

JOHN WAIHEE
GOVERNOR OF HAWAII



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

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

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MANABU TAGOMORI
Dan T. Kochi

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
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HISTORIC PRESERVATION
PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:OCEA:JN

APR 26 1991

FILE: KA-2/28/91-2472
DOC.: 0594E

MEMORANDUM

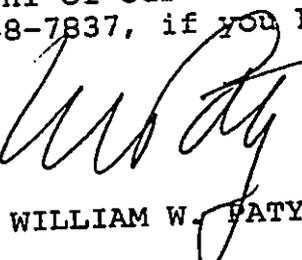
TO: Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: Document for Publication in the OEQC Bulletin -
Environmental Assessment for Conservation District Use
Application for Water System Improvements at Kilauea,
Kauai

The above-mentioned Chapter 343 Document was reviewed, and a negative declaration was declared based upon the environmental assessment provided with the CDUA.

Please call me or Don Horiuchi of our Office of Conservation and Environmental Affairs, at 548-7837, if you have any questions.


WILLIAM W. PATY

Attachment

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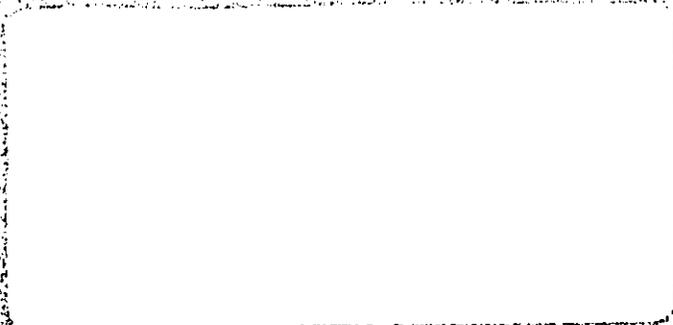
OFC. OF ENVIRONMENTAL
QUALITY CONTROL

NAMAHANA FARMS WATER SYSTEMS IMPROVEMENTS

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FILE COPY



Wilson Okamoto & Associates
ENGINEERS · ARCHITECTS · PLANNERS



CONSERVATION DISTRICT
USE APPLICATION
FILE COPY
*NAMAHANA FARMS
WATER SYSTEMS
IMPROVEMENTS*

Kilauea, Kauai

Prepared for:
Namahana Farms, Inc.

Prepared by:
Wilson Okamoto & Associates

February 1991

February 1993

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

DEPARTMENT MASTER APPLICATION FORM

FOR DLNR USE ONLY

Reviewed by _____
Date _____
Accepted by _____
Date _____
Docket/File No. _____
180-Day Exp. _____
EIS Required _____
PH Required _____
Board Approved _____
Disapproved _____
Well No. _____

(Print or Type)

I. LANDOWNER/WATER SOURCE OWNER
(If State land, to be filled in by Government Agency in control of property)

Name B. A. Dyre
Address P.O. Box 40
Kilauea, Kauai
HAWAII 96754

Telephone No. 245-9601

SIGNATURE *B. A. Dyre*

Date FEB. 7, 1991

II. APPLICANT (Water Use, omit if applicant is landowner)

Name Namahana Farms, Inc.

Address P.O. Box 3600

Lihue, Kauai 96766

Attn: John Wehrheim

Telephone No. 245-9601

Interest in Property Sect. Namahana

Farms & Authorized Agent (see ltr.)

(Indicate interest in property; submit written evidence of this interest)

*SIGNATURE *John Wehrheim*

Date Feb. 4, 1991

*If for a Corporation, Partnership, Agency or Organization, must be signed by an authorized officer.

III. TYPE OF PERMIT(S) APPLYING FOR

() A. State Lands

(xx) B. Conservation District Use

() C. Withdraw Water From A Ground Water Control Area

() D. Supply Water From A Ground Water Control Area

() E. Well Drilling/Modification

IV. WELL OR LAND PARCEL LOCATION REQUESTED

District Hanalei

Island Kauai

County Kauai

Tax Map Key 5-2-01:03

Area of Parcel 1155.62 acres
(Indicate in acres or sq. ft.)

Term (if lease) _____

JOANN A. YUKIMURA
MAYOR



COUNTY OF KAUAI
PLANNING DEPARTMENT
4280 RICE STREET
LIHUE, KAUAI, HAWAII 96766

PETER A. NAKAMURA
PLANNING DIRECTOR

ROLAND D. SAGUM, III
DEPUTY PLANNING DIRECTOR

TELEPHONE (808) 245-3919

Namahana Farms
P. O. Box 3600
Lihue, Hawaii 96766

RE: Special Management Area
Namahana Farms
Kilauea, Kauai
TMK: 5-2-01:03

In reference to the subject property, T.M.K. 5-2-01:03 is not located in the Special Management Area and is not subject to the Special Management Area Rules and Regulations.

Should you have any questions regarding this matter you can contact me at 245-3919.


PETER A. NAKAMURA
Planning Director

ENVIRONMENTAL ASSESSMENT
FOR THE
NAMAHA FARM WATER SYSTEM IMPROVEMENTS

Prepared for:
NAMAHA FARM, INC.

Prepared by:
WILSON OKAMOTO & ASSOCIATES, INC.

February 1991

NAMAHANA FARMS, INC.
P.O. BOX 3600
LIHUE, HI 96766
(808) 245-9601

October 24, 1990

Mr. William Paty, Chairman
Board of Land & Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 86809

SUBJECT: LETTER OF AUTHORIZATION - CONSERVATION DISTRICT
USE APPLICATION (CDUA) FOR NAMAHANA FARMS, INC.
KILAUEA, KAUAI
TMK: 5-2-01:03

Dear Mr. Paty:

As the owner of TMK: 5-2-01:03 and President of Namahana Farms, Inc., I hereby authorize John Wehrheim, Secretary of Namahana Farms, Inc., to act as my agent in processing our CDUA application with the State Department of Land & Natural Resources, as well as all other State and County Agencies

Thank you,

Sincerely,



B. A. Dyre
President

cc: John Wehrheim

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I. INTRODUCTION

This Environmental Assessment documents the anticipated impacts of proposed water system improvements on privately-owned land mauka of the proposed Namahana Farms subdivision in Kilauea, Kauai, Hawaii (TMK 5-2-01: portion of 03). The water system improvements, consisting of two 100,000-gallon water storage tanks, pipeline, two booster pumps, roadway easement, and appurtenant facilities, are to be privately constructed and dedicated to the County of Kauai, Department of Water. The project is intended to service the proposed Namahana Farms subdivision, the recently subdivided Kalihiwai Ridge Phase II and a portion of Kalihiwai Ridge - Phase I.

Preparation of this Environmental Assessment is required pursuant to Chapter 343, Hawaii Revised Statutes, and Chapter 11-200, Administrative Rules of the Department of Health. Both of the reservoir sites and access road are within the State Conservation District. The proposed action is not anticipated to generate any significant adverse impacts on the environment.

SUMMARY SHEET

Applicant: Namahana Farms, Inc.

Landowner: B. A. Dyre

Accepting Agency: State Department of Land and Natural Resources

Project Location: Kilauea, Kauai, Hawaii

Tax Map Key: 5-2-01: portion of 03

Land Area: One acre (tank sites and access road)

State Land Use District: Conservation

Conservation Subzone: Resource

County General Plan: Open

Zoning: Conservation

Existing Use: Vacant, undeveloped

Proposed Use: Water system improvements, including two 100,000 gallon water reservoirs, access road and appurtenant facilities

Consulted Agencies: State Department of Land and Natural Resources
Division of Water Resources Management,
Office of Conservation and Environmental Affairs
Planning Department, County of Kauai
Department of Water, County of Kauai

II. PROJECT DESCRIPTION

A. Proposed Improvements

The proposed project involves the construction of two 100,000-gallon water storage reservoirs, 1,100-foot access roadway, and appurtenant facilities (2 booster pumps and transmission/distribution line) on privately-owned land mauka of the town of Kilauea, Island of Kauai (see figure 1). The proposed facilities will connect with and expand the existing Kilauea Water System. The project area consists of two quarter-acre sites mauka of the proposed Namahana Farms subdivision and an access road for a total of approximately one acre. The water system will primarily service improvements in the immediate area, including the proposed Namahana Farms and Kalihiwai Ridge - Phase II subdivisions.

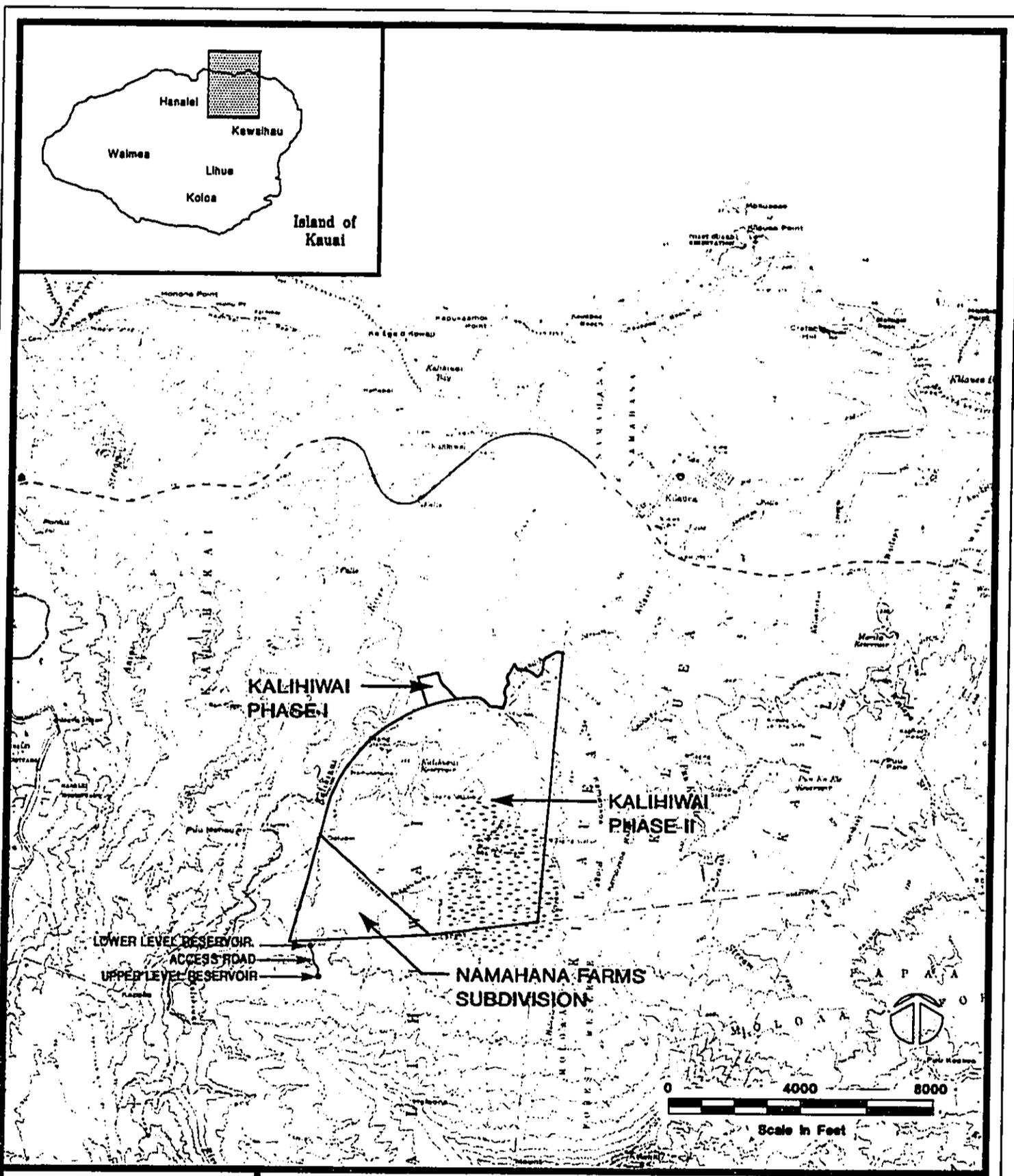
The reservoirs will be situated at about the 630-foot and 735-foot elevations with a new access road between them (see figure 2). Each of the 100,000-gallon reinforced concrete reservoirs will be 19 feet high and 34 feet in diameter.

A 12-foot wide paved access road to each reservoir site and 10-foot wide perimeter road around each reservoir will be constructed for maintenance vehicles and personnel. The length of the access road between the lower and upper reservoirs will be 1,100 feet. Each reservoir site will be surrounded by a 6-foot high chain link fence. Landscaping will be provided around the reservoirs for erosion control purposes.

Water for the proposed reservoirs is presently stored in two 250,000-gallon water tanks located approximately 10,000 feet northwest of the project site, at elevation 460 feet. A gravity line will convey water from the existing water tanks to a proposed booster pump to be situated north of the project site at elevation 360 feet as illustrated in figure 2. A proposed 6-inch transmission/distribution main will convey water approximately 9,500 feet to the lower reservoir. The main will be dual purpose and will also distribute water to Kalihiwai Ridge - Phases II and three lots in Phase I.

A duplex booster pump will be installed at the lower reservoir site and another transmission/distribution line will extend about 1,100 feet to the upper reservoir at the 735-foot elevation. A parallel distribution line alongside the booster line will service the proposed Namahana Farms subdivision from the high level reservoir (see figure 2).

