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AUG 14 1990

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 HA-2405 for Koloko Water System Improvements,
North Kona, Hawaii

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

Please feel free to call me or Ed Henry of our Office of Conservation and Environmental Affairs, at 8-7837, if you have any questions.

Enclosure

1990-08-23-HA-FEA.

FILE COPY

**Environmental Assessment
For Kaloko Water
System Improvements**

Kaloko, North Kona, Hawaii

Prepared For:

**HAWAII COUNTY DEPT. OF WATER SUPPLY
& TSA INTERNATIONAL, LTD.**

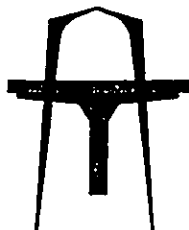
Prepared By:

**WILSON OKAMOTO & ASSOCIATES, INC.
HONOLULU, HAWAII**

JUNE 1990

2662-03
July 26, 1990

**WILSON
OKAMOTO
& ASSOCIATES**



**ENGINEERS
ARCHITECTS
PLANNERS**

1150 SOUTH KING STREET
HONOLULU, HAWAII 96814
PHONE: (808) 531-5261

Mailing Address:
P. O. Box 3530
Honolulu, Hawaii 96811

Mr. Edward Henry
Office of Conservation and
Environmental Affairs
Department of Land and Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Henry:

Subject: Conservation District Use Application, Kaloko Water
System Improvements, Kaloko, North Kona, Hawaii (File
No. HA-2405)

This is to amend our previous submittal of July 6, 1990 to provide a fuller description of the specific uses and structures within the Conservation District. Wilson Okamoto and Associates is the authorized agent for the applicant, TSA International, Limited. Section II, Project Description on page 4 of the application is revised as follows:

"II. Description:

The proposed project in the Conservation District involves the construction of a one-million gallon water storage reservoir and associated facilities. The reservoir will be constructed of reinforced concrete, measuring 22 feet high and 100 feet in diameter. A 12-foot wide access driveway with a 10-foot wide perimeter road around the reservoir will be developed on the 1-acre site to provide access to the grounds by maintenance vehicles and personnel.

A 6-foot high chain link security fence will surround the perimeter of the site. Bougainvillea landscaping will be provided inside the fence fronting the mauka-makai road. A control building adjacent to a transformer pad will contain the start/stop controls for the reservoir and pumps within a 200-square foot, 10-foot high hollow tile structure.

Three booster pumps will be installed on a concrete pad to convey water to higher elevation tanks from the 12-inch water main along Queen Kaahumanu Highway. The site plan for the reservoir site is depicted in Figure 4 of the attached EA.

The overall water systems project for the Kaloko Property involves the construction of four (4) one-million gallon water storage reservoirs and appurtenant facilities, and a 20-inch water transmission main along the planned mauka-makai roadway, as described in the attached Environmental Assessment."

WILSON
OKAMOTO
& ASSOCIATES

2662-03
Letter to Mr. Edward Henry
Page 2
July 26, 1990

Please feel free to call me if there are any further questions regarding our application.

Sincerely,

Rodney Funakoshi

Rodney Funakoshi, Planner

cc: TSA International, Limited
Hawaii County Department of Water Supply

ENVIRONMENTAL ASSESSMENT
FOR THE
KALOKO WATER SYSTEM IMPROVEMENTS

Prepared For: HAWAII COUNTY DEPARTMENT OF WATER SUPPLY
and
TSA INTERNATIONAL, LIMITED

Prepared By: WILSON OKAMOTO & ASSOCIATES, INC.

June 1990

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I. INTRODUCTION

This Environmental Assessment documents the anticipated impacts of proposed water system improvements mauka of the existing Kaloko Light Industrial Subdivision in North Kona, Island of Hawaii. The water system improvements consist of 4 one-million gallon water storage reservoirs and appurtenant facilities and are being undertaken as an Improvement District with the County of Hawaii Department of Water Supply.

The preparation of this Environmental Assessment arises from the location of one of the reservoir sites within the State Conservation District as well as County funding participation in the overall water system project. This Environmental Assessment has been prepared in accordance with Chapter 343, Hawaii Revised Statutes, and Chapter 11-200, Administrative Rules of the Department of Health. The proposed action is not anticipated to generate any significant adverse impacts on the environment.

SUMMARY OF PROPOSED ACTION

Applicant: Hawaii County Department of Water Supply
and TSA International Ltd.

Landowner: TSA International Ltd. and Y-O Partnership

Accepting Agency: State Department of Land and Natural
Resources

Project Location: Kaloko, North Kona, Hawaii

Project Area: 4± acres

Tax Map Key: 7-3-9: Portion of 17, 19

State Land Use District: Agricultural, Conservation

County General Plan: Orchard, Extensive Agriculture,
Conservation

Zoning: Single-Family Residential, Unplanned, and
Open Districts

Existing Use: Vacant undeveloped

Proposed Use: Water system improvements, including four
1-million gallon water reservoirs and
appurtenant facilities, and a 20-inch
water transmission main

Consulted Agencies: Hawaii County Department of Water Supply
Hawaii County Planning Department
State Department of Land and Natural
Resources

II. PROJECT DESCRIPTION

A. Proposed Improvements

The proposed project involves the construction of four (4) one-million gallon (1 MG) water storage reservoirs and appurtenant facilities on private land adjacent and mauka of the existing Kaloko Light Industrial Subdivision, between Queen Kaahumanu Highway and Mamalahoa Highway in North Kona, Island of Hawaii (See Figures 1 and 2). The water system would service the existing and proposed developments in the immediate area, including an approved 18-hole golf course and additional phases of the light industrial subdivision development. It will also serve as an important supplement to the County of Hawaii's municipal water system for the North Kona area.

The reservoirs will be located at four sites of approximately 1-acre each adjacent to a proposed mauka-makai connector road (See Figure 3). The reservoir sites will be situated at the 118-foot, 343-foot, 630-foot, and 914-foot ground elevations. Each of the 1 MG reservoirs will be constructed of reinforced concrete, 22 feet high and 100 feet in diameter.

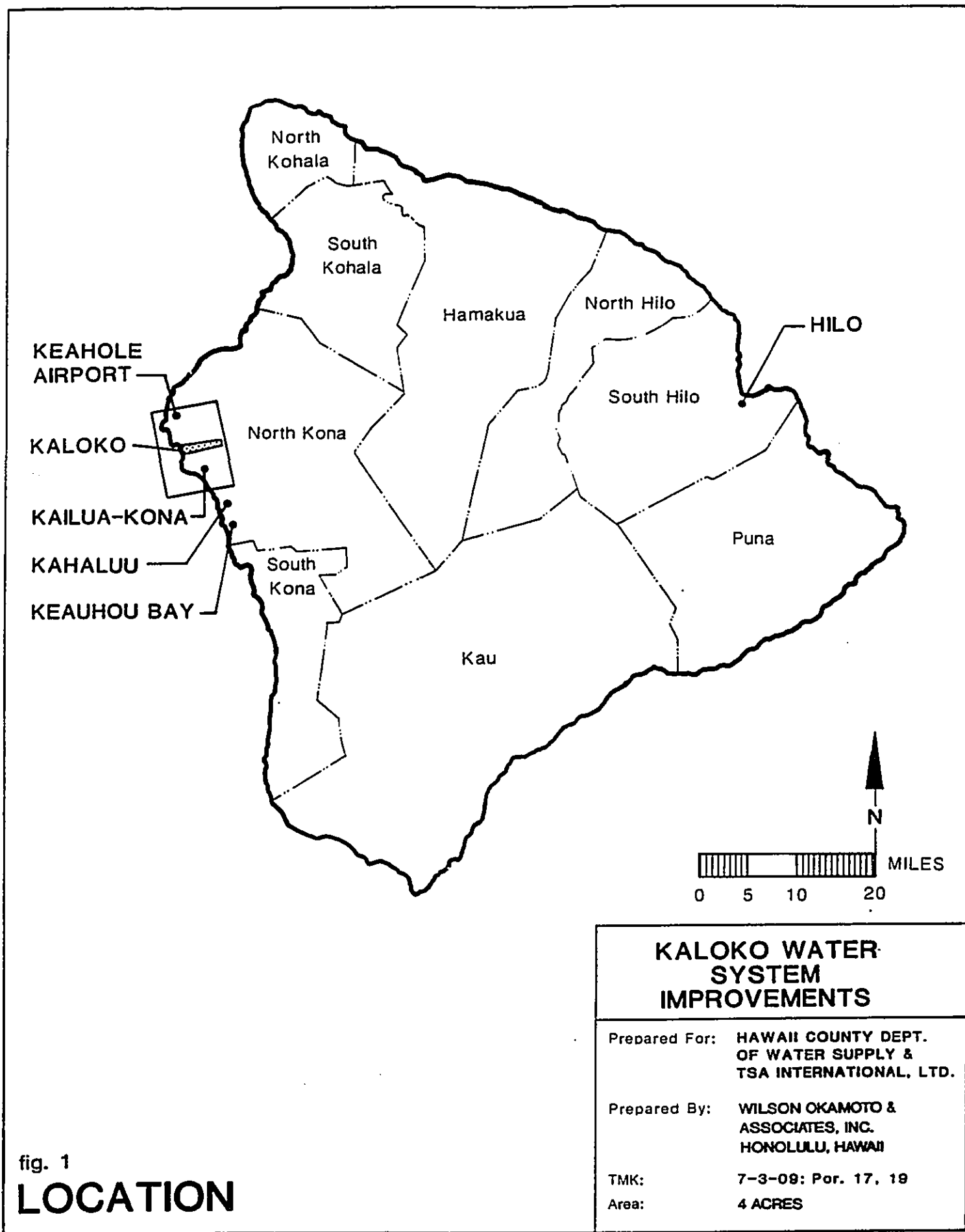
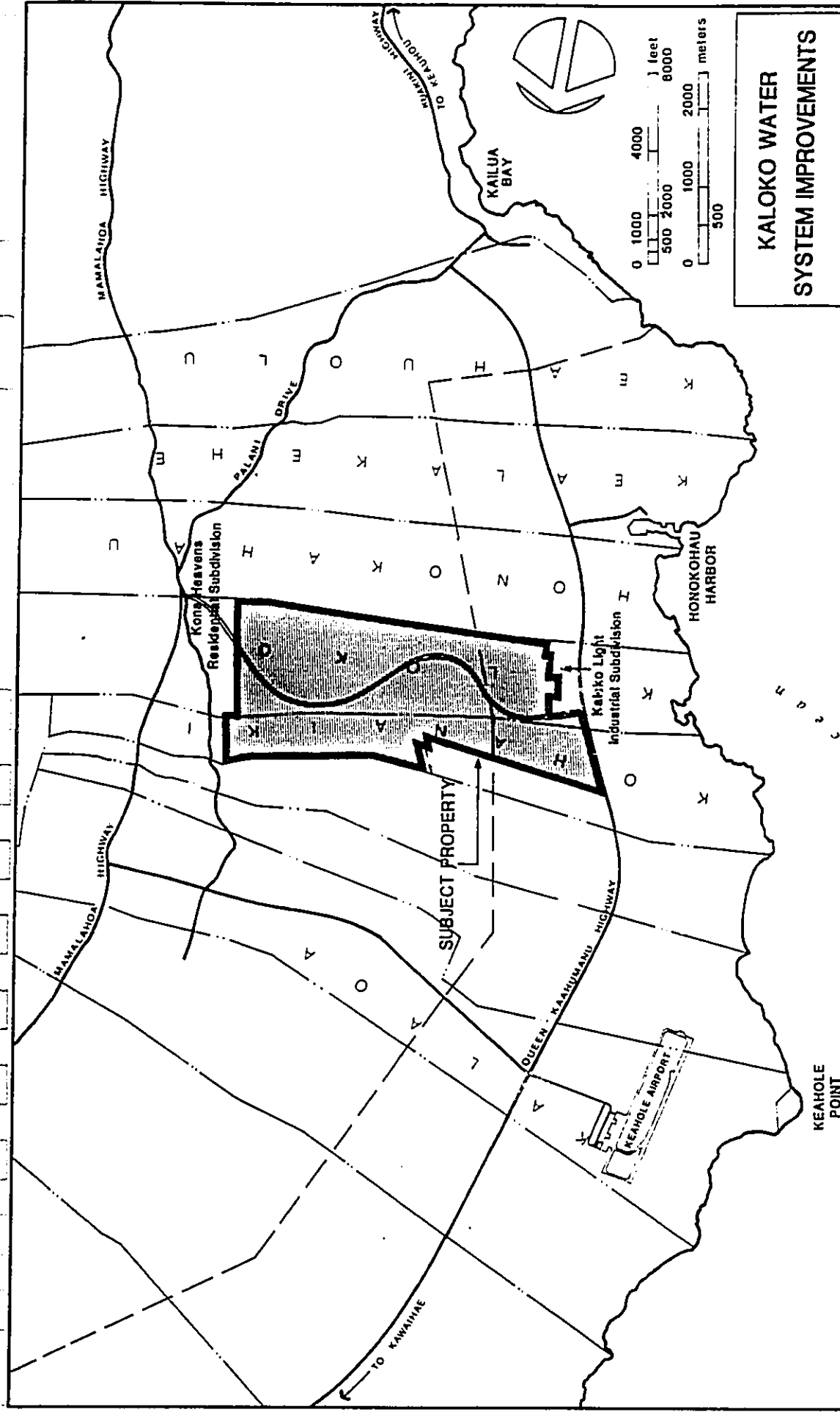


fig. 1
LOCATION



**KALOKO WATER
SYSTEM IMPROVEMENTS**

FOR KALOKO & KOHANA'IKI
Kaloako, North Kona, Hawaii
Prepared : HAWAII COUNTY DEPT. OF
FOR : WATER SUPPLY &
TSA INTERNATIONAL, LIMITED

Prepared : WILSON OKAMOTO
By : & ASSOCIATES, INC.
Honolulu, Hawaii

TMK : 7-3-09: Por. 17, 10

Area : 4 Acres

fig. 2

LOCATION MAP

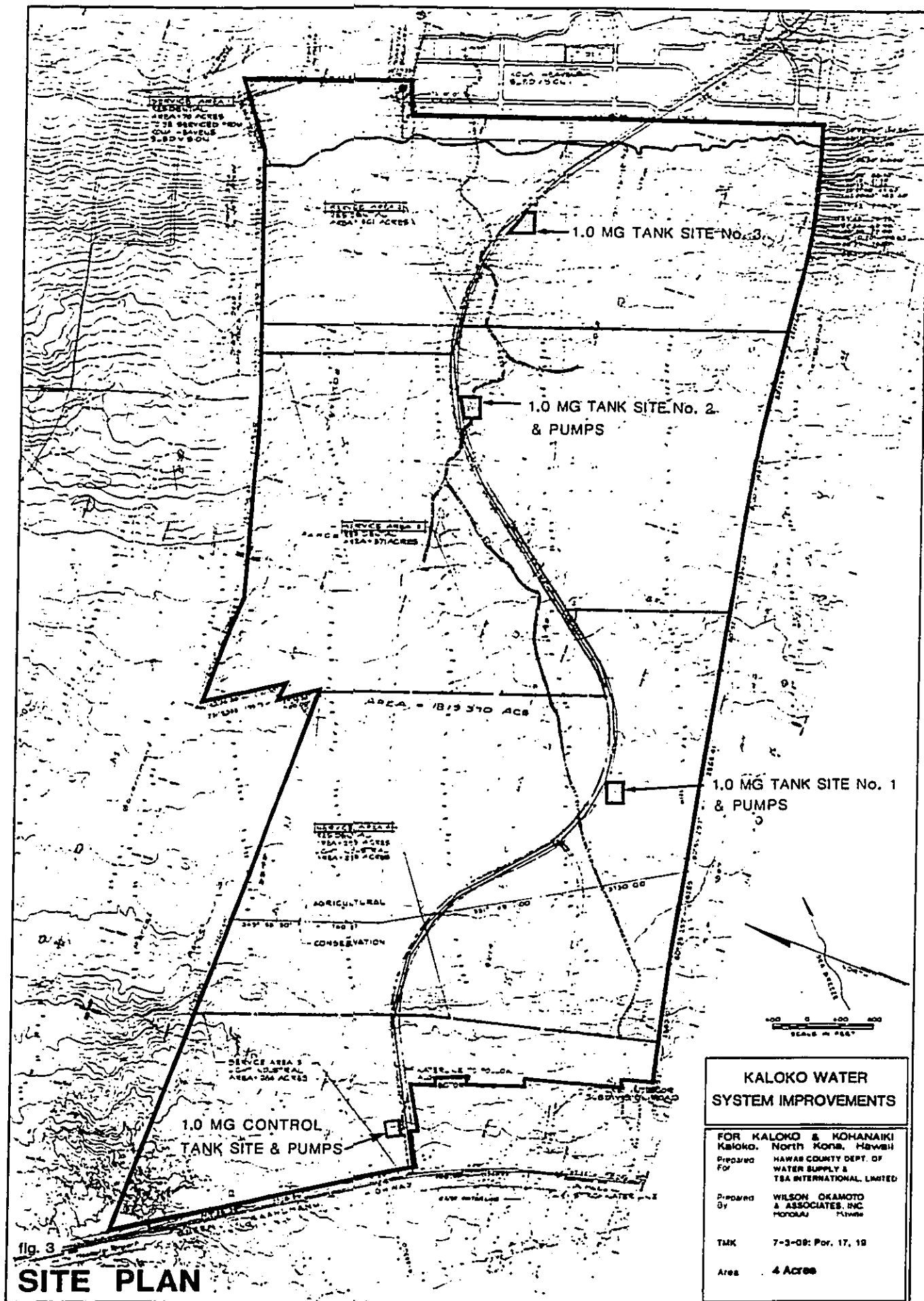


fig. 3
SITE PLAN

A 12-foot wide access road to each of the reservoir sites will be constructed. A 10-foot wide perimeter road around each reservoir will also be constructed to provide access to the grounds by maintenance vehicles and personnel.

