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

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
STATE PARKS
WATER RESOURCE MANAGEMENT

RECEIVED
'00 JAN 27 A11:14
OFC. OF ENVIRONMENTAL QUALITY CONTROL

JAN 27 2000

REF:PB:LT

File No.: MA-2952

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 S. Beretania St., Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Conservation District Use Permit (CDUA) Application MA-2952 for the Honokohau Water System Improvements: TMK: 4-2-01: por. 01 and 4-1-01: por. 09, Lahaina, Maui

We reviewed the final EA document and the comments received during the public comment period that ended on November 22, 1999. The Department is issuing a Finding of No Significant Impact (FONSI). Please publish a notice of the FONSI in the February 8, 2000 OEQC bulletin.

Enclosed are four copies of the final EA and a completed OEQC publication form. Should you have questions, please call Lauren Tanaka at 587-0385, Planning Branch of the Land Division.

Aloha,

Dean Y. Uchida, Administrator

Enclosures

16

2000-02-08-MA-FEA—

Final Environmental Assessment

HONOKOHAU WATER SYSTEM IMPROVEMENTS

Prepared for:

County of Maui,
Department of
Water Supply

January 2000

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Final Environmental Assessment

HONOKOHAU WATER SYSTEM IMPROVEMENTS

Prepared for:

County of Maui,
Department of
Water Supply

January 2000

MUNEKIYO, ARAKAWA & HIRAGA, INC.

CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

Preface

The applicant, County of Maui, Department of Water Supply, proposes to install water system improvements to upgrade water services to users in Honokohau Valley, Maui, Hawaii. Portions of the proposed waterline are within the State Conservation District. Pursuant to Chapter 343, Hawaii Revised Statutes, and Chapter 200 of Title 11, Hawaii Administrative Rules, Environmental Impact Statement Rules, this Environmental Assessment (EA) documents the project's technical characteristics and environmental impacts, and advances findings and conclusions relative to the significance of the project.

Chapter I

Project Overview

I. PROJECT OVERVIEW

A. PROJECT LOCATION, EXISTING USE AND LAND OWNERSHIP

The County of Maui, Department of Water Supply (DWS) is proposing to construct water system improvements to upgrade service to users in Honokohau Valley, Maui, Hawaii. See Figure 1.

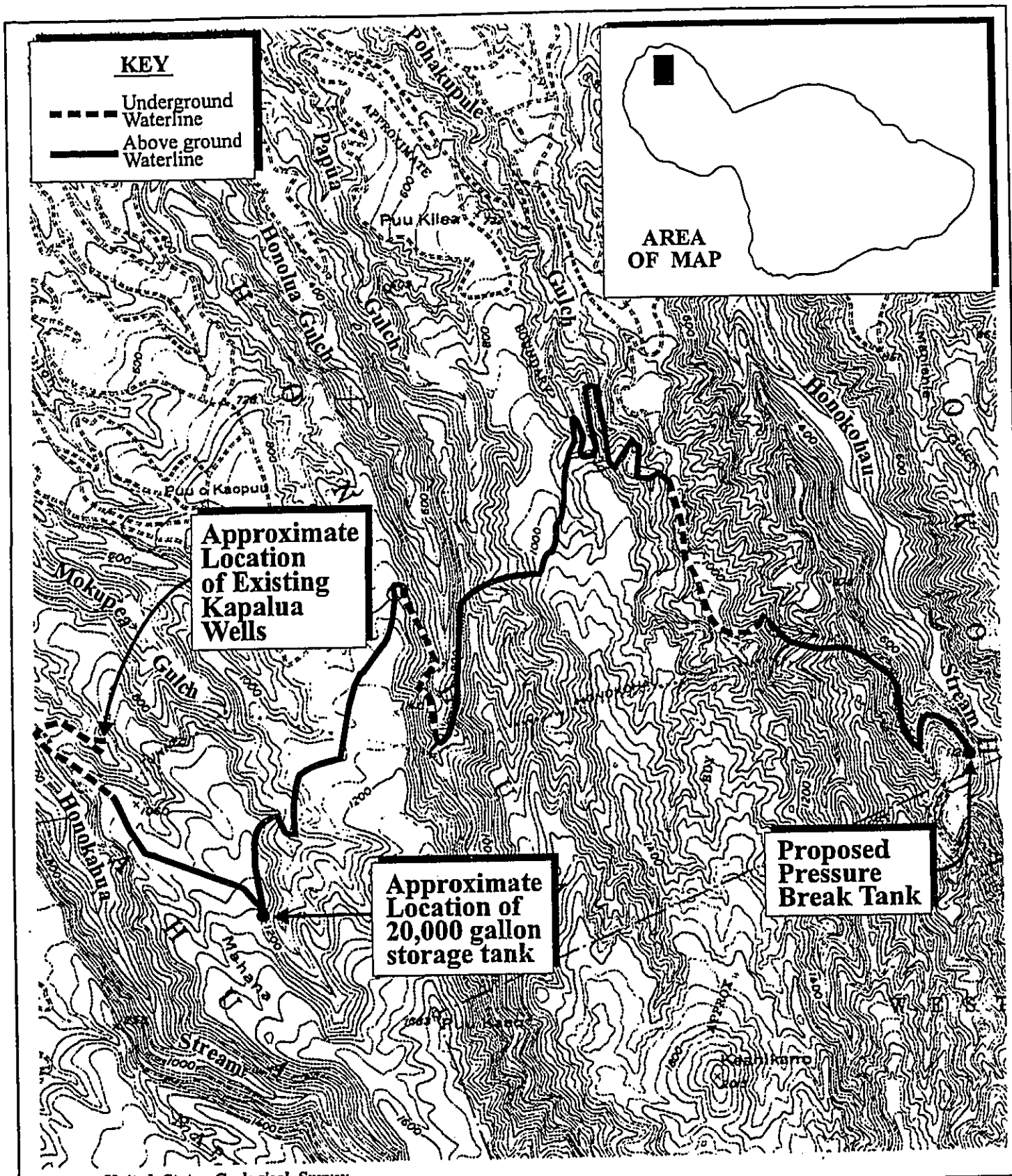
The improvements extend from existing Kapalua Wells located between Honokahua Stream and Mokupea Gulch to a proposed pressure break tank located near an unnamed tributary to Honokohau Stream. The project involves installation of approximately 33,000 lineal feet of waterline and appurtenant improvements. The proposed project will traverse lands in a variety of land uses including vacant lands, dirt access roads, and pasture.

The land on which the proposed improvements would be placed is owned by Maui Land and Pineapple Company, Inc. (TMK 4-2-1: por.1 and 4-1-1:por.9).

B. PROJECT NEED

The source of domestic water to approximately thirteen (13) water meters in Honokohau Valley has traditionally been provided by surface sources. However, in order to comply with Environmental Protection Agency standards promulgated by the Safe Drinking Water Act, the DWS has been transporting water from the Lahaina Water System to an existing storage tank within the valley.

In order to lessen the time and labor involved in filling the existing tank on a daily basis, the DWS is proposing to pipe groundwater from the existing Kapalua Well Nos. 1 and 2 to Honokohau Valley. With chlorine disinfection utilized in the existing distribution system in Honokohau



Source: United States Geological Survey

Figure 1

Honokohau Water System Improvements

Regional Location Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply

Valley, the groundwater can then meet Clean Drinking Water standards.

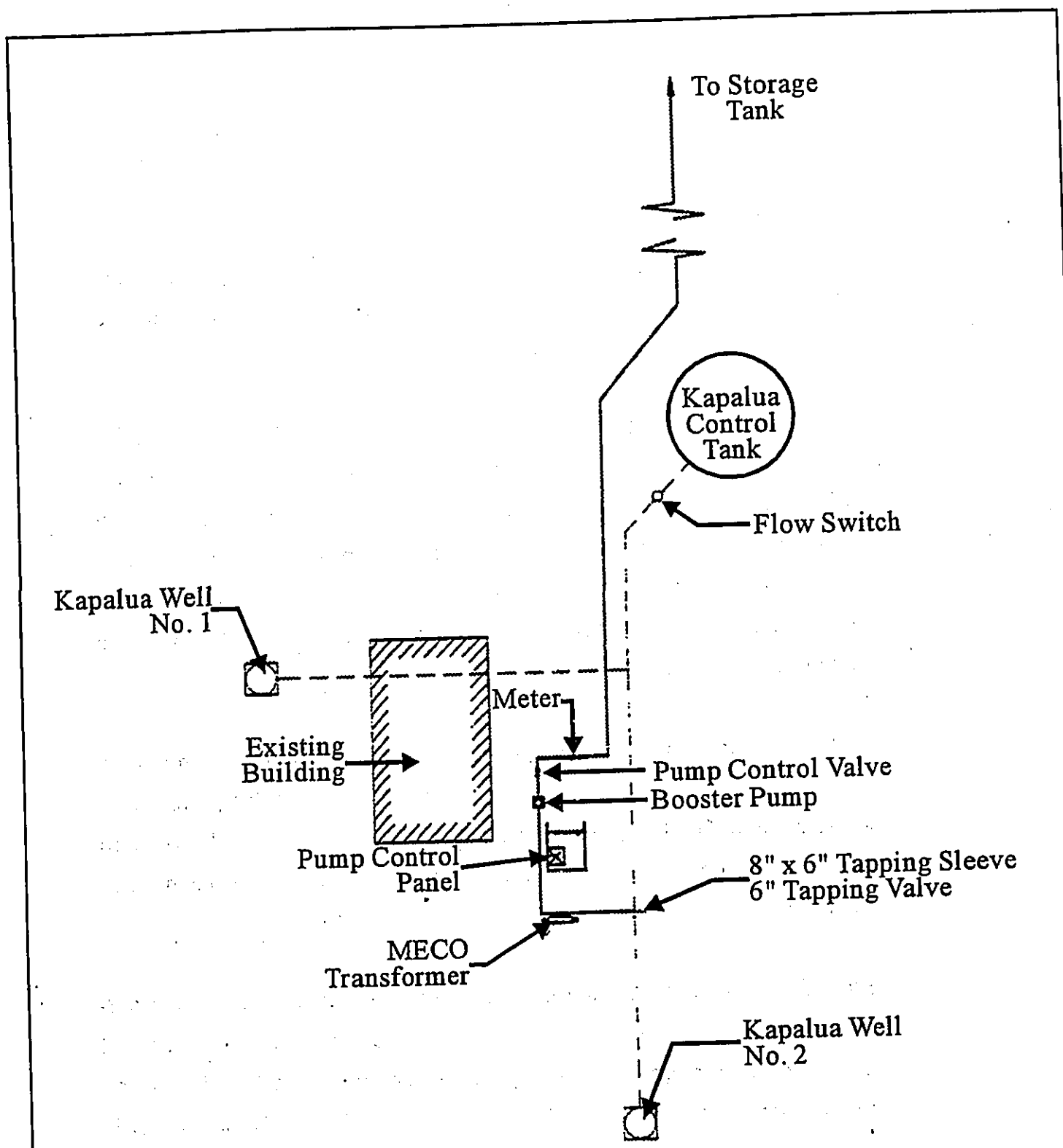
C. ***PROPOSED ACTION***

In addition to installing 33,000 lineal feet of waterline, the proposed action includes installation of a booster pump and appurtenances, a 20,000 gallon storage tank, and a pressure break tank.

The DWS proposes to purchase water from an existing private water system which serves developments in Kapalua. There are two (2) existing Kapalua wells and a control tank located at approximately the 765 foot elevation. The project involves the installation of a booster pump that is proposed to be located near the existing wells. Other appurtenant improvements include a pump control panel, pump control valve, and tapping sleeve and valve. See Figure 2.