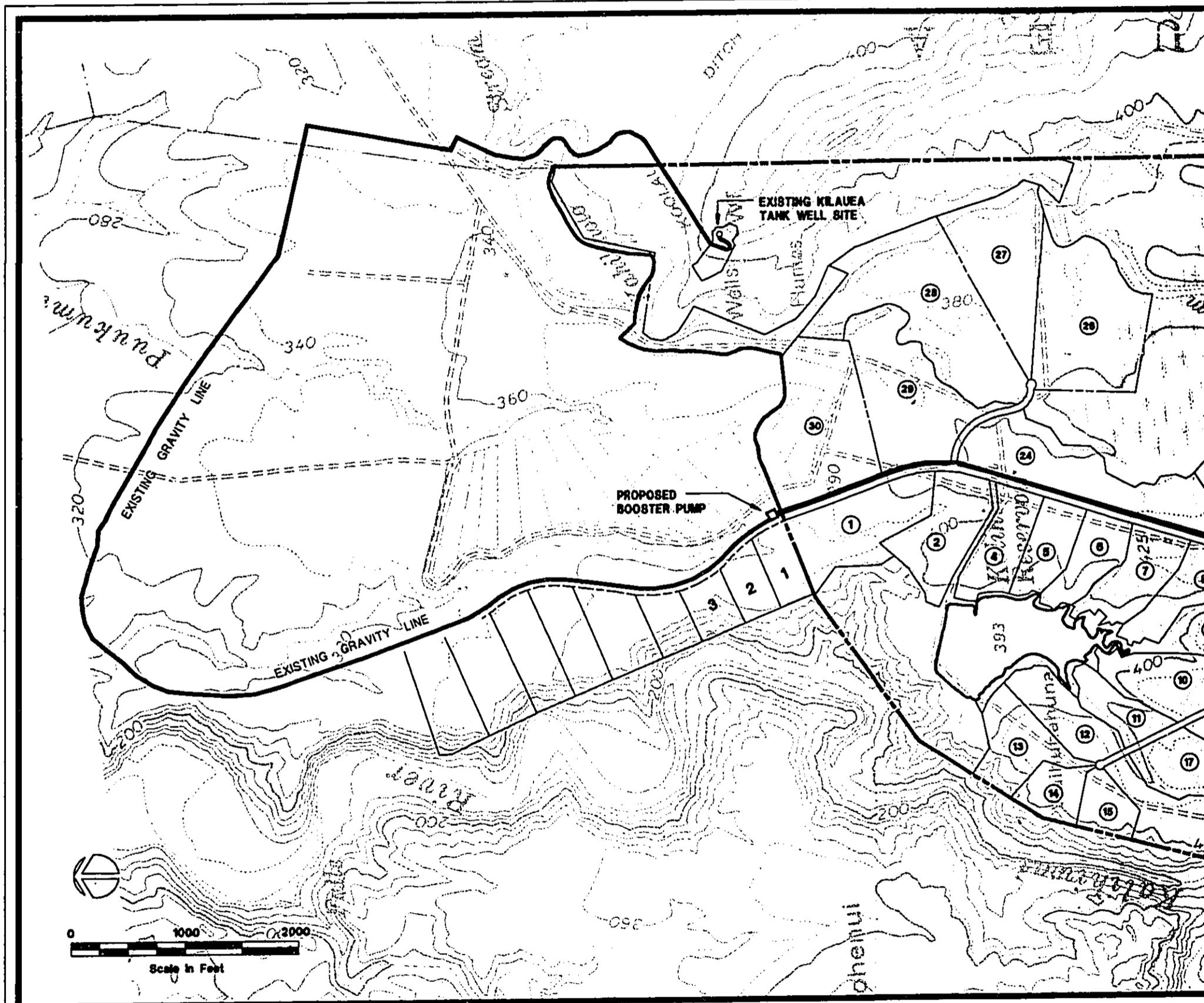
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Namahana Farms
Water System
Improvements

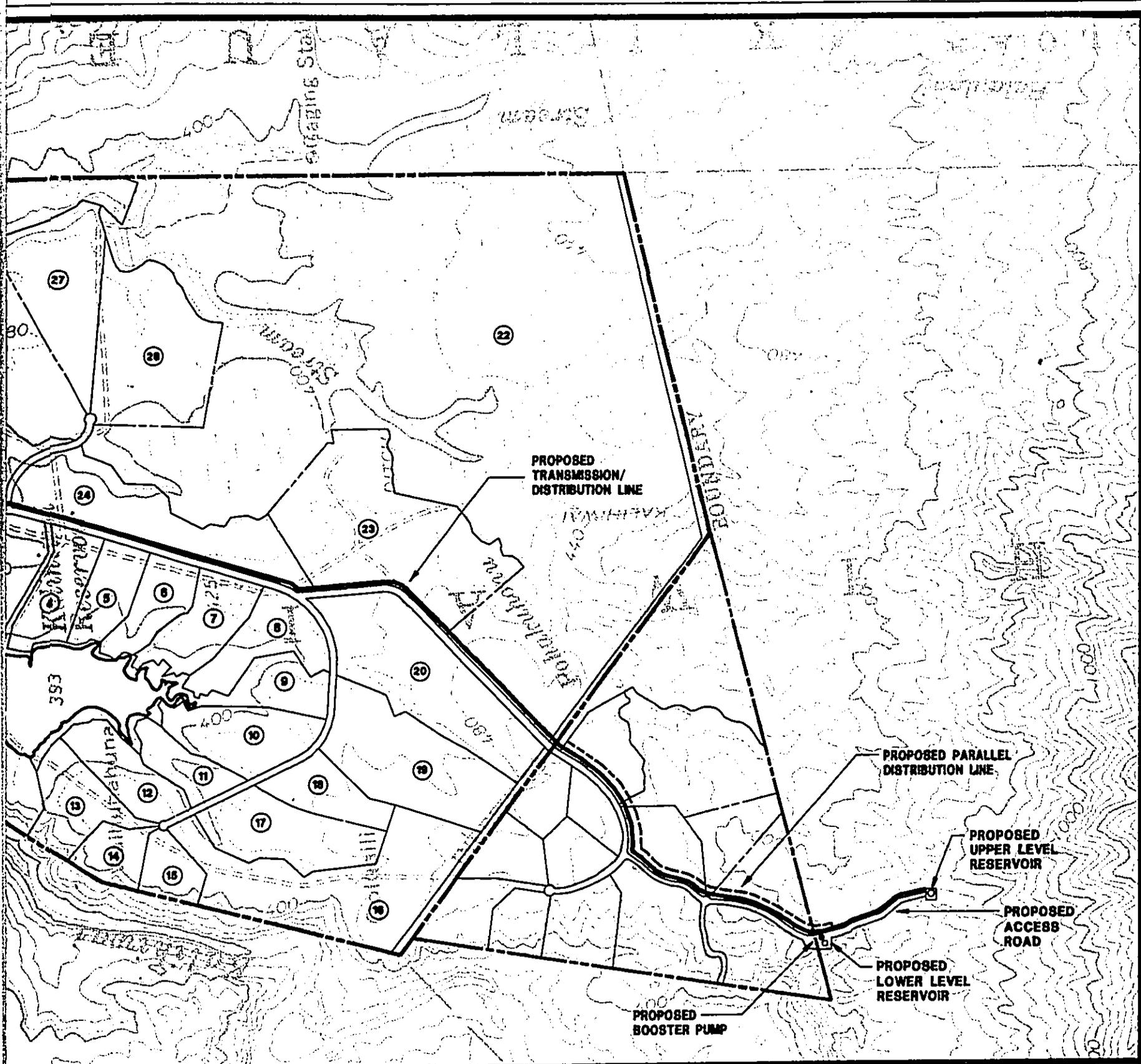
Fig. 1
SERVICE AREA MAP

Prepared for :
NAMAHANA FARMS, INC.
Prepared by :
WILSON OKAMOTO & ASSOCIATES, INC.



**Namahana Farms
Water System
Improvements**

**Fig. 2
SITE PLAN**



Prepared for :

NAMAHANA FARMS, INC.

Prepared by :

WILSON OKAMOTO & ASSOCIATES, INC.

AN

All mains are sized to provide adequate carrying capacity and maintain pressure during peak consumptive periods. The transmission and distribution mains, roadway easement, and all water facilities are to be constructed according to the standards set forth by the County's Department of Water and shall be dedicated to the Department upon completion. Site plans for the individual reservoir sites are depicted in figures 3 and 4.

The proposed project is intended to provide domestic and fire protection service to the entire proposed Namahana Farms and Kalihiwai Ridge - Phase II projects where no water conveyance system presently exists. The proposed Namahana Farms agricultural subdivision, to be serviced by the upper level reservoir tank, is situated on 150 acres and is subdivided into 15 lots. Further north, the proposed Kalihiwai Ridge - Phase II agricultural subdivision, to be serviced by the lower reservoir tank, encompasses 952 acres and is proposed to be subdivided into 28 lots. Three parcels in the Kalihiwai Ridge - Phase I are also to be served by the lower reservoir, since their water pressure is presently low through the existing system serving Phase I.

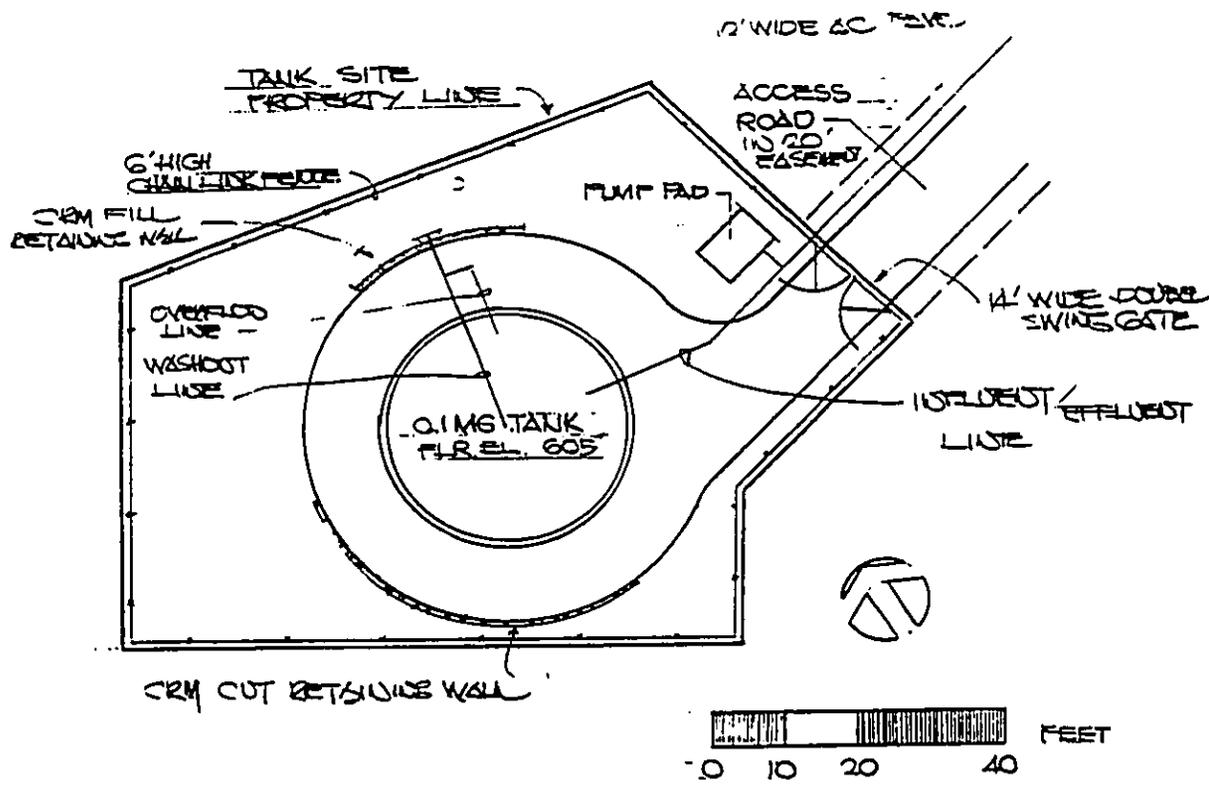
When fully implemented and integrated with the Kilauea Water System, the proposed improvements will provide further assurance of adequate water supply for increased domestic needs and fire protection throughout the entire system. Reservoir storage minimizes fluctuations in water pressure, provides water for emergencies, and helps to meet peak consumption demand. Reservoir facilities also allow water pumpage to proceed at stabilized rates rather than in response to consumption demand. Water stored during periods of low demand may then be utilized during peak demand anywhere in the system.

B. Location and Ownership

The project site lies in the rural and thinly populated Hanalei District along the North Shore on the Island of Kauai. It is approximately three miles mauka of Kuhio Highway and the town of Kilauea and is identified by Tax Map Key 5-2-01: por. 3. The property is owned in fee by B. A. Dyre.

