 to 6 months following issuance of the requested CDUP. Construction is expected to require approximately 6 months.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,

Joseph Wasco



January 24, 1997

Mr. Henry Wong
44-443 Kaneohe Bay Drive
Kaneohe, Hi., 96744

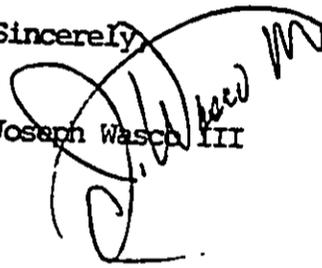
Subject: Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Mr. Wong:

This letter is to notify you, as the nearest neighbor, and owner of the only single family house now in existence on Auloa Road, of our intention to construct a single family house on TMK 4-2-11:28. We are purchasing this 8.654 acre parcel from the Teixeira Family Trust with the condition that we take ownership of the parcel only upon acceptance of a CUA permit allowing us to construct this house on this particular piece of property.

Should you have any questions or require additional information regarding the subject project, please call. Agent: Kalani Miller (808) 247-5858

Sincerely,


Joseph Wasco III

January 24, 1997

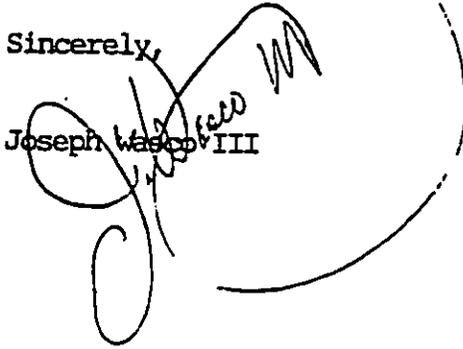
Ms. Pascual, Director of Teixeira Family Trust
2153 North King Street
Honolulu, Hawaii, 96819

Subject: Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Ms. Pascual;

Mr. Gary Gill, Director of Environmental Quality Control, has requested that I inform the adjacent property owners of our intention to construct a single family house on TMK 4-2-11:28, an 8.654 acre parcel of land. As the Teixeira Family Trust is the legal owners of the adjacent property, as well as this parcel, and are selling it to myself and my wife upon acceptance of a CDUA permit, then you are already aware of this taking place. I am just following instructions.

Sincerely,


Joseph Wasco III

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 8TH FLOOR
HONOLULU, HAWAII 96813

December 18, 1996

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT
PROGRAM

AQUATIC RESOURCES
CONSERVATION AND

RESOURCES ENFORCEMENT
CONVEYANCES

FORESTRY AND WILDLIFE
HISTORIC PRESERVATION

DIVISION

LAND DIVISION

STATE PARKS

WATER AND LAND DEVELOPMENT

MEMORANDUM

LOG NO: 18651 ✓
DOC NO: 9612EJ08

TO: Dean Uchida, Administrator
Land Division

FROM: Don Hibbard, Administrator
Historic Preservation Division

SUBJECT: Chapter 6E-42 Historic Preservation Review -- Conservation District Use
Application for Single Family Residence: Joseph Wasco, III (File No. OA-
2841)
Kaeleuli, Ko'olaupoko, O'ahu
TMK: 4-2-11:28

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A review of our records shows that there are no known historic sites at the project location. However, the EA for this project states that a historic site, 50-80-14-1174, known as the Pali Complex, is located in the upper limits of the property. No archaeological inventory survey has been conducted for the proposed project area. The EA also states that the applicant has proposed recording of archaeologically significant sites that might be found within the building site.

Therefore we recommend that an archaeological inventory survey of the proposed project area be performed to determine if any historic sites are present, and, if so, to gather sufficient information to evaluate their significance. A report of the finds should be submitted to the State Historic Preservation Division for review. If significant historic sites are found during the survey, a mitigation plan may need to be developed and executed.