Water is proposed to be pumped through a 4-inch ductile iron pipe extending approximately 5,100 lineal feet from the booster pump to an approximately 20,000 gallon storage tank to be located near the western edge of Mokupea Gulch at the approximately 1,200 foot elevation. See Figure 3.

From the storage tank, water is proposed to be transported through a 2-inch high density polyethylene pipe which traverses Mokupea Gulch and then extends through an existing pasture. The waterline then follows an existing dirt road and then extends near the bottom of Honolua Gulch. From this point, the waterline is proposed to be placed next to an existing 6-inch waterline which follows an existing trail and access tunnel to Papua Gulch. The existing 6-inch waterline is utilized for irrigation purposes by Maui Land and Pineapple Company, Inc.



Source: County of Maui, Department of Water Supply

NOT TO SCALE

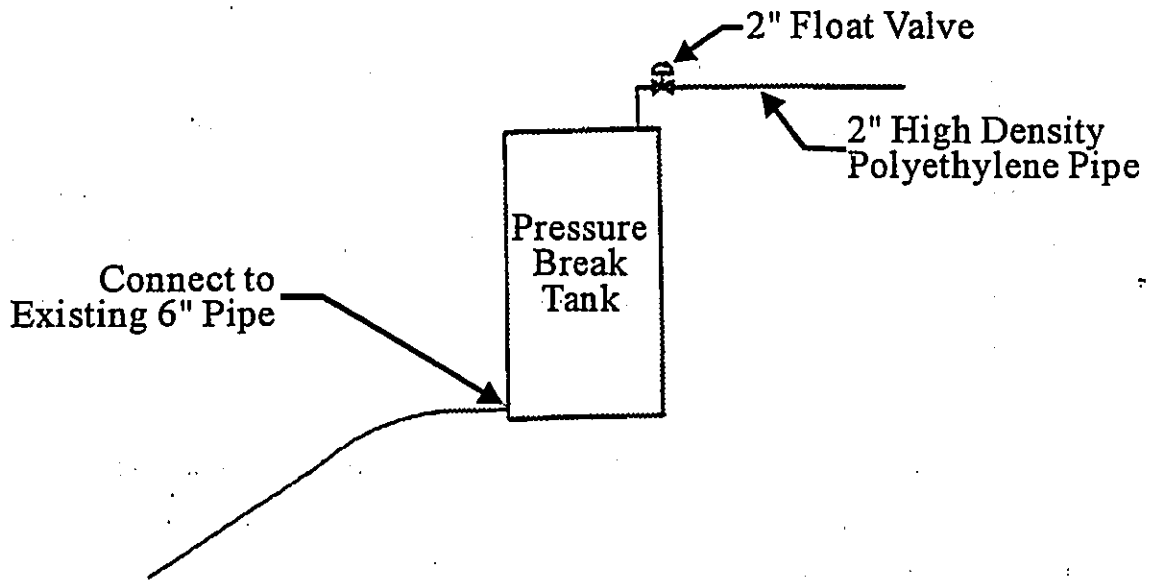
Figure 2

Honokohau Water System Improvements

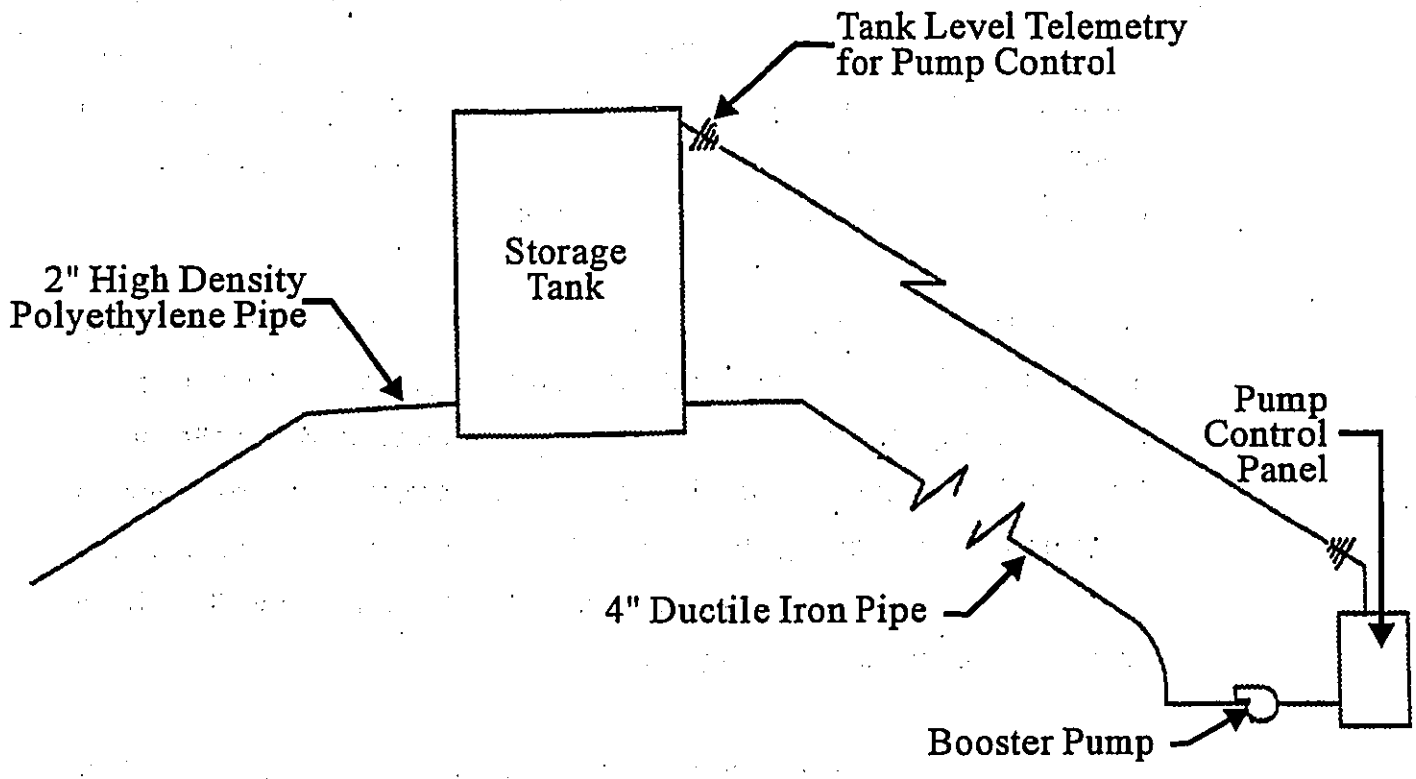
Detail of Booster Pump Station

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply



Detail of Connection to Existing 6" Pipe



Detail of Booster Pump to Storage Tank

Source: County of Maui, Department of Water Supply

NOT TO SCALE

Figure 3

Honokohau Water System Improvements

Detail of Pressure Break Tank, Storage Tank and Booster Pump

MUNEKIYO, ARAKAWA & HIRABA, INC.

Prepared for: County of Maui, Dept. of Water Supply

The waterline traverses Papua Gulch, extending through a pasture area before crossing Pohakupule Gulch. The waterline then would be placed within an existing dirt road and then crosses an unnamed tributary to Honokohau Stream. The waterline would then be placed within an existing access tunnel and an existing trail to the proposed pressure break tank. Refer to Figure 3.

From this point, water will be transported through an existing 6-inch line which is part of the existing distribution system to service users in Honokohau Valley.

The waterline is proposed to be placed underground within existing dirt roads. Alternatively, the waterline may be laid on the ground surface on the side of the road. For other portions of the alignment through pastures, trails, gulches and tunnels, the waterline is proposed to be laid on the ground surface. Waterline crossings at streams and gulches are proposed to be suspended above the stream bed.

With regard to the construction of the waterline, methods would likely involve use of (1) track-mounted mechanical equipment, (2) rubber tire mechanical equipment such as a tractor or backhoe, or (3) installation by hand. It is anticipated that the portion of the project from the Kapalua wells up to and including the storage tank would be constructed by the DWS while the remainder will be constructed by DWS as well as Maui Land and Pineapple Company, Inc.

With regard to the installation of the waterline within dirt roads, it is likely that track-mounted mechanical earth-moving equipment with a plow will be utilized to excavate the trench. A second vehicle will place the waterline into the trench and, at the same time, cover the trench with

backfill. A tractor or backhoe may also be used as an alternative means of construction.

For segments of waterline in pasture areas, track-mounted or rubber tire mechanical equipment will be used to unwind the waterline. For trails and gulches, the use of a tractor or backhoe is anticipated to unwind the waterline. Alternatively, narrow trails will involve installation of the waterline by hand. Within tunnels, the waterline will be installed by hand. Waterline crossings at streams are proposed to be suspended above the stream bed. In order to secure the suspended waterline, concrete footings would likely be constructed on both sides of the stream bed above the high water mark. No portion of the waterline crossings at streams would be erected above the existing vegetation canopy.

Approximately 8,000 lineal feet of waterline through the Honolua District and approximately 4,500 lineal feet of waterline near the Honokohau District are located within the State Conservation District. Accordingly, an Environmental Assessment and a Conservation District Use Application are required.

The proposed improvements will be owned and maintained by DWS. An easement encompassing the project improvements through Maui Land and Pineapple Company lands will be prepared. Preliminary estimates indicate that the project will cost approximately $175,000.00. Assuming all applicable permits are obtained, construction of the proposed project is anticipated to be completed approximately eleven (11) weeks after the start of construction. The start of construction is targeted for March 2000.

Chapter II

Description of the Existing Environment

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL SETTING

1. Surrounding Environment

The proposed project occupies a narrow corridor and extends approximately 33,000 feet or 6.25 miles from Honokahua to Honokohau.

From the existing Kapalua wells to the proposed pressure break tank, the proposed waterline traverses a number of differing surroundings.

The waterline crosses Mokupea Gulch, Honolua Gulch, Papua Gulch, Pohakupule Gulch and an unnamed tributary to Honokohau Stream. The waterline also crosses several pasture areas utilized for cattle grazing. Additionally, the waterline follows dirt roads, tunnels and trails which are currently utilized by Maui Land and Pineapple Company and/or its lessees for the purposes of access.

The surrounding areas are uninhabited. With the exception of pasture use and other water supply or distribution related improvements, the surrounding uses are vacant.

Lower elevation lands in Honokohau Valley support taro cultivation. Lands makai of the waterline alignment are in pasture use and vacant with pineapple being cultivated on lower elevations. The Kapalua Resort area is located approximately 1.5 miles to the northwest of the existing Kapalua wells.

2. *Climate*

Like most areas of Hawaii, West Maui's climate is relatively uniform year-round. The region's tropical climate, its position relative to storm tracts and the Pacific anticyclone, and the surrounding ocean combine to produce this stable climate. Variations in climate among different regions, then is largely left to local terrain.

Rainfall in this area is highly seasonal, with most precipitation occurring between October and April when winter storms hit the area. Isohyetal data indicate that average annual rainfall in the area of the proposed project ranges from 50 to 100 inches.

The winds in the region are also seasonal. The northeasterly trade wind occurs 90 percent of the time during the summer, and just 50 percent of the time in the winter. Wind patterns also vary on a daily basis, with trade winds generally being stronger in the afternoon. During the day, winds blow onshore toward the warmer land mass. In the evening, the reverse occurs, as breezes blow toward the relatively warm ocean.

3. *Topography and Soils*

At a regional scale, the topography of West Maui ranges from gently sloping areas to steep ridges and large amphitheater valleys. The maximum elevation of the West Maui Mountains is 5,788 feet at Puu Kukui.

The project vicinity contains a number of variations in topography. From the existing Kapalua wells at approximately the 765 foot elevation to the storage tank at approximately the 1,200 feet

elevation, the proposed waterline traverses an existing dirt road and pasture area with slopes ranging from 10 to 15 percent.