Booster pumps will be installed at each of the reservoir sites. The booster pumps at each reservoir site will convey water from lower to higher elevation tanks from the 12-inch water main along Queen Kaahumanu Highway. A 6-foot high chain link security fence will surround the perimeter of each site. Site plans for the individual reservoir sites are depicted in Figures 4, 5, 6, and 7.

A 20-inch water transmission main will extend approximately 14,500 lineal feet along the proposed mauka-makai corridor road from the light industrial subdivision up to Reservoir No. 3. A 16-inch main will link Reservoir No. 3 to the existing Kona Heavens Subdivision water system. The 16-inch main is planned for completion of construction in February 1990. The transmission main will be installed in the road right-of-way with a minimum cover of three feet. The mains are sized to provide adequate carrying capacity and maintain pressures during peak consumptive periods. Water main appurtenances include valves, valve boxes, and pressure reducing valves.

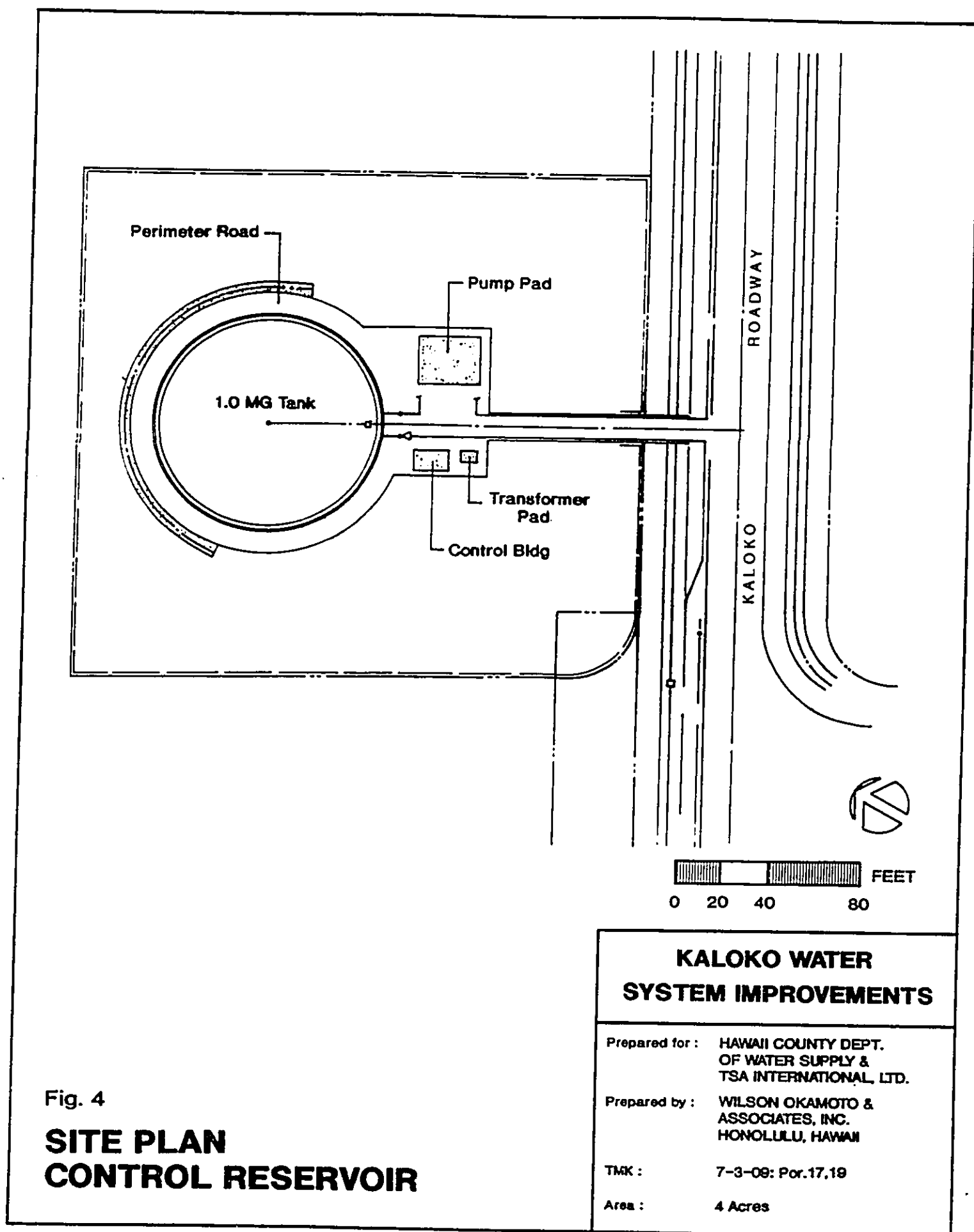


Fig. 4

**SITE PLAN
CONTROL RESERVOIR**

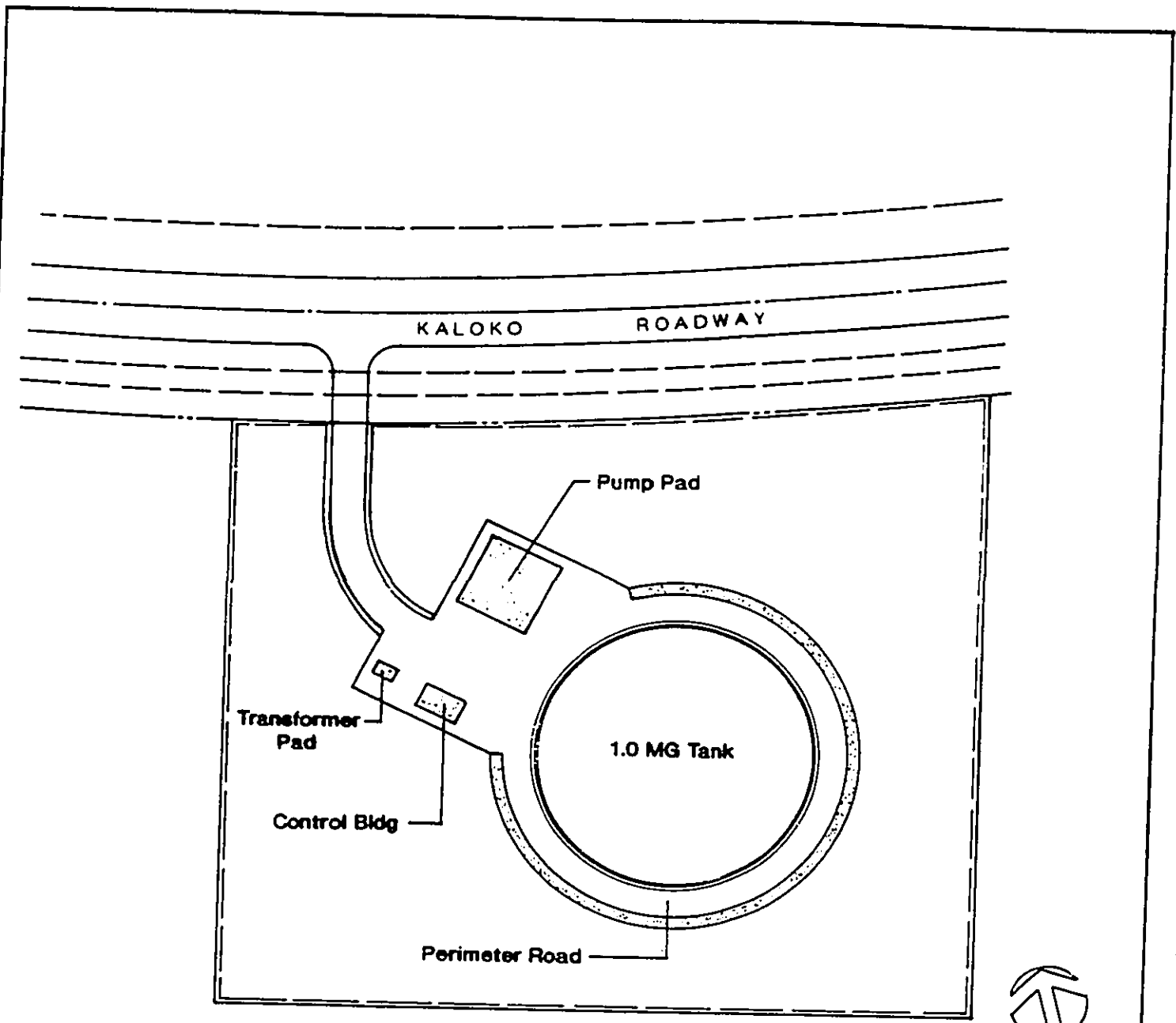
**KALOKO WATER
SYSTEM IMPROVEMENTS**

Prepared for : HAWAII COUNTY DEPT.
OF WATER SUPPLY &
TSA INTERNATIONAL, LTD.

Prepared by : WILSON OKAMOTO &
ASSOCIATES, INC.
HONOLULU, HAWAII

TMK : 7-3-08: Por.17,19

Area : 4 Acres



KALOKO WATER SYSTEM IMPROVEMENTS	
Prepared for :	HAWAII COUNTY DEPT. OF WATER SUPPLY & TSA INTERNATIONAL, LTD.
Prepared by :	WILSON OKAMOTO & ASSOCIATES, INC. HONOLULU, HAWAII
TMK :	7-3-09: Por.17,19
Area :	4 Acres

Fig. 5
**SITE PLAN
 RESERVOIR NO. 1**

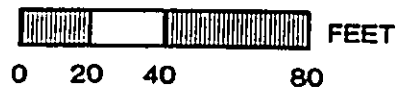
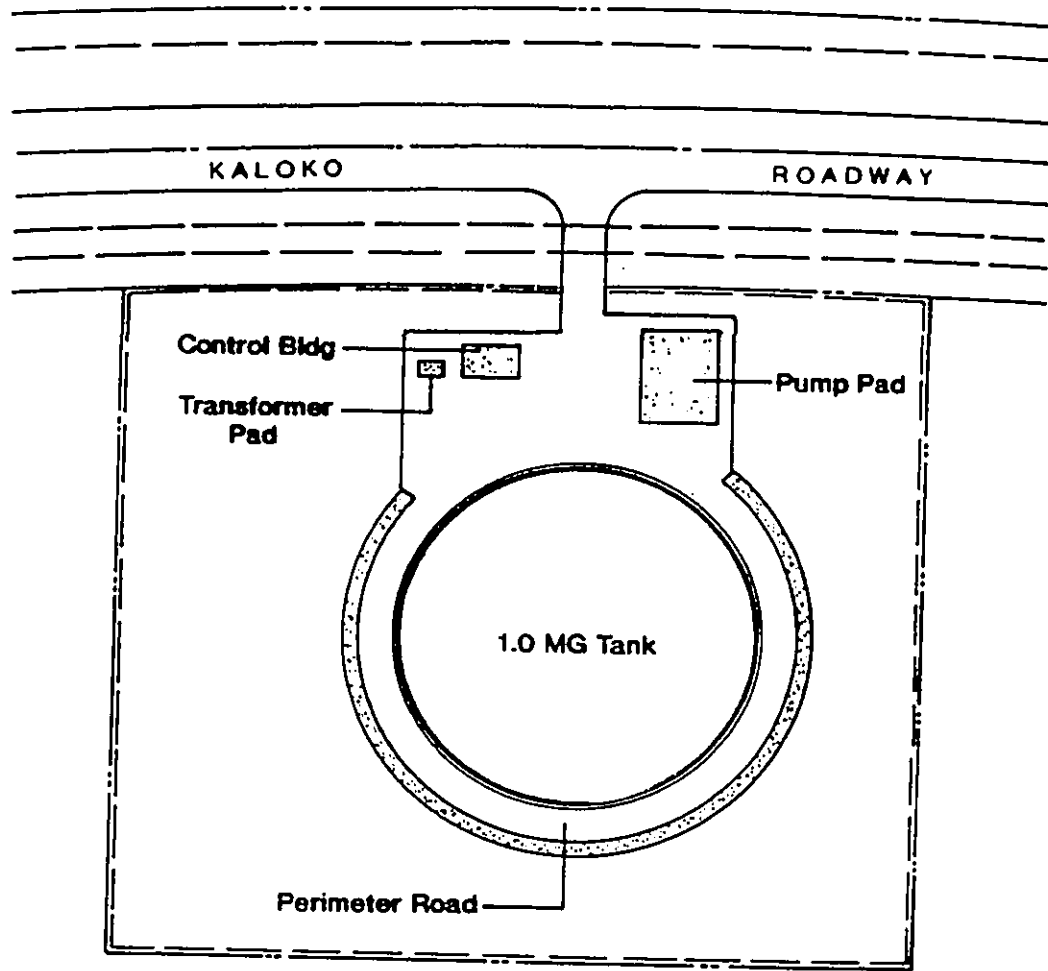


Fig. 6
SITE PLAN
RESERVOIR NO. 2

KALOKO WATER SYSTEM IMPROVEMENTS	
Prepared for :	HAWAII COUNTY DEPT. OF WATER SUPPLY & TSA INTERNATIONAL, LTD.
Prepared by :	WILSON OKAMOTO & ASSOCIATES, INC. HONOLULU, HAWAII
TMK :	7-3-09: Por.17,19
Area :	4 Acres

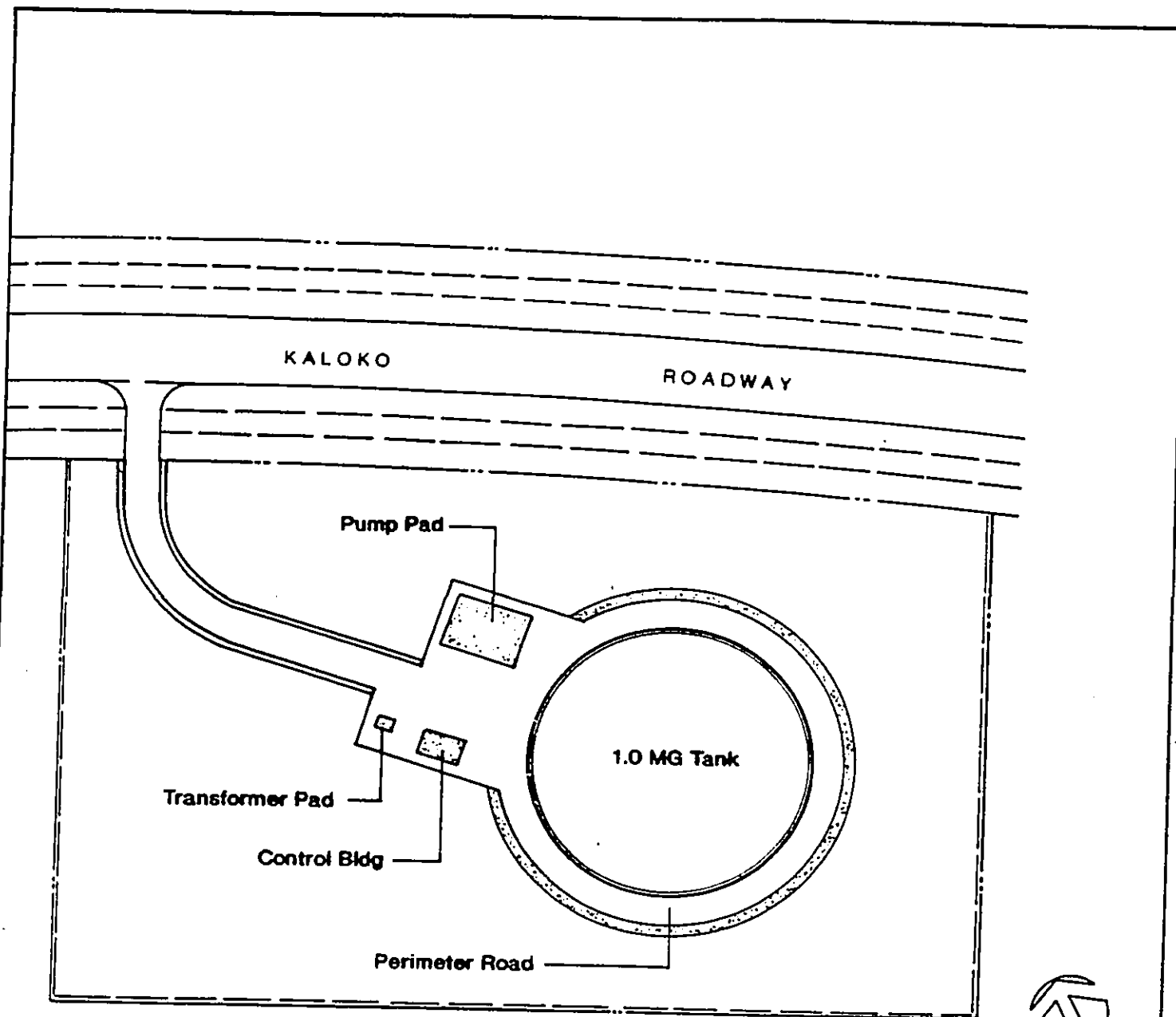


Fig. 7
**SITE PLAN
 RESERVOIR NO. 3**

KALOKO WATER SYSTEM IMPROVEMENTS	
Prepared for :	HAWAII COUNTY DEPT. OF WATER SUPPLY & TSA INTERNATIONAL, LTD.
Prepared by :	WILSON OKAMOTO & ASSOCIATES, INC. HONOLULU, HAWAII
TMK :	7-3-09: Por.17,19
Area :	4 Acres

The water system project is being undertaken as an improvement district involving the County of Hawaii Water Commission and TSA International Limited. The County of Hawaii's participation arises from the existing inadequate water supply for the Palani Upper System. To supplement the water transmission capability from its Kailua-Keahole Lower System to its Palani Upper System, the County will fund the oversizing of the developers' proposed water facilities which will enable the system to also support the County water supply needs at a lower cost than if a separate project were to be undertaken. The privately-constructed improvements will be dedicated to the County upon their completion. The agreement does not involve any additional water supply commitments from the County for the Kaloko properties.