EJ:jk

January 13, 1997

Mr. Don Hibbard, Administrator
State of Hawaii
Department of Land and Natural Resources
Historic Preservation Division
33 South King Street, 6th Floor
Honolulu, Hawaii, 96813

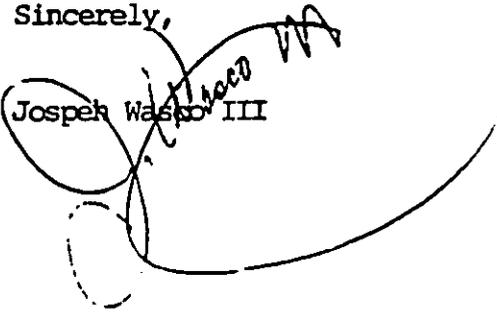
Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Mr. Hibbard:

Thank you for your memorandum of December 18, 1996 to Mr. Dean Uchida, Administrator, Land Division, regarding the subject project. The following is provided in response to your comments:

We, Joseph Wasco III and wife, are not the legal landowners of this parcel of land at present. We are purchasing this property with conditions that we shall only take ownership upon acceptance of permit from the DLNR to build a single family house on the designated building site. We are in full agreement with your request of an archaeological inventory study, and the results of that study provided to you for review. As this survey is quite expensive, and we do not own the land as yet, we only ask that we be permitted to conduct this task immediately upon permit acceptance, and prior to any construction activity. Should historic sites be found, an appropriate mitigation plan shall be developed and executed prior to construction of the residence. Should you have questions call (Agent: Kalani Miller (808) 247-5858)

Sincerely,


Joseph Wasco III

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 8TH FLOOR • HONOLULU, HAWAII 96813-3017
PHONE: (808) 523-4711 • FAX: (808) 523-4950



JEREMY HARRIS
MAYOR

CHERYL D. SOON
CHIEF PLANNING OFFICER

CAROLL TAKAHASHI
DEPUTY CHIEF PLANNING OFFICER

MH 11/96-2254

December 4, 1996

Honorable Michael D. Wilson, Chairperson
Board of Land and Natural Resources
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr Wilson:

Conservation District Use Application (CDUA)
No. OA-2841/Draft Environmental Assessment (DEA)
for the Proposed Wasco Residence & Related Improvements,
Koolaupoko, Oahu, Hawaii, TMK: 4-2-11: 28

In response to your department's request that was received on November 15, 1996, we have reviewed the subject CDUA/DEA and have the following comments to offer:

1. The third sentence of the last paragraph on Page 4 of the DEA should clarify that the proposed project site is designated for Preservation use on the Koolaupoko Development Plan Land Use Map and zoned P-1 Restricted Preservation District on Zoning Map No. 22 (Heeia-Kaneohe-Maunawili). This information should be included in the Final Environmental Assessment (FEA).
2. In addition to the site photographs presented in the application for the subject CDUA, the FEA should further address mauka and makai views in relationship to the proposed project from public places.

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

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LAND MANAGEMENT

Honorable Michael D. Wilson, Chairperson
Board of Land and Natural Resources
Department of Land and Natural Resources
December 4, 1996
Page 2

A visual impact assessment of mauka and makai views from public places would determine if the proposal is consistent with Section 24-6.2.(a)(2) Public Views of the Development Plan Special Provisions for Koolaupoko, which states the following:

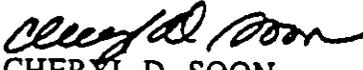
"In order to promote pleasing and attractive living environments and panoramic mauka and makai views from public places, views of major landmarks from public places shall be protected whenever possible.

The site and intended height (35 feet) of the proposed 2-story single-family residence indicated in the application should be disclosed in the FEA

3. Since the proposed project would result in an increase in impervious surface area, the FEA should disclose the potential impacts of runoff to areas downstream of the proposed project.
4. Given that the archaeological site (80-14-1174) known as the Pali Complex which consists of agricultural or habitation features (heiau or house platform) exists on the upper portion of the subject property, and that the owner would preserve or record archaeological significant sites that might be found within the building site as appropriate and as required by applicable federal, state and county rules and regulations, comments from the State Historic Preservation Division should be disclosed in the FEA.
5. Based on our review, the DEA lacks sufficient mauka and makai view analysis and drainage/runoff and historical/archaeological data. As a general policy, we oppose expansion of urban development on lands intended for Preservation.

Should you have any questions, please contact Matthew Higashida of our staff at 527-6056.