C. Existing and Surrounding Uses

The project area is currently undeveloped, underlain by silty clay Hulua soil and overgrown with vegetation common to rainy climates in Hawaii. North of the project is vacant and vegetated land where the 150 acre

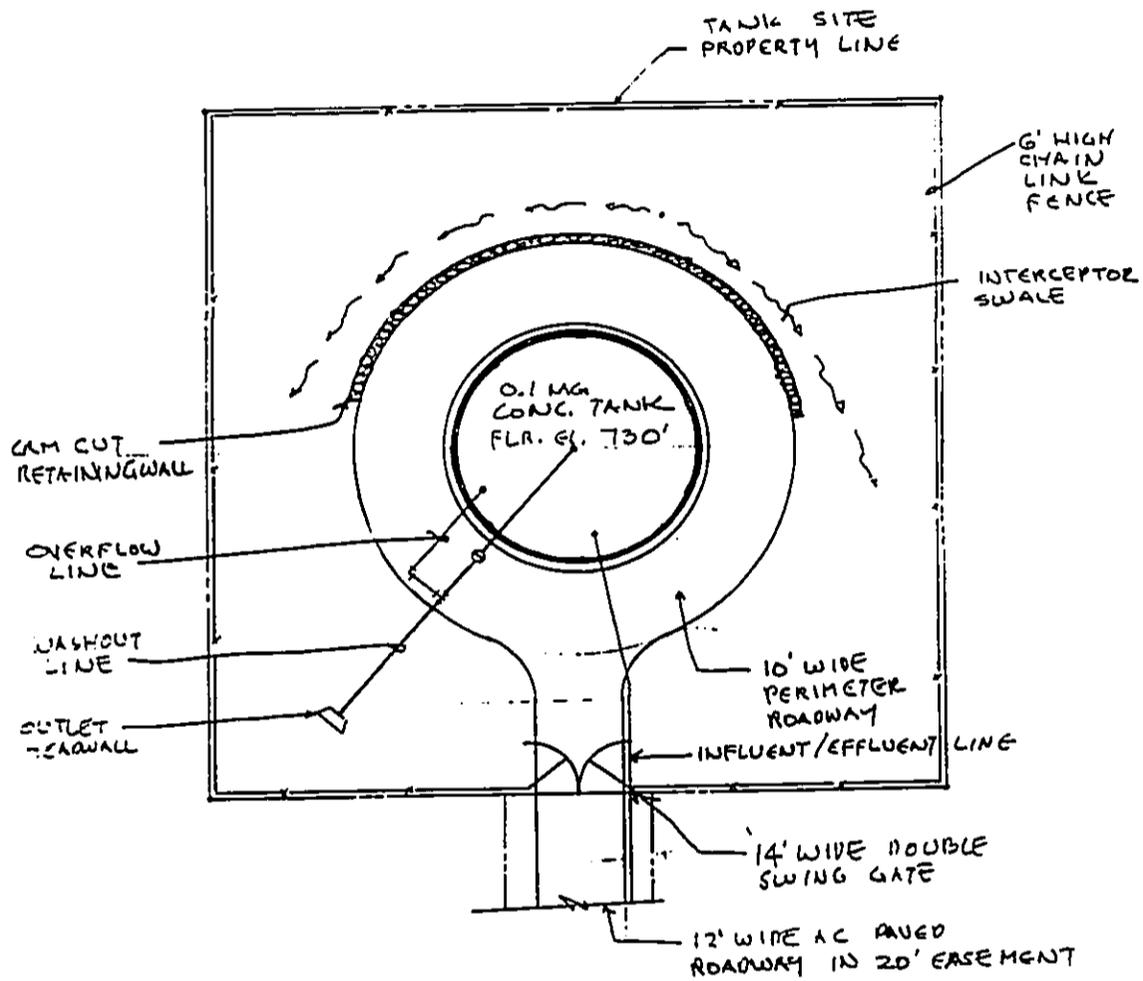


← 12' WIDE AC ROAD
 WATER TANK SITE

Namahana Farms
 Water System
 Improvements

Fig. 3
 LOW LEVEL TANK PLAN

Prepared for :
 NAMAHAHA FARMS, INC.
 Prepared by :
 WILSON OKAMOTO & ASSOCIATES, INC.



HIGH LEVEL TANK
SCHEMATIC SITE PLAN
1" = 20'



Namahana Farms
Water System
Improvements

Fig. 4
HIGH LEVEL TANK PLAN

Prepared for :
NAMAHAANA FARMS, INC.
Prepared by :
WILSON OKAMOTO & ASSOCIATES, INC.

Namahana Farms agricultural subdivision is proposed (see figure 2). At present, one house occupies the property. Further north is more vacant and vegetated land where the proposed Kalihiwai Ridge - Phase II agricultural subdivision and the existing Kalihiwai Reservoir, owned by C. Brewer Properties, is located. West of Phase II is the subdivided parcels of Kalihiwai Ridge - Phase I, intended for agricultural/residential use and also owned by C. Brewer Properties (see figure 2). Consisting of 27 lots on 843 acres, Phase I has all of its access roadways and infrastructure in place. Flanking the project site on the south side is approximately 4,000 undeveloped acres owned by Consolidated Oil & Gas, Inc. This property lies within the 14,147-acre Halelea Forest Reserve stretching further south into the mountains. Directly west is Kalihiwai River Valley and directly east is Moloaa Forest Reserve.

III. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. Geology and Hydrology

The Island of Kauai consists essentially of a single dome. Lava flows dip outward in all directions from the principal volcanic center near Mount Waialeale. Geologically, the project area is comprised of the Koloa volcanic flows that occurred during the Pleistocene era, some 1.4 million years ago. The Koloa series consists of lava flows of nephelene basalt, picrite-basalt and basanite erupted from a large number of vents scattered over the eastern portion of the island.

Topographically, the land along the Kilauea town coastal area up to Kuhio Highway has slopes between zero and thirty percent with elevations in excess of 200 feet above shoreline cliffs. Mauka of Kuhio Highway, slope also varies between zero and thirty percent with elevation increasing gradually through the Kalihiwai Reservoir area to the 480 foot elevation. Continuing mauka towards the project site, the slope slightly steepens to the 750-foot elevation. The Kalihiwai Valley to the west is large and nearly level at the floor with side slopes in excess of 20 percent. Although both proposed reservoir sites lie in an area where there are slopes in excess of 30 percent, according to "Kauai Lands Classified by Physical Qualities for Urban Usage," both reservoir sites are nearly level (see figure 2).

The Hanalei District is in a fresh basal and perched water resource area. The project area is considered to be in a "perched" water zone according to the "Kilauea Agricultural Water Management Study Report." Water occurring in this zone is "perched" on top of layers of impermeable material such as volcanic rock and/or clay-bearing sediments. Discharge of this water type can occur as springs which are of excellent quality. Nearby basal ground water (where the proposed reservoirs' water source is located) offers substantial quantities to meet domestic requirements of the North Shore area. Fresh groundwater bodies in Hanalei, Princeville and Kilauea stand approximately 13 to 27 feet above sea level.

The Koloa Volcanic series, in the form of lava flows and associated permeable clinker zones, allow small bodies of perched water to occur in the Hanalei District. Thus, aquifers in the vicinity of the project area are considered perched. The widespread perched groundwater in this geologic formation masks the presence of basal water. Beneath the perched aquifers in the Koloa formation, high level and basal groundwater may

exist in the basement rock of the Napali volcanics. Kilauea Stream picks up much of its flow from discharging perched groundwater.

B. Climate

The climate of the area is generally mild and semi-tropical, influenced by the island's location in the tropics within the belt of cooling northeasterly trade winds. Rainfall is relatively high in the vicinity of the project site, receiving approximately 75 to 140 inches of rain per year.

Temperatures are persistently uniform, passing through the seasons without extremes. The average temperature is 75 degrees Fahrenheit. Winds are generally east-northeast trades of 10 to 14 miles per hour. Humidity of the area is generally within the 60 to 80 percent range.

C. Soils and Agricultural Productivity

Soils within the region include indurated ironstone, dusky red clay loam and soft, rocks weathered from basic igneous rocks. The soil characteristics of the project site, according to the "Kauai Lands Classified by Physical Qualities For Urban Usage," are non-expanding and non-rocky with a well-drained surface.

The Land Study Bureau of the University of Hawaii classifies soil on the property as E15 indicating moderate suitability for agricultural tilling but displaying poor drainage characteristics. The Classification also generalizes the soils in the project site as Humic Ferruginous Latosols, which tend to be relatively inert and highly erosive particularly in the higher sloping uplands. Erosive tendencies being an inherent characteristic of the soil and combined with a slope greater than thirty percent, renders the area generally unsuitable for agricultural use.

The U.S. Department of Agriculture Soil Conservation Service's "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai" identifies the soil on the property as Hulua (HUNF), a soil consisting of gravelly silty clay loam on slopes between 25 and 70 percent. This soil material is generally shallow over hard, weathered basic igneous rock. The subsurface layer, about six inches thick is a mottled, dark grayish-brown, massive silty clay. Permeability is moderately rapid and the erosion hazard is severe. Underneath the subsurface layer, the ironstone sheet caps consist of yellowish-red and very dusky red clay loam and soft, weathered rock that may extend to a depth of more than 70 inches.

D. Flora and Fauna

The project area is described as a wet lowland forest consisting mostly of invasive, introduced plant species according to the Botanical Survey Report conducted by Botanical Consultants in January 1991 for the two reservoir sites and proposed access road. The vegetative cover on the property includes Ohia trees, yellow guava, and uluhe. Ohia is endemic to the Hawaiian Islands. None of the plants identified during the survey are officially listed as threatened or endangered species. Detailed findings of the Botanical Survey are contained in appendix A.

According to "Field Survey of the Avifauna and Feral Mammals at Kalihiwai Ridge, Kauai, March, 1990," conducted for the Kalihiwai Ridge - Phase II project, the only endemic species recorded during a field survey of the Conservation District was the Hawaiian Duck or Koloa (*Anas wyvilliana*). Koloa are found more on Kauai than elsewhere in the State, and often occur in mountain streams as well as coastal wetlands. Other possible endemic birds might also be found in the area, but were not recorded during the survey. There are no endemic amphibians or land reptiles in the Hawaiian Islands. Those that do exist have been introduced into the environment intentionally or accidentally by man. None are considered endangered species. ✓

The only observed resident indigenous birds identified in the survey were two adult Black-crowned Night Heron or Aku'u (*Nycticorax*), observed along the southern edge of Kalihiwai Reservoir. This specie is not endangered and has recently experienced recent growth in population as a result of aquaculture development.

The Pacific Golden Plover (*Pluvialis fulva*) was identified in the study as the only migratory indigenous specie in the area. Plover prefer open areas such as mud flats, roads, plowed fields, pastures and large lawn areas. These populations have remained relatively stable over many years. ✓

Based on the findings of the field survey, the present environment provides a limited range of habitats which are utilized by the typical array of exotic birds one would expect at this elevation and in this type of habitat on Kauai.

E. Archaeological and Historical Resources

The Hanalei District was so named in reference to the area being known for its abundance of cool rain. Early accounts of the Kalihiwai Valley

describe the fertile lands, lush foliage, many streams and waterfalls. Ancient Hawaiians living in this area evidently did not grow taro as the land sections were too high above streams for irrigation. The town of Kilauea, despite the sizable stream flowing through it, did not produce much taro due to steep topography and high erosion. In the late 19th century, villages occupied areas where there had once been no inhabitants at all. Historical records indicate that during the early 20th Century, the Kalihiwai area was used for some ranching, sugar and rice production.

In the project area, an Archaeological Inventory Survey was conducted by Paul H. Rosendahl, Inc. in December 1990 for the two reservoir sites and access road (see appendix B). No archaeological resources were found at either reservoir site or the access road. Therefore, no test excavations were made. Data collected during the survey was considered sufficient and no further archaeological work was recommended. ✓

F. Air and Noise Quality

The ambient noise and air quality in the region is excellent due to distance from highway and industrial uses.

G. Population

Provisional estimates for 1989 indicate a Kauai resident population of 51,000. According to the Department of Business and Economic Development, the 1988 resident population for the Hanalei District was 5,300 with 895 residing in Kilauea.

The population to be served by the project are the proposed Kalihiwai Ridge - Phase II subdivision on 28 lots, the proposed Namahana Farms subdivision on 15 lots, and the Kalihiwai Ridge - Phase I on three lots.

H. Economy

The County of Kauai has a growing economy based on the agricultural industry and tourism. Tourism, as in the past, is Hawaii's leading economic force. According to First Hawaiian Bank Research Department, the Kauai westbound market experienced a 2.5 percent decline from the same period in 1989. Through September 1990, Kauai hotels posted a 69 percent occupancy rate, down from 72 percent in 1989.

Construction is now the second largest industry in terms of dollar valuations. In 1987, building permit valuations totalled \$109 million, up by

about \$8 million from the year 1986. Construction activity in 1990 totaled \$70 million, 43 percent higher than in 1989. In 1990, residential construction valuations as well as additions and alterations valuations totalled more than \$111 million. In the period through July 1990, Kauai had a 155 percent increase in public sector construction that totaled \$3.5 million.

With an additional 150 acres of orchard planted, production of guava puree by Kilauea Agronomics increased by five percent to 9 million pounds in 1990. Because of the expansion of the guava industry, the value of processed fruits grown on Kauai has increased more than four fold since 1980. Further increases are expected. The island has not yet maximized its potential in growing fruit.

I. Scenic Views

The project area as viewed from Kuhio Highway is dominated by the distant mountain range and expansive Kalihiwai River Valley. Other views include the Princeville pasture lands to the west and to the Pacific Ocean beyond Kalihiwai Bay. The project area itself is covered by foliage with gently sloping hills in the foreground and mountains in the background and cannot be seen from Kuhio Highway.

J. Roadways

Kuhio Highway provides the major transit route through Hanalei and Kilauea towns. This highway is a two lane, right-of-way, Class I State highway. Access to the property is currently provided via a dirt road leading from the mauka end of the guava processing plant (see figure 1).

K. Drainage

Existing Hulua soils on the project site, consisting primarily of silty clay with a cemented layer at depths of 10 to 20 inches, are poorly drained and muddy on the surface. During frequent periods of moderate to heavy rainfall, water retention occurs due to thick vegetation, with some sheetflow to existing drainage gullies and some infiltration due to moderate permeability.

The property is within the Zone X flood or tsunami inundation area as identified on the Flood Insurance Rate Map prepared by the Federal Emergency Management Agency. Zone X is an area determined to be outside 500-year flood plain.