From the storage tank, the waterline connects to the existing Honokohau waterline at the 1,135 feet elevation. However, between these two points, the waterlines traverses five (5) gulches. Slopes within the gulches, dirt roads and trails range from moderate to extreme, with a 60 to 70 percent slope not uncommon. Pasture areas have an average slope of 10 to 15 percent.

Underlying the project are soils of the Honolua Olelo association and Rock land-Rough mountainous land association. See Figure 4. The Honolua-Olelo association is characterized by deep, gently sloping to moderately steep, well-drained soils that have a fine-textured subsoil, located on intermediate uplands. The Rock land-Rough mountainous land association is characterized by very shallow, steep and very steep, rock land and rough mountain land.

The specific soil types underlying the corridor include Honolua silty clay, 7 to 15 percent slopes (HwC), Honolua silty clay, 15 to 25 percent slopes (HwD), Rough broken land (rRR) and Rough mountainous land (rRT). See Figure 5.

Honolua silty clay, 7 to 15 percent slopes (HwC) is characterized by moderately rapid permeability, slow to medium runoff, and slight to moderate erosion hazard.

Honolua silty clay, 15 to 25 percent slopes (HwD) is characterized by medium runoff and moderate erosion hazard.

LEGEND

① Pulehu-Ewa-Jaucas association

② Waiakoa-Keahua-Molokai association

③ Honolua-Olelo association

④ Rock land-Rough mountainous land association

⑤ Puu Pa-Kula-Pane association

⑥ Hydrandepts-Tropaquods association

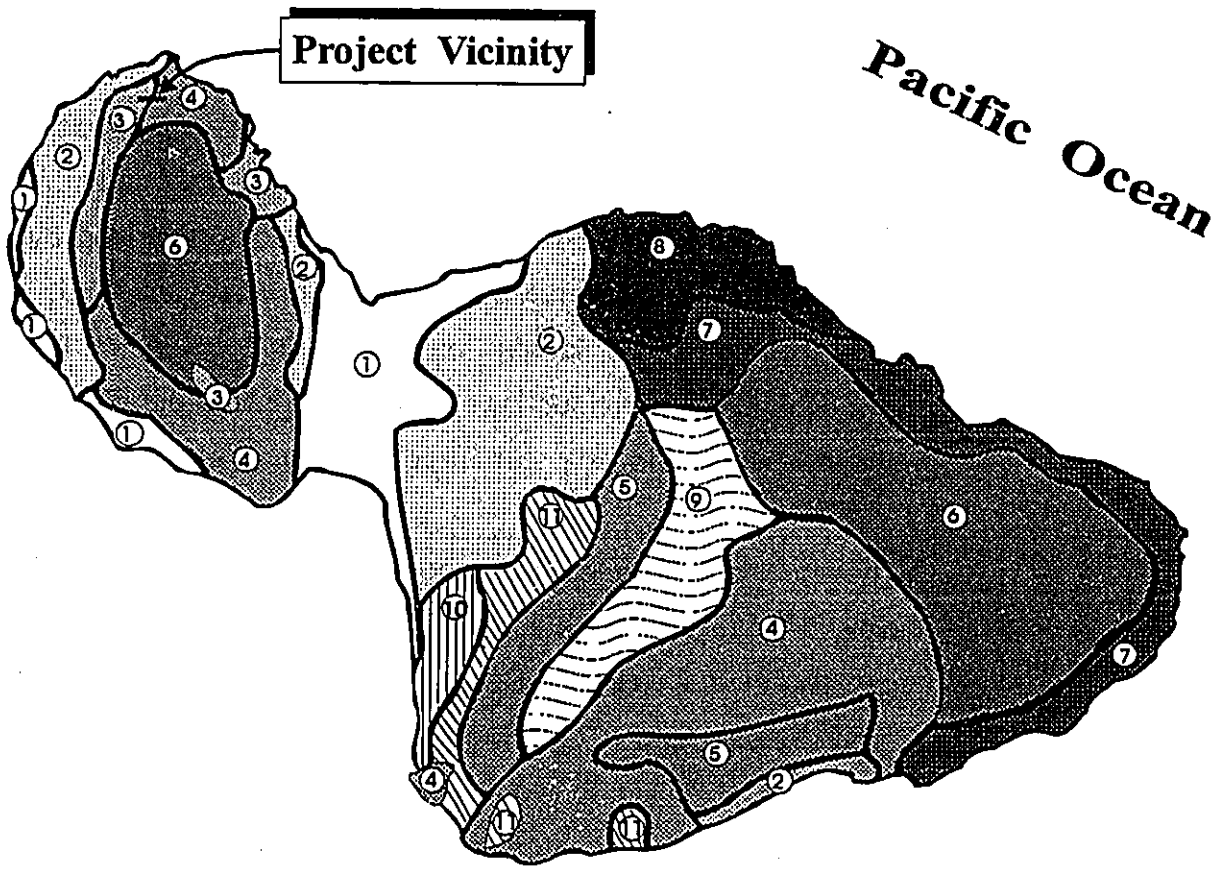
⑦ Hana-Makaalae-Kailua association

⑧ Pauwela-Haiku association

⑨ Laumaia-Kaipoipoi-Olinda association

⑩ Keawakapu-Makena association

⑪ Kamaole-Oanapuka association



Map Source: USDA Soil Conservation Service

NOT TO SCALE

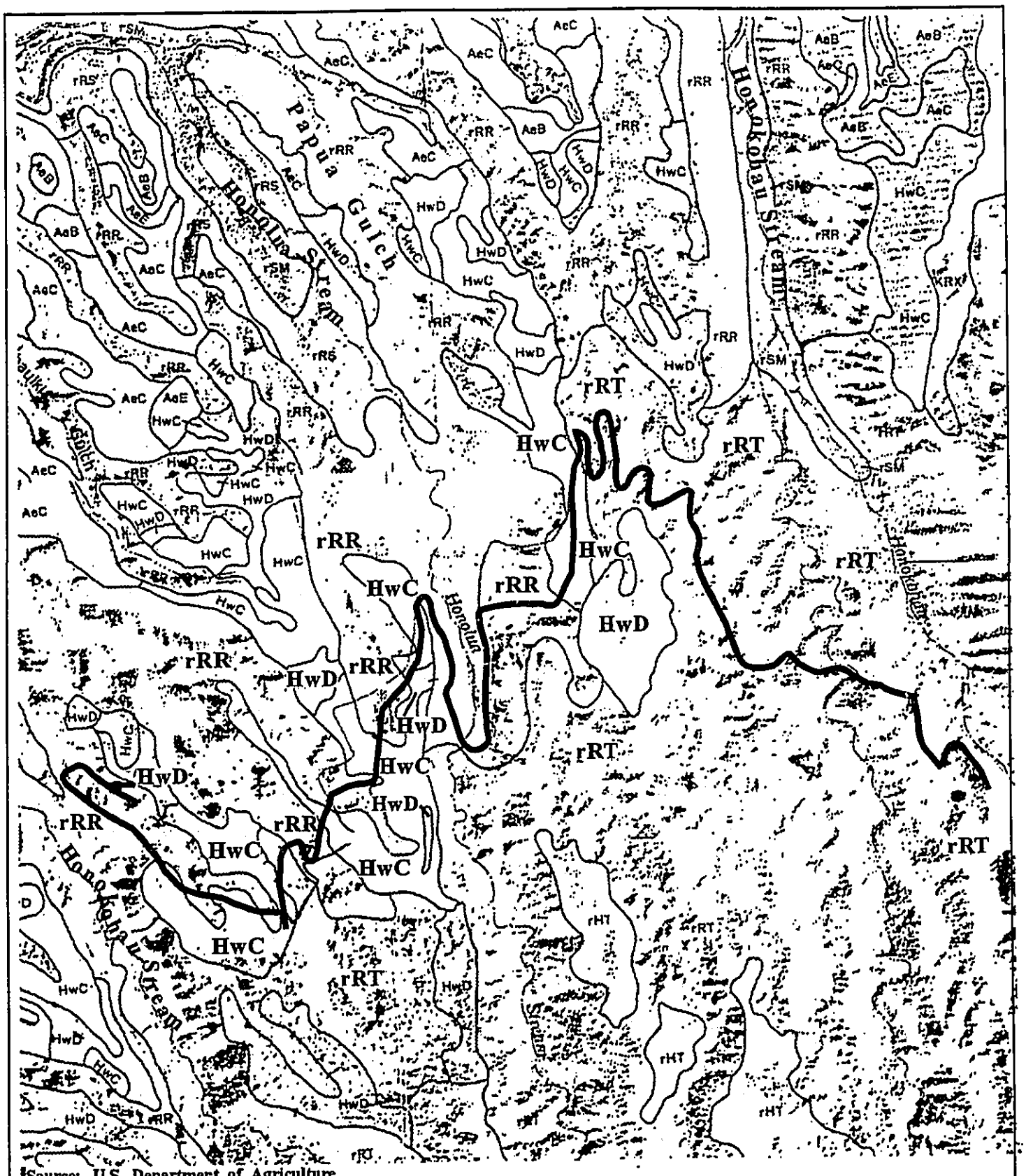
Figure 4

Honokohau Water System Improvements

Soil Association Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply



Source: U.S. Department of Agriculture

Figure 5

Honokohau Water System Improvements

Soil Classification Map

0 500 1000 2000

MUNEKIYO, ARAKAWA & HIRABA, INC.

Prepared for: County of Maui, Dept. of Water Supply

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. Runoff is rapid and the geologic erosion is active.

Rough mountainous land (rRT) also consists of very steep land broken by numerous drainage channels. The land surface is dominated by deep V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys.

The State Department of Agriculture has established three (3) categories of Agricultural Lands of Importance to the State of Hawaii (ALISH). The ALISH system classifies lands into "Prime", "Unique" and "Other Important Agricultural Land". The remaining lands are "Unclassified". Utilizing modern farming methods, "Prime" agricultural lands have the soil quality, growing season, and moisture supply needed to produce sustained crop yields economically, while "Unique" agricultural lands possess a combination of soil quality, location, growing season, and moisture supply currently used to produce sustained high yields of a specific crop. "Other Important Agricultural Land" includes those which have not been rated as "Prime" or "Unique".

Most of the waterline alignment is "Unclassified" although portions which traverse through pasture areas are considered "Prime" and "Unique". See Figure 6.