Sincerely,


CHERYL D. SOON
Chief Planning Officer

CDS:js

cc: Office of Environmental Quality Control

January 13, 1997

Cheryl D. Soon, Chief Planning Officer
City and County of Honolulu
Department of Planning
650 South King Street, 8th Floor
Honolulu, Hawaii 96813-3017

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Ms. Soon;

Thank you for your letter of December 4, 1996 to Mr. Michael D. Wilson regarding the subject project. The following is provided in response to your comments.

1. The information requested regarding the present land use designations will be included in the Final EA.
2. Additional mauka/makai photographs will be included in the Final EA. Mauka/makai view are obstructed by the dense vegetation on the site. This vegetation will be retained as is to screen the proposed residence to the greatest extent possible. Similarly, the proposed residence is not and will not be visible from public viewing sites, such as the Pali Highway or Lookout due to the terrain of the property and the dense vegetation on the site. As requested, the height of the residence will be included in the Final EA.
3. As indicated in the Draft Environmental Assessment, to prevent sheet flooding of the home site, earthen or concrete drainage swales, as required, would be constructed around the building site and on the upper boundary of the building site. Surface water from these drainage structures would be directed into natural drainage ways such that adjoining properties are not adversely affected by surface water runoff. Further, during construction, all applicable State and City and County of Honolulu building codes and standards, including those relating to erosion and sediment control, will be followed.
4. As indicated in the Draft Environmental Assessment, should culturally significant sites, as determined by applicable federal or state guidelines, be found within the building site during construction, appropriate preservation and recordation measures would be taken in compliance with applicable federal, state and county rules and regulations. Additionally, at the request of the State Historic Preservation Office, an archaeological inventory survey will be conducted prior to construction and the results of that survey provided to the State Historic Preservation office for their information and approval.
5. As noted above, the drainage information is already included in the Draft EA. However, we will add to this information in the Final EA to assure decision makers have sufficient information on

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

January 13, 1997

Cheryl D. Soon, Chief Planning Officer
City and County of Honolulu
Department of Planning
650 South King Street, 8th Floor
Honolulu, Hawaii 96813-3017

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Ms. Soon;

Thank you for your letter of December 4, 1996 to Mr. Michael D. Wilson regarding the subject project. The following is provided in response to your comments.

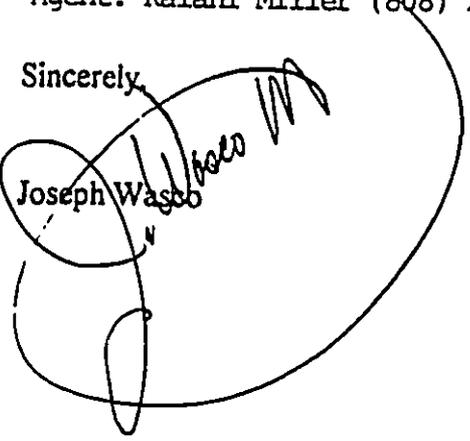
1. The information requested regarding the present land use designations will be included in the Final EA.
2. Additional mauka/makai photographs will be included in the Final EA. Mauka/makai view are obstructed by the dense vegetation on the site. This vegetation will be retained as is to screen the proposed residence to the greatest extent possible. Similarly, the proposed residence is not and will not be visible from public viewing sites, such as the Pali Highway or Lookout due to the terrain of the property and the dense vegetation on the site. As requested, the height of the residence will be included in the Final EA.
3. As indicated in the Draft Environmental Assessment, to prevent sheet flooding of the home site, earthen or concrete drainage swales, as required, would be constructed around the building site and on the upper boundary of the building site. Surface water from these drainage structures would be directed into natural drainage ways such that adjoining properties are not adversely affected by surface water runoff. Further, during construction, all applicable State and City and County of Honolulu building codes and standards, including those relating to erosion and sediment control, will be followed.
4. As indicated in the Draft Environmental Assessment, should culturally significant sites, as determined by applicable federal or state guidelines, be found within the building site during construction, appropriate preservation and recordation measures would be taken in compliance with applicable federal, state and county rules and regulations. Additionally, at the request of the State Historic Preservation Office, an archaeological inventory survey will be conducted prior to construction and the results of that survey provided to the State Historic Preservation office for their information and approval.
5. As noted above, the drainage information is already included in the Draft EA. However, we will add to this information in the Final EA to assure decision makers have sufficient information on

which to base their decisions. Similarly, additional archaeological information will be provided in the Final EA, as described above.