L. Water

Water for the proposed reservoirs will be supplied by the Kilauea Water System, owned by the County of Kauai and operated by the County's Department of Water. Kilauea Water System's two 700-gallon-per-minute (gpm) pumps, which are operated alternately, draw basal water from two deepwells 790 feet beneath the surface (well nos. 1125-01 & 02). Drawn water is presently stored in two 250,000-gallon reservoirs located on Kamookoa Ridge, elevation 460 feet (see figure 2). A piped distribution system transports the water from the tanks through gravity lines to existing service areas. An existing gravity line will convey water to a proposed booster pump to be situated within Kalihiwai Ridge - Phase I and from there into the proposed water system expansion. Additional pumpage from the wells as a result of the proposed project is not anticipated to exceed the present allocation by the Division of Water Resources Management.

IV. RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

A. State Land Use Districts

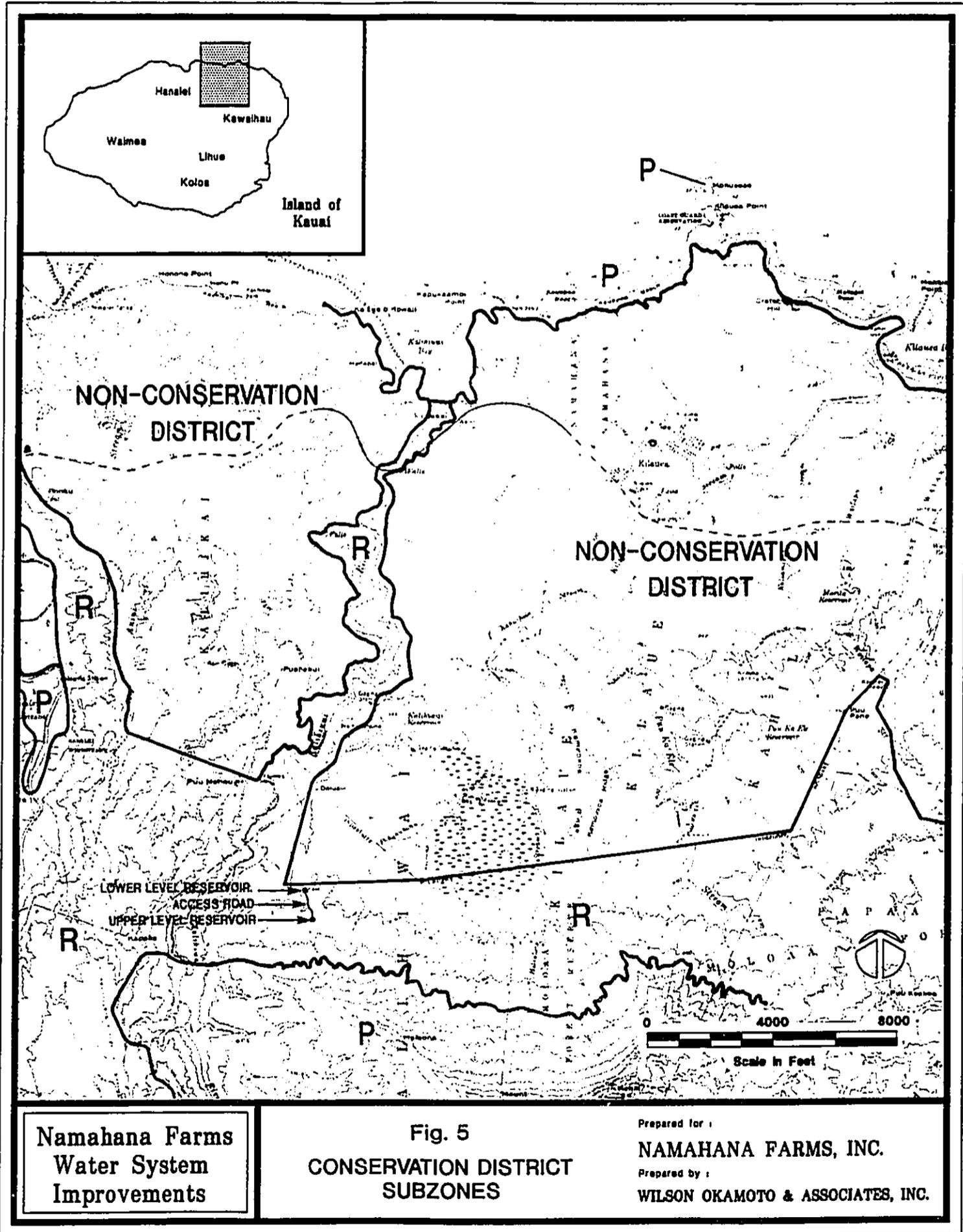
Pursuant to Chapter 205, Hawaii Revised Statutes (HRS), all lands in the State of Hawaii are classified into one of four land use designations; Urban, Rural, Agricultural, and Conservation. Portions of the proposed water system improvements, including the two reservoir sites, access road and transmission lines, are within land designated Conservation with a subzone designation of "Resource" (see figure 5). The Resource subzone includes land valued for one or another type of resource, whether or not it is currently being used. Included are parklands, areas deemed suitable for logging, recreational sites, and submerged lands not in any other subzone. The proposed use is considered a "conditional use," as it is not permitted in this subzone, and therefore requires a Conservation District Use Permit from the Board of Land and Natural Resources. Other portions of the project, including the lower level booster pump with transmission/distribution line to the lower level reservoir are in the Agricultural land use designation.

B. Kauai County General Plan

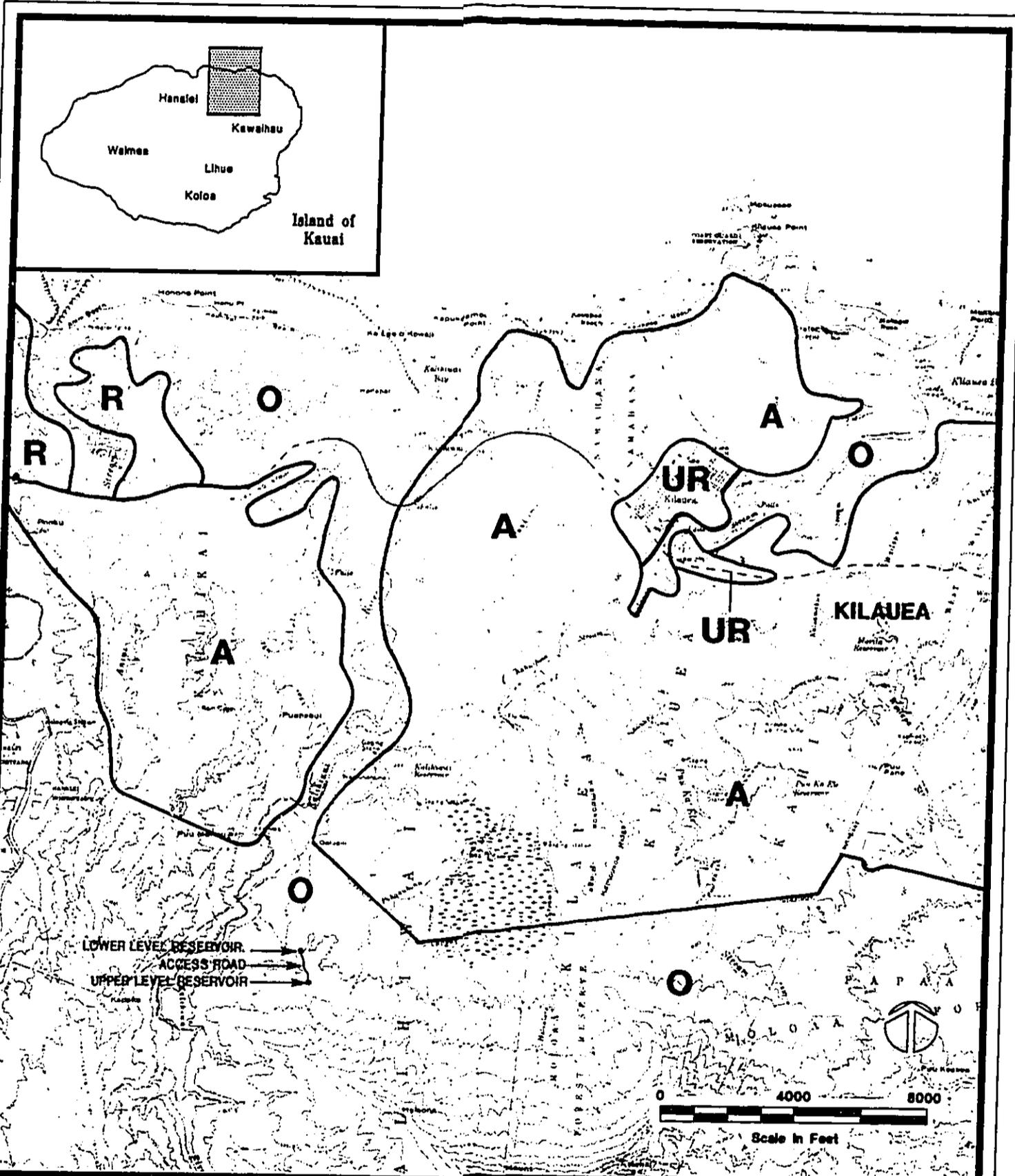
The 1982 Kauai General Plan Update outlines the goals and policies for the County as well as for each of its districts. The Plan serves as a policy document for the comprehensive long-range development of the County, and provides guidelines and direction for orderly growth through the implementation of the County goals and policies. The Kauai General Plan allocates 10-year growth patterns for each community on the island. In Kilauea, 200 additional residential units are allocated based on improved infrastructure by 1992. Development of the proposed reservoir storage tanks was required by the County Department of Water as a condition of developing all proposed projects to be served.

The County of Kauai is described on seven planning area maps. The project site is located in the North Shore planning area. Under the current General Plan land use guide map for the North Shore, land use designations within and in proximity to the property include Agricultural, Open, and Urban Residential. The General Plan designates the project site as Open (see figure 6). The proposed project is a permitted use unless the Department of Water determines otherwise.

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**Namahana Farms
Water System
Improvements**

**Fig. 6
COUNTY GENERAL PLAN**

Prepared for :
NAMAHANA FARMS, INC.
Prepared by :
WILSON OKAMOTO & ASSOCIATES, INC.

C. Kauai County Comprehensive Zoning Ordinance

The Comprehensive Zoning Ordinance, Chapter 8 implements the goals and policies of the County General Plan. The Zoning Ordinance regulates land uses as it deals with existing conditions and the short-range needs of the community.

The County zoning designation for much of the property, as well as lands to the North, East, West, and South is Agricultural, while those lands in the Conservation District, including the project site, are left unzoned and remain under the guidance of the State's Department of Land and Natural Resources.

D. North Shore Special Area Development Plan

In 1971, the County of Kauai adopted by resolution the concept and objectives of Development Plans for specific County areas. Development Plans assess how future development in the region might best be implemented. In addition, the Kauai Planning Commission formulated Special Planning Areas out of regional areas which are of particular County, State or Federal value due to unique physical, ecologic or cultural concern. The North Shore of Kauai is considered such an area with the boundaries established by the Planning Commission and recorded on zoning maps. Two of the goals for the North Shore Special Planning Area intend "(t)o preserve the unique natural beauty..and ..the special rural charm of the North Shore Planning Area."

The Development Plan for the North Shore Special Planning Area pays particular attention to social and economic projections in relation to future development: "*Given the parameters of predicted population growth, prevention of stagnating physical decay and social debilitation is more the issue than controlling rampant growth pressures.*" The report does not set growth policies for the District per se but rather emphasizes flexibility in population projections to accommodate economic changes. The report projects a building rate of 38 dwelling units per year assuming a full time population of 2,000 for the North Shore excluding Princeville. The North Shore report stresses that "*present use of these areas should be maintained with only selective increases in residential use in the river valleys.*" The proposed Namahana Farms and Kalihiwai Ridge subdivisions are consistent with the growth projections of the North Shore Development Plan. The report also encourages improved utility service to the Hanalei District such as water, electricity and telephone but does not detail how improvements should be made.

The North Shore Development Plan Update of 1980 discusses the development of Agriculturally designated lands which the proposed water tanks would serve. The Plan recommends that lands mauka of Kuhio Highway retain its agricultural

designation to conform to surrounding land uses. The Development Plan map shows that the proposed reservoir sites are located outside the Development Plan boundaries.

V. POTENTIAL IMPACTS AND PROPOSED MITIGATION MEASURES

A. Short-Term Construction Related Impacts

1. Water Quality

Clearing and grading operations at the project site will temporarily expose the underlying soil to rain until the reservoirs are built and landscaping is planted. Some erosion is anticipated as rainfall is typically heavy and soil is moderately permeable. Groundcover will be planted as soon as possible after grading for erosion control. The required County grading standards will be complied with to minimize erosion potential during construction of the reservoirs and access road.

2. Flora and Fauna

Earthwork operations will remove vegetative cover consisting mostly of Ohia/Uluhe (*Metrosideros/Dicanopteris*). According to the Botanical Survey, "mature Ohia trees reach a height of 20 meters with an understory of yellow guava (*Psidium cattleianum* Sabine)." Maile, ie'ie and various fern species, along with the introduced species of Guava, Lantana and Shoe Button ardisia occur on the project site. There are no known rare or endangered species of flora or fauna located in the immediate vicinity of the reservoir sites (see appendix A).

3. Archaeology

An archaeological inventory survey of the project site was conducted in accordance with standards recommended by the Department of Land and Natural Resources-Historic Preservation Office. No historic/archaeological sites in the project area were identified during the archaeological survey (see appendix B).

4. Noise

A temporary increase in local noise levels can be anticipated during construction of the facilities. Sources of noise will include construction vehicles and equipment operating on site. Noise impacts will be mitigated to the greatest extent possible through the

use of mufflers on construction equipment and daytime construction periods.

Adequate distance separates the proposed reservoir sites from the nearest noise sensitive neighbors. One single family dwelling, located in the area approximately 1,000 feet makai of the lower tank site, may be within hearing range of construction but noise levels at this distance will not be a health concern.