The proposed project is intended to provide additional dependability and flexibility to the system. Reservoir storage minimizes fluctuations in water pressure, provides water for emergencies, and to help meet peak consumption demand. Reservoir facilities 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 hours of peak demand. When fully implemented and integrated with the Palani Upper System, this system will provide further assurances of adequate water supply for domestic

needs and fire protection and a more cost-effective program of water supply and distribution.

B. Location and Ownership

The site lies in the North Kona District on the Island of Hawaii within the Kaloko Ahupuaa, mauka of Queen Kaahumanu Highway and midway between the town of Kailua-Kona and Keahole Airport. The project is identified by Tax Map Key 7-3-09: portion of 17 and 19. The subject properties are owned in fee by TSA International, Limited and Y-0 Partnership. Parcel 17 owned by TSA International Limited consists of approximately 1,168 acres, while Parcel 19 owned by Y-0 Partnership consists of approximately 410 acres.

The area covered by the project consists of four 1-acre sites adjacent to the proposed mauka-makai road which winds through and generally bisects the properties. The 1-acre reservoir sites are at the 118-foot, 343-foot, 630-foot, and 914-foot floor elevations.

C. Existing and Surrounding Uses

The project area is currently undeveloped, underlain by pahoehoe and aa lava and overgrown with vegetation, mostly koa haole and

fountain grass. On the makai end of the property fronting Queen Kaahumanu Highway is Phase 1 of the Kaloko Light Industrial Subdivision. The initial phase of development consisting of 55 lots has been completed. The mauka end of the site is owned by Y-O Partnership which plans residential and commercial development. Further mauka is the Kona Heavens Subdivision consisting of 96 single-family residential units.

Flanking the property on its northern and southern ends are undeveloped lands owned by the State of Hawaii and private owners. South of the project site, the Kealakehe Planned Community is a proposed State-sponsored affordable housing community on 1,500 acres of land. Lands makai of Queen Kaahumanu Highway are undeveloped but are proposed by the U.S. Fish and Wildlife Service as the site for the Kaloko-Honokohau National Historic Park. This cultural historic park will be operated by the National Park Service for the preservation, interpretation, and perpetuation of traditional Native Hawaiian activities and culture. Adjacent to the cultural park is the proposed Kohanaiki Resort, a 470-acre development consisting of 2 hotels, condominium and resort units, a golf course, and a marina.

The master plan for the approximately 1,333 acres of Kaloko Properties held by TSA International, Limited envisions a range

of residential, commercial, and industrial developments. The existing Kaloko Light Industrial Subdivision is planned for expansion to accommodate an additional 139 lots. Business and commercial uses adjacent to the main highway and compatible with the light-industrial uses and mauka residential areas are planned on up to 225 acres. Development of the Kona International Country Club, an 18-hole championship golf course, would encompass approximately 190 acres. Adjacent and mauka of the golf course is slated for low and medium density residential development on approximately 753 acres. The residential developments would target the growing housing market in the Kona region stimulated by the projected vigorous economic activity.

III. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. Geology and Hydrology

Geologically, the project area is comprised of Hualalai volcanic flows created during the eruption of 1800-1801. Soils within the region include lava flows, thin organic soils and ash loams over pahoehoe and aa lava. The lava lands predominate in the lower coastal areas while the organic soils and ash loams occur upland and extend up to the lava flows and cinder lands found near the summit area.

Topographically, the land along the coastal area up to Queen Kaahumanu Highway generally has slopes of up to 5 percent. Above the highway to elevations of 1000 feet slope generally varies between 6 and 10 percent while the area above the 1000-foot elevation becomes progressively steeper until a slight flattening occurs near the summit area. The average slope of the Property is 6 percent.

Groundwater occurs as a thin, unconfined basal lens with low artesian heads. At the coast, heads approach zero and are about 1 foot or less at a distance 1,000 feet inland. Within 2 to 3 miles from shore, the basal lens rises on a gradient of 1/2 foot to 3 feet per mile. In general, within several thousand feet of

the coast, the basal water is brackish, with a chloride content of 1,000 to 2,000 parts per million.

B. Climate

The climate of the area is semi-tropical and considered to be dry and arid with light rainfall. The average annual temperature is 75 degrees (F) with an average high of 83 degrees and an average low of 67 degrees. Average annual precipitation at Kailua is 25 inches.

The area is shielded by Mauna Kea, Mauna Loa, and Hualalai from the strong prevailing pattern of the northeast trades which accounts for its dependable mild climate, bright sunshine and gentle breeze throughout the year. Typical wind velocities range from between 3 to 14 knots. Relative humidity is also generally stable year-round, with the daily average ranging from 71 to 77 percent.

C. Soils and Agricultural Productivity

The Detailed Land Classification for the Island of Hawaii prepared by the Land Study Bureau of the University of Hawaii classifies soil on the property as E319, indicating very poor suitability for agricultural pursuits.

The Soil Survey of the Island of Hawaii conducted by the Soil Conservation Service describes the soils of the property as part of a soil group classified as lithosol, a soil lacking definite genetic horizons, consisting of a freshly or imperfectly weathered mass of hard rock or hard rock fragments.

The site is composed almost entirely of basaltic rock. The "aa" lava has extremely rough, irregular and clinkery surfaces, is black to grayish in color and closely resembles heavy cinders or coal. The "pahoehoe" lava is characterized by small, low, and broad outcroppings with smooth and ropey surface features. The pahoehoe flows are composed of a series of thin, overlapping flow units separated by distinct interfaces which are characterized by red to brown oxidized surfaces and fractures. In general, the site has the irregular surface associated with uneroded lava flows. The lava material is very friable and can usually be graded using conventional earth moving equipment. Due to the lack of soil material as well as low precipitation, the area is generally unsuitable for agricultural use.

D. Flora and Fauna

Two types of Hawaiian plants form the predominant vegetative cover on the Property. They include koa haole (leucaena

leucocephala), a common variety found especially in lower elevations or in drier regions growing generally three to five feet high, and an herb layer of fountaingrass (Pennisetum setaceum), a bunch grass that persists on lava flows where little else can grow. Scattered throughout this vegetative cover are a number of native and exotic species, such as ilima, uhaloa, naio, lantana and kiawe (Nagata, 1983).

One endemic species of Hawaiian birds, the Hawaiian Owl (Asio flammeus sandwichensis), is known to be present in the area of the property. Indigenous birds known to this general area include the Golden Plover (Pluvialis dominica fulva), Wandering Tattler (Heteroscelus incanus), and Ruddy Turnstone (Arenaria interpres). A number of other introduced birds including the Indian Grey Francolin, Barred Dove, Common Mynah, Japanese White-eye, House Finch, House Sparrow, Cardinal, and Brazilian Cardinal are known to frequent the area.

Mammals such as the Mongoose (Herpestes auropunctatus), House Mouse (Mus musculus domesticus), Black Rat (Rattus rattus), Polynesian Rat (Rattus exulans hawaiiensis), and Feral Cats (Felis catus) are probable in the general area.

E. Archaeological and Historical Features

The Kona and Kohala Districts are rich in history, predating the arrival of Captain Cook at Kealahou Bay in 1779. Subsequent to Cook's arrival, Kamehameha I in 1812 established his permanent residence and capital in Kailua. Today, many historic sites serve as reminders of early Hawaiian life and culture. Among those included on National and State Registers of Historic Places are the Imiola Church of Waikoloa, Pu'uhonua O Honaunau (City of Refuge), Ahuaumi Heiau at Keauhou, and Kamakahonu (Residence of King Kamehameha I) at Lanikai.

For the project area, an archaeological reconnaissance survey was conducted by Paul H. Rosendahl, Inc. in October 1987 for the upper three reservoir sites (Reservoirs No. 1, 2, and 3). See Appendix A. At the middle and lower reservoir sites, no archaeological resources were found. At the uppermost reservoir site, however, one archaeological site, a wall, was identified during the survey. The wall was found to be in good physical condition, and its functional interpretation is that of a boundary or cattle wall. The wall bisects the uppermost tank site, running in a north to south direction across the site. The core-filled wall measures 1.0 meters wide by 2.3 meters high and is constructed of aa boulders and small boulder and cobble fill.

The site was determined to be significant solely for its potential information content. On this basis and since adequate field information was collected and recorded, no additional archaeological fieldwork was deemed necessary. The State Historic Preservation Office has concurred with this determination and has given its approval to allow the project to proceed.

In November 1989, a reconnaissance survey was conducted for a fourth reservoir site (the Control Reservoir) which abuts the Kamanu Street extension north of the Kaloko Light Industrial Subdivision (See Appendix A). During the survey, one archaeological site was encountered. The site consists of a segment of a steppingstone trail, measuring 7.5 meters long and 0.7 meters wide in the northern corner of the control reservoir. The trail appears to be prehistoric and used as a secondary transportation route.

The site was assessed as generally exhibiting moderate cultural value and low research and interpretive values. Data collected during the survey is considered sufficient, its preservation is not considered essential, and no further archaeological work is recommended.

An archaeological reconnaissance survey was also conducted by Lloyd Soehren in 1979 along the proposed access road corridor where the water line will be laid. No surface archaeological or historical features were found.

F. Air and Noise Quality

Air quality in the Kona region can be generally characterized as excellent. Results of an air quality survey conducted by the State Department of Transportation (June 1983) which monitored ambient carbon monoxide levels at the Kahakai Elementary School reflected low pollutant levels. The average ambient CO level during any one-hour period was less than 0.5 milligrams per cubic meter (U.S. Department of Transportation, State of Hawaii Department of Transportation, and County of Hawaii, September 1984). The State standard for the maximum average CO level in any one-hour period is 10 milligrams per cubic meter.

Ambient noise in the area is generated primarily by traffic. The Property is presently undeveloped and surrounding areas partially developed with residential units. Due primarily to its rural and partially developed characteristics, the Property's existing noise level is comparable to a rural, quiet suburban-type environment.

G. Population

The estimated population for the County of Hawaii in 1985 was 109,159. Approximately 40 percent of the Island's population resides in the Hilo area, but the West Hawaii area has been experiencing rapid growth. In South Kohala, the population has nearly tripled from 2,310 in 1970 to 6,310 in 1985, while in North Kona, the resident population has nearly quadrupled over the past 15 years, from 4,832 in 1970 to 18,962 in 1985. Of all the districts in the County of Hawaii, the North Kona district has experienced the greatest increase in population. This pattern of growth is anticipated to continue.

The County of Hawaii has made some population projections for the Kona and Kohala districts (See Table 1). These projections are based on three development scenarios ranging from limited development to significant expansion of visitor accommodations which is expected to spur population growth in the districts. These alternatives represent different general growth policies for Kona. Depending on land use decisions based on such policies, the future growth of Kona can be greatly influenced.

TABLE I
 ALTERNATIVE KONA-KOHALA POPULATION PROJECTIONS
 (1980-2000)

YEAR	ALTERNATIVE I Approvals Only		ALTERNATIVE II Existing PDP		ALTERNATIVE III High Kona Projection	
	KONA	KOHALA	KONA	KOHALA	KONA	KOHALA
1980	20,000	8,000	20,000	8,000	20,000	8,000
1985	23,800	12,900	24,900	11,700	26,200	10,400
1990	27,100	20,700	30,100	17,600	32,900	15,300
1995	30,200	30,400	35,000	25,900	39,900	22,200
2000	33,200	39,400	39,400	32,000	46,300	28,200

Notes:

Alternative I assumes no additional Kona Hotels, additional Kona resort condos, and existing planned development projects.

Alternative II assumes complete Keauhou hotel development, additional Kona resort condos.

Alternative III assumes significant expansion of visitor accommodations in Kona.

SOURCE: Kona Regional Plan (Draft), Hawaii County, Planning Department, Table IX-19, 1982 (Revised).

H. Economy

The Big Island's leading industry, tourism, is established primarily in the Kona-Kohala region of West Hawaii, also known as "the Gold Coast." New hotels and championship golf courses have been built along the shoreline, and massive new luxury resorts are planned or are under construction. The \$360-million Hyatt Regency Waikoloa, expected to open later this year, will employ some 1,800 persons and add 1,244 rooms to the hotel inventory of the Kona Coast, effectively doubling the existing number.

Direct airline flights from mainland cities to Keahole Airport are boosting visitor arrivals to this area. By the year 2005 it is projected that 1,150,000 overseas passengers will use the Keahole Airport. This would represent a 785 percent increase in overseas passenger activity between 1986 and 2005.

Big Island farmers are replacing diminishing sugarcane plantings with other crops, mainly papaya and macadamia nuts. The Island also produces avocados, oranges, tangerines, flowers, and foliage. It is the world's largest orchid producer and has the nation's only coffee industry.

The Big Island is also noted for its research and development activities relating to geology, astronomy, agriculture, and aquaculture. The observatories at Mauna Kea and the Hawaii Volcanoes Observatory at Kilauea Crater are prominent examples. In Kona, the State-supported Natural Energy Laboratory of Hawaii (NELH) is presently involved in the development of aquacultural products as well as research in ocean thermal energy conversion. An adjacent aquaculture-related facility, the Hawaii Ocean Science and Technology Park, was established to facilitate the commercial development of aquaculture products demonstrated at the NELH facility using the nutrient-rich cold waters extracted from the ocean depths offshore of Keahole. Tenants of this 540-acre park will occupy 3-20 acre parcels and specialize in a variety of aquaculture projects as well as research and development of alternate energy and marine biotechnology.

I. Scenic Views

The landscape and view makai of Queen Kaahumanu Highway is one of a dominant, black and brown expanse of lava flow in the foreground, with a scattering of urban uses mostly along the shoreline between Keahole Airport and Kailua Village. Viewed from Mamalahoa Highway, a panoramic vista is available, providing sweeping views of the horizon, ocean, coastal areas, and flat and sloping lava plains.

J. Roadways

The Queen Kaahumanu Highway provides the major transit route between the Kona and Kohala districts. This highway is a two-lane, 300-foot right-of-way, Class I State highway. The Mamalahoa Highway is the other regional highway which services the island areas in both North and South Kona. Access to the Property is currently provided via the Queen Kaahumanu Highway. The proposed mauka-makai road will serve as the primary roadway within the Property and link the Queen Kaahumanu Highway with Mamalahoa Highway.

K. Drainage

Existing soils consisting primarily of aa and pahoehoe lava are extremely permeable. Rainfall percolates rapidly through layers of the porous lava to the underground water table. This is evidenced by the topography having no definable streams and the absence of any record of flooding in this area.