Should you have any questions or require additional information regarding the subject project, please call.
Agent: Kalani Miller (808) 247-5858

Sincerely,

Joseph Wasco

A large, handwritten signature in black ink, appearing to read "Joseph Wasco", is written over the printed name. The signature is enclosed within a large, hand-drawn oval.

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LAND MANAGEMENT
JAN 7 4 09 PM '97

DATE: 1/7/96
TO: Ed Henry
FROM: Donna Wong
Hawaii's Thousand Friends
262-0682 phone/fax

REMARKS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR
WASCO/PALI PROPERTY RESIDENTIAL SITE TMK4-2-11:28

2.2.1.1

How will the "natural drainageway" referred to be impacted/changed by this development? Is this the only natural drainageway on the property? Does "drainageway" refer to a stream? If so the streams need to be identified by name, location, and characteristics.

Since the slopes are steep "greater than 70%" was a sheetflow study done to evaluate immediate and future impacts to the existing drainage patterns and areas downslope from this development?

Because the site is surrounded by steep slopes will retaining walls have to be built? If so how many and what is the height? How will these walls impact the drainage pattern?

2.2.1.5

Due to the close proximity to overhead electrical transmission lines should there be any electromagnetic field (EMF) effects can the State and County be held responsible should these agencies grant permits?

2.2.1.7

The extent of "limited clearing of vegetation" is not given. How many acres will be cleared? How many trees will be removed?

2.2.1.8

While the DEA acknowledges that several native plants are in the area it does not identify how these plants will be impacted by this development?

How many days was the faunal survey conducted? Since the area is habitat for Elepaio, Apapane and the common Amakihi greater concern and consideration must be given to both short and long term impacts;

construction activities, introduction of domestic animals, noise from daily activities (eg. Lawn mowers).

2.2.1.9

How would grading and development of this site (house, garage, driveway and water catchment facilities) impact the "archaeologically significant sites....in the general area"?

2.2.1.10

What is meant by "Access to the building site would be improved by the proposed construction activities"? Is Auloa Road to be improved if so at whose expense?

2.2.1.11

Is there sufficient rainfall to provide adequate water via a catchment system? If there is not adequate water in the future what arrangements have/will be made to provide potable water and who will pay for those facilities? What system will be used to provide water for fire protection?

2.2.1.12

Since there is no municipal drainage in the area the disposal wastewater system and all "applicable state and county building code requirements" that will be followed must be identified.

3.3

The exact acreage to be cleared, grubbed and graded is identified only referred to as "some minor clearing and grading for the home site". This is not satisfactory.

While earthen or concrete drainage swales must be constructed around the building site and on the "upper boundary of the building site" to protect the home site no statistics are given on these swales (eg. Length, height, width) or their impacts to adjacent and down slope properties.

Hawaii's Conservation lands have resource value as watersheds and provide some of the last remaining places for native flora and fauna habitat. Development cannot and should not be allowed to continue encroaching into these valuable areas. Approval of this project will set a bad precedent for further development.

January 20, 1997

Ms. Donna Wong
Hawaii's Thousand Friends

Subject: Draft Environmental Assessment
Conservation District Use Permit Application
Pali Property Residential Site
TMK 4-2-11:28

Dear Ms. Wong;

Thank you for your letter of January 7, 1997 to Mr. Ed Henry regarding the subject project. The following is provided in response to your comments.

1. As indicated in the Draft Environmental Assessment (EA), Section 2.2.1.1, the natural drainageway is located to the east of the property boundary on an adjacent lot. This drainageway will be unaffected by the proposed single family residence that will be located approximately 500 feet from the drainageway.

The drainageway is just that, a natural drainageway formed as a gully between two ridges. It is not a stream and only contains water during heavy storms.