5. Air Quality

Ambient air quality is expected to temporarily decline in the immediate vicinity during construction due to dust and erosion from construction vehicles and equipment. Dust control measures are not likely to be necessary due to the amount of moisture in the region.

6. Traffic

Impacts of construction upon traffic are not anticipated to be significant. Construction equipment will enter and exit the site on Kalihiholo Road through the Kalihiwai Ridge - Phase II subdivision.

7. Economy

During the construction phase of the project, there will be a slight, temporary increase in the number of jobs in the Hanalei District which may induce an associated multiplier effect in related job creation and retail sales.

B. Potential Long-Term Impacts

1. Water Quality

The proposed water system improvements are anticipated to increase rainfall runoff very slightly by increasing building area and pavement. Runoff from the site will be accommodated by existing sheetflow patterns.

2. Flora and Fauna

The water system improvements will displace existing flora and fauna, but landscaping will restore some of the vegetative cover and

naturally occurring flora will rejuvenate. There are no threatened or endangered species in the area.

3. Noise

Long-term noise quality will not be significantly impacted by the proposed water reservoirs. In the operational phase, potential noise impacts will be confined to the mechanical operations of the booster pump located at the lower reservoir site. The pump will be contained within housing which will muffle any noise generated. No adverse impacts are anticipated on any current or future noise-sensitive uses.

4. Air Quality

Long-term air quality will not be impacted by the proposed reservoirs.

5. Visual

Minimal visual impacts may result from the construction of the 19-foot high reservoirs amidst an undeveloped area. However, existing vegetation and terrain will preclude visibility from Kuhio Highway. The lower reservoir may slightly impact the mauka view of a single family dwelling, located approximately 1,000 feet away, but with the landscaping and natural plant growth following construction, the water tank will be eventually fully obscured from view.

6. Traffic

Traffic will not be affected by the proposed improvements. The only traffic to be generated will be by personnel conducting chart recording, groundskeeping and landscaping maintenance work on a weekly basis.

7. Economy

Maintenance of the reservoirs will increase manpower requirements in the long-run.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Potential alternatives to the proposed action include the implementation of separate water system improvements, the development of on-site water storage, and the "no action" alternative.

Under the first alternative, the developers would be allowed to proceed with the water system improvements but only to serve their proposed developments in the immediate area; Kalihiwai Ridge - Phases I and II, and Namahana Farms subdivision. Water storage and transmission capacities would be reduced to meet just the developer's needs and the system would not be dedicated to the County of Kauai. No separate improvements would be undertaken by the County to increase water supply to the areas mauka of Kuhio Highway. This alternative would not yield benefits to the Kilauea community associated with water system expansion, including minimizing fluctuations in water pressure, water for fire protection and emergencies, and satisfying peak consumption demand.

A second alternative would be on-site storage with smaller pressure booster pump(s) dedicated to the County's Department of Water. This involves one reservoir within and serving each of the Namahana Farms and Kalihiwai Ridge - Phase II subdivisions. The water source would remain the same with one transmission/distribution line from the proposed booster pump. As the reservoirs would be located in the Agricultural District, this option would not require a Conservation District Use Permit. This alternative, however, is not generally favored by the Department of Water due to higher maintenance, increased power cost of additional booster pumps, and the resulting increase in consumer water cost.

The "no action" alternative would result in no new reservoirs and, as a result, would leave only the use of catchment systems for the proposed agricultural subdivisions of Kalihiwai Ridge and Namahana Farms. Catchment systems, however, are not considered an acceptable form of water system improvement by the County's Department of Water and therefore cannot be dedicated. Under the no action alternative, the objective of supplying water to the agricultural subdivisions would not be achieved. The no action alternative is not considered a feasible option to the proposed project.

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APPENDIX A
BOTANICAL SURVEY REPORT

BOTANICAL SURVEY REPORT FOR TWO NAMAHANA FARMS TANK SITES AND ROAD
RIGHT-OF-WAY, KILAUEA, KAUAI

FOR

Wilson Okamoto and Associates
1150 South King Street
Honolulu, Hawaii 96814

by

Evangeline J. Funk, Ph.D.
Botanical Consultants
P.O. Box 90765
Honolulu, Hawaii 96835

January 1991

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INTRODUCTION

Located on the windward side of the Island of Kauai, the Namahana Farms proposed water tank sites and road right-of-way are south of and inland from the town of Kilauea, Kauai. The general area can be characterized as mostly cleared farm lands, and the proposed tank sites are situated on heavily wooded, low, rolling hills just south of the agricultural lands (Figure 1).

Annual rainfall in this area exceeds 90 inches and the area has been subjected to occasional fires which probably accounts for the high percentage of adventives found on the site (Pers. Comm. John Wehrheim - long time resident of the area).

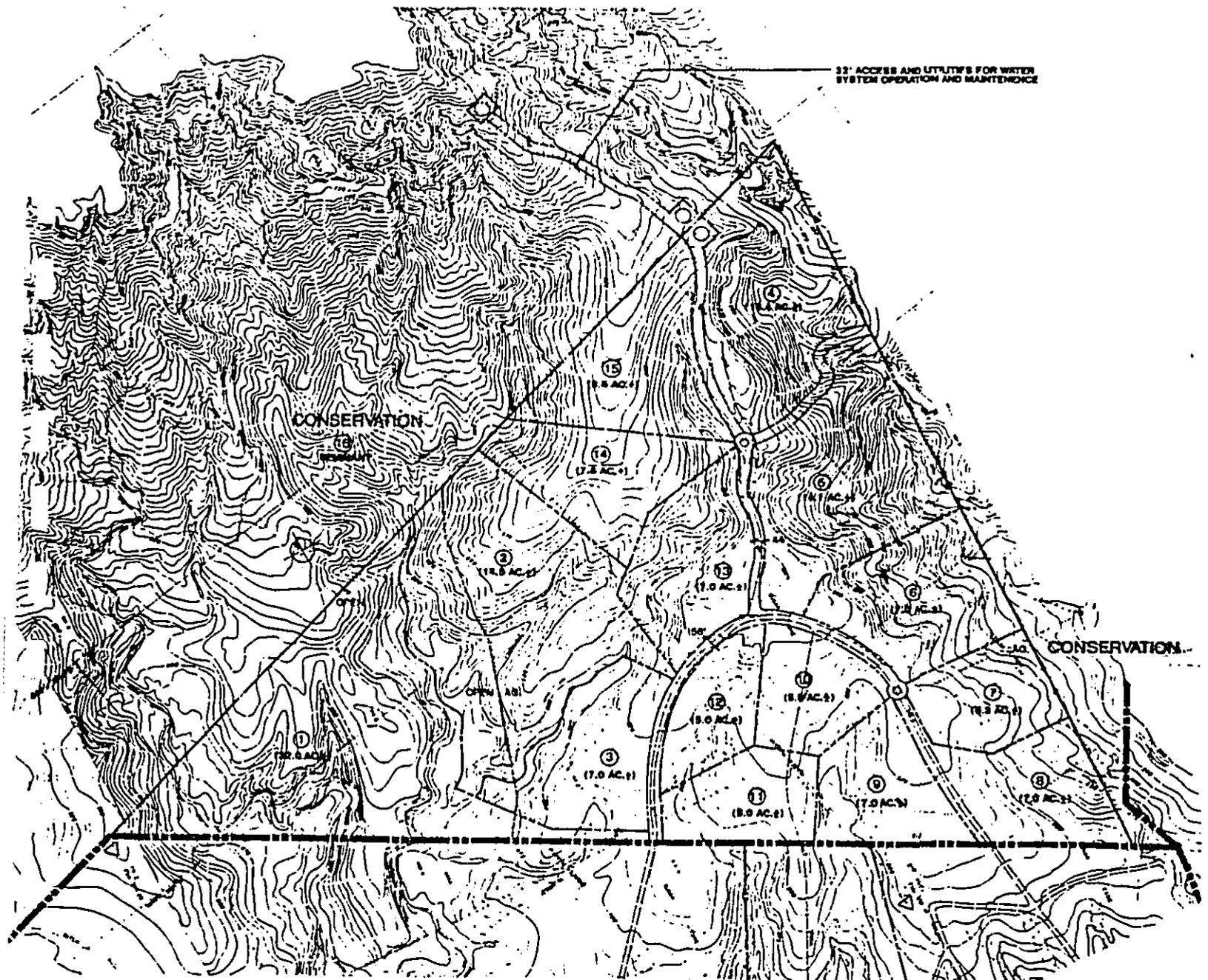
A botanical survey of these areas was conducted on January 8, 1991 to describe and record the existing vegetation, to determine if proposed or listed threatened and endangered species are present on the site (USFWS 1990), and to prepare a species list of the taxa found in the area.

METHODS

Access to the site was obtained by way of existing farm roads and a trail into the wooded area. Data were collected during a wandering transect along both sides of the thirty foot by six-hundred foot road right-of-way and by way of peripheral and cross transects of the two, one-hundred fifty foot square tank sites. All parts of the site were examined and the results of that survey are presented here.

LITERATURE REVIEW

Two environmental assessments are available for projects in the area, both of which were prepared by Belt Collins & Associates. The oldest of these was for a proposed Agricultural Subdivision in the Kilauea area



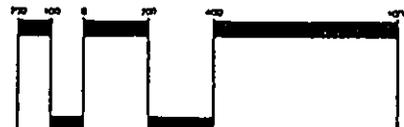
PRELIMINARY SUBDIVISION PLAN
NAMAHANA FARMS

KILAUEA, KAUAI
AREA SCALE

8 ACRES
4 AC. 2 AC.
1 AC. 1 AC.



LINEAL SCALE (FEET)



DATE: 11/16/80

REV: 11/24/80

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PLANNING
CONSULTANTS, INC.

Figure 1. Location Map.

(Belt Collins & Associates 1977). The second was for an Urban Mixed use and Urban Residential Park (Belt Collins & Associates 1985) also proposed for the Kilauea, Kauai area. Botanical surveys were included in both of these documents and no sensitive species were reported.

Biological areas, such as that in which the study site is located have been described in a general way by several botanists (Hillebrand 1888, Rock 1913, Wagner et al 1990), however there is no literature specific to the vegetation of the Kilauea area.

RESULTS

The single vegetation type of the study site is Ohia/Uluhe (*Metrosideros/Dicanopteris*) wet lowland forest with invasive, introduced species well established. The invasion of this forest by introduced plants is probably the result of the fires mentioned earlier and other human activities. The mature Ohia trees reach a height of 20 m with an understory of yellow guava (*Psidium cattleianum* Sabine), 8 to 10 m high. The ground layer is uluhe (*Dicanopteris linearis* (Brum.) Underw.). Maile (*Alysia oliviformis* Gaud.), ie'ie (*Freycinetia arborea* Gaud.), and *Myrsine lessertiana* A. DC are fairly common on this small site as well as a fair number of fern species. The numbers of introduced and native species are fairly evenly divided with Trumpet tree (*Cecropia pellata* Sandmark), three species of Guava, Lantana (*Lantana camera* L.), and Shoe button ardisia (*Ardisia humilis* Vahl.) the most common. A species list of all taxa found on the site has been appended.

THREATENED AND ENDANGERED SPECIES

No proposed or listed threatened and endangered species were found during this survey (USFWS 1990). No sensitive species have been reported from this area.

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SPECIES LIST

The plant families in the following species list have been alphabetically arranged within three groups, Ferns, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of Neal (1965), St. John (1973), and Haselwood and Motter (1976). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant which has been introduced to Hawaii since the arrival of Capt. James Cook or by the Polynesians.
2. The scientific name.
3. The Hawaiian name and or the most widely used common name.
4. Abundance ratings are for this site only and they have the following

meanings:

Uncommon - a plant that was found less than five times.

Occasional - a plant that was found between five to ten times.

Frequent - a plant that was found in widely scattered parts of the site in low numbers.

Common - a plant considered an important part of the vegetation

Locally abundant - plants found in large numbers over a limited area. For example, the plants found in grassy patches.

This species list is the result of an extensive survey of this site at the beginning of the growing season (January 1990) and it reflects the vegetative composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season.