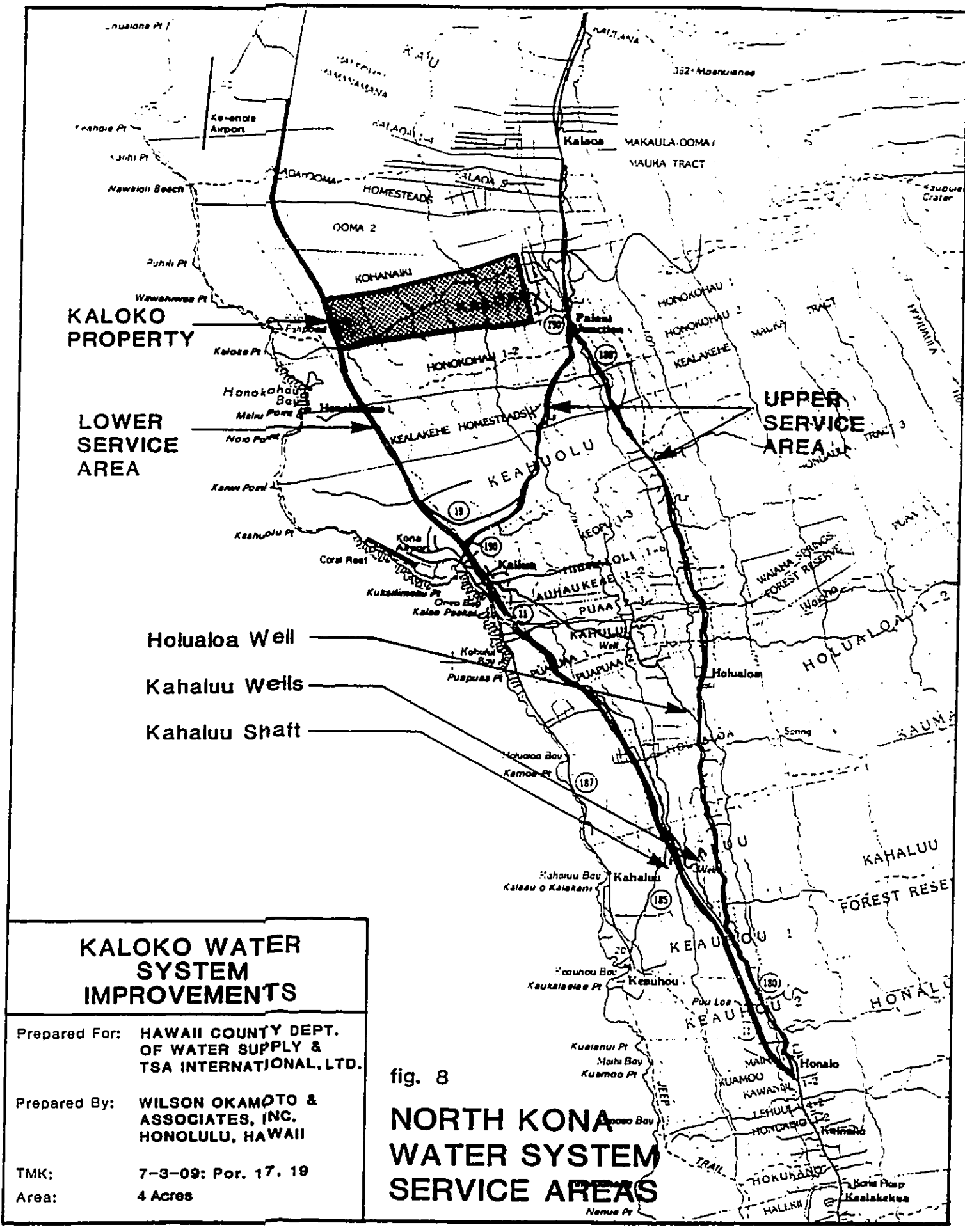
The Property is not within the flood or tsunami inundation areas identified on the Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency.

L. Water

The North Kona municipal water system presently has six groundwater sources owned by the County of Hawaii. All of these water sources tap into the same basal lens. The estimated safe yield of the lens ranges from several tens of millions of gallons per day to approximately 100 mgd. There are four deep wells denoted as Kahaluu Wells A, B, C, and D, with a cumulative safe yield capacity of 4.4 million gallons per day (mgd) (See Table 2). The Kahaluu Wells, located over a mile inland from Kahaluu Bay near Keauhou, consist of four vertical 12-inch diameter deep wells, drawing water from a depth of over 880 feet. The Holualoa Well to the north is another deep well with a 1.0 mgd pump capacity.

The sixth source, the Kahaluu Shaft, has a safe yield of 6 mgd. The Kahaluu Shaft is a Maui-type well consisting of a shaft leading from the ground surface to a nearly horizontal tunnel in the upper part of the basal water lens. The tunnel provides a large surface area below the water table allowing high well yields without requiring deep drilling into the basal lens.

The North Kona water system can be divided into two distinct service areas, the upper service area and the lower service area (See Figure 8). Water is pumped from the Kahaluu Wells to



KALOKO WATER SYSTEM IMPROVEMENTS

Prepared For: HAWAII COUNTY DEPT. OF WATER SUPPLY & TSA INTERNATIONAL, LTD.

Prepared By: WILSON OKAMOTO & ASSOCIATES, INC. HONOLULU, HAWAII

TMK: 7-3-09: Por. 17. 19

Area: 4 Acres

fig. 8
NORTH KONA WATER SYSTEM SERVICE AREAS

Mamalahoa Highway and the lower areas. The upper service system areas are those areas where booster pumps are necessary to maintain service. The waterlines along Mamalahoa Highway, Palani Road and the area mauka of the Keahole Airport are all part of this upper service area. The capacity of the upper service system can be increased by adding more pumps or replacing the existing pumps with larger capacity pumps. Increased pumping capacity must be accompanied by increased transmission line capacity as the service area demands increase.

The upper service area includes 20 booster pump stations and 33 reservoirs with a total storage capacity of 4.81 million gallons.

The lower service area, which comprises the remaining portion of the North Kona system, extends from Keahole Airport to Keauhou Bay. There are eight major reservoirs in this system with a total capacity of 3.95 mg. The lower service area is fed by gravity from the Kahaluu reservoirs through two parallel transmission mains along Kuakini Highway. The Kailua area is supplied by a 24-inch and 20-inch transmission main.

TABLE 2
NORTH KONA WATER SYSTEM SOURCES

	<u>Capacity 24-Hour Pumping (mgd)</u>	<u>Cumulative Total Capacity (mgd)</u>	<u>Cumulative Safe Capacity (based on breakdown of one pump) (mgd)</u>
Kahaluu Well A	1.0	1.0	--
Kahaluu Well B	1.0	2.0	1.0
Kahaluu Well C	1.0	3.0	2.0
Kahaluu Well D	1.4	4.4	3.0
Kahaluu Shaft	6.0	10.4	8.4
Holualoa Well	1.0	11.4	9.4

SOURCE: County of Hawaii Department of Water Supply, Water Master Plan -
Island of Hawaii, 1980)

In the Kaloko area, the Kaloko Light Industrial Subdivision is serviced by the 12-inch main along Queen Kaahumanu Highway (lower service system). The existing waterline along Queen Kaahumanu Highway is fed by a 0.3 MG reservoir located off of Palani Road at about the 310-foot elevation just mauka of the Queen Kaahumanu Highway/Palani Road intersection. The waterline consists of a 16-inch section and a 12-inch section. The 16-inch waterline extends approximately 14,250 feet from the reservoir, along Queen Kaahumanu Highway to the entrance of Honokohau Small Boat Harbor. The 12-inch waterline extends from the harbor entrance to the Kaloko Light Industrial Subdivision, a distance of approximately 8,500 feet, and continues to Keahole Airport.

The completion of the mauka-makai connector road with its 20-inch transmission main, four 1-MG reservoirs, booster pump stations and the other improvements in the area will create a redundancy of facilities in the Kaloko area. This will provide greater flexibility and reliability for the system. When the mauka-makai connector road and the proposed water system improvements are completed, the Kaloko development will be interconnected to both the upper and lower service systems.

Recent improvements to the North Kona water system include the installation of a 20-inch transmission line along Kuakini

Highway. This improvement was necessary to ensure that the existing water system will have sufficient capacity to supply water committed to the Kaloko Light Industrial Subdivision by the DWS. The water commitment granted by the DWS was contingent on completion of this waterline. Another recent improvement included the installation of additional booster pumps on the Palani Road transmission main. This will supply additional water to the North Mamalahoa Highway system.

In order to meet the projected demands for 1990 and beyond, a series of reservoirs and booster pumps have been planned along the Mamalahoa Highway and Palani Road (See Table 3 listing the proposed improvements). The bulk of these improvements may be deferred when the Kaloko water system improvements are undertaken.

According to the Draft Keahole to Kailua Development Plan, estimated 2010 demand for proposed developments in the region is approximately 11.4 mgd with a maximum day demand of 17.1 mgd. To satisfy this demand, a series of wells is proposed to be drilled in the 1,500 to 1,800-foot water resource development zone, spaced approximately half a mile apart. Approximately 36 wells would be required to supply the maximum day demand with one well out of service. Wells would be tied into a 24-inch transmission line approximately 20.3 miles long bringing water

to the junction of Palani Road and Mamalahoa Highway. From the 1,500 to 1,600-foot level the water will flow by gravity by transmission line through the looped distribution system to the lower reaches of the system.

TABLE 3

MASTER PLANNED DEPARTMENT OF WATER SUPPLY IMPROVEMENTS IN NORTH KONA

Source

Additional pumps at the Kahaluu Shaft
Exploratory Wells

Reservoir

New Kailua 1.0 MG Reservoir
Palani Reservoir
Laaloa Reservoir
Keauhou Reservoir
Moeauoa Reservoir

Booster Pumps

Mamalahoa Booster - North
Mamalahoa Booster - South
Kahaluu Booster

Transmission

Kuakini Transmission
Mamalahoa Transmission - North
Mamalahoa Transmission - South

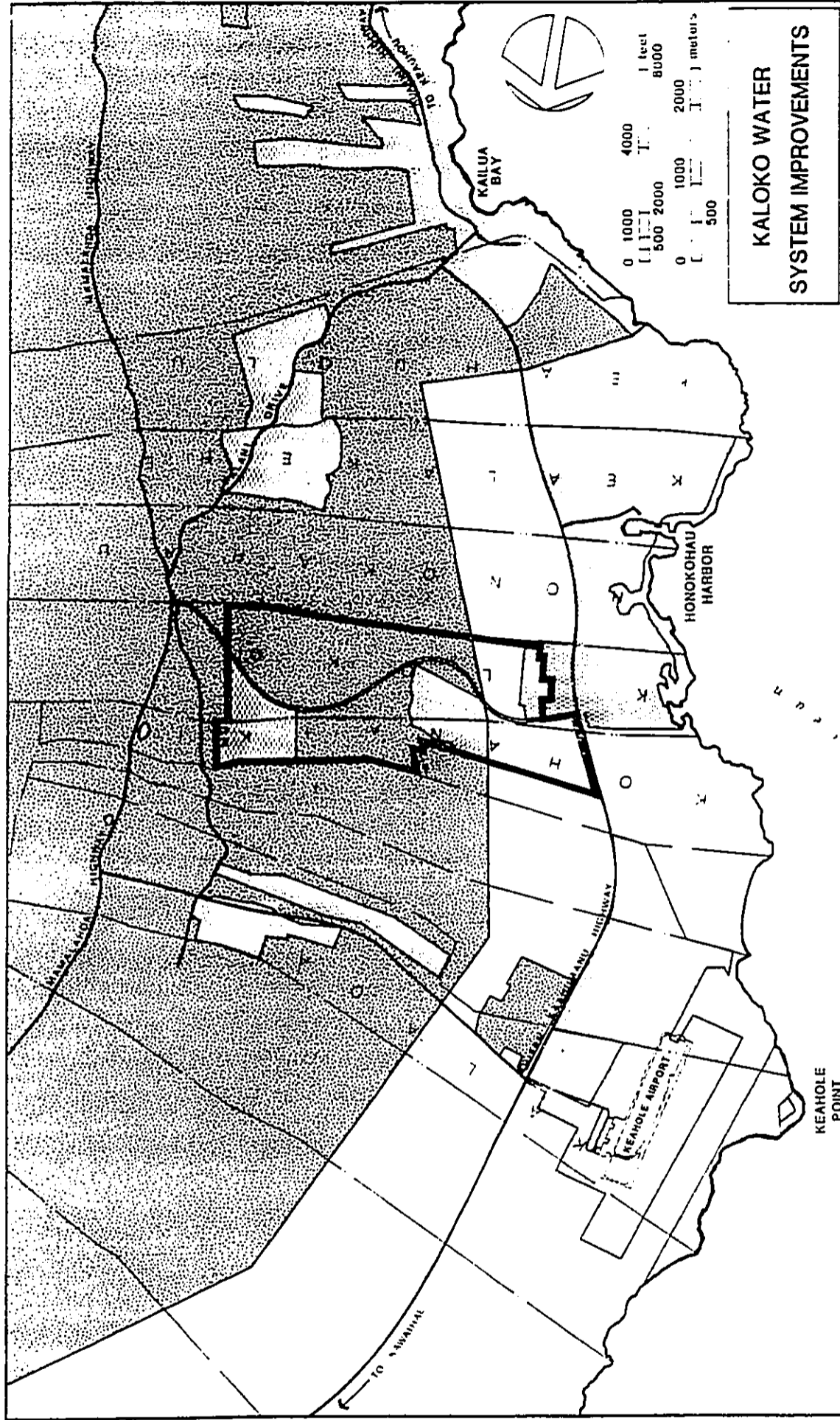
(Source: Water Master Plan - Island of Hawaii, Department of Water
Supply, 1980)

IV. RELATIONSHIP TO PLAN, POLICIES, AND CONTROLS

A. State Land Use Districts

Pursuant to Chapter 205, Hawaii Revised Statutes, all lands in the State of Hawaii are classified into one of four land use designations: Urban, Rural, Agriculture, and Conservation. Within the Property, the Kaloko International Country Club (KICC) golf course site (190 acres) and a portion of the proposed mauka-makai road (approximately 9 acres) are designated Urban (See Figure 9). Urban designation for the KICC site was approved by the State Land Use Commission (LUC) in February 1985 while the proposed mauka-makai road was reclassified from Conservation to Urban in May 1986. A portion of the property slated for light industrial use is also designated Urban.

Much of the remaining acreages mauka of the proposed KICC are designated as Agriculture, which permits activities and uses related or accessory to agriculture. The area makai of the proposed golf course adjacent to the industrial subdivision is designated Conservation. One of the reservoir sites is located within the "General" subzone of the Conservation District, the proposed use for which requires a Conservation District Use Permit from the Board of Land and Natural Resources (see Figure 10).



LEGEND

- Conservation
- Urban
- Agriculture
- Rural

SOURCE: Land Use District Boundary Maps, State Land Use Commission

KALOKO WATER SYSTEM IMPROVEMENTS

FOR KALOKO & KOHANAIAKI
 Kaloako, North Kona, Hawaii
 Prepared by
 HAWAII COUNTY DEPT OF
 WATER SUPPLY &
 TSA INTERNATIONAL, LIMITED

Prepared by
WILSON OKAMOTO & ASSOCIATES, INC.
 Honolulu, Hawaii

DATE: 7-3-00, Rev. 17, 11
 AREA: 4 Acres

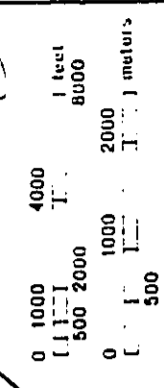
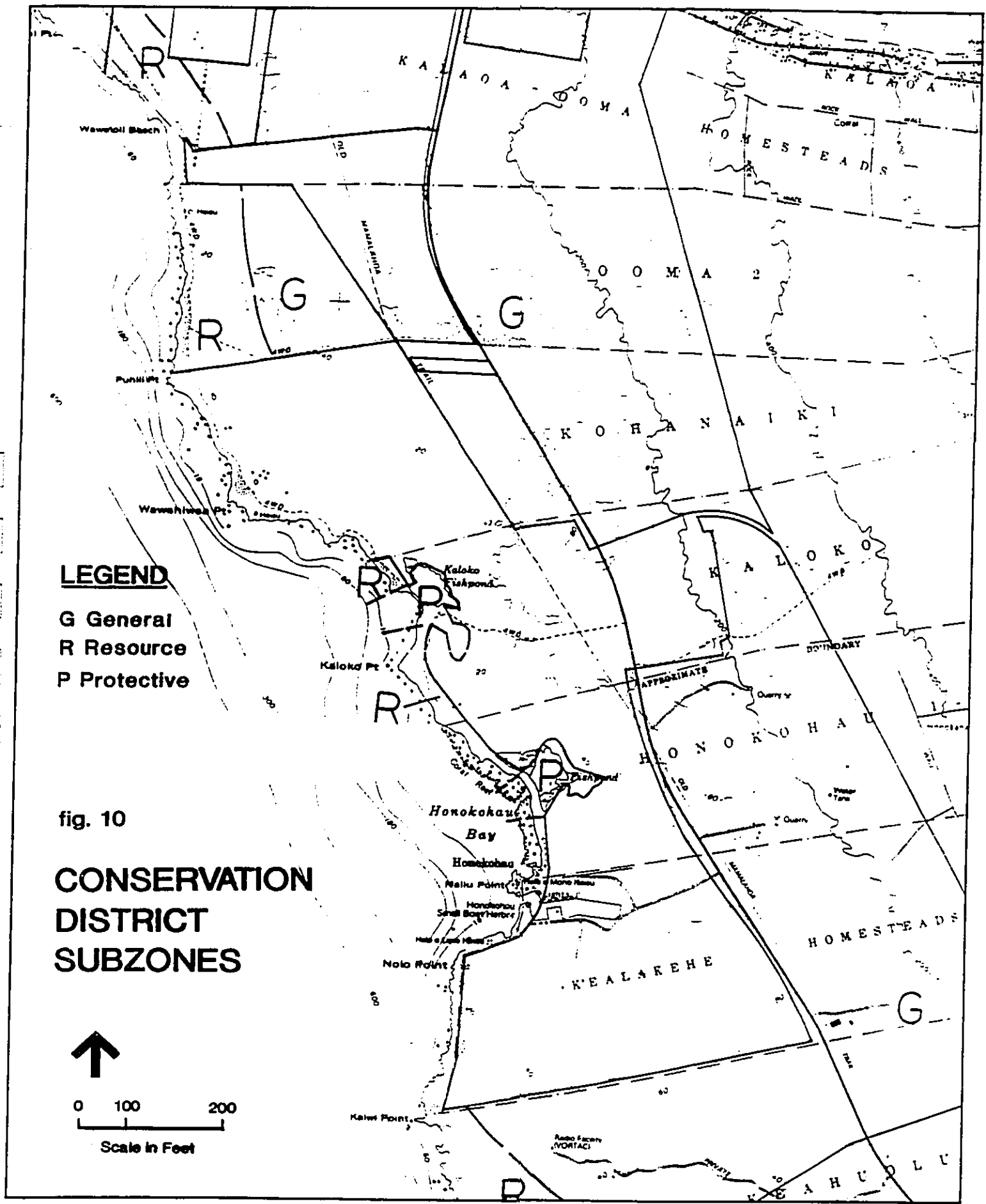