The Land Study Bureau's Detailed Land Classification rates the agricultural suitability of soils. A five (5) class productivity rating is applied using the letters A, B, C, D, and E, with "A" representing lands of the highest productivity, or very good, and "E" the lowest,

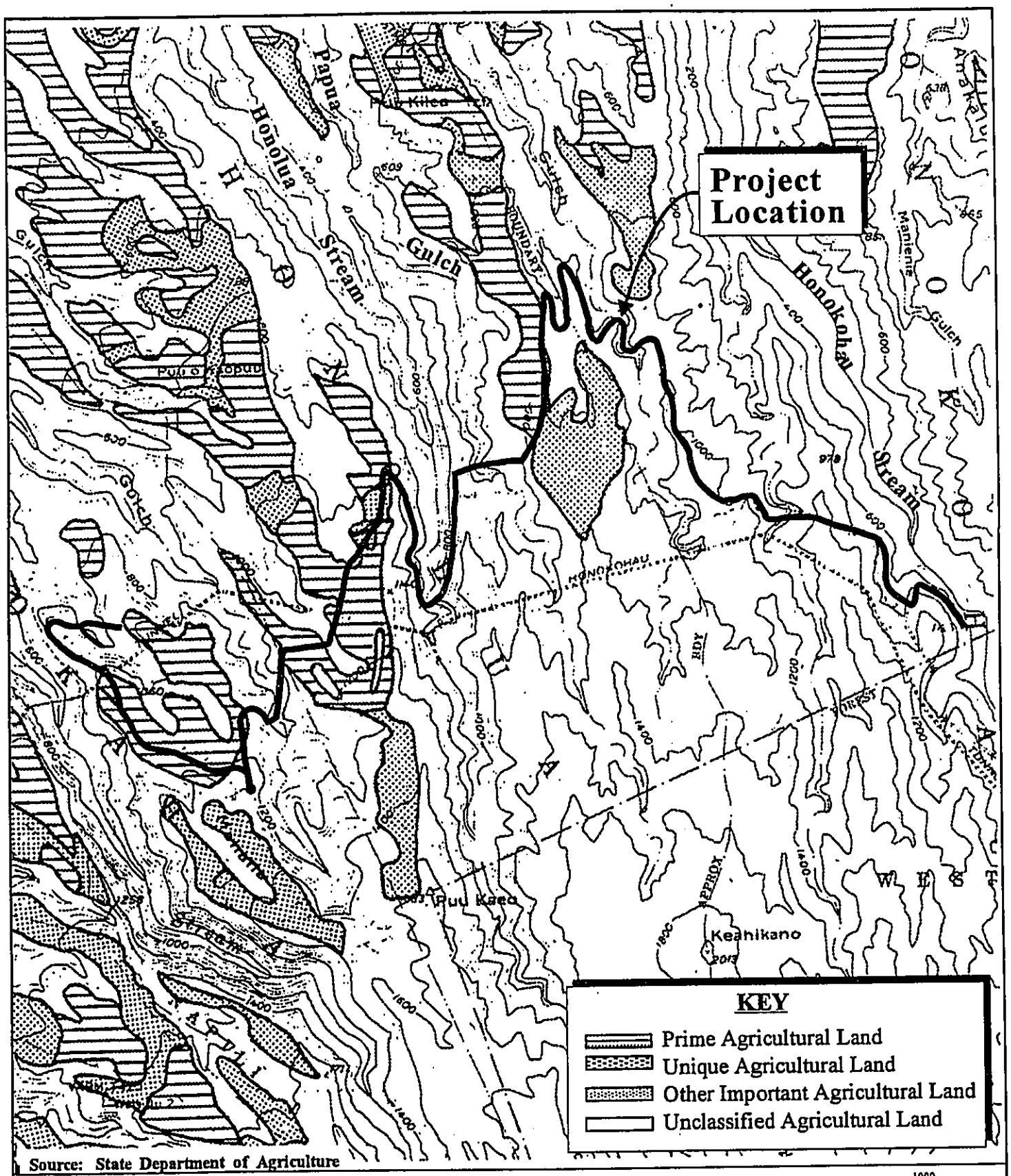


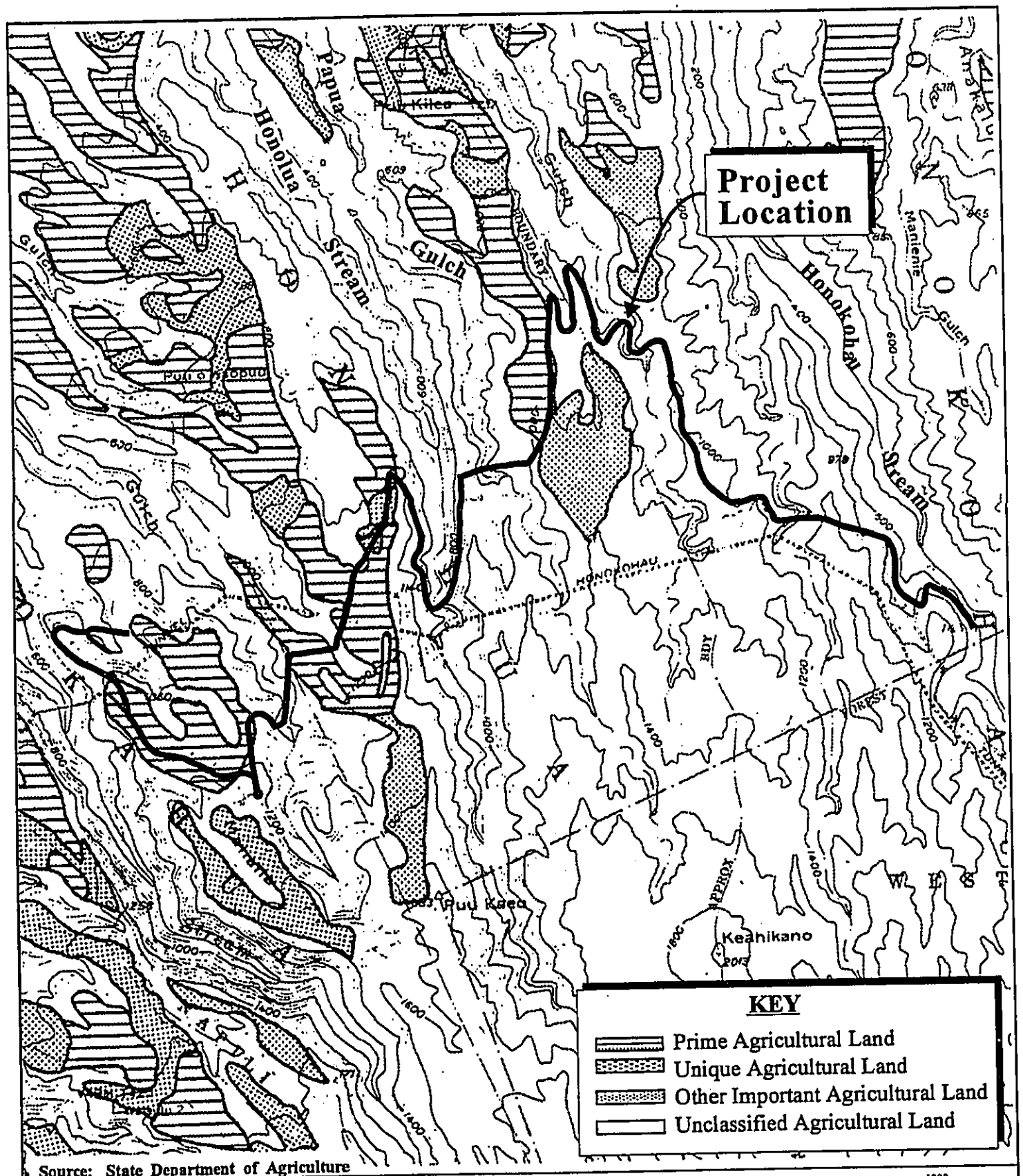
Figure 6 Honokohau Water System Improvements
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply

CORRECTION

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



Source: State Department of Agriculture

Figure 6 Honokohau Water System Improvements
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply

or very poorly suited for agricultural production. The Land Study Bureau identifies the land within the project site as "C", "D" and "E".

4. ***Flood and Tsunami Hazard***

The proposed project is located in Zone C, areas of minimal flooding according to the Flood Insurance Rate Map. It is noted that there will be no work performed below the high water mark within any drainageway or gulch since the proposed waterline will be suspended over drainageways.

5. ***Flora and Fauna***

A biological resources survey was conducted for the subject project by David Paul and Erik Fredericksen. Field work was conducted on October 19 and 20, 1998, and May 24, 1999. Portions of the proposed corridor had been previously inspected by Erik Fredericksen on October 6, 1998. See Appendix A.

The survey was conducted by traversing the entire length of the proposed project corridor and recording every vascular plant, avian and mammalian species encountered in the area. There are four (4) biological communities identified in the project area: Lowland Dry Forest, Lowland Mesic Grassland, Lowland Mesic Shrubland, and Lowland Mesic Forest.

Lowland Dry Forest is dominated by lama (Diospyros sandwicensis) with 'akia (Wikstroemia oahuensis), 'akoko (Chamaesyce multiformis), alahe'e (Canthium odoratum), 'ala'ala wai nui (Peperomia leptostacya), 'ala'ala wai nui pua ki (Plectranthus parviflorus), and 'ilima (Sida fallax) commonly found

in the understory. A single vine of maile (Alyxia oliviformis) was observed. 'Ohia (Metrosideros polymorpha) is an occasional canopy tree. This community is the least extensive community found in the project area, and is located along the outer slopes and ridges of Honolua and Papua Gulches.

Lowland Mesic Grassland is found in two (2) types in the project area. The most extensive is dominated by pastures of Hilo grass (Paspalum conjugatum), violet crabgrass (Digitaria violescens), Glenwood grass (Sacciolepis indica), yellow foxtail (Setaria gracilis), and broomsedge (Andropogon virginicus). These grasslands are located on tablelands above and between Honokahua, Mokupea, and Honolua Gulches. Within this community, cattle (Bos taurus), horses (Equus caballus caballus) and feral pigs (sus scrofa scrofa) were observed grazing.

The other grassland is found along access trails, roadways and shoulders of water ditch systems in the project corridor, and is dominated by molasses grass (Melinus minutifolia). The grassland communities in the project area are highly impacted and lacking in native (indigenous and endemic) vegetation. Evidence of feral cats (Felis catus) was found in both grassland communities. The Pacific golden plover or kolea (Pluviatis dominica pacifica), a migratory bird was encountered in both communities in October.

Lowland Mesic Shrubland is dominated by 'a'ali'i (Dodonaea viscosa), 'akia (Wikstroemia oahuensis), alahe'e (Canthium odoratum) and uluhe (Dicranopteris linearis). 'Ohia (Metrosideros polymorpha), lama (Diospyros sandwicensis), 'akoko (Chamaesyce multiformis), 'ama'u (Sadleria cyatheoides), and Hawaiian cliff

uluesedge (Carex wahuensis) are common associates of this community. 'Akia papa (Wikstroemia uva-ursi) is occasional on the ridges of Honolua Gulch. Neneleau (Rhus sandwicensis) and 'iliahi (Santalum ellipticum) are uncommon on the ridges of Honokohau Gulch. The Lowland Mesic Shrubland community is extensive on exposed ridges and slopes from Mokupea Gulch to Pohakupule Gulch.

Lowland Mesic Forest is represented in the project area by two (2) general types. At Mokupea Gulch, koa (Acacia koa) is the dominant tree at the inner reaches of the project area on tablelands in a forest highly impacted by Christmasberry (Schinus terebinthifolius), Formosan koa (Acacia confusa), and Moreton Bay fig (Ficus macrophylla). Alahe'e (Canthium odoratum) and uluhe (Dicranopteris linearis) are dominant in the understory, with olopua (Nestegis sandwicensis) and ni'ani'au (Neprolepis exaltata) being common associates. An occasional patch of palapalai (Microlepia strigosa) was found, and a single tree of hao (Rauvolfia sandwicensis) were located at the top of the southern slope of the gulch near the proposed 20,000 gallon water tank.

In Pohakupule Gulch and the upper portion of Honokohau Valley, the mesic forest community is dominated by lama (Diospyros sandwicensis), and 'ohia (Metrosideros polymorpha). 'Akia (Wikstroemia oahuensis), alahe'e (Canthium odoratum), uluhe (Dicrancpteris linearis), and 'a'ali'i (Dodonaea viscosa) are commonly found, with alahe'e and 'a'ali'i becoming arborescent in many locations. Several trees of ho'awa (Pittosporum glabrum) were observed in Papua Gulch, just past the mauka end of the first tunnel which the project corridor runs through. Several trees of

maua (Xylosma hawaiiense) were located at the end of the project area in Honokohau Valley, just past the mauka end of the second tunnel. A small stand of mature hala (Pandanus tectorius) was noted to the north of Honolua Ditch. Hala was not observed elsewhere in the corridor. The presence of these hala trees in the valley area suggests that they may be associated with an indigenous habitation area in the general vicinity of the project corridor.

Within the lesser sloping areas of the mesic forest, several plants have been cultivated in the past, and are naturalized. These include 'ulu (Artocarpus altilis), ki (Cordyline fruticosa), 'ohi'a 'ai (Syzygium malaccense), mango (Mangifera indica), coffee (Coffee arabica), and cinnamon (Cinnamomum verum).

The mesic forest community is the most extensive and diverse habitat in the project area. It contains the greatest number of indigenous, endemic, and Polynesian plants, but also contains the most invasive alien species.

Rats (Rattus sp.) were seen in this community, as well as evidence of their feeding on kukui (Aleurites moluccana) nuts.

Most of the animal species encountered were located in pastures of the mesic grassland community, although alien avian species, such as mynahs (Acridotheres tritis), Northern cardinals (Cardinalis cardinalis), spotted doves (Strptopelia chinensis), zebra doves (Geopelia striata), Japanese white-eyes (Zosterops japonicus), and house finches (Carpodacus mexicanus) were found throughout the project area, but none were found in any sizable numbers.

6. *Archaeological Resources*

An archaeological reconnaissance survey was conducted over much of the project corridor (Fredericksen, November 10, 1998). The entire long project area was traversed during the fall of 1998, and the summer of 1999. This approximately 10-meter wide corridor which extends from the two (2) existing Kapalua wells near Honokohua Gulch to Honokohau Valley was inspected by Erik Fredericksen and David Paul. In addition, Erik Fredericksen revisited portions of the study area to reassess cultural resources in the summer of 1999.

The archaeological inventory survey consisted of a 100 percent pedestrian walk-over of the project corridor. In addition, sites were recorded and evaluated in the field. When possible, an approximately 5-meter spacing was maintained during the surface inspection of the corridor. See Appendix B.

Two (2) previously unrecorded archaeological sites were found during the inventory survey of the study area. These sites consist of a surface scatter of waterworn coral, and a post-contact retaining wall. Both were assigned SHIP numbers. The waterworn coral scatter (Site 50-50-01-4782) lies just outside the proposed surface pipeline corridor and can be avoided. The post-contact retaining wall (Site 50-50-01-4783) is associated with an early pineapple plantation era road, and lies within the proposed pipeline corridor. In addition, portions of the Honokohau and Honolua water delivery systems were noted in parts of the project area. Both of these systems are part of the large Honokahau District (Site 50-50-01-1591). A discussion of the field findings follows.

Site 50-50-01-4782

This site is located on a ridge of land that separates Pohakupule and Papua Gulches. It lies at approximately 930 feet above mean sea level in a pasture. Vegetation observed in the general vicinity included alien species such as guava trees, ironwood trees, various annual weeds, and kikuyu or pasture grass.

Site 4782 consists of a surface scatter of waterworn coral that appears to have been partially displaced and/or exposed by cattle or previous pasture maintenance activities. Several cobbles ranging from approximately 8 to 12 centimeters in diameter were noted in an approximately 6 to 8 square meter area. A few of the pieces of coral were partially exposed and two (2) were on the surface. No other material culture remains were noted in the area.

While the function of this site remains unclear, the lack of any other cultural materials associated with the exposed pieces of coral suggests that the area was probably not used for habitation. No subsurface testing was conducted because the site lies outside the project corridor. Site 4782 is tentatively interpreted as a probable indigenous site.

Site 50-50-01-4783

This second site is located in Mokupea Gulch at about the 800-foot level of elevation. Observed vegetation in the area consisted primarily of alien species, such as guava and Java plum trees, coffee plants, various grasses and annual weeds, and ferns.

Finally, several kukui nut trees were growing in the immediate vicinity of the wall.

Site 4783 is interpreted as a post-contact retaining wall, associated with an old pineapple plantation-era road. This road is very deteriorated from disuse and lack of maintenance. It was a maximum of 6 meters wide, and the corridor follows it for approximately 300 meters. The retaining wall is 20 meters long and up to 3.7 meters in height. It is constructed with subangular basalt cobbles and boulders that range from 20 to 70 centimeters in diameter. The wall ranges from 8 to 18 rock-courses in height. Overall construction technique is generally good, and site condition ranges from poor to good.

An old concrete and rock culvert was noted at the base of the wall. This culvert was approximately 35 centimeters in diameter. No other material cultural remains were noted. The abandoned road was up to 6 meters wide in this portion of the project area.

Site 50-50-01-1591

The Honokahua District is a large historic district which encompasses Kapalua as well as much of the project area. Both the Honokohau and the Honolua Ditch systems are considered to be a part of this district.

The Honokohau Ditch system was begun in 1901 as part of a water agreement between Honolua Ranch and Pioneer Mill. The latter's success depended on water delivered from the watershed controlled by Honolua Ranch (later known as Baldwin Packers,

then Maui Pineapple Company, and finally Maui Land and Pineapple Company in 1969). Construction of Honokohau Ditch began in 1902 and was completed in 1904. The ditch and flumes ran along soft hillsides where landslides frequently filled it with dirt and damaged the flumes.

By 1912, it was leaking badly and was in very poor condition. David T. Fleming, manager of Honolua Ranch, determined that an entirely new system should be built. This was called the Honolua Ditch to avoid confusion with the earlier water system. Work began on the new system, incorporating two (2) features to minimize seepage. It was totally lined with cement, and wooden flumes were eliminated--relying on tunnels instead.

Portions of this ditch system and two (2) associated tunnels lie within the project corridor. The first of these tunnels is approximately 100 meters long (Tunnel 1), while the second one is approximately 300 meters long. Both tunnels range from approximately 1.5 to 2.2 meters in height and are approximately 2.5 to 3 meters wide. The shorter tunnel is in generally poor condition and is considered to be somewhat dangerous. The longer tunnel is in generally fair condition and appears to be relatively stable. These tunnels were hand excavated by laborers through two (2) ridges. The longer one accesses the upper portion of Honokahau Valley.

Inspected segments of the Honokohau Ditch in the project corridor ranged from poor to fair condition. Construction technique tended to range from fair to good. In general, the rock-lined ditch sections did not contain large amounts of mortar. The bulk of the water

system present in the project area consists of the Honokohau Ditch, which is no longer in use.

The Honolua water system constructed later between 1912 and 1914 tended to be in better condition. Concrete and mortar were more extensively utilized in the Honolua water delivery system, than in the older one.

Discussion

The proposed pipeline route will parallel portions of the Honokohau and Honolua Ditch systems. Sections of both ditches will likely lie within 5 meters of the proposed surface waterline. It is estimated that approximately 500 to 600 meters of the water ditch system will be paralleled by the waterline. In addition, the pipeline will also traverse two (2) existing tunnels associated with the water system.

7. *Air Quality*

There are no adverse air quality conditions along the proposed waterline alignment, as there are no significant sources of pollution between the summit of the West Maui Mountains and the ocean. In addition, the island's exposure to winds typically results in the rapid dispersion of pollutants (e.g., automobile pollutants).

8. *Noise Characteristics*

Surrounding noise levels in the area of the project are characteristic of its conservation and agricultural nature. Background noise levels are primarily limited to weather conditions (e.g., wind, rain) or occasional vehicular noise. Equipment noise related to pineapple cultivation and harvesting at lower elevations

may also contribute to background noise levels on an occasional basis.

9. *Visual Resources*

Spanning approximately 6.25 miles, the proposed project is located on the uplands of the West Maui Mountains. Lands which slope up to the summit are located to the south. The project traverses several pastures. Lower elevation lands are cultivated in pineapple. Gulch areas are generally undeveloped containing a mix of native and alien vegetation. The Pacific Ocean is visible to the north and west from portions of the project. Developed areas of Kapalua and Napili are visible to the west close to the shoreline.

B. *SOCIO-ECONOMIC ENVIRONMENT*

1. *Population*

The resident population of the West Maui Community Plan region has demonstrated a substantial increase over the last two decades. Population gains were especially evident in the 1970's as the rapidly developing visitor industry attracted many new residents. The current population of the Lahaina District is estimated at 14,574 (Community Resources, Inc., 1994). A projection of the resident population for the years 2000 and 2010 are 18,555 and 22,633, respectively.

Growth at the County level exhibits a similar pattern. The County's 1980 resident population of 71,000 has since grown to just over 100,000. The estimated County population in 2010 is 145,872 (Community Resources, Inc., 1994).

2. ***Economy***

The economy of Maui is heavily dependent upon the visitor industry. The dependency on the visitor industry is especially evident in West Maui, which is one of the State's major resort destination areas. In addition to Kapalua, the Kaanapali Resort, located approximately five (5) miles to the south of the project site, hosts a number of hotels, including the Maui Marriott Resort (720 rooms), Hyatt Regency Maui (816 rooms), and the Westin Maui (761 rooms).

West Maui's visitor orientation is reflected in the character of Lahaina Town, which serves as a center for visitor-related retail outlets, as well as visitor-related activities.

In addition to the visitor industry, agriculture is established as a vital component of the West Maui economy. Sugar operations in West Maui are managed by the Pioneer Mill Co., Ltd. (PMCo). Currently, PMCo. utilizes approximately 6,700 acres for agricultural cultivation. However, with the announced closure of its sugar cultivating operations in February 1999, PMCo. is considering other commercial crops in addition to its approximately 500 acres of coffee. Additionally, Maui Land and Pineapple Company's pineapple fields play an important component of the region's agricultural base.

3. ***Solid Waste Disposal***

Single-family residential solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews is disposed at the County's 55-acre Central Maui Landfill, located four miles southeast of the

Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

4. ***Medical Facilities***

The only major medical facility on the Island is Maui Memorial Hospital, located approximately twenty (20) miles from Lahaina, midway between Wailuku and Kahului. The approximately 200-bed facility provides general, acute, and emergency care services.

In Kapalua, Doctors on Call provides private physician services. In addition, regular hours are offered by private practices in Lahaina, which include the Maui Medical Group, Lahaina Physicians, West Maui Healthcare Center, and Kaiser Permanente Lahaina Clinic.

5. ***Police and Fire Protection***

The County of Maui's Police Department is headquartered at its Wailuku Station. The project site is within the Lahaina Police Station service area, which services all of the Lahaina district.

Fire prevention, suppression and protection services are offered by the County's Department of Fire Control. The project vicinity is serviced by the Napili Station and the Lahaina Fire Station.

6. ***Educational Facilities***

The West Maui area is served by four public schools operated by the State of Hawaii, Department of Education: Lahainaluna High School; Lahaina Intermediate School; King Kamehameha Elementary School; and Princess Nahienaena Elementary School.

The region is also served by privately operated pre-elementary and elementary schools.

7. *Recreational Facilities*

West Maui is served by numerous recreational facilities offering diverse opportunities for the region's residents. There are seventeen (17) County parks and three (3) State beach parks in West Maui. Approximately one-third of the County parks are situated along the shoreline and are excellent swimming, diving, and snorkeling areas.

In addition, Kaanapali and Kapalua Resorts operate world-class golf courses which are available for public use.

C. *INFRASTRUCTURE*

1. *Roadways*

Honoapiilani Highway (State Highway 30) is the main roadway serving the West Maui region. This highway is the only link between West Maui and the rest of the island (although a non-standard segment of highway extends around the north coast of the island to Waihee, providing limited access). The highway has a typical two-lane configuration except for a segment from Kaanapali Parkway to Lahainaluna Road where four (4) travel lanes are provided.

Access points to the project site are by pineapple field roads and other private unimproved roads extending from Honoapiilani Highway. Since the roads traverse private property, there are existing gates which restrict access.

2. ***Water System***

Water for the existing users in Honokohau Valley were previously derived from the Honokohau Tunnel. Currently, water is being trucked to Honokohau Valley by the Department of Water Supply. There are approximately 13 water meters in the Valley with an average consumption of less than 2,000 gallons per day (Wilson Okamoto & Associates, Inc., September 1992).

The existing Kapalua Well Nos. 1 and 2 are part of the privately operated Kapalua Water Company's (KWC's) water system which services Kapalua Resort. The KWC provides potable, fire protection and irrigation water for the resort.

3. ***Wastewater Systems***

The County's wastewater collection and transmission system and the Lahaina Wastewater Reclamation Facility (LWRF) accommodate the region's wastewater needs. The LWRF, located along Honoapiilani Highway just north of Kaanapali Resort, has been recently upgraded and expanded to a design capacity of 9.0 million gallons per day. The collection system extends from Lahaina Town to Kapalua. Other areas, such as Honokohau Valley, are served by cesspools or septic tanks.

4. ***Drainage***

There are no existing drainage improvements in the vicinity of the proposed project. Surface runoff flows downhill in a generally makai or northern direction. Runoff flows into natural drainageways, such as Honokahua Gulch, Mokupea Gulch, Honolua Gulch, Papua Gulch, Pohakupule Gulch, an unnamed tributary to Honokohau Stream, and Honokohau Stream.

5. ***Electrical***

Electrical power requirements associated with the proposed project will be supplied by Maui Electric Company, Ltd., which currently provides power at the site of Kapalua Well Nos. 1 and 2.

Chapter III

Potential Impacts and Mitigation Measures

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Environment

The project site is located in the midst of an open space setting which traverses gulches and pastures interspersed with roads, trails, and access tunnels. Portions of the waterline are proposed to be laid on the existing ground surface to minimize impact to existing conditions. Other portions of the waterline are proposed to be placed underground within existing access roadways. The proposed project is not anticipated to have any adverse effects on surrounding land uses.

2. Topography/Landform

The proposed project will involve excavation for the waterline in areas where there are existing access roads. Clearing and grubbing will be required for the site of the storage tank and pressure break tank. Finished contours will follow existing grades and maintain existing drainage patterns. Other portions of the waterline will be placed on the ground surface and should not affect topography or landform.

3. Flora and Fauna

The biological resources survey did not find any species of vascular plant which has protection under Federal or State law.

Although legally protected plants were not found in the study area, they have the potential of establishing in all of the unique biological communities in the project area, with the exception of the Lowland Mesic Grassland habitats, due to ongoing disturbances.

The only animal species encountered in the project area that has legal protection was the Pacific golden plover or kolea (Pluvialis dominica pacifica). The Pacific golden plover is a migratory bird species which is seasonal in Hawaii and is not endangered. It inhabits areas close to humans, and quickly repositions itself when humans or other animals approach it. Therefore, the impacts to this animal, from the actions of this project, should be minimal.

There are no biological resources found in the project corridor that require consideration for planning, as long as impacts to the proposed corridor be kept to a minimum.

Stream habitats found in the project area were intermittent and did not have any standing bodies of water at the time of the survey. The proposed suspension of the waterline over the streams will mitigate negative impacts to the stream habitats.

The U.S. Fish and Wildlife Service commented that the endangered dark-rumped petrel (Pterodroma phaeopygia sandwichensis) flies between the uplands of West Maui and marine foraging areas. However, it is noted that the proposed project will not erect any obstructions such as suspended cables or poles which could result in seabird collision and fallout. Thus, the project will not result in an additional hazard to seabirds and other night-flying birds should they pass through the area.

The entire proposed corridor for the project runs across previously disturbed areas consisting of access trails, roadways, cattle pastures, shoulders of water ditch systems, and through two (2)

tunnels. Therefore, impacts to biological resources resulting from the actions of the proposed project should be minimal.

4. ***Archaeological Resources***

Two (2) previously unrecorded sites and portions of the water system associated with Honokahau District (Site 1591) were located during the inventory survey of the project area. See Appendix B. Site 4782 is tentatively interpreted as a precontact site with an unknown function. This site is located in a pasture and consist of an eroding scatter of waterworn coral cobbles. It lies just outside of the proposed waterline corridor. Site 4783 is interpreted as an old retaining wall associated with an abandoned, unimproved pineapple road. This feature was found in Mokupea Gulch and lies within the proposed pipeline corridor.

Portions of Site 1591 were also present in the project area. Sections of the older Honokahua Ditch network and the newer Honolua water system were noted within the corridor. While the above sites were found during the survey, the proposed surface location of the waterline should provide sufficient flexibility to avoid negative impact to these cultural resources.

Site Significance Evaluations

Sites 4782 and 4783, and the portions of the water delivery system associated with Honokahua District (Site 1591) in the project corridor qualify for significance under Criterion "D" of the Federal and State historic preservation guidelines. In addition, the Honokahau and Honolua Ditch systems (Site 1591) also would be considered significant under Criterion "C".

Mitigation Recommendations

No subsurface evaluation was conducted on the Site 4782 surface scatter because it lies just outside the proposed corridor in a pasture. This site is still considered to be significant under Criterion "D". Data recovery is the recommended mitigation treatment if the proposed pipeline alignment changes and the site is to be impacted. In the event that the corridor remains unchanged, no further work is deemed necessary for the site at this point in time.

Site 4783, the retaining wall in Mokupea Gulch is no longer considered to be significant for its information content. Consequently, no further work is required for this post-contact structure. In any event, placement of the pipeline should not impact this site.

The proposed surface waterline will parallel portions of the Honokohau and Honolua water ditch systems, and go through two (2) existing tunnels in the Honokohau system. The sections of the Site 1591 water delivery system that are in the project corridor are still considered significant under both Criteria "C" and "D" of the guidelines. In order to prevent adverse impacts on this historically significant water delivery system, the proposed pipe installation methodology for areas along the various ditches shall be submitted to State Historic Preservation Division (SHPD) for review.

Large and medium-growth trees (i.e. guava, Java plum, kukui nut) were noted in close proximity to portions of the ditch system in the project corridor. Mechanical installation of the pipeline could negatively impact the nearby mortar and rock ditch sections.

Consequently, it may be necessary to monitor sections of the corridor if mechanical pipeline placement is proposed.

5. ***Air Quality***

Air quality impacts attributed to the project will include dust generated by short-term construction activities. Where trenching is proposed within existing dirt roads, earthwork operations via plowing will result in fugitive dust and exhaust emissions from equipment being generated. Trenched areas shall be immediately backfilled after placement of the waterline.

When mechanical equipment is utilized to unwind and lay the waterline on the ground surface, this may also result in minor and temporary generation of particulate matter.

On a long-term basis, the project will not generate adverse air quality conditions.

6. ***Noise Quality***

Noise will be generated from construction equipment such as materials-carrying trucks and mechanical equipment. All construction activities are anticipated to be limited to daylight hours only.

There are no adverse long-term noise conditions arising out of the proposed action.

7. ***Visual Resources***

The project would consist of a number of minor above ground improvements. Near the existing Kapalua Wells and existing

equipment storage structure, a pump control panel and other accessory improvements are proposed. The pump control panel is approximately 6 feet in height, approximately 5 feet in width, and approximately 2 feet in depth. The booster pump may reach approximately 6 feet above grade and would be placed on a concrete pad.

The proposed storage tank located near the edge of Mokupea Gulch would occupy an area of approximately 15 feet in diameter and approximately 12 feet in height. An additional 10 feet around the tank is proposed to be cleared. The proposed break tank near Honokohau is likely to be cube-shaped with dimensions of 5 feet on each side.

The proposed project should not have an adverse effect upon the visual character of the surrounding area.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population and Local Economy

The project should have no effect upon population parameters.

On a short-term basis, the project will support construction-related services. It is anticipated that Maui Land and Pineapple Company would construct and install the waterline for the Department of Water Supply. Maui Land and Pineapple Company owns the land over which the improvements are proposed. There are existing potable and non-potable water system improvements in the area maintained by Maui Land and Pineapple Company.

On a long-term basis, the project does upgrade the quality of water for domestic usage for residents of Honokohau Valley. Although not a direct economic benefit, the proposed improvements will maintain the economic viability as well as the health and safety of the area.

2. ***Agriculture***

Portions of the waterline would be placed within existing pasture lands. The waterline is proposed to be placed on the ground surface and is not expected to adversely impact agricultural concerns.

3. ***Public Services***

The proposed use of the property is not expected to increase the resident or visitor population. As such, the proposed project is not anticipated to affect the service area limits or requirements for emergency services, such as police, fire and medical services. Furthermore, the project will not affect recreational facilities and public schools.

4. ***Solid Waste***

Minor clearing would be required for small portions of the project, such as the area of the storage tank and pressure break tank. Green waste from the cleared areas will be utilized on lands owned by Maui Land and Pineapple Company.

C. *INFRASTRUCTURE*

1. ***Roadways***

Access to the project site is via pineapple field roads extending from Honoapiilani Highway. Existing dirt roads mauka of the

pineapple fields provide vehicular access to pasture lands. There will be no new roadways constructed to move equipment into and along the proposed corridor.

In the short term, there may be inconveniences for users of the existing dirt roads. However, access is controlled by Maui Land and Pineapple Company. Access arrangements during construction work periods will be coordinated with affected parties. Access during non-work periods (i.e., nighttime, weekends, holidays) is not anticipated to be affected.

In the long term, the project should have no effect upon area roadways.

2. ***Wastewater***

The project will not generate any wastewater and will have no impacts upon wastewater disposal parameters or the County's wastewater system.

3. ***Drainage***

During construction of the underground waterlines, trenching is expected to be covered immediately. Finish grades will match existing grades. Portions of the project, such as the storage tank and pressure break tank, will add a relatively small amount of impermeable surface to the project. Other portions of the project are not expected to significantly alter the existing surface. The quality and quantity of runoff in the area is not anticipated to be affected to any significant degree due to the project.

Chapter IV

Relationships to Governmental Plans, Policies and Controls

IV. RELATIONSHIPS TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

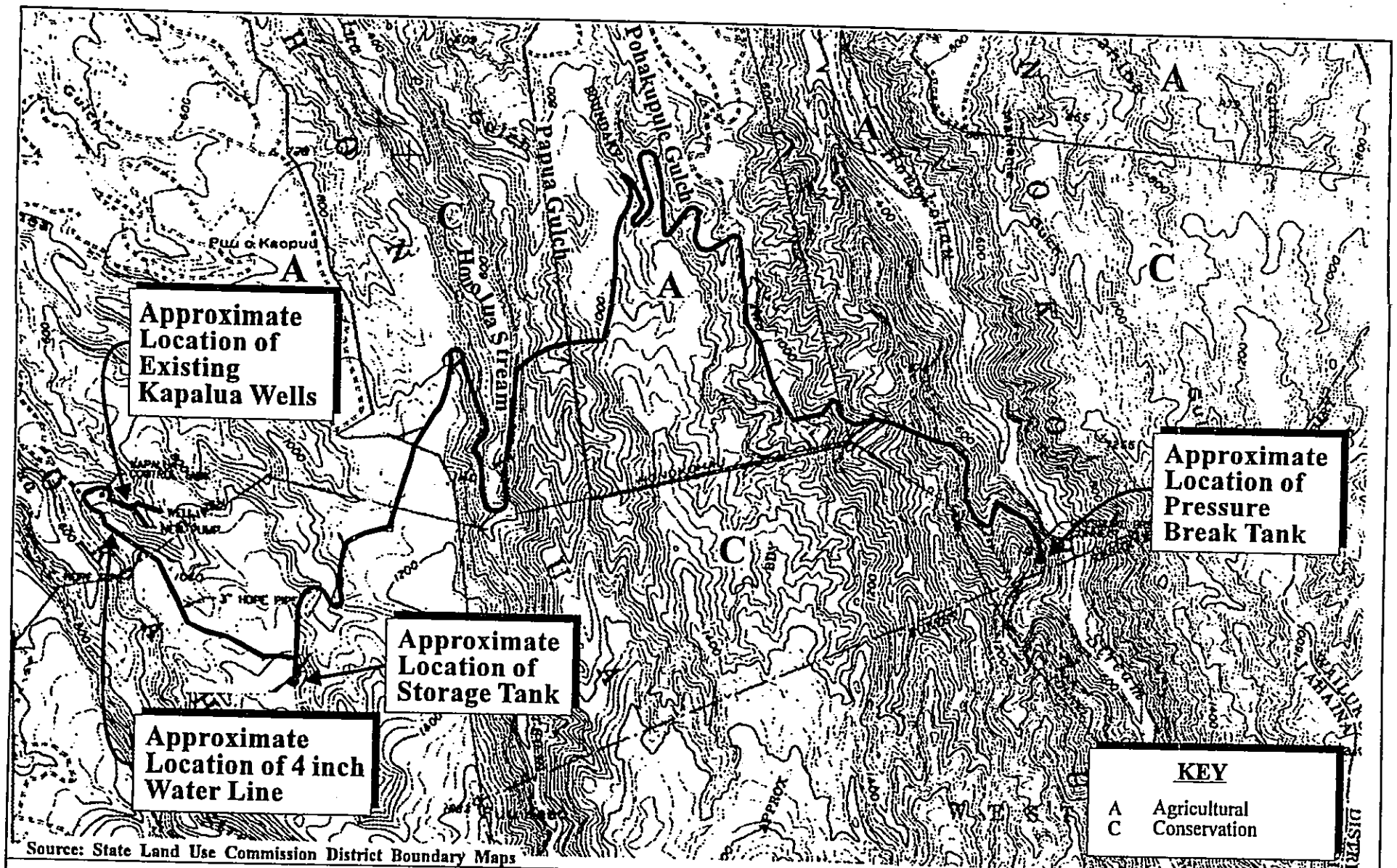
Chapter 205, Hawaii Revised Statutes, relating to the State Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation".

From the existing Kapalua Wells to the storage tank to the Honolua District, approximately 9,500 lineal feet of waterline is within the Agricultural District. Within the Honolua District, approximately 8,000 lineal feet is located within the Conservation District. Within the Papua and Pohakupule areas, approximately 11,000 lineal feet of waterline traverses the Agricultural District. From Pohakupule to the pressure break tank, approximately 4,500 lineal feet of waterline is within the Conservation District. See Figure 7.

The proposed project is permissible within the Agricultural District as a "public utility line".

Chapter 2, of Title 13, Hawaii Administrative Rules, requires that a Conservation District Use Permit (CDUP) be issued by the State Board of Land and Natural Resources (BLNR) to conduct work within the Conservation District.

Title 13 establishes subzones within the Conservation District. These subzones are designated "Protective" (P), "Limited" (L), "Resource" (R), "General" (G), and "Special" (S). The portions of the waterline within the Conservation District are within the "Resource" subzone. The objective of the "Resource" subzone is to develop, with proper management, areas



Source: State Land Use Commission District Boundary Maps

Figure 7

Honokohau Water System Improvements

State Land Use Classification

Prepared for: County of Maui, Dept. of Water Supply

MUNEKIYO, ARAKAWA & HIRAGA, INC.

to ensure sustained use of the natural resources of those areas.

According to the Department of Land and Natural Resources Conservation District rules, the proposed project may be considered an "identified use" as a public purpose use (D-2). A description of the public purpose use (D-2) is as follows:

> Transportation systems, transmission facilities for public utilities, water systems, energy generation facilities utilizing the renewable resources of the area (e.g., hydroelectric or wind farms) and communications systems and other such land uses which are undertaken by non-governmental entities which benefit the public and are consistent with the purpose of the conservation district.

Accordingly, an application for a Conservation District Use Permit for the proposed project will be prepared and processed in accordance with Title 13.

Thus, with regard to the proposed action's consistency with the purpose of the Conservation District, the following criteria are discussed:

1. ***The proposed land use is consistent with the purpose of the Conservation District:***

   The proposed project is a permissible use within the Conservation District and is not contrary to the purpose of conserving, protecting and preserving important natural resources of the State.

2. ***The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur:***

   The proposed project is consistent with the objective of the Resource subzone. The project is not contrary to ensuring the sustained use of natural resources of this area.

3. ***The proposed land use complies with provisions and guidelines contained in Chapter 205A, HRS, entitled "Coastal Zone Management," where applicable:***

The discussion of compliance with Chapter 205A, HRS is as follows:

(1) ***Recreational Resources***

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational

value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed project will not affect coastal zone recreational opportunities. Accessibility to shoreline areas will not be impacted by the proposed action.

(2) ***Historic Resources***

Objective:

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

(A) Identify and analyze significant archeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: An archaeological inventory survey was conducted for the project. Two (2) previously unrecorded

sites and portions of the water system associated with the Honokohau District were discussed in the survey. The applicant will work with the SHPD in implementing applicable mitigation measures.

(3) ***Scenic and Open Space Resources***

Objectives:

Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The proposed project will not adversely impact scenic or open space resources. The project involves only minor water supply appurtenances which will not change the topographic character of the area.

(4) ***Coastal Ecosystems***

Objective:

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

(A) Improve the technical basis for natural resource management;

(B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: The proposed project will not disrupt or impact coastal ecosystems.

(5) ***Economic Uses***

Objectives:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent

development outside of presently designated areas when:

(i) Use of presently designated locations is not feasible;
(ii) Adverse environmental effects are minimized; and
(iii) The development is important to the State's economy.

Response: The proposed project is not contrary to provision of public or private facilities and improvements in suitable locations.

(6) ***Coastal Hazards***

Objectives:

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
(D) Prevent coastal flooding from inland projects; and
(E) Develop a coastal point and nonpoint source pollution control program.

Response: The proposed action is governed by controls on development through the administration of Conservation District provisions. The proposed action is not anticipated to adversely impact downstream or adjacent properties, and is not located within flood-prone areas.

(7) ***Managing Development***

Objectives:

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: Input was solicited during the early consultation phase of the Environmental Assessment (EA). Public comments will also be afforded during the draft and final EA review as well as the Conservation District Use Permit process.

(8) ***Public Participation***

Objectives:

Stimulate public awareness, education, and participation in coastal management.

Policies:

(A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
(B) Disseminate information on coastal management issues by means of educational materials, published

reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific medications to respond to coastal issues and conflicts.

Response: The proposed project is subject to the EA and the Conservation District Use Permit process. The project is not contrary to the objective of public awareness, education, and participation in coastal management.

(9) Beach Protection

Objectives:

Protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The closest point of the proposed project to the shoreline is still approximately 9,000 feet away and is not anticipated to impact shoreline activities.

(10) Marine Resources

Objectives:

Implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
(D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
(E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
(F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed project is a significant distance away from the marine environment. There are no discharges into streams and gullies which could affect the marine environment. Accordingly, the proposed project has no significant effect upon this environmental parameter.

4. ***The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area:***

The proposed project involves the implementation of small scale water supply improvements which would benefit approximately 13 water meters in Honokohau. No adverse impact to existing natural resources within the surrounding area are anticipated.

5. ***The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to physical conditions and capabilities of the specific parcel or parcels:***

The structures which are proposed as part of the project are all modestly sized. In this regard, there will be no significant visible changes to the environment as a result of the project.

6. ***The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable:***

Upon completion of the project, the existing land uses along the waterline corridor are anticipated to remain as either open space, access roadway, trails, tunnel or pasture. The project will result in minimal effect upon the existing landscape. The intent is to preserve the natural beauty and open space characteristics of the area.

7. ***Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district:***

The proposed action does not involve the subdivision of land to increase land use intensity.

8. ***The proposed land use will not be materially detrimental to the public health, safety and welfare:***

The proposed project enhances the public's health, safety and welfare by upgrading the domestic water system.

B. ***GENERAL PLAN OF THE COUNTY OF MAUI***

The General Plan of the County of Maui (1990) update provides long-term goals, objectives and policies directed toward the betterment of living

conditions in the County. Addressed are social, environmental, and economic issues which influence both the quantity and quality of growth in Maui County. The following General Plan objectives and policies are addressed by the proposed project:

Objective:

To provide an adequate supply of potable and irrigation water to meet the needs of Maui County's residents.

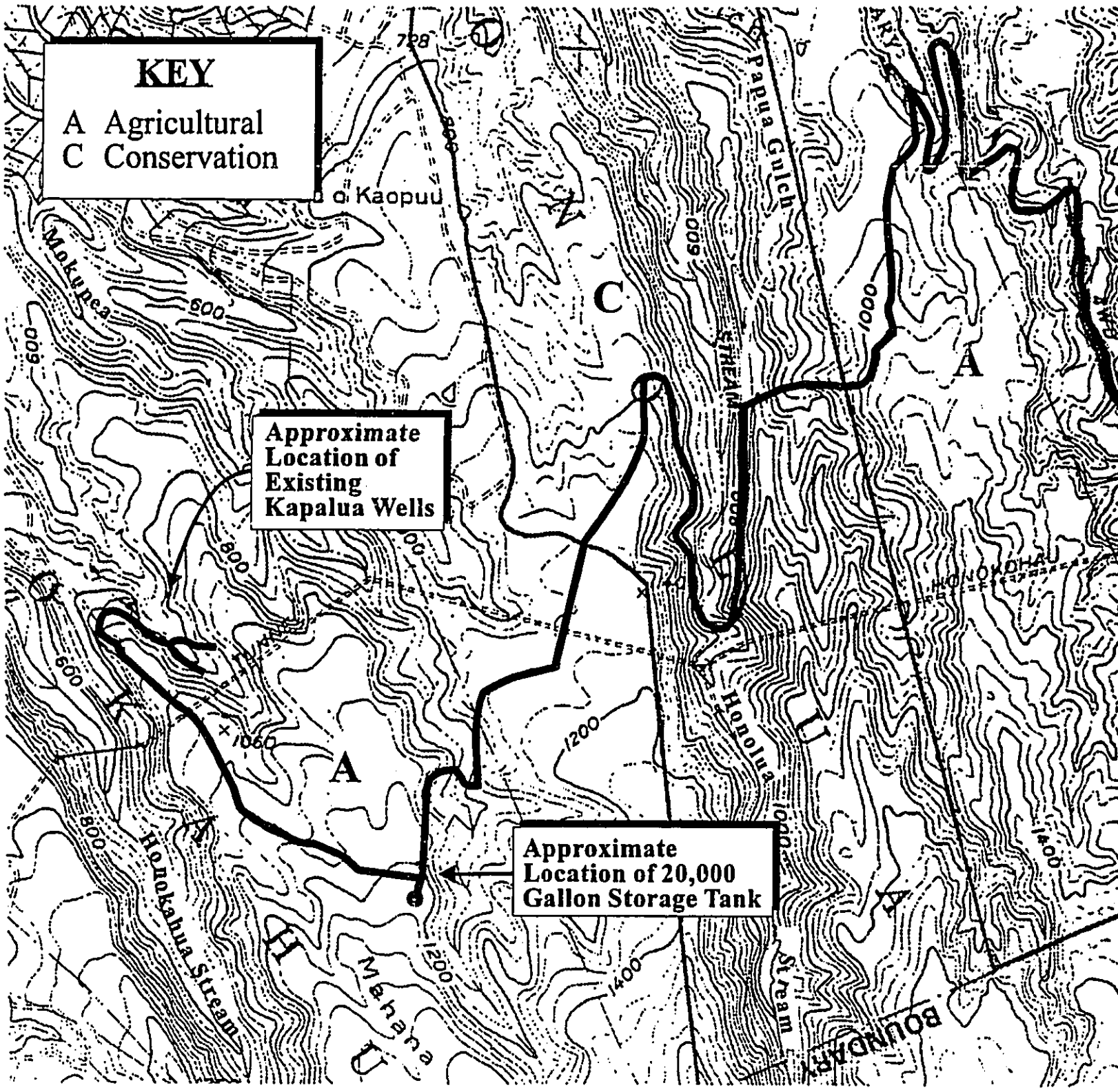
Policy:

Meet or exceed Federal quality standards for the potable water supply.

C. *WEST MAUI COMMUNITY PLAN*

The proposed project is located in the West Maui Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designed to implement the Maui County General Plan. Each Community Plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

Land use guidelines are set forth by the West Maui Community Plan Land Use Map. The community plan land use designations for the project alignment are generally the same as the State land use classifications. See Figure 8. From the existing Kapalua Wells to the storage tank to the Honolua District, approximately 9,500 lineal feet of waterline are within the Agricultural District. Within the Honolua District, approximately 8,000 lineal feet are located within the Conservation District. Within the Papua and Pohakupule areas, approximately 11,000 lineal feet of waterline traverse the Agricultural District. From Pohakupule to the pressure break

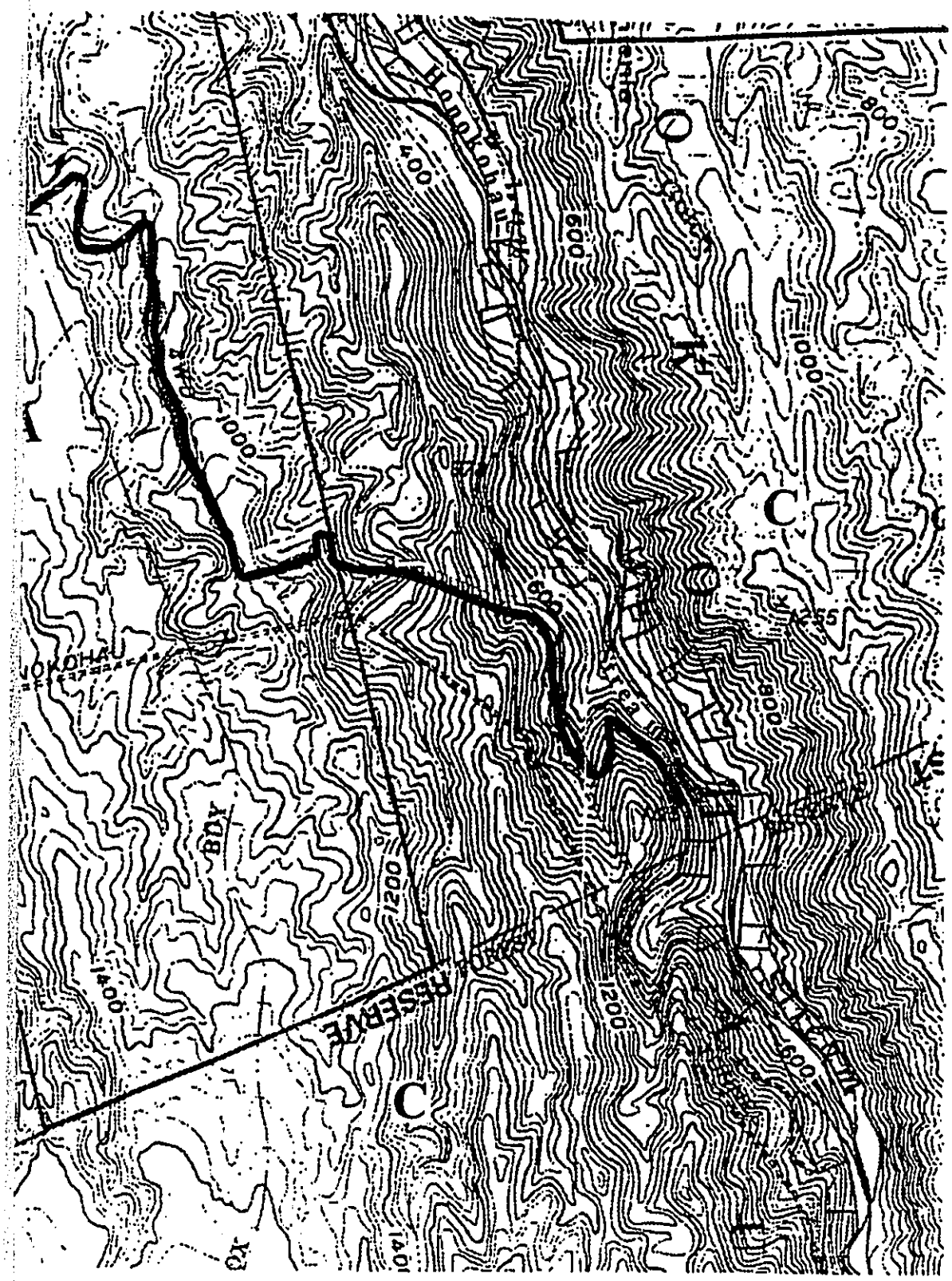


Source: County of Maui, Department of Planning

Figure 8

Honokohau Water System Improv
West Maui Community Plan

Prepared for: County of Maui, Dept. of Water Supply



m Improvements
unity Plan

NOT TO SCALE

MUNEKIYO, ARAKAWA & HIRAGA, INC.

tank, approximately 4,500 lineal feet of waterline are within the Conservation District.

The following objectives and policies also pertain to the subject application:

Environment

Integrate stream channels, gulches and other areas deemed unsuitable for development into the region's open space system for the purposes of safety, open space relief, greenways for public use and visual separation. Existing development of these stream channels, gulches and other areas shall be maintained and shall not be expanded. Drainage channels and siltation basins should not be considered for building sites, but used, rather, for open space.

The following major streams and gulches, as named on the United States Geologic Survey topographic maps (Lahaina and Honolua, Hawaii, 7.5 minute series, 1:24,000 scale), are to be kept as open space:

a. Kahoma Stream
b. Wahikuli/Hahakea Gulch
c. Honokowai Stream
d. Mahinahina Stream
e. Kahana Stream
f. Kaopala Gulch
g. Honokeana Stream
h. Napili Stream (2-3)
i. Napili Stream (4-5)
j. Honokahua Stream
k. Mokupea Gulch
l. Honolua Stream
m. Papua Gulch

n. Kauaula Stream

For other natural drainageways that discharge to the ocean during part of the year, their natural filter functions shall be preserved. The preservation of these natural filter functions may be accomplished by the use of structural controls or solutions in accord with accepted engineering standards or rules as may be adopted by the Department of Public Works and Waste Management, and includes the use of best management practices such as desilting basins, moderation of flow velocity, subsurface infiltration systems, and baffles.

Water

Improve the quality of domestic water.

It is noted that the proposed project is not contrary to the land use designations in the Community Plan. The project complies with the objectives and policies of the Community Plan by maintaining the open space function of streams, gulches and drainageways as well as improving the quality of domestic water to residents of Honokohau Valley.

D. *OTHER REGULATORY CONSIDERATIONS*

The waterline alignment traverses five (5) streams or gulches. Mokupea Gulch, Honolua Gulch, Papua Gulch, Pohakupule Gulch, and an unnamed tributary to Honokohau Stream are all delineated as streams in the United States Geological Survey Map (Napili Quadrangle).

The waterline is proposed to be suspended over the stream bed. On each side of the stream, a concrete footing outside of the high water mark is proposed in order to anchor the waterline in place. Since no fill is being

proposed within stream waters, regulatory requirements such as the Department of the Army Permit, Stream Channel Alteration Permit, Section 401 Water Quality Certification, and the Hawaii Coastal Zone Management Program Consistency Assessment are not applicable.

No discharges to State waters are proposed. Thus, no National Pollutant Discharge Elimination System (NPDES) permit would be required.

Chapter V

Summary of Adverse Environmental Effects Which Cannot be Avoided

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project development will result in some construction-related impacts as described in Chapter III, Potential Impacts and Mitigation Measures.

Potential effects include noise-generated impacts occurring from construction activities. In addition, there may be temporary air quality impacts associated with dust generated from construction activities, and exhaust emissions discharged by construction equipment.

Accordingly, the proposed project is not anticipated to create any long-term adverse environmental effects.

Chapter VI

Alternatives to the Proposed Action

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION ALTERNATIVE

The no action alternative would leave the existing water distribution system in its present state. The existing surface source system is not in compliance with Safe Drinking Water Standards. As an interim measure, the DWS trucks potable water to Honokohau Valley for domestic use generally on a daily basis. The no action alternative would require further use of DWS time and manpower to continue this task. From an operational standpoint, this represents an inefficient use of Department resources.

Should the trucking of potable water be discontinued, the use of the surface source system without adequate treatment would not be in conformance with Safe Drinking Water Standards. Non-compliance could lead to fines and sanctions by the State Department of Health and Environmental Protection Agency. The use of a surface water source would also leave the residents of Honokohau Valley with domestic water which does not meet applicable standards.

B. TREATMENT OF SURFACE WATER

An alternative of treatment of surface water was also considered. Microfiltration units may be utilized to upgrade the quality of the surface water.

The general cost to construct a treatment plant would be approximately $1.7 million. Honokohau Valley currently does not have any electrical power which would be needed to run the plant. Thus, power lines would need to be installed from the Kapalua Wells, a distance of slightly more than 2 miles.

This alternative would provide a long-term solution to the issue of compliance with applicable standards. However, the cost which DWS would be required to expend per consumer in Honokohau Valley would be very high.

C. ***CONSTRUCT AND EQUIP WELL IN HONOKOHAU***

Another possible alternative involves drilling a well in Honokohau. With a groundwater source and use of the existing chlorination system, this could meet Clean Drinking Water Standards.

Overhead electrical power also must be extended from the Kapalua Wells to the well site. A general estimate of the total construction cost is approximately $400,000.00.

This alternative could be considered as a long term solution to the provision of potable water in the Honokohau area. However, cost per consumer is still high and it involves extension of electrical power to the well.

D. ***PROPOSED ACTION***

The proposed action of extending a waterline from the existing Kapalua Wells to Honokohau would involve a reasonably moderate construction cost of $175,000.00. The waterline would also be placed on lands that are in pasture use or are being used by Maui Land and Pineapple Company or its lessees for access. The proposed action represents a relatively efficient, low cost and expeditious alternative to achieve compliance with Safe Drinking Water Standards. It also does not

adversely affect use of the land and results in minimal impact to the existing landscape.

Chapter VII

Irreversible and Irretrievable Commitments of Resources

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project would involve the commitment of fuel, labor, funding and material resources.

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project would involve the commitment of fuel, labor, funding and material resources.

Chapter VIII

Findings and Conclusions

VIII. FINDINGS AND CONCLUSIONS

The proposed project involves the construction of waterline improvements and other related appurtenances from Honokahua to Honokohau, Maui, Hawaii.

Every phase of the proposed action, expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of Hawaii Administrative Rules. Based on the analysis, the proposed project will not result in any significant impacts. Discussion of project conformance to the criteria is noted as follows:

1. ***No irrevocable commitment to loss or destruction of any natural or cultural resource would occur as a result of the proposed project***

   The project will not significantly affect slope and land use characteristics of the surrounding area.

   Portions of the waterline are located within existing dirt roads which have been previously disturbed. The applicant will work with the SHPD in implementing applicable mitigation measures. Should any cultural materials be discovered during construction, applicable procedures to ensure compliance with Chapter 6E, HRS, will be followed.

2. ***The proposed action would not curtail the range of beneficial uses of the environment***

   The proposed waterline and appurtenant improvements are appropriate uses within the Conservation and Agricultural District. The proposed project would not curtail the range of beneficial uses of the environment.

3. ***The proposed action does not conflict with the State's long-term environmental policies or goals or guidelines as expressed in Chapter 344, Hawaii Revised Statutes***

The State Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS) and were reviewed in connection with the proposed project. The proposed action is in consonance with the State's long-term environmental policies and goals of Chapter 344, HRS.

4. ***The economic or social welfare of the community or State would not be substantially affected***

The proposed project upgrades the water system for Honokohau