CHECKLIST OF PLANTS FOUND ON TWO NAMAHA FARM TANK SITES AND
ROAD RIGHT-OF-WAY, KILAUEA, KAUAI

<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>ABUNDANCE</u>
FERNS AND FERN ALLIES		
Psilotaceae - Psilotum Family		
<i>Psilotum nudum</i> L.	Moa	Occasional
Davalliaceae		
<i>Nephrolepis exaltata</i> (L.) Schcott.	Sword fern	Common
Dicksoniaceae - Dicksonia Family		
<i>Cibotium splendens</i> Krajiná	Hawaiian tree fern	Occasional
Elaphoglossaceae		
<i>Elaphoglossum hirtum</i> C. Chr.		Occasional
Gleicheniaceae - Vine fern Family		
<i>Dicranopteris linearis</i> (Brum.) Underw.	False staghorn Fern	Abundant
Grammitidaceae		
<i>Adenophorus tarmariscinus</i> L.		Occasional
<i>Grammitis tenella</i> Kaulf.		Occasional
Hymenophyllaceae - Filmý Ferns		
<i>Hymenophyllum</i> sp.	Filmý fern	Occasional
Ophioglossaceae		
<i>Ophioglossum pendulum</i> L.	Adder's tongue	Uncommon
Polypodiaceae - Common fern Family		
<i>Dryopteris dentata</i> (Forsk.) C. Chr.	Oak Fern	Occasional
<i>Microsorium scolopendrium</i> (Burm.) Copel.	Laua'e	Occasional
<i>Pleopeltis thunbergiana</i> Kaulf.		Uncommon
<i>Polypodium pellucidum</i> Kaulf.		Uncommon
<i>Sphenomeris chusana</i> (L.) Copel.	Pala'a	Common

SCIENTIFIC NAME	COMMON NAME	ABUNDANCE
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MONOCOTYLEDONES

Cyperaceae - Sedge Family

<i>Cyperus polystachyus</i> Rottb.	Flat sedge	Occasional
<i>Fimbristylis dichotoma</i>	Tall fringe rush	Abundant

Gramineae - Grass Family

<i>Axonopus affinis</i> Chase	Narrow-leaved carpet grass	Common
<i>Oplismenus hirtellus</i> (L.) Beauv.	Basket grass	Common
<i>Paspalum conjugatum</i> Berg.	Hilo grass	Common
<i>Paspalum orbiculare</i> Frost.	Rice grass	Common
<i>Sacciolepis indica</i> (L.) Chase	Glenwood grass	Common
<i>Setaria glauca</i> (L.) Beauv.	Yellow foxtail	Common

Orchidaceae -Orchid Family

<i>Spathoglottis plicata</i> Bl.	Ground orchid	Occasional
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Pandanaceae - Screw Pine Family

<i>Freycinetia arborea</i> Gaud.	'Ie'ie	Uncommon
<i>Pandanus odoratissimus</i> L.	Hala	Common

Zingiberaceae - Ginger Family

<i>Zingiber zerumbet</i> (L.) Sm.	'Awapuhi	Common
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DICOTYLEDONES

Apocynaceae - Dogbane Family

<i>Alyxia oliviformis</i> Gaud.	Maile	Occasional
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Compositae - Daisy Family

* <i>Ageratum conyzoides</i> L.	Ageratum	Occasional
* <i>Elephantopus mollis</i> H. B. K.	Elephantopus	Occasional

Lythraceae - Loosestrife Family

* <i>Cuphea carthagenensis</i> MacBride	Tarweed	Uncommon
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Melastomataceae - Melastoma Family

* <i>Melastoma malabathricum</i> L.	Melastoma	Common
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SCIENTIFIC NAME	COMMON NAME	ABUNDANCE
Moraceae - Fig Family		
* <i>Cecropia peltata</i> Sandmark	Trumpet tree	Common
Leguminosae - Bean Family		
* <i>Desmodium</i> sp.	Beggar's tick	Uncommon
Myrsinaceae - Myrsine Family		
* <i>Ardisia humilis</i> Vahl.	Shoebutton ardisia	Common
<i>Myrsine lessertiana</i> A. DC	Kolea lau nui	Occasional
Myrtaceae - Myrtle Family		
<i>Metrosideros collina</i> (J.R. & G. Frost.)	'Ohia	Common
* <i>Psidium cattleianum</i> Sabine	Strawberry guava	Common
* <i>Psidium guagava</i> L.	Yellow guava	Uncommon
Umbelliferae - Carrot Family		
* <i>Centella asiatica</i> (L.) Urban	Asiatic pennywort	Locally abundant
Verbenaceae - Verbena Family		
* <i>Lantana camera</i> L.	Lantana	Occasional
* <i>Stachytarpheta cayennensis</i> Vahl	Cayenne vervain	Occasional

APPENDIX B
ARCHAEOLOGICAL INVENTORY SURVEY



Paul H. Rosendahl, Ph.D., Inc.

Archaeological • Historical • Cultural Resource Management Studies & Services

305 Mohouli Street • Hilo, Hawaii 96720 • (808) 969-1763 • FAX (808) 961-6998
P.O. Box 12835 • Tamuning, Guam 96911 • (671) 649-3045 • FAX (671) 649-2611

Report 969-122990

December 27, 1990

Mr. John Wehrheim
P.O. Box 3600
Lihue, Hawaii 96766

*Subject: Archaeological Inventory Survey
Namahana Farms Tank Sites and Access Road CDUA Project
Land of Kalihiwai, Hanalei District
Island of Kauai*

Dear Mr. Wehrheim:

At your request, Paul H. Rosendahl, Ph.D., Inc. (PHRI) recently conducted an archaeological inventory survey of the Namahana Farms Tank Sites and Access Road CDUA Project, in the Land of Kalihiwai, Hanalei District, Island of Kauai (Figure 1). The inventory survey field work was conducted on December 19, 1990 by Supervisory Archaeologist Alan T. Walker, B.A. Approximately four labor-hours were expended for the field work portion of the survey. The overall objective of the survey was to provide information appropriate to and sufficient for the preparation of a State Conservation District Use Application (CDUA). The present letter report constitutes the final report for the inventory survey.

The basic purpose of an inventory survey is to identify—to discover and locate on available maps—features of potential archaeological significance present within the specified project area. An *inventory survey* is an initial level of archaeological investigation. It is extensive rather than intensive in scope, and is conducted with the primary aim of determining the presence or absence of archaeological resources within a specified project area. A survey of this type indicates both the general nature and the variety of archaeological remains present, and the distribution and density of such remains. It permits a general significance assessment of the archaeological resources, and facilitates formulation of realistic recommendations and estimates for any further work that might be necessary or appropriate. Such work could include *intensive survey*—further data collection involving detailed recording of sites and features, and selected test excavations. It might also include subsequent *mitigation*—data recovery research excavations, construction monitoring, interpretive planning and development, and/or preservation of sites and features with significant scientific research, interpretive, and/or cultural values.

The basic objectives of the present survey were fourfold: (a) to identify (find and locate) all sites and site complexes present within the project area, (b) to evaluate the potential general significance of all identified archaeological remains, (c) to determine the possible impacts of proposed development upon the identified remains, and (d) to define the general scope of any further data collection and/or other mitigation work that might be necessary or appropriate.

Based on a review of available background literature, familiarity with the current requirements of federal, state, and county review authorities, and on discussions with you, the following specific tasks were determined to constitute an adequate and appropriate scope of work for the present survey:

1. Conduct archaeological and historical documentary background research involving review and evaluation of readily available archaeological and historical literature, historic documents and records, and cartographic resources relevant to the immediate project area;

2. Conduct a variable coverage (partial to 100%), variable intensity surface survey of the project area, with relatively higher intensity coverage to be given to non-cultivated and other less modified lands, and relatively lower intensity coverage to be given to areas extensively modified by historic period and/or recent cultivation;
3. Conduct limited subsurface testing at selected sites and features identified within the project area to determine the presence or absence of potentially significant buried cultural features or deposits, and to obtain suitable samples for age determination analyses; and
4. Analyze background and field data, and prepare appropriate reports.

The inventory survey was carried out in accordance with the standards for inventory-level survey recommended by the Hawaii State Department of Land and Natural Resources-Historic Preservation Program/State Historic Preservation Office (DLNR-HPP/SHPO). The significance of all archaeological remains identified within the project area was to have been assessed in terms of (a) the National Register criteria contained in the Code of Federal Regulations (36 CFR Part 60), and (b) the criteria for evaluation of traditional cultural values prepared by the national Advisory Council on Historic Preservation (ACHP). DLNR-HPP/SHPO uses these criteria to evaluate eligibility for the Hawaii State and National Registers of Historic Places. In order to facilitate your management decisions regarding archaeological sites, archaeological remains were also to have been assessed in terms of PHRI Cultural Resource Management value modes, which are based on the above federal criteria.

The Namahana Farms Tank Sites and Access Road CDUA project area is c. 3.8 miles inland from the coast and is within the Conservation District in the Land of Kalihawai, Hanalei District, Island of Kauai (Figure 1). The project area is on a ridge immediately east of the Kalihawai River Valley and is between 600 and 730 ft AMSL. In addition to two 0.25 ac tank sites, the project area includes an access corridor measuring approximately 800 ft long by 35 ft wide. One tank site is at 600 ft above mean sea level (AMSL) and the second is at 730 ft AMSL. The access road connects the two tank sites. To ensure that the project area was accurately located, the two tank sites and access corridor were flagged with surveyors' tape and were shown by you to Mr. Walker.

The terrain in the project area is roughly level to gently sloping and the soil is classified as Hulua gravelly silty clay loam (3-25% slopes) (Foote et al. 1972). Hulua gravelly silty clay loam represents the Hulua series of "...poorly drained soils on uplands on the island of Kauai. These soils have a layer of indurated ironstone at depths of 10 to 20 inches. They developed in material weathered from basic igneous rock" (Foote et al. 1972:45). According to Foote et al. "[i]n a representative profile the upper part of the surface layer is black gravelly silty clay loam about 10 inches thick. The subsurface layer, about 6 inches thick, is mottled, dark grayish-brown, massive silty clay. This horizon overlies indurated ironstone, 1/2-inch to three inches thick. The ironstone sheet caps yellowish-red, and very dusky, red clay loam and soft, weathered rock that extends to a depth of more than 70 inches" (Foote et al. 1972:45).

Vegetation in the project area consists primarily of an overstory of 'ohi'a-lehua (*Metrosideros collina* [Forst.] Gray subsp. *polymorpha* [Gaud.] Rock), guava (*Psidium* sp.), purple strawberry guava (*Psidium cattleianum* Sabine), hala (*Pandanus odoratissimus* L.f.), and an understory of uluhe (*Dicranopteris linearis* [Burm.] Underw.), lantana (*Lantana camara* L.), ginger (*Zingiber zerumbet* [L.] Smith), maile (*Alyxia olivaeformis* Gaud.), and various shrubs and grasses. Rainfall in the general vicinity of the project area ranges from 75-100 inches per year, and the mean annual temperature in the area is approximately 70-75 degrees F. (Armstrong 1983:62,64).

The present survey is the first archaeological work conducted within the project area. A reconnaissance survey by Kennedy (1990) is the only previous archaeological work conducted within the general vicinity of the project area. In April of 1990, Kennedy conducted a reconnaissance survey of 15 acres (TMK:5-2-02:Por.10) located c. 4,500 ft seaward (north) of the present project area. Survey field work and informant interviews indicated that the subject parcel was once in sugar cane. Because no archaeological remains were identified during the survey, Kennedy recommended no further archaeological work (Kennedy 1990).

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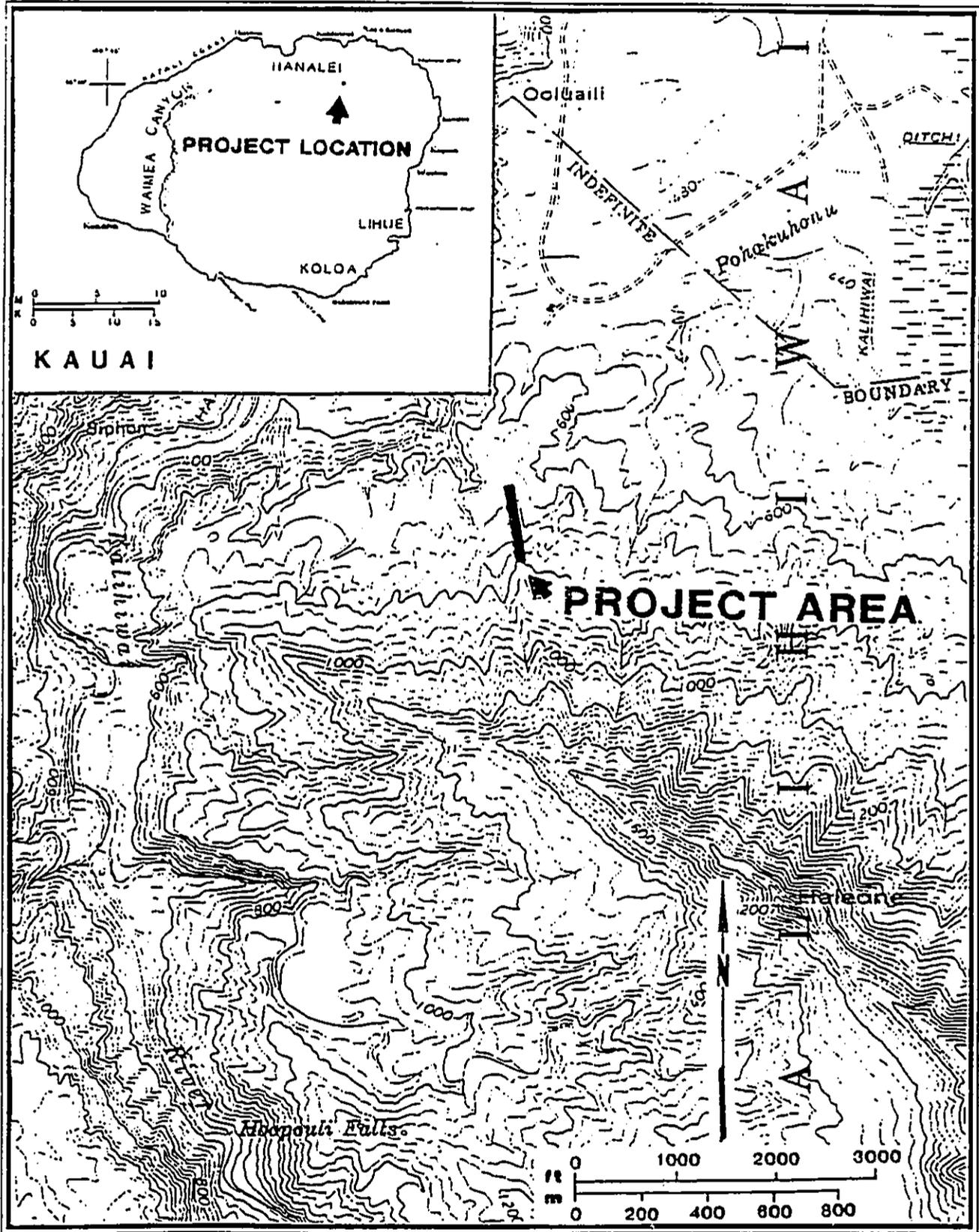


Figure 1. Project Area Location

Previous archaeological work in the Land of Kalihiwai includes investigations by Thrum (1907), Bennett (1931), Earl (1978), Hammatt (1980), and Rosendahl (1989). With the exception of Thrum and Bennett, all of these earlier investigations conducted within the Land of Kalihiwai were concentrated on the coast. The two *heiau* (Maheu Heiau and Kapaka Heiau) identified by Thrum and Bennett, are located on the east side of Kalihiwai River Valley and are far outside the present project area.