fig. 9

STATE LAND USE DISTRICTS



LEGEND

- G General
- R Resource
- P Protective

fig. 10

CONSERVATION DISTRICT SUBZONES



0 100 200

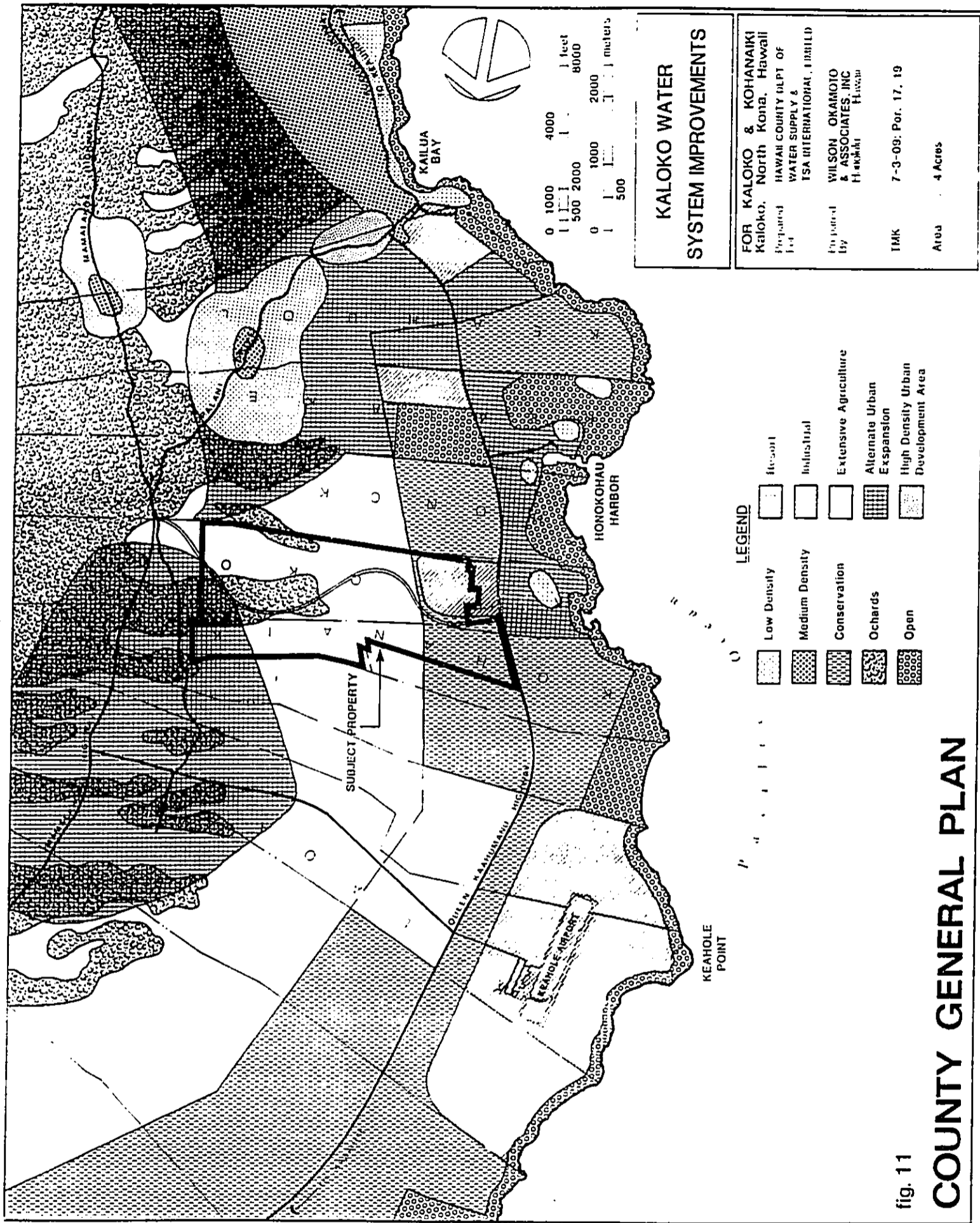
Scale in Feet

The mauka parcel owned by Y-0 Partnership is designated Urban and slated for residential development. Immediately makai of Queen Kaahumanu Highway is also designated Urban. Designations along the coastal plain between the Keahole Airport and Kailua Village include Urban, Agriculture, and Conservation.

B. Hawaii County General Plan

The County of Hawaii is divided into nine (9) geographical districts. The General Plan for the County of Hawaii outlines the goals and policies for the County as well as for each of the 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 County goals and policies.

Under the current General Plan Land Use Pattern Allocation Guide Map, land use designations within and in proximity to the Property include Alternate Urban Expansion, Orchards, Conservation, Industrial, and Extensive Agriculture (See Figure 11).



KALOKO WATER SYSTEM IMPROVEMENTS

FOR KALOKO & KOHANAIAKI
 Kaloako, North Kona, Hawaii
 Prepared by HAWAII COUNTY DEPT OF WATER SUPPLY & ISA INTERNATIONAL, LIMITED
 Prepared by WILSON OKAMOTO & ASSOCIATES, INC. HAWAII
 TMK 7-3-09: Por. 17, 19
 Area 4 Acres

LEGEND

- Low Density
- Medium Density
- Conservation
- Orchards
- Open
- Forest
- Industrial
- Extensive Agriculture
- Alternate Urban Expansion
- High Density Urban Development Area

fig. 11

COUNTY GENERAL PLAN

C. Hawaii County Comprehensive Zoning Ordinance

The Comprehensive Zoning Ordinance, Hawaii County Code (Chapter 25), is the document which implements the goals and policies of the County General Plan. It 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 for lands to the North, East, and South is Unplanned (see Figure 12). Permitted uses on lands zoned Unplanned include one single family dwelling per site, agriculture-related uses and buildings, hunting and fishing preserves or sites, and aquaculture activity-related uses. The required building setbacks include 30 feet front and rear, and 20 feet on each side. The water system improvements are consistent with the underlying zoning classifications, so no zoning change or use permit is required for the development. The proposed improvements require a grading permit and a building permit from the County of Hawaii.

A Use Permit (Use Permit No. 33) to allow development of the golf course and related improvements was approved by the County of Hawaii Planning Commission in July 1985. The Y-0 Properties are zoned for residential uses. The Kaloko Light Industrial

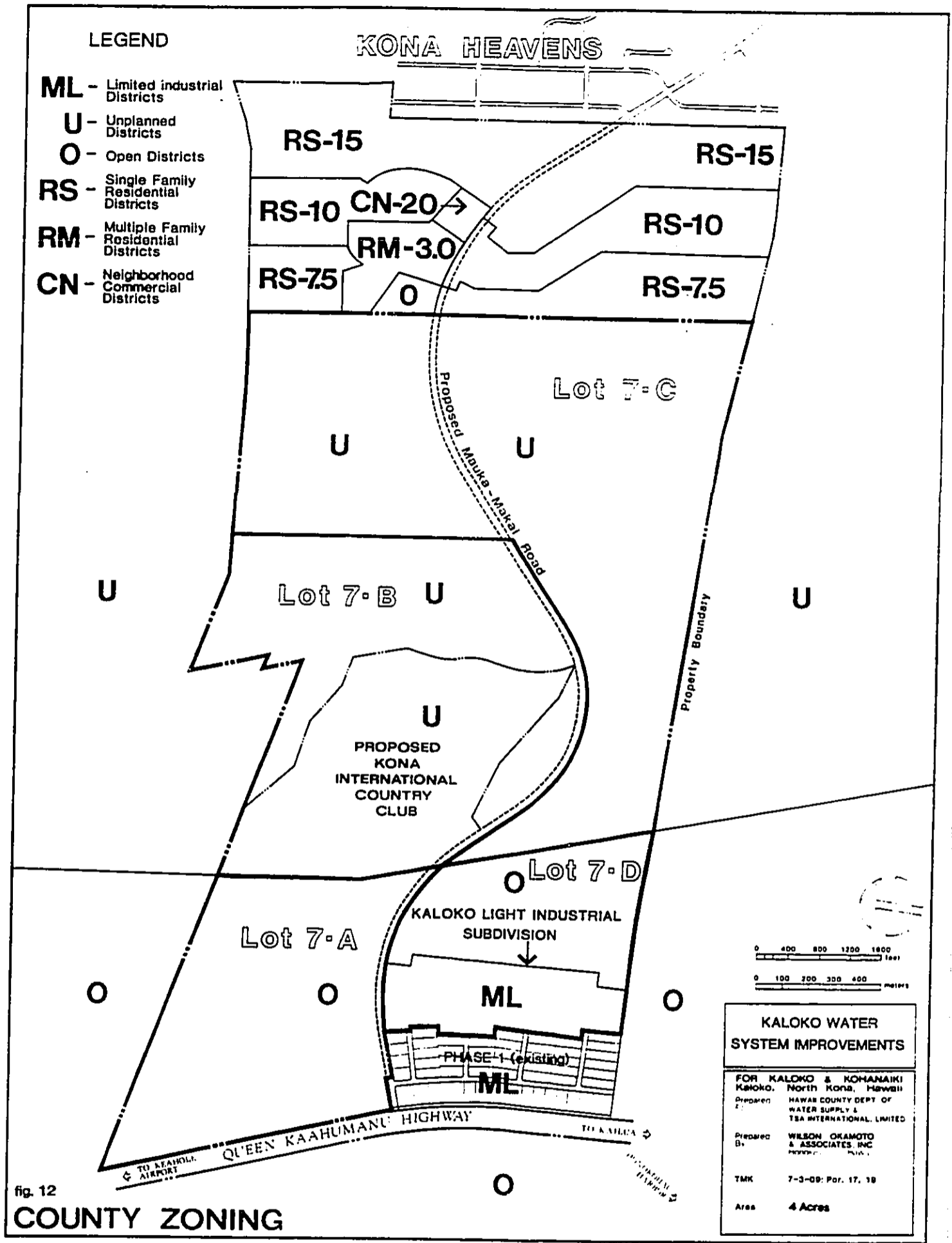


fig. 12

COUNTY ZONING

Subdivision site is zoned ML for light industrial uses. Lands makai of the property are zoned open.

D. Keahole to Kailua Development Plan

In September 1989, the County of Hawaii Planning Department issued a draft of the Keahole to Kailua Development Plan to assess how future development in the region might best be implemented. The overall goal for the Keahole to Kailua DP is "to develop a mixed residential, commercial, resort, industrial and recreational community, with approximately 8,000 or more residential units, in a functional, attractive, and financially viable manner."

The Plan pays particular attention to the infrastructure requirements to implement future development. With regard to water supply, the plan's objective calls for the development of a water system with a 6 mgd capacity over the next 10 years. The Plan cites the limited availability of potable groundwater as a significant constraint to development, and the need for its importation from the north and south.

The major themes of the land use plan include three major development zones, a new regional center, major new roadways, and a regional greenbelt system. The Kaloko area lies in the

midst of this development and is slated for one of four village centers in the upland zone.

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 expose the underlying soil to rain. Only minor effects are anticipated, however, as rainfall in the area is typically light (approximately 25 inches annually), while the lava ground cover is extremely permeable and not susceptible to runoff. The absence of streams and drainageways in the area are indicative of the site's high permeability.

2. Flora and Fauna

Earthwork operations will remove vegetative cover, but these consist mainly of koa haole and fountaingass. There are no known rare or endangered species of flora or fauna located in the immediate vicinity of the reservoir sites.

3. Archaeology

The archaeological reconnaissance noted the presence of only one historic site -- a boundary or cattle wall at the

uppermost reservoir site. Following consultation with the State Historic Preservation Office and the County of Hawaii Planning Department, it has been determined that sufficient information on the site has been collected and recorded to allow the project to proceed in this area. There will thus be no effect on significant historic sites.

4. Noise

A temporary increase in local noise levels can be anticipated during construction of the facilities. Sources of noise will include heavy vehicles and power equipment operating on site.

Adequate distance separates the proposed reservoir sites from the nearest noise sensitive neighbors. The nearest residential areas are located approximately 1500 feet mauka of the uppermost tank site.

5. Air Quality

Ambient air quality is expected to temporarily decline in the immediate vicinity as a result of construction activities particularly during grading. Dust control

measures such as water sprinkling and spraying may be implemented if they become necessary.

6. Traffic

Impacts of construction upon traffic are not anticipated to be significant. Construction equipment will enter and exit the site via a jeep trail extending from Queen Kaahumanu Highway to the mauka reaches of the property.

B. Potential Long-Term Impacts

1. Water Quality

The proposed water system improvements are anticipated to slightly increase rainfall runoff by increasing the building area and pavement. Runoff from the site will be accommodated by sheetflow due to the soil's porosity and the low rainfall in the area. This should be adequate for the increased runoff generated by the proposed improvements. The proposed water storage and transmission facilities are not expected to affect groundwater recharge.

2. Flora and Fauna

The water system improvements will displace existing flora and fauna, but there are no threatened or endangered species in the area. Landscaping will restore some of the vegetative cover.

3. Noise

In the operational phase, potential noise impacts will be confined to the mechanical operations of the booster pumps located at each of the reservoir sites. The pumps will be contained within a housing unit which will help to minimize any noise generated. No adverse impacts are anticipated on any current or future noise-sensitive uses.

4. Visual

Some short term visual impacts will result from the construction of the 22-foot high reservoirs amidst an undeveloped area. Vegetation will obscure much of the reservoir's visibility from the Queen Kaahumanu Highway. Some residents of the Kona Heavens Subdivision may have a view of the upper portion of the reservoirs. As the surrounding area undergoes development, however, the

anticipated residential, commercial, and industrial uses will obscure and greatly lessen the visual impacts of the reservoirs.

5. Traffic

In the long term, traffic will not be affected by the proposed improvements. The reservoirs should largely be self-sustaining, with the exception of the need for personnel to make periodic checks of water levels and water quality, and perform routine groundskeeping and maintenance work.

VI. ALTERNATIVES TO THE PROPOSED ACTION

Potential alternatives to the proposed action include the implementation of separate County water system improvements as called for in the Water Master Plan, the development of additional water sources, 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. Water storage and transmission capacities would be significantly reduced to meet just the developer's needs. The County, however, would have to undertake separate improvements to its transmission system at a greater cost if it still desires to increase water supply to the upper service areas. Additional booster pumps and reservoirs would be required along Palani Road and Mamalahoa Highway.

A second alternative would be the development of additional water sources and related transmission mains to serve the upper areas. The most probable site for a successful potable well would be in the area south of Palani Road. According to a U.S. Geological Survey study of the Kona area in 1983, the fresh water lens is thickest in the Keauhou area where the existing Kahaluu Wells and Kahaluu Shaft are situated. The development of additional source in this area would

not only be costly but it would still leave the problem of transmission to the upper Palani service areas.

As proposed in the Keahole to Kailua Development Plan, a series of wells may be drilled in the 1,500 to 1,800-foot water resource development zone, spaced approximately half a mile apart. Wells would be tied in to a 24-inch transmission line approximately 20 miles long, with a gravity-flow looped distribution system to service the lower reaches of the system. Nine 2.0 mg reservoirs would be required to serve the anticipated demand of 17.1 million gallons. The cost for this proposed system, however, is estimated at a substantial \$146.2 million.

The "no action" alternative would allow the developers to proceed with improving the water system for their proposed development areas, with no benefits to the County. No separate improvements would be undertaken by the County to increase water supply to the upper areas. Conceivably, this could seriously constrain future development in a region which comprises the Big Island's fastest growing areas.