2. As indicated in the Draft EA, except for the single family home site, slopes on the property are generally greater than 70 percent. The slope of the single family homesite is between 2 to 5 percent. Because of the natural topography of the property, rain water sheet flow tends to flow to the east and west of the single family home site. The proposed single family home will not alter existing sheet flow patterns. Drainage structures, such as retaining walls, culverts, or swales, will be designed in compliance with City and County of Honolulu Building Department codes and standards. As such, they will not adversely affect existing drainage patterns.
3. As indicated in the Draft EA (see Section 2.2.1.5), electromagnetic field (EMF) effects have been investigated in detail in numerous areas of the mainland US as well as in Hawaii. In general, these studies have demonstrated that no adverse effects are indicated for ecosystems, wildlife, agricultural crops or livestock production. A recently completed National Academy of Sciences study has confirmed these findings. Therefore, no adverse effects are expected and neither the State nor City and County of Honolulu can be expected to be affected by the proposed single family residence.
4. Clearing of the single family homesite will be limited to that required for the home itself and access drive way. One of the reasons the applicant is proposing to purchase the land is the existing dense vegetation that the future owners plan to retain to the greatest extent possible.

Ms. Donna Wong
January 20, 1997
Page 2

5. As indicated in the Draft EA, the flora of the single family home site consists of exotic, that is, introduced, species that are primarily forestry plantings by the Hawaiian Division of Forestry. A few native plants are found on the road cuts just outside the building site and these are ferns and small saplings of 'ohi'a. There are no listed, proposed, or candidate threatened or endangered plant species designated by federal and/or state governments on the site, nor are any of the plants found on the site considered to be rare. All are common introduced plants found throughout the Hawaiian Islands.
6. As indicated in the Draft EA (see Section 2.2.1.8), during the faunal survey, no resident endemic (native) birds were observed at the site. the Common Amakihi, Apapane, and Elepaio might occur in the area, however, none were sighted during the survey which was conducted over a two- to three-day period. As noted in the Faunal Survey Report (Appendix B), traffic noise from Pali Highway was particularly noticeable during early morning and late evening rush hours. It is generally recognized by biologists that birds rapidly become habituated to their surroundings, including noise and lights, and are unaffected by these factors. Neither construction activities nor daily activities around the home site are expected to adversely affect the birds of the area.
7. Construction activities, such as grading and development of the site, will not affect the archaeologically significant sites found outside the home building site.
8. Access to the building site will be improved by the addition of a driveway to the single family home. Auloa Road will be improved only to the extent necessary to allow access to the home site. Auloa Road is a State highway under the jurisdiction of the State Department of Transportation, Highways Division.
9. As indicated in the Draft EA (see Section 2.2.1.3) rainfall in the single family home site area averages 75 to 100 inches per year. This is more than adequate to provide sufficient catchment water for domestic as well as fire protection purposes.
10. As indicated in the Draft EA (see Section 2.2.1.12), waste water will be disposed of via a septic tank system that is designed in compliance with the State Department of Health Individual Wastewater System requirements.
11. The exact acreage of clearing required for the proposed single family home has not been determined at this time. However, it will be no more than the home site area, which is defined as 0.87 acre. Much of the cleared area will be replanted with landscape materials appropriate for the site and in keeping with the existing vegetation.

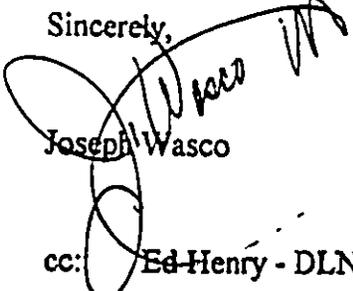
Similarly, the final design of any drainage structures that may be required for the proposed single family home has not been completed. As noted in the Draft EA, these structures will be designed in compliance with City and County of Honolulu Building Department codes and standards. These standards are designed to protect downslope properties as well as the property on which they are constructed.

Ms. Donna Wong
January 20, 1997
Page 3

12. We agree that many of Hawaii's conservation lands have resource value as watersheds and provide some of the last remaining places for native flora and fauna. However, as indicated in the Draft EA, there are no known potable water supplies beneath the proposed single family home site, and the flora and fauna of the site is generally limited to introduced species. Approval of the proposed single family home will not adversely affect either the watershed nor flora and fauna characteristics of the area.

Should you have any questions or require additional information regarding the subject project, please call.

Sincerely,



Joseph Wasco

cc: Ed Henry - DLNR