The following historical documentary research for the present project was conducted by PHRI Historical Researcher Lehua Kalima, B.A.:

The Namahana project area lies in Kalihiwai Ahupua'a, in the Hanalei district of Kaua'i. Kalihiwai is located between Kalihikai Ahupua'a, on the west, and Kilauea Ahupua'a, on the east. In ancient times, the Hanalei district was known as Halele'a, and Hanalei was regarded as an *ahupua'a* in this district. Ko'olau was another name given to the eastern side of the Halele'a district. The name Kalihiwai is translated as "Kalihi [the edge] (with a) stream" (Pukui et al. 1974:77). Handy and Handy speculate concerning the origin of the name Halele'a for this area:

Eastward from Napali (The cliffs) is the *moku* (district) named Halele'a. The name means "House-of-delight." Perhaps this name for the whole area from Kalihiwai to Ha'ena was given because at Ha'ena was the greatest *hula* shrine in the islands...(1972:417-8).

Two Hawaiian sayings that refer to this area are found in Pukui's *Olelo No'eau*:

Ka ua Makako'i o Halele'a.

The Adz-edged rain of Halele'a.

A rain so cold that it feels like the sharp edge of an adz on the skin. Refers to Halele'a, Kaua'i (1983:1586).

Lu'ulu'u Hanalei i ka ua nui; kaumaha i ka noe o Alaka'i.

Heavily weighted is Hanalei in the pouring rain; laden down by the mist of Alaka'i.

An expression used in dirges and chants of woe to express the burden of sadness, the heaviness of grief, and tears pouring freely like rain. Rains and fogs of other localities may also be used (ibid:2034).

There are very few early accounts of the area, but one early visitor, Henry Whitney, mentioned the Kalihiwai Valley in his "Hawaiian Guide Book" written in 1875:

Just outside of Kilauea is the beautiful Kalihiwai valley, whose fertile lands are watered by the river of the same name. A short sail up the river, whose banks are shaded by large trees, a beautiful little cascade is disclosed, while further inland is another and still another, which though smaller, vie in beauty with many larger waterfalls (Whitney IN Clark 1990:24).

Handy and Handy mention taro cultivation along the streams of Kalihikai and Kalihiwai:

East of Hanalei are two small *ahupua'a*, Kalihi-kai, and Kalihi-wai, both of which had quite extensive *lo'i* area near the sea. There were *lo'i* back along main streams and side streams, but both valleys are shallow. Actually the stream flow from both valleys is diverted eastward to Kilauea, the adjacent *ahupua'a* in the *moku* of Ko'olau.

Kilauea is watered by a small river whose headwaters take the flow of streams above Kalihiwai as well as those coming down sloping *kula* lands above Kilauea. This is a peculiar terrain, with terraces along the north side of the river toward its seaward end belonging to Kilauea and those on the south side to the small *ahupua'a* named Kahili. A mile upstream is a small terraced area, but beyond this there were no terraces, for the main stream flows in a narrow gulch, and so do other side streams which flow into the Kilauea River. Hawaiians evidently never developed *lo'i* here because the neighboring *kula* land is too high above the streams for irrigation. This *kula* would have been excellent sweet-potato land. On the whole, Kilauea, despite a sizable river flowing through it, was a relatively small producer of taro because of the nature of its hinterland (Handy and Handy 1972:421).

Thomas G. Thrum lists various *heiau* in Kalihiwai Ahupua'a. With the exception of Kapaka, all of these *heiau* are located near the coast. Thrum's notes are shown below:

Kaihalulu.....Kalihiwai. - A small high walled *heiau* of pookanaka class dedicated to Kane and Kanaloa. Destroyed years ago to help build a mill.

Kaunonoli.....Kalihiwai. - Destroyed years ago after use as a cattle pen.

Kihei.....Kalihiwai. - A small *heiau* built by a chief of same name. Its walls were 8 feet high, and at his death its paving was removed and he was buried in his canoe in the enclosure.

Kalahihi.....West side, Kalihiwai. - Of pookanaka class. Foundations only remain, indicating it as of large size.

Kapaka.....Back of Hanalei. - A paved open platform *heiau*, without walls; stones set edgewise traversing through. Kane its deity. Said to have had connection with Kapinao at Waiakalua in its workings (Thrum 1907:42).

In addition to these *heiau*, there is Maheu Heiau (Bennett 1931:134), located near the project area. This *heiau*, located on the peak of Puu Maheu in Kalihikai Ahupua'a, is a paved platform 18 by 21 feet, and it is built with river stone as well as local rock (*ibid.*).

In Edward Joesting's *Kauai The Separate Kingdom*, there is an interesting story about a chief named Kihei. While Joesting does not say so, the chief might be the same Kihei mentioned above:

After failing for a second time to conquer the leeward islands by force, Kamehameha turned to other means to accomplish his objective....Kamehameha sent a chief, Kihei, to Kauai to discuss a basis whereby Kauai and Niihau could peacefully come under the rule of Kamehameha, but with Kaumualii retaining authority over his domains. Chief Kihei proved to be a poor choice. He became so enamored with life on Kauai that he decided to stay on the island and did not return to report to his king. Nevertheless, he did deliver Kamehameha's message, and in return Kaumualii sent Wahine to see Kamehameha (Joesting 1984:66).

As a result of the Great Mahele, in 1848, the entire *ahupua'a* of Kalihiwai was awarded to William Lunalilo in L.C.A. 8559-B (Board of Commissioners 1929). This *ahupua'a* comprised 8,600 acres. In addition to his award, 38 other individuals were awarded *kuleana* (small land grants) in this *ahupua'a*, but no *kuleana* were claimed on or near the project site.

In the late 19th century, Kalihiwai was touched by the economic and social change that affected most of the Kingdom. According to Joesting:

By 1890 there were villages and hotels where once there had been no inhabitants at all, a reflection of how the centers of population were shifting. The places that had offered the most to Hawaiians - the sea to fish in, a stream to provide water for taro - these things became less important as the new commercial world took increasing control. Although some Hawaiians preferred the old life-style, many moved close to the plantation mill with the nearby company store, and their generally thinning numbers reduced old villages to fragments of what they had once been.

Places like Anahola Valley, Moloaa, Kalihiwai, and Waipouli had previously been centers of population. Valleys along Na Pali coast once had extensive terraces for growing taro... (1984:249-250).

New industries came in to the Garden Isle and the centers of population shifted away from Kalihiwai. Thrum's indication that Kaunonoli Heiau was destroyed by use as a cattle pen indicates that the land was used for ranching, and since Kaihalulu Heiau was destroyed to help build a mill, according to Thrum, sugar cane must have been cultivated nearby. In the historic period, the lower valley flood plain was extensively planted in rice (Rosendahl 1989:2), and the coastal area near the bay was inundated in 1957 by a tsunami, which destroyed many homes there (ibid.).

A 100%-coverage surface survey of the Namahana Farms Tank Sites and Access Road CDUA project area was performed utilizing two to five pedestrian transects that were oriented approximately north-south and parallel to the major axis of the corridor. Transect intervals were maintained approximately 5.0-10.0 m apart, and areas outside the project area tank sites and access corridor were also inspected. The survey was facilitated by the conceptual subdivision map (1"=200' scale) you provided and a USGS 7.5' series quad map ("Hanalei, Hawaii") (1"=2,000', 50-ft contours). Because the overstory of 'ohi'a-lehua and guava restricted understory vegetation growth, ground visibility within the inland (south) half of the access corridor and the tank site at 730 ft AMSL was good. Ground visibility within the seaward (north) half of the access corridor and the tank site at 600 ft AMSL was only moderate to poor, because the understory consisted predominantly of *uluhe*.

The archaeological inventory survey of the Namahana Farms Tank Sites and Access Road CDUA project area did not identify any archaeological sites or features. Because no archaeological sites were identified, no test excavations were made.

Although no archaeological features were identified, it can be supposed that general settlement patterns for the Land of Kalihiwai probably correspond with settlement patterns previously proposed for island environments. Because occupation is thought to have initially occurred in coastal areas (Green 1980), the first prehistoric settlement in the Land of Kalihiwai probably took place primarily along the coast at Kalihiwai Bay and in the seaward portion of Kalihiwai River Valley. Due to the presence of (a) a permanently flowing river, (b) large tracts of fertile alluvial and colluvial soils, and (c) a variety of offshore reef environments supporting a wide range of marine resources, Kalihiwai Bay and River Valley is typical of the well-developed river valleys which offered attractive and ecologically optimal environments for early Polynesians.

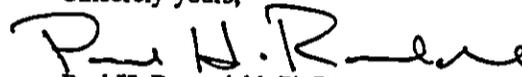
Subsequent expansion of prehistoric settlement within the Land of Kalihiwai probably was concentrated within the river valley and/or coastal areas. Because the present project area is in the forest zone, it was probably rarely inhabited. The early Hawaiians primarily used upland-forest areas for the collection of various raw materials. The presence of two *heiau* (Maheu Heiau and Kapaka Heiau) at upland locations suggests that those areas were also used for ceremonial or religious activities. Historic period settlement patterns for the Land of Kalihiwai have followed the probable prehistoric patterns. Occupation and agricultural exploitation have steadily expanded inland. Much of the land seaward of the present project area is used for agriculture and contains scattered residential structures.

Because of the negative findings of the inventory survey, no further archaeological work is necessary within the Namahana Farms Tank Sites and Access Road CDUA project area. Subsequent to completion of the present survey field work (January 1991), survey findings and conclusions—including evaluations and recommendations—were discussed with Ms. Nancy McMahon, staff archaeologist for Kauai in DLNR-HPP/SHPO.

It should be noted that the above evaluations and recommendations have been made solely on the basis of the present inventory survey work. There is always the possibility, however remote, that potentially significant, unidentified subsurface cultural remains or surface structural features will be encountered in the course of future archaeological investigations or subsequent development. In such situations, archaeological consultation should be sought immediately.

If you have any questions concerning the survey or this report, please contact me at our Hilo office (808) 969-1763.

Sincerely yours,


Paul H. Rosendahl, Ph.D.
President and Principal
Archaeologist

ATW:kb

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INFORMATION REQUIRED FOR ALL USES

INFORMATION REQUIRED FOR CONDITIONAL USE ONLY

INFORMATION REQUIRED FOR ALL USES

I. Description of Parcel

A. Existing structures/Use

The two proposed water storage reservoirs and access road are to be located within the property identified as TMK 5-2-01: portion of 03 which contains over 1,155 acres (see exhibit A). The entire parcel is owned in fee by B. A. Dyre (Namahana Farms, Inc.). The parcel is mostly vacant, with one single family dwelling about 1,000 feet makai of the proposed lower elevation reservoir site. The remainder of the parcel is overgrown with vegetation common to rainy climates in Hawaii.

B. Existing Utilities

There are no water, sewerage, or storm drainage systems in the immediate vicinity of the proposed water storage reservoirs and access road.

C. Existing Access

An unpaved road extends approximately one mile from the Kalihiholo Road, at the mauka end of the Guava Processing Farm, to the lower level reservoir site. The area between the lower and upper reservoir sites is overgrown with vegetation.

D. Vegetation

Thick vegetation surrounding the site is dominated by Ohia trees, yellow guava, and uluhe. The project area is described as a wet lowland forest according to the Botanical Survey Report conducted by Botanical Consultants in January 1991 for the proposed project. None of the plants are listed as threatened or endangered species. Detailed findings of the Botanical Survey are contained in appendix A.

E. Topography

The site is located mauka of Kuhio Highway where slope varies between zero and thirty percent. Both reservoir sites are located in an area where there are slopes in excess of 30 percent, according to "Kauai Lands Classified by Physical Qualities for Urban Usage." The actual reservoir sites, however, are relatively flat.

F. Shoreline

At its closest point, the shoreline is located approximately two miles away at Kalihiwai Bay.

G. Existing Covenants, Easements, Restrictions

None.

H. Historic Sites Affected

None. See appendix B.

II. Description

The proposed action involves the construction of two 100,000-gallon water storage reservoirs and a 1,100-foot paved access roadway between them. The reinforced concrete reservoirs will be situated at about the 630-foot and 735-foot elevations, each 19 feet high and 34 feet in diameter. The width of the access road between the reservoirs will be 12 feet. A 10-foot wide perimeter road around each reservoir will be constructed for maintenance vehicles and personnel. Each reservoir site will be surrounded by a 6-foot high chain link fence. Landscaping will be provided around the reservoirs for erosion control purposes. A duplex booster pump will be installed at the lower reservoir site and a transmission/distribution line will extend about 1,100 feet paralleling the road to the upper level reservoir site. A parallel distribution line will service the proposed Namahana Farms subdivision located within the same parcel. Refer to figure 2 in Environmental Assessment (EA). The project area consists of two quarter-acre sites for the reservoirs and a 1,100-foot long paved access road for a

total of approximately one acre within the Conservation District.

III. Commencement Date: October 1991

Completion Date: October 1992

IV. Type of Use Requested

Conditional Use: Subzone R.

Area of Proposed Use:

Two quarter acre sites and 1,100 feet of access roadway between reservoir sites, for a total of approximately one acre.