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APPENDIX A
ARCHAEOLOGICAL RECONNAISSANCE SURVEYS

PAUL H. ROSENDAHL, Ph.D., Inc.
Consulting Archaeologist

Report 370-101487

ARCHAEOLOGICAL RECONNAISSANCE SURVEY
KALOKO WATER TANK SITES

Land of Kaloko
North Kona, Island of Hawaii
(TMK:3-7-3-09:Por.1,17)

by

Margaret L.K. Rosendahl, B.A., S.O.P.A.
Supervisory Archaeologist

and

Alan E. Haun, Ph.D.
Senior Archaeologist

Prepared for

Wilson Okamoto & Associates, Inc.
P.O. Box 3530
Honolulu, Hawaii 96811

October 1987

305 Mohouli Street • Hilo, Hawaii 96720 • (808) 969-1763 or 966-8038

INTRODUCTION

BACKGROUND

At the request of Mr. Gary Okamoto of Wilson Okamoto & Associates, Inc., Paul H. Rosendahl, Ph.D., Inc. (PHRI) recently conducted an archaeological reconnaissance survey of three one-acre parcels located in the Land of Kaloko, North Kona District, Island of Hawaii (TMK:3-7-3-09:Por.1,17). This report comprises the final report on the survey field work.

Field work was conducted on October 6, 1987 by PHRI Supervisory Archaeologist Margaret L.K. Rosendahl and Field Archaeologist Robert Noah. Approximately 16 labor-hours were expended in conducting the field work; after the field work, survey findings and preliminary conclusions--including tentative evaluations and recommendations--were discussed with Dr. Ross Cordy, chief archaeologist in the Dept. of Land and Natural Resources, Historic Sites Section (DLNR-HSS) (October 9, 1987), and with Ms. Connie Kiriu, staff planner in the Hawaii County Planning Department (October 15, 1987). Dr. Cordy and Ms. Kiriu will formally review the findings upon submittal of this final report.

SCOPE OF WORK

The basic objective of an archaeological reconnaissance survey is to identify--to discover and locate on available maps--sites or features of possible archaeological significance. A reconnaissance survey is a pedestrian, or walk-through, survey--extensive rather than intensive in scope--conducted to determine the presence or absence of archaeological resources within a specified project area. A reconnaissance survey indicates the general nature of and variety of archaeological remains present, and the general distribution and density of such remains; it permits a preliminary evaluation of archaeological resources and facilitates formulation of realistic recommendations and estimates for such further archaeological work as might be necessary or appropriate. Such further work could include intensive survey--detailed recording of sites and features, and selected test excavations; and possibly subsequent mitigation--salvage research excavations, interpretive planning and development, and/or preservation of sites and features with significant scientific research, interpretive, and/or cultural values.

The specific objectives of the Kaloko Water Tank Sites reconnaissance survey were four-fold: (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 impact of proposed development upon the identified remains, and (d) to define the general scope of any subsequent data collection and/or mitigation that might be necessary or appropriate within the project area.

The reconnaissance survey was conducted in accordance with the minimum requirements for reconnaissance-level survey as recommended by the Society of Hawaiian Archaeology (SHA). These standards are currently used by the Hawaii County Planning Department and the DLNR-HSS as guidelines for the review and evaluation of archaeological reconnaissance survey reports submitted in conjunction with various development permit applications.

PROJECT AREA DESCRIPTION

The Kaloko Water Tank Sites project area consists of three one-acre parcels in the Land of Kaloko, North Kona District, Island of Hawaii (TMK:3-7-3-09:Por.1,17) (Figure 1). The three parcels, originally part of a land commission award (LCA) to Lot Kamehameha (King Kamehameha V) (LCA 7715:11 [Royal Patent 4218]), are situated south of the main access road connecting Queen Kaahumanu Highway and Kona Heavens Subdivision (Figure 2). The elevations of the parcels are roughly: 350 ft above mean sea level (AMSL) (Tank Site 4), 630 ft AMSL (Tank Site 3), and 910 ft AMSL (Tank Site 2). Each parcel measures c. 300 ft along the frontage on the main access road and each extends c. 250 ft to the south.

An aa flow covers much of the project area. Vegetation at Tank Site 2, however, is very dense and consists primarily of Christmas-berry (Schinus terebinthifolius Raddi), lantana (Lantana camara [L.]), koa-haole (Leucaena leucocephala [Lam.] de Wit), lau'a'e (Microsorium scolopendria [Burm.] Copel.), bitter yam (Dioscorea bulbifera L.), air plant (Bryophyllum pinnatum [Lam.] Kurz), and ferns (Nephrolepis sp.). Vegetation at Tank Site 3 is comprised mainly of koa-haole; the area about Tank Site 4 is devoid of vegetation.

The main access road, a 70-ft corridor, was grubbed in 1979. A smaller road, a jeep trail, runs east-west through the project area. Average annual rainfall within the general vicinity of the project area is 20 to 40 in (Armstrong 1983:63).

PREVIOUS ARCHAEOLOGICAL WORK

Previous archaeological work conducted within the general vicinity of the present project area includes reconnaissance surveys of the Kailua-Kawaihae Road (Queen Kaahumanu Highway) (Ching 1971, Ching and Rosendahl 1968), and work by Cluff (1971), Cordy (1987), Emory and Soehren (1971), Reinecke (Ms.), Renger (1970), Rosendahl (1973), Soehren (1976, 1982, 1985), Stokes (Ms.), and Walker and Haun (1987). Previous archaeological work conducted within the specific boundaries of the project area is limited to a single reconnaissance survey of the proposed access road (a survey in which no sites were located) (Soehren 1979).

Previous archaeological work in the Lands of Ooma and Kalaoa (lands near the Land of Kaloko) is summarized in Cordy (1985). Cordy indicates

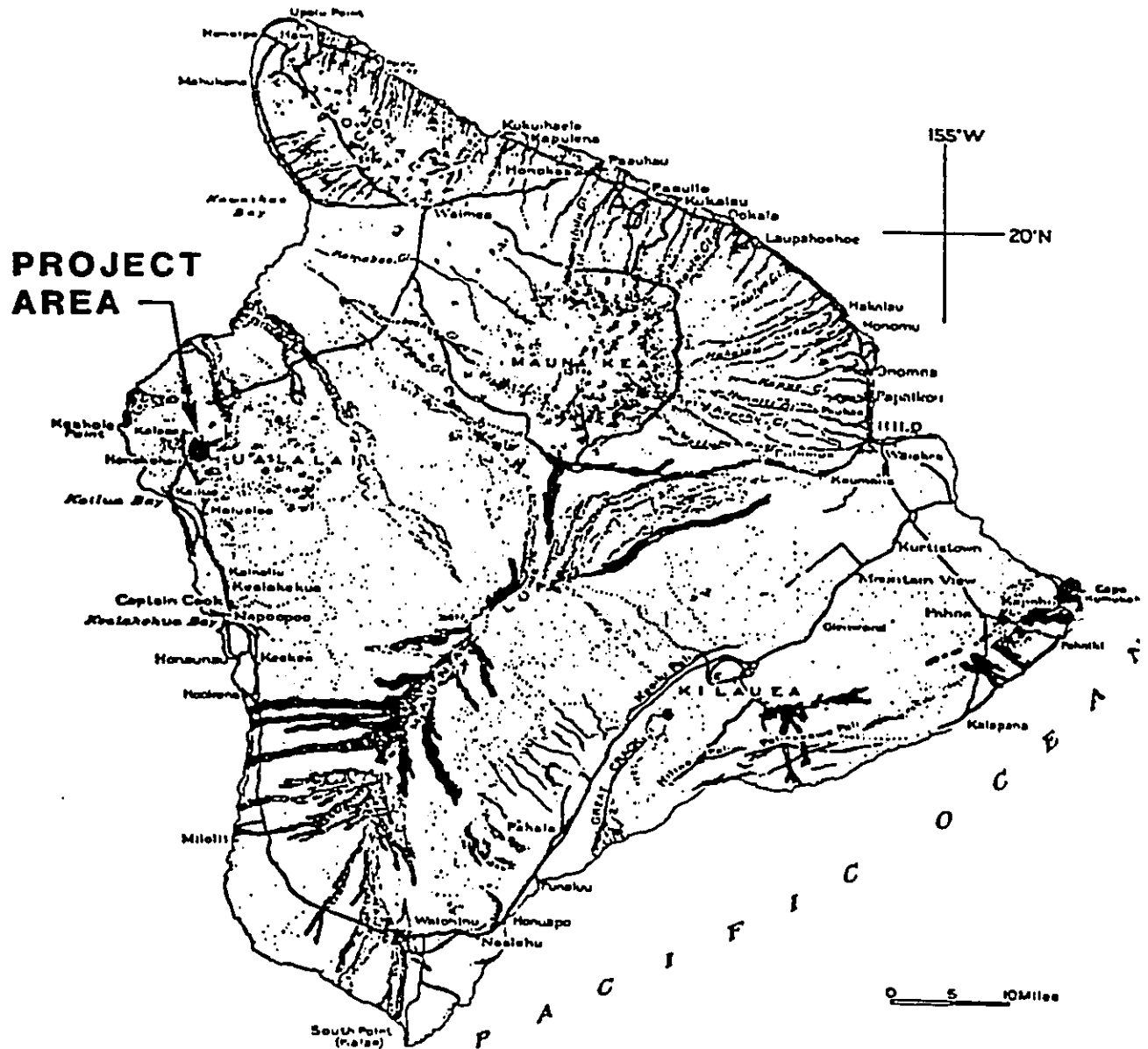


Figure 1. PROJECT LOCATION MAP

ARCHAEOLOGICAL RECONNAISSANCE SURVEY
KALOKO WATER TANK SITES

Land of Kaloko, North Kona
Island of Hawaii (TMK:3-7-3-09:Por.1,17)

PHRI 87-370

October 1987

(Map taken from Macdonald and Abbott 1970:288.)

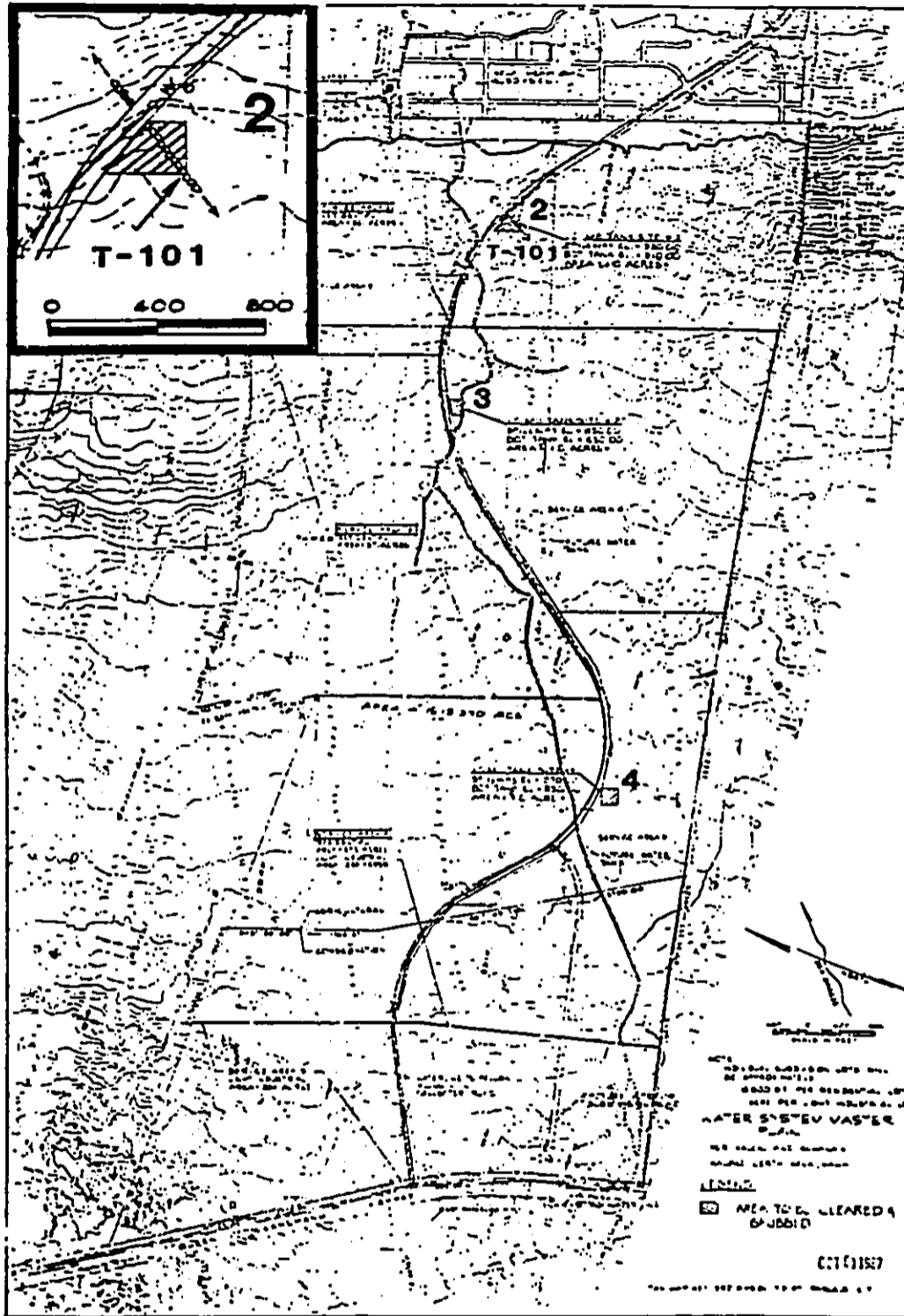


Figure 2. LOCATION MAP SHOWING PROJECT AREA, SITE T-101, AND WATER TANK SITES 2, 3, AND 4

that upland areas in the Lands of Ooma and Kalaoa contain prehistoric agricultural field systems which were in use until early historic times.

General information on the historical and cultural significance of the Land of Kaloko is provided in the study The Spirit of Ka-loko Hono-ko-hau (Honokohau Study Advisory Commission, National Park Service 1974). This study proposes the establishment of a 1,300-ac cultural park (named Kaloko-Honokohau National Park) seaward of the Queen Kaahumanu Highway--a park which would include the Lands of Kaloko and Honokohau.

FIELD METHODS AND PROCEDURES

To facilitate the survey of the Kaloko Water Tank Sites project area, Mr. Bob Shirai of Island Survey, Inc. had previously flagged the parcels with orange flagging tape to indicate their northern boundaries. Parcels were inspected by means of pedestrian sweeps oriented north-south across the individual parcels. The distance between sweeping crew members was 10-15 m, depending on vegetation and terrain encountered.

One site (PHRI temporary site number T-101) was identified during the survey. The site was plotted onto a blue-line map of the project area (scale: 1"=400'), and descriptive data and feature dimensions for the site were recorded onto a standard PHRI site survey record form. In addition, the site and project area were photographed using 35 mm black-and-white film (PHRI Roll No.637), and the site was marked with orange and blue flagging tape and was tagged with an aluminum tag denoting the temporary site number, PHRI project number (87-370), the letters "PHRI," and the date.

FINDINGS

One archaeological site, a wall (T-101), was identified during the current project. This core-filled wall, located within Tank Site 2, crosses the northeast corner of the project area at 245 degrees Az and is oriented north to south, running downslope from the north end. The wall measures 1.0 m wide by 1.3 m high and is constructed of aa boulders and small boulder and cobble fill. A section of the wall was apparently cut during grubbing for the access road, but overall, the wall is in good condition. Running along the wall is a dense alignment of Christmas-berry trees. The area immediately west of the wall has been mechanically altered, and may possibly be a jeep corridor. Much of the remaining area around the site appears to have been chain-dragged. A flattened 55-gallon drum is present on site.

CONCLUSION

The archaeological reconnaissance survey of Kaloko Water Tank Sites confirmed the presence of a single archaeological site (Site T-101). Site T-101, located within Tank Site 2, is in good physical condition, and the integrity of the site is also good. The site is interpreted to be historic in origin and has been assigned a tentative functional interpretation of boundary or cattle wall.

To facilitate state and county review of evaluations and recommendations, general significance assessments and recommended general treatments for Site T-101 are summarized in Table 1. These significance assessments are based on the National Register criteria for evaluation, outlined in the Code of Federal Regulations (36 CFR Part 60), under Criterion D, which defines significant resources as ones which "have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR Sec. 60.4). The Hawaii State DLNR-HSS uses these criteria for evaluating site significance. Sites determined to be potentially significant for information content fall under Criterion D, which defines significant resources as ones which "have yielded, or may be likely to yield, information important in prehistory or history" (36 CFR Sec. 60.4). Sites potentially significant as representative examples of site types are evaluated under Criterion C, which defines significant resources as those which "embody the distinctive characteristics of a type, period, or method of construction...or that represent a significant and distinguishable entity whose components may lack individual distinction" (36 CFR Sec. 60.4).

In order to facilitate future client management decisions regarding site treatments, sites are further evaluated on terms of three value modes which are derived from the previously mentioned state and federal evaluation criteria. The archaeological sites are evaluated in terms of potential scientific research, interpretive, and/or cultural values. Research value refers to the potential of archaeological resources for producing information useful in the understanding of culture history, past lifeways, and cultural processes at the local, regional, and interregional levels of organization. Interpretive value refers to the potential of archaeological resources for public education and recreation. Cultural value refers to the potential of archaeological resources to preserve and promote cultural and ethnic identity and values.

Sites with potential cultural significance are evaluated under guidelines prepared by the Advisory Council on Historic Preservation (ACHP) entitled "Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review" (ACHP 1985). The guidelines define cultural value as "...the contribution made by an historic property to an ongoing society or cultural system. A traditional cultural value is a cultural value that has historical depth" (1985:1). The guidelines further specify that "[a] property need not have been in consistent use since antiquity by a cultural system in order to have traditional cultural value" (1985:7).

Table 1.

**SUMMARY OF GENERAL SIGNIFICANCE ASSESSMENTS
AND RECOMMENDED GENERAL TREATMENTS
KALOKO WATER TANK SITES PROJECT AREA (TMK:3-7-3-09:Por.1,17)**

Site or Feature No.	Significance Category				Recommended Treatment			
	A	X	B	C	FDC	NEW	PID	PAI
T-101	-	+	-	-	-	+	-	-

General Significance Categories:

- A=Important for information content, further data collection necessary (PHRI=research value);
 X=Important for information content, no further data collection necessary (PHRI=research value, SHPO=not significant);
 B=Excellent example of site type at local, region, island, State, or National level (PHRI=interpretive value); and
 C=Culturally significant (PHRI=cultural value).

Recommended General Treatments:

- FDC=Further data collection necessary (intensive survey and testing, and possibly subsequent data recovery/mitigation excavations);
 NEW=No further work of any kind necessary, sufficient data collected, archaeological clearance recommended, no preservation potential (possible inclusion into landscaping suggested for consideration);
 PID=Preservation with some level of interpretive development recommended (including appropriate related data recovery work); and
 PAI=Preservation "as is," with no further work (and possible inclusion into landscaping), or minimal further data collection necessary.

Based on the findings of the reconnaissance survey, Site T-101 appears to be, for the most part, significant solely for potential information content. The present project has recovered from Site T-101 information adequate and sufficient to warrant recommending that no additional archaeological field work is necessary.

The evaluation and recommendation presented within this report have been based on a surface reconnaissance survey of the project area. There is always the possibility, however remote, that potentially significant, unidentified surface structural remains, subsurface cultural features, or deposits will be encountered in the course of future archaeological investigations or subsequent development activities. In such situations, archaeological consultation should be sought immediately.

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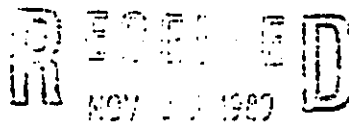


Paul H. Rosendahl, Ph.D., Inc.

Archaeological • Historical • Cultural Resource Management Studies & Services

305 Mohouli Street • Hilo, Hawaii 96720 • (808) 969-1763 • FAX (808) 961-6998

Report 547-110389



November 6, 1989

Mr. Charles Schuster
Wilson Okamoto & Associates
P.O. Box 3530
Honolulu, Hawaii 96811

WILSON OKAMOTO & ASSOCIATES

Subject: *Addendum Report: Archaeological Inventory Survey
Additional Kaloko Water Tank Site
Land of Kaloko, North Kona District
Island of Hawaii (TMK:3-7-3-10:Por.17)*

Dear Mr. Schuster:

At the request of Wilson Okamoto & Associates, Paul H. Rosendahl, Ph.D., Inc. (PHRI) conducted a 100% surface archaeological inventory survey of the Additional Kaloko Water Tank Site (TMK:3-7-3-10:Por.17), situated within the Land of Kaloko, North Kona District, Island of Hawaii. The survey was conducted on November 1, 1989 by Supervisory Archaeologist Alan T. Walker and Field Archaeologist Jack Harris. Approximately six man-hours of labor were expended in carrying out the survey.

The present site constitutes an addition to the original Kaloko Water Tank Sites project area, the survey of which was reported on in October 1987 (Rosendahl and Haun 1987). This letter report constitutes an addendum to the earlier report; as such, information in the earlier report pertaining to background, scope of work, and previous archaeological work will not be repeated here.

The Additional Kaloko Water Tank Site abuts the north side of the proposed Kamanu Street extension in the Kaloko Light Industrial Park (Figure 1, at end). The project area measures c. 360 ft north-south and east-west. Vegetation in the area consists primarily of fountain grass (*Pennisetum setaceum* [Forsk.] Chiov.) and *koa-haole* (*Leucaena leucocephala* [Lam.] de Wit), and scattered Christmas-berry (*Schinus terebinthifolius* Raddi), *opiuna* (*Pithecellobium dulce* Roxb. Benth.), *kiawe* (*Prosopis pallida* [Humb. and Bonpl. ex Willd.], *kolu* (*Acacia farnesiana* [L.] Willd.), *pua-pilo* (*Capparis sandwichiana* DC.), *'uhaloa* (*Waltheria americana* L.), *'ilima* (*Sida fallax* Walp.), and *noni* (*Morinda citrifolia* L.).

Initially, in order to locate the project area, PHRI crew members used a 300-ft tape to plot the approximate boundaries of the project area relative to Kanalani Street (Figure 1). The area was then surveyed by way of four pedestrian sweeps; intervals between sweeping crew members were c. 15.0 m.

During the survey, one archaeological site (Site 13493*) was identified (Figure 1). Site 13493 is a segment of a steppingstone trail; it measures 7.5 m long (E-W) by 0.6-0.7 m wide (N-S) and is located either within or immediately adjacent to the northern corner of the project area on a section of aa lava (exact location of the trail needs to be determined by a professional surveyor). The segment consists of approximately six flat and roughly round pahoehoe slab steppingstones set on worn aa gravel. The steppingstones measure c. 0.4 m in diameter by 0.1 m thick. The trail is oriented c. 159 degrees Az. (magnetic). No portable remains were present in association with the trail. The trail appears to be prehistoric, and appears to have been used as a secondary transportation route.

* State Inventory of Historic Places (SIHP) site designation system: five-digit site number prefixed by 50-10-27 .
(50=State of Hawaii, 10=Island of Hawaii, 27=USGS 7.5" series quad map ["Keahole Pl., Hawaii"]).

Site 13493 was flagged with pink flagging tape and was initially assigned PHRI temporary number 547-1 (547=PHRI project number). Subsequently, the site was assigned its present number, which is a permanent SIHP (State Inventory of Historic Places) number. The site was plotted on a photocopy of a 1"=200' scale tax map, was recorded on a standard PHRI site record form, and was then mapped, with orientation and site dimensions determined using metric tape and compass. A 35 mm black-and-white photograph was taken of the site (PHRI Temp. Roll No. 547-1), and the site was tagged with an aluminum strip bearing the site number, project number (89-547), the letters PHRI, and the date. The same information as on the aluminum strip was written on pieces of flagging tape, which were then wrapped around stones and placed in protected areas on the site.

Site 13493 was evaluated using significance categories based on the National Register criteria for evaluation, as outlined in the Code of Federal Regulations (36 CFR Part 60). The Hawaii State Department of Land and Natural Resources-Historic Sites Section/State Historic Preservation Office (DLNR-HSS/SHPO) uses these criteria for evaluating cultural resources. Sites determined to be potentially significant for information content fall under Criterion D, which defines significant resources as ones which "...have yielded, or may be likely to yield, information important in prehistory or history." Sites potentially significant as representative examples of site types are evaluated under Criterion C, which defines significant resources as those which "...embody the distinctive characteristics of a type, period, or method of construction...or that represent a significant and distinguishable entity whose components may lack individual distinction."

Sites with potential cultural significance are evaluated under guidelines prepared by the Advisory Council on Historic Preservation (ACHP) entitled "Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review" (ACHP Draft Report, August 1985). The guidelines define cultural value as "...the contribution made by an historic property to an ongoing society or cultural system. A traditional cultural value is a cultural value that has historical depth." The guidelines further specify that "[a] property need not have been in consistent use since antiquity by a cultural system in order to have traditional cultural value."

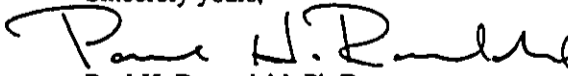
In order to facilitate future client management decisions regarding the treatment of Site 13493, the site was further evaluated in terms of PHRI CRM (Cultural Resource Management) value modes, which are derived from the previously mentioned state and federal criteria. The site was evaluated in terms of potential scientific research, interpretive, and cultural values. Research value refers to the potential of archaeological resources for producing information useful in the understanding of culture history, past lifeways, and cultural processes at the local, regional, and interregional levels of organization. Interpretive value refers to the potential of archaeological resources for public education and recreation. Cultural value refers to the potential of archaeological resources to preserve and promote cultural and ethnic identity and values.

Based on the above federal and state criteria, Site 13493 is assessed as culturally significant and valuable for information content. Based on the CRM value modes, the site is assessed as generally exhibiting moderate cultural value, and low research and interpretive values. Because data collected from Site 13493 during the present survey is considered sufficient, and the site consists of only a short, secondary trail, its preservation is not considered essential and no further archaeological work is recommended. As mentioned previously, the exact location of the trail is in question. If necessary, the trail could be precisely plotted by a professional surveyor with the aid of an archaeologist.

It should be noted that the evaluations and recommendations presented here are made solely on the basis of a 100% surface inventory survey. There is always the possibility, however remote, that potentially significant, subsurface cultural remains will be encountered in the course of future archaeological investigations or subsequent development activities. In such situations, archaeological consultation should be sought immediately.

This letter report constitutes the final report on the Additional Kaloko Water Tank Site. If you have any questions concerning this report, please contact me at our Hilo office (808) 969-1763.

Sincerely yours,



Paul H. Rosendahl, Ph.D.

President and Principal Archaeologist

ATW:atw

References Cited

ACHP (Advisory Council on Historic Preservation)

1985 Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review. Washington, D.C.: Advisory Council on Historic Preservation. (Draft report, August)

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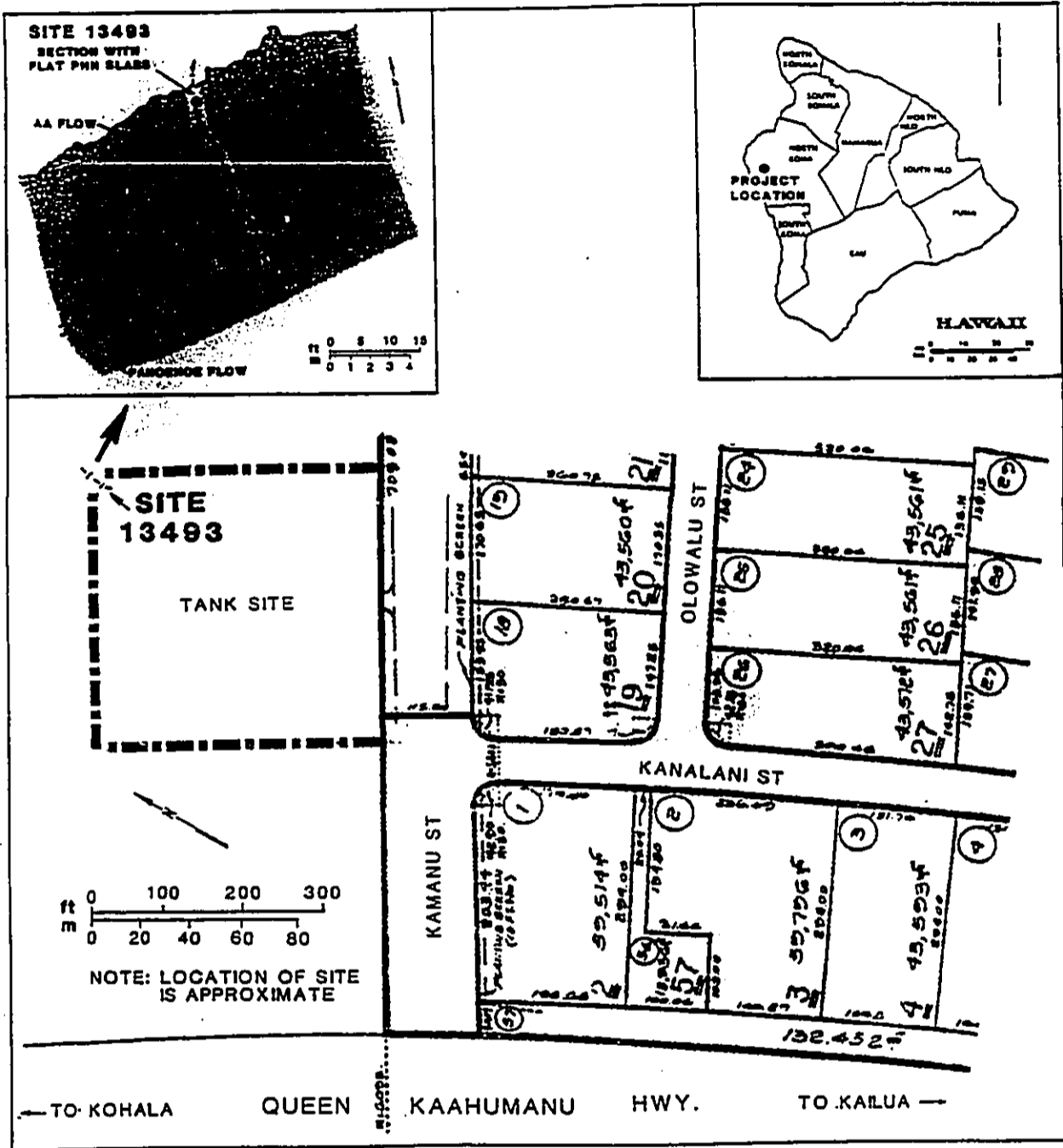


Figure 1. PROJECT AREA AND SITE LOCATION MAP

Additional Kaloko Water Tank Site
Land of Kaloko
North Kona District, Island of Hawaii
(TMK:3-7-3-10:Por.17)

PHRI Project 89-547

November 1989

APPENDIX B
AGENCY COMMENTS

JOHN WAIHEE
GOVERNOR OF HAWAII



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

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STATE PARKS
WATER AND LAND DEVELOPMENT

October 22, 1987

Mr. Rodney Funakoshi
Wilson Okamoto & Associates, Inc.
P.O. Box 3530
Honolulu, Hawaii 96811

RECEIVED

OCT 25 1987

WILSON OKAMOTO & ASSOCIATES

Dear Mr. Funakoshi:

SUBJECT: Review of "Archaeological Reconnaissance Survey,
Kaloko Water Tank Sites" (M. Rosendahl & A. Haun 1987)
Kaloko, North Kona, Hawaii
TMK: 7-3-9: part 17, 19

Thank you for submitting this report for our review.

We agree that the survey has found all historic sites in the project areas, totalling 1 site. We have entered this site in the State's Inventory of Historic Places and have assigned this site, T-101, a permanent state inventory number. It should now be referred to as site 10-28-10,887.

The report presents sufficient information to evaluate the significance of this site. We agree that it is significant solely for its information content. Additionally, we agree that the site is "no longer significant", having sufficient amounts of its significant information recorded during this survey.


In sum, no significant sites still exist in the project areas. The project in these areas will have "no effect" on significant historic sites.

We would, however, like to request the following items in order for our inventory file on the site to be complete:

1. Representative photographs of the site.
2. Better maps of the location of the site. We would appreciate receiving 2 maps -- (a) a copy of a portion of the U.S.G.S. quadrangle with the site's location and (b) a copy of a portion of the Tax Map with the site's location.

If you have any questions, please feel free to contact Dr. Ross Cordy, our Head Archaeologist who handles Hawaii County, at 548-7460.

Sincerely yours,



RALSTON H. NAGATA
State Parks Administrator and Deputy
State Historic Preservation Officer

cc: Paul H. Rosendahl, Ph.D., Inc.
County of Hawaii Planning Department

JOHN WAIHEE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
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WATER AND LAND DEVELOPMENT

December 8, 1989

Mr. Rodney Funakoshi, Planner
Wilson Okamoto & Associates
1150 South King Street
Honolulu, Hawaii 96814

RECEIVED
DEC 14 1989

WILSON OKAMOTO & ASSOCIATES

Dear Mr. Funakoshi:

SUBJECT: Proposed Additional Kaloko Water Tank Site -- Review of Archaeological Survey (Rosendahl 1989. Addendum Report: Archaeological Inventory Survey, Additional Kaloko Water Tank Site. PHRI.)
Kaloko, North Kona, Hawaii
TMK: 7-3-10: part 17

Thank you for sending us this report for our review.

We agree that the survey adequately covered the project area and is likely to have found all historic sites, totalling 1 site. In order to evaluate the significance of the site, we need some additional information:

1. What is the context of this trail in the overall settlement pattern of Kaloko? Where does the trail lead to? What are its terminal points? Why is the trail considered a secondary trail? What does secondary trail mean?
2. We would like to receive a photograph of the site.

Once we get this information, then we can better evaluate the significance of the site and appropriate mitigation.

At present, we lean toward agreeing with the significance evaluation, although the trail might also be considered an excellent example of its type in the region. Also, at present, we lean toward recommending that the trail be preserved, since it is in a corner of the proposed project area and probably could be easily avoided and since it might be useful as an inland site relating to the coastal national historic park. However, we will await the additional information before commenting on significance and mitigation.

Sincerely,

A handwritten signature in cursive script, appearing to read "Don Hibbard".

DON HIBBARD, Director
Historic Preservation Program

cc: PHRI

2662-03
✓



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

Archaeological • Historical • Cultural Resource Management Studies & Services

305 Mohoull Street • Hilo, Hawaii 96720 • (808) 969-1763 • FAX (808) 961-6998

Memo 547-011790

January 17, 1990

MEMORANDUM

To: Mr. Don Hibbard, Director
Historic Preservation Program
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

From: Paul H. Rosendahl, Ph.D. *PHR* Alan T. Walker, B.A.
President and Principal Archaeologist Supervisory Archaeologist

Subject: *Addendum Report: Archaeological Inventory Survey
Additional Kaloko Water Tank Site
Land of Kaloko, North Kona District
Island of Hawaii (TMK:3-7-3-10:Por.17)*

The purpose of this memorandum is to provide additional information requested by yourself regarding Site 50-10-27-13493, a steppingstone trail segment initially identified during the inventory survey for the Additional Kaloko Water Tank Site project area (Rosendahl 1989).

Settlement patterns for the general vicinity of the project area have been described within prior archaeological reports (Rosendahl 1973, Cordy 1985) and will not be repeated here. As for the types of features expected to be found in the project area vicinity, the present project area is situated within an environmental zone which has been previously identified as the dry, barren middle zone, characterized by exposed aa and pahoehoe lava rocklands largely devoid of soil or vegetation. This zone during prehistoric times was largely uninhabited; sites commonly found within the zone are generally confined to trails, cairns (possibly marking the trails), and temporary habitation sites (predominately C-shapes and caves).

The presence of a short steppingstone trail segment (Site 13493) in the project area, therefore, is not unexpected. Site 13493, based on the absence of complex structural architecture (kerbstones, causeways, etc.) and evidence of extended use (extensively worn surface), appears to be a segment of a secondary trail, rather than a segment of a primary one. A primary trail, as the term is used here, is an original trail from which other trails are derived, and is of high quality and important. Primary trails generally link coastal habitation and marine exploitation with upland habitation areas and agricultural cultivation. Primary coastal-inland trail routes previously recorded in Kaloko include Sites D13-81 and -89 (Renger 1970). Secondary trails are derived from or result from primary trails, and they are hence considered to be secondary in quality or importance. Site 13493 is probably a secondary trail segment which linked with nearby, localized areas within Kaloko. The segment may be part of a trail that leads to Site D13-81, and eventually to D13-89.

A check of readily available cartographic sources (aerial photographs, topographic maps, etc.) and previous archaeological reports for the general area did not reveal additional locational information regarding Site 13493. Presently, the terminal points and/or final destination of the trail segment (Site 13493) are unknown. Further work in adjacent areas may result in the discovery of additional related trail sections which may help define the segment further.

Regarding the Rosendahl (1989) significance evaluations and recommendations for Site 13493, the site was not recommended for preservation on the basis of its interpretive value (due to its state of poor preservation; the trail is not an excellent example of its type) or information content (significant information has been collected). The site was assessed as moderately significant for cultural value, but as noted in the report, because it consisted of a short segment, preservation was not recommended (Rosendahl 1989).

If you have any questions concerning this memorandum, please contact me at our Hilo office 808/969-1763.

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Rosendahl, P.H.

- 1973 Archaeological Salvage of the Ke-Ahole to Anaehoomalu Section of the Kailua-Kawaihae Road (Queen Kaahumanu Highway), Island of Hawaii. Departmental Report Series 73-3. Dept. Anthro., B.P. Bishop Museum.
- 1989 Addendum Report: Archaeological Inventory Survey, Additional Kaloko Water Tank Site, Land of Kaloko, North Kona District, Island of Hawaii (TMK:3-7-3-10:Por.17). PHRI Report 547-110389. Prepared for Wilson Okamoto & Associates.

JOHN WAIHEE
GOVERNOR OF HAWAII



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STATE PARKS
WATER AND LAND DEVELOPMENT

January 29, 1990

Mr. Rodney Funakoshi, Planner
Wilson Okamoto & Associates
1150 South King Street
Honolulu, Hawaii 96814

Dear Mr. Funakoshi:

SUBJECT: **Proposed Additional Kaloko Water Tank Site
Review of Archaeological Survey
Kaloko, North Kona, Hawaii
TMK: 7-3-10: part 17**

This is a follow-up on our letter of December 8, 1989. We received a memorandum from your archaeological consultant, PHRI, dated January 17, 1990, supplying us with additional information which we requested (Rosendahl & Walker 1990. Addendum Report: Archaeological Inventory Survey, Additional Kaloko Water Tank Site. PHRI).

The survey had found 1 site, a trail segment. The addendum adequately covers the information that we needed. It is now clearer that this is a short branch trail, probably leading off one of the mauka-makai trails. Where exactly this branch trail leads is unclear, but hopefully this will be identified in future archaeological surveys in adjacent parcels.

Given this information and the clarification that the trail is in a poor state of preservation and is not an excellent example of its type, we agree with the significance evaluation of PHRI that the trail was significant for its information content, but that the survey recorded sufficient amounts of this information, making the site "no longer significant".

In turn, this means that no significant historic sites are in the project parcel, and that the project will have "no effect" on significant historic sites. The historic preservation review process is, thus, concluded for this project.

However, we still need to receive a photograph(s) of the site for archiving in the State's Inventory of Historic Sites.

Sincerely,

A handwritten signature in cursive script, appearing to read "Don Hibbard".

DON HIBBARD, Director
Historic Preservation Program

cc: P. Rosendahl, PHRI

February 1983

FILE COPY

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 TSA International, Limited
Address 1585 Kapiolani Boulevard
Suite 1600
Honolulu, Hawaii 96814

Telephone No. 942-2131

SIGNATURE *H. Haysli*

Date July 5, 1990

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

Name TSA International, Limited
Address c/o Wilson Okamoto & Assoc.
1150 South King St. #800
Honolulu, Hawaii 96814

Telephone No. 531-5261

Interest in Property Landowner

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

*SIGNATURE *H. Haysli*

Date July 5, 1990

*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
- (X) 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 Kaloko, North Kona

Island Hawaii

County Hawaii

Tax Map Key 7-3-09:por. 17

Area of Parcel 1,167.54 acres
(Indicate in acres or
sq. ft.)

Term (if lease) n/a

V. ENVIRONMENTAL REQUIREMENTS

An Environmental Assessment for the Kaloko Water System Improvements was prepared by Wilson Okamoto and Associates, Inc. for the Hawaii County Department of Water Supply and TSA International, Ltd in June 1990 (copy attached). The preparation of this Environmental Assessment arises from the location of one of the reservoir sites within the State Conservation District as well as County funding participation in the overall water system project. The Environmental Assessment has been prepared in accordance with Chapter 343, Hawaii Revised Statutes, and Chapter 11-200, Administrative Rules of the Department of Health.

Based on its preliminary review of the Environmental Assessment, the County of Hawaii Department of Water Supply believes that the proposed project will not cause any significant environmental impacts (See attached letter from County of Hawaii Department of Water Supply dated March 7, 1990).

VI. SUMMARY OF PROPOSED USE

The proposed project within the Conservation District involves the construction of a one-million gallon water storage reservoir of reinforced concrete, measuring 22 feet high and 100 feet in diameter. A 12-foot wide entrance road with a 10-foot wide perimeter road around the reservoir will be developed on the approximately one-acre site to provide access to the grounds by maintenance vehicles and personnel. A booster pump will also be installed to convey water to higher elevation tanks from the 12-inch water main along Queen Kaahumanu Highway.

The proposed reservoir is part of an overall water systems project being undertaken as an Improvement District with the County of Hawaii Water Commission and TSA International Limited. The system for the Kaloko area was designed to service the existing and proposed developments in the immediate area, including an approved 18-hole golf course and additional phases of the Kaloko light industrial subdivision. The County will fund the oversizing of the developers' needed water facilities which will enable the system to serve as an important supplement to the County of Hawaii's municipal water system for the North Kona area. The water facilities upon completion will be dedicated to the County of Hawaii.

INFORMATION REQUIRED FOR ALL USES

I. Description of Parcel

A. Existing structures/Use.

The approximately one-acre site within the Conservation District abuts the north side of the proposed Kamanu Street extension of the Kaloko Industrial Park, approximately 500 feet mauka of Queen Kaahumanu Highway. See Figure 3 of the attached Environmental Assessment. The site is near the western boundary of the Tax Map Key parcel 7-3-10: 17.

The project site is currently undeveloped, underlain by pahoehoe and aa lava and overgrown with vegetation, mostly koa haole and fountain grass. The project site is north and adjacent to the first phase of the Kaloko Light Industrial Subdivision.

B. Existing utilities.

Existing utilities along a planned mauka-makai access roadway adjacent and south of the project site include electrical lines and a 20-inch water line within the roadway right-of-way. These improvements would be within the State Urban District.

C. Existing access.

Access to the site is off of Queen Kaahumanu Highway on a planned roadway running mauka-makai and linking Queen Kaahumanu Highway with Mamalahoa Highway. See Figure 3 of the attached Environmental Assessment.

D. Vegetation.

Two types of Hawaiian plants form the predominant vegetative cover on the site. They include koa haole (*Leucaena leucocephala*), a common variety found especially in lower elevations or in drier regions growing generally three to five feet high, and an herb layer of fountaingrass (*Pennisetum setaceum*), a bunch grass that persists on lava flows where little else can grow. Scattered throughout this vegetative cover are a number of native and exotic species, including Christmas-berry (*Schinus terebinthifolius*), opiuma (*Pithecellobium dulce*), kiawe (*Prosopis pallida*), kolu (*Acacia farnesiana*), pua-pilo (*Capparis sandwichiana*), uhaloa (*Waltheria americana*), ilima (*Sida fallax*) and noni (*Morinda citrifolia*).

E. Topography.

The water reservoir is located at the 118-foot elevation. The land above the site rises to elevations of 1,000 feet with slopes between 6 and 10 percent. The average slope of the site is 6 percent.

F. Existing covenants, easements, and restrictions.

The proposed reservoir site is owned in fee simple by TSA International Ltd. with no easements or restrictions affecting the proposed reservoir site.

G. Historic sites affected.

An archaeological inventory survey of the proposed tank site in the Conservation District was conducted by Paul H. Rosendahl, Ph.D., Inc. (PHRI) in November, 1989. The survey revealed one archaeological site, a secondary stepping stone trail segment. Upon review by the State Department of Land and Natural Resources, the Historic Sites Preservation Office concurred with the significance evaluation of PHRI that the trail was significant for its information content, but that since sufficient information has been recorded by the survey, the site is "no longer significant". Accordingly, the project will have no effect on significant historic sites. See Appendices A and B of the attached Environmental Assessment.

II. Description:

The proposed project in the Conservation District involves the construction of a one-million gallon water storage reservoir and associated facilities. The reservoir will be constructed of reinforced concrete, measuring 22 feet high and 100 feet in diameter. A 12-foot wide road with a 10-foot wide perimeter road about the reservoir will be developed on the 1-acre site to provide access to the grounds by maintenance vehicles and personnel.

A booster pump will be installed to convey water to higher elevation tanks from the 12-inch water main along Queen Kaahumanu Highway. The site plan for the reservoir site is depicted in Figure 4 of the attached EA.

The overall water systems project for the Kaloko Property involves the construction of four (4) one-million gallon water storage reservoirs and appurtenant facilities, and a 20-inch water transmission main along the planned mauka-makai roadway, as described in the attached Environmental Assessment.

III. Commencement Date: Following the receipt of governmental approvals.

Completion Date: Estimated two years from approval.

IV. Type of Use Requested:

Permitted Use; DLNR Title 13, Chapter 2, Section 14(C)(2); Subzone G. Approval as a Permitted Use is being requested based on Section 13-2-14 (C) of the Conservation District rules which provide for such permitted uses in the (G) subzone. Among the permitted uses cited are the "development of water collection, pumping, storage, control, and transmission." The Kaloko site improvements which include reservoir, booster pump, and related water facilities are consistent with the subzone's permitted uses.

Area of Proposed Use: 1.0± Acres.

Name and Distance of Nearest Town or Landmark: Keahole Airport, approximately 3 miles to the north.

Conservation District Subzone: General (G)
(See Figure 10 in attached Environmental Assessment.)

County General Plan Designation: Conservation

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.

III. Commencement Date: Following the receipt of governmental approvals.

Completion Date: Estimated two years from approval.

IV. Type of Use Requested:

Permitted Use; DLNR Title 13, Chapter 2, Section 14(C)(2); Subzone G. Approval as a Permitted Use is being requested based on Section 13-2-14 (C) of the Conservation District rules which provide for such permitted uses in the (G) subzone. Among the permitted uses cited are the "development of water collection, pumping, storage, control, and transmission." The Kaloko site improvements which include reservoir, booster pump, and related water facilities are consistent with the subzone's permitted uses.

Area of Proposed Use: 1.0± Acres.

Name and Distance of Nearest Town or Landmark: Keahole Airport, approximately 3 miles to the north.

Conservation District Subzone: General (G)
(See Figure 10 in attached Environmental Assessment.)

County General Plan Designation: Conservation

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.



DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720
TELEPHONE (808) 969-1421 • FAX (808) 969-6996


March 7, 1990

Mr. Charles Schuster, Project Manager
Wilson Okamoto & Associates, Inc.
P.O. Box 3530
Honolulu, HI 96811

MAR 11 1990
WILSON OKAMOTO & ASSOCIATES

KALOKO WATER SYSTEM IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT

We have reviewed the subject document and hereby concur that the proposed project will not cause any significant environmental impacts. Therefore, a negative declaration of impact would be appropriate.


H. William Sewake
Manager

QA

... Water brings progress...

OEQC FORM FOR PUBLICATION OF EIS DOCUMENTS IN THE OEQC BULLETIN

Project title: Kaloko Water System Improvements
District: North Kona
Island: Hawaii
Acreage: Approx. 4 acres
Tax map key numbers: 7-3-09: por. 17, 19

TO BE FILLED OUT BY THE AGENCY ONLY:

Type of action:

- Agency
 Applicant

Please check all that apply. This document is a:

Chapter 205A document

- EIS Preparation Notice
 Draft EIS
 Final EIS

NEPA document

- FONSI
 Notice of Preparation (NOP)
 Draft EIS
 Final EIS

Chapter 343 document

- Negative Declaration
 EIS Preparation Notice
 Draft EIS
 Final EIS
 Acceptance Notice

OEQC must receive 4 copies of the environmental assessment, 60 of the draft EIS, and 25 of the final EIS. Proposing agencies or applicants should deliver an appropriate number of draft and final EISs to the accepting authority before submitting copies to OEQC.

Accepting authority's address:

Contact:

Phone:

Proposing agency or applicant's address: TSA International Limited
c/o Wilson Okamoto and Associates
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Contact: Rodney Funakoshi Phone: 531-5261

Consultant's address: Wilson Okamoto and Associates
1150 South King Street, Suite 800
Honolulu, Hawaii 96814

Contact: Rodney Funakoshi Phone: 531-5261

Summary of the proposed action or project to be published in the bulletin. Please use complete sentences and write plainly and clearly. The description should be brief, but sufficiently detailed so that the full impact of the action can be determined.

The water systems improvements project involves the construction of four (4) one-million gallon water reservoirs and appurtenant facilities, and a 20-inch water transmission main along the planned mauka-makai roadway. The project is being undertaken as an Improvement District with the County of Hawaii Water Commission and TSA International, Limited. The system for the Kaloko area was designed to service the existing and proposed developments in the immediate area, including an approved 18-hole golf course and additional phases of the Kaloko Light Industrial Subdivision. The County will fund the oversizing of the developer's needed water facilities which will enable the system to serve as an important supplement to the County of Hawaii's municipal water system for the North Kona area.

Please check all that apply. Characteristics that made this action subject to the EIS law:

- | | |
|---|--|
| <input checked="" type="checkbox"/> Use of state or county lands or funds | <input type="checkbox"/> Amendment to a county general plan |
| <input checked="" type="checkbox"/> Use of conservation district lands | <input type="checkbox"/> Reclassification of conservation lands |
| <input type="checkbox"/> Use of shoreline setback area | <input type="checkbox"/> Construction or modification of helicopter facilities |
| <input type="checkbox"/> Use of historic site or district | <input type="checkbox"/> Other |
| <input type="checkbox"/> Use of lands in the Waikiki Special District | |

Estimated project cost:

_____ Federal funds
 _____ State funds
 _____ County funds
 _____ Private funds
 _____ TOTAL

Document preparation cost:

_____ Environmental assessment
 _____ Draft EIS
 _____ Final EIS
 _____ Supplemental final EIS
 _____ TOTAL