Name and Distance of Nearest Town:

The fringe of Kilauea town and Kuhio Highway lie approximately three miles makai of the proposed reservoir sites. About one mile makai from the project site are the agricultural subdivisions, Kalihiwai Ridge - Phases I and II. The proposed Namahana Farms agricultural subdivision lies immediately makai of the project site.

Conservation District Subzone: Resource

County Development Plan Designation: No Designation

V. Filing Fee

A filing fee of \$50.00 is remitted, together with a public hearing fee of \$50.00, for a total remittance of \$100.00.

INFORMATION REQUIRED FOR CONDITIONAL USE ONLY

I. Plans

A. Area Plan: Both reservoir sites are vacant and undeveloped. A portion of the parcel is proposed for the Namahana Farms subdivision. The parcel is owned by B. A. Dyre. Refer to figure 1 in EA.

B. Site Plan: Refer to figure 2 in EA.

- C. Construction Plan: Refer to figures 3 and 4 in EA.
- D. Maintenance Plan: The 12-foot wide paved access road to each reservoir site and 10-foot wide perimeter road around each reservoir will be constructed for maintenance vehicles and personnel who will conduct chart recording, groundskeeping and landscaping maintenance work on a weekly basis.
- E. Management Plans: No animal, plant or mineral resources are used or proposed for usage.
- F. Historical or Archaeological Site Plan: Neither site contains any historic or archaeological sites on the State or Federal Register (see appendix B).

II. Subzone Objective:

The objective of the Resource Subzone is to "*develop, with proper management, areas to ensure sustained use of the natural resources of those areas.*" (Section 13-2-13 Administrative Rules of the Department of Land and Natural Resources).

The proposed water storage reservoirs and access road are requested as a Conditional Use of the Resource Subzone. The reservoirs and access road will utilize one acre within the 1,155-acre parcel, which is a relatively small area in relation to the surrounding open space. The reservoirs should not significantly detract from the sustained use value of the area.

EXHIBIT A
PHOTOGRAPHS OF PROJECT SITE
TMK MAP



Existing access road leading to lower level reservoir site from proposed Namahana Farms Subdivision. It is proposed that this access road be paved.



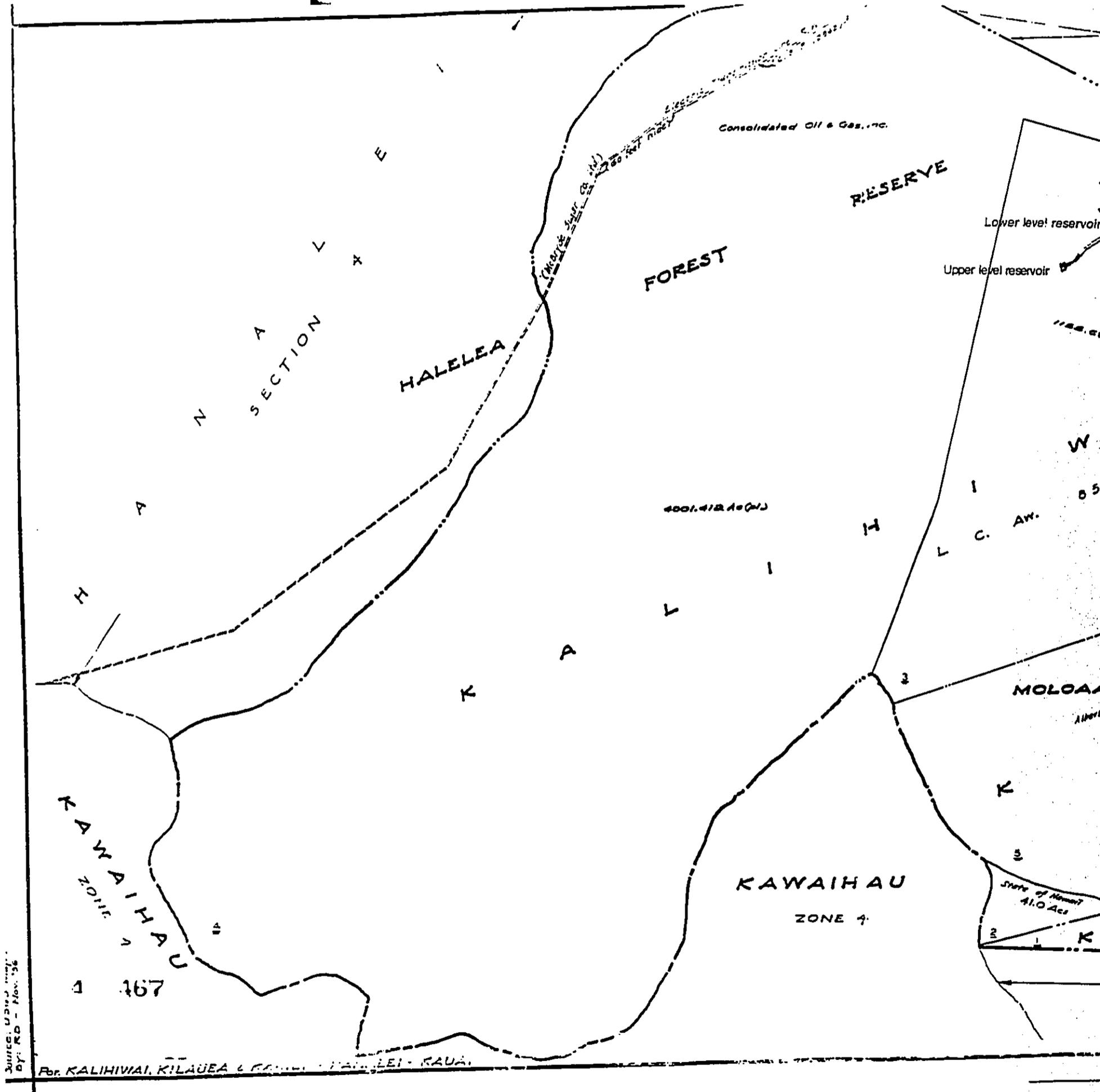
View from upper level reservoir site in the direction of the lower level reservoir site.



Upper level reservoir site.



Lower level reservoir site.



SECTION 2

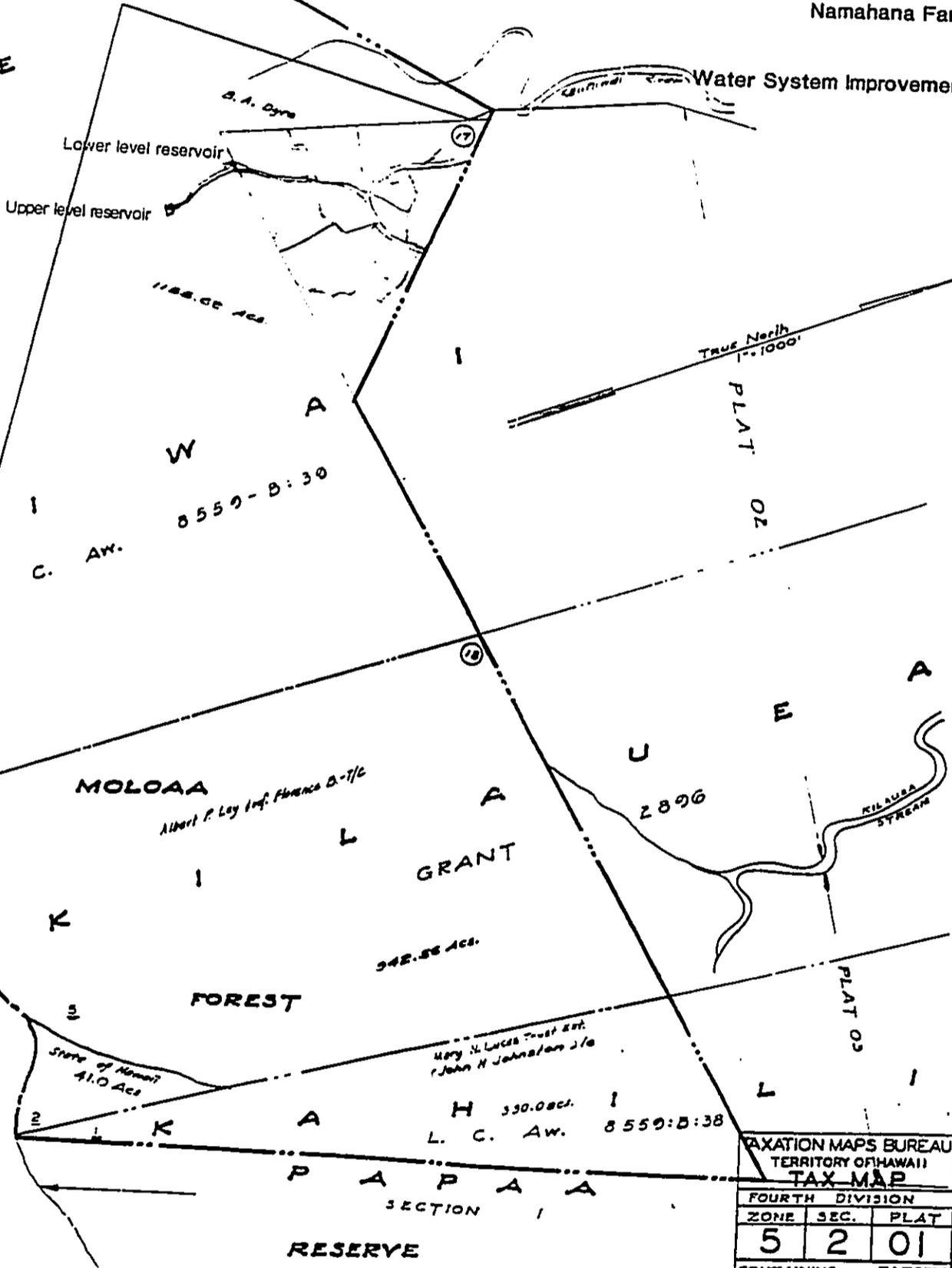
Conservation District Use Application

Namahana Farms

Water System Improvements

RESERVE

Geo. Inc.



True North
1" = 1000'

PLAT 01

PLAT 02

PLAT 03

HAU

E 4

P A P A A
SECTION 1

RESERVE

SUBJECT TO CHANGE

TAXATION MAPS BUREAU		
TERRITORY OF HAWAII		
TAX MAP		
FOURTH DIVISION		
ZONE	SEC.	PLAT
5	2	01
CONTAINING PARCELS		
Scale: 1 in. = 1000 ft		
PRINTED		

DOCUMENT FOR PUBLICATION IN THE OEQC BULLETIN

Date: 2/20/91

Prepared by: Wilson Okamoto & Associates, Inc.

The document is a (check all that apply)

Chapter 205A Document	()	Negative Declaration	()
Chapter 343 Document	(x)	EIS Preparation Notice	()
NEPA Document	()	Draft EIS	()
		Final EIS	()
		Acceptance Notice	()

Is the document a supplemental EIS? Yes () No (x)

Title of Proposed Action or Project: Conservation District Use Application
Namahana Farms Water System Improvements

Location: Island Kauai District Hanalei

Type of Action (check one): Applicant (x) Agency ()

Name of Proposing Applicant or Agency: Namahana Farms Inc.

Name of Contact: John Wehrheim

Address: P O Box 3600

City: Lihue State: Hawaii Zip Code: 96766

Phone: (808) 245 9601

Name of Preparer or Consultant: Wilson Okamoto & Associates, Inc

Name of Contact: Charles Schuster

Address: 1150 South King Street, Suite 800

City: Honolulu State: Hawaii Zip Code: 96814

Phone: (808) 531 5261

Accepting Authority: Department of Land & Natural Resources

Estimated Project Cost:		Document Preparation Cost:	
Federal Funds	\$ _____	Neg Dec/EA	\$ _____
State Funds	\$ _____	Draft EIS	\$ _____
County Funds	\$ _____	Sup Draft EIS	\$ _____
Private Funds	\$ _____	Sup Final EIS	\$ _____
TOTAL	\$ _____	TOTAL	\$ _____

EA Trigger (check all that apply)

- () Use of State or County Lands or Funds
- (x) Use of Conservation District Lands
- () Use of Shoreline Setback Area
- () Use of Historic Site or District
- () Use of Lands in the Waikiki Special District
- () Use Requiring an Amendment to a County General Plan

NOTE: For answers to any question on Page 10 or 11,
please contact the Office of Environmental
Quality Control at (808) 548-6915.

[OEQC Form 89-01 (1/89)
Page 1 of 2]

- () Use Requiring the Reclassification of Conservation Lands
- () Construction or Modification of Helicopter Facilities
- () Other _____

Brief Description of the Proposed Action or Project which will be Published in the OEQC Bulletin (limit of 500 words or less): _____

The proposed project involves the construction of two 100,000-gallon water storage reservoirs, 1,100-foot access roadway, and appurtenant facilities (2 booster pumps and 1 gravity line) on privately-owned land mauka of the town of Kilauea, Island of Kauai. The proposed requirements will connect with and expand the existing Kilauea Water System. The proposed water system would service developments in the immediate area including the proposed Namahana Farms subdivision and the recently subdivided Kalihiwai Ridge - Phase II. Located within the Conservation District are the two reservoirs, situated at about the 630-foot and 735-foot elevations, respectively, and a new access road between the lower and upper reservoirs will be 19 feet high, 34 feet in diameter and constructed of reinforced concrete. The 20-foot wide paved access road to each reservoir will be constructed for maintenance vehicles and personnel.

Both

(Continue on another sheet if necessary)

Tax Map Key(s): 5-2-01:03 _____

FOR OEQC USE ONLY

Date of Submission:
 Date of Publication:
 Last Day for Consulted
 Party Request:
 Comment Period Ends:
 Acceptance Date:
 Publication Date of
 Acceptance:

OEQC # _____
 Planner: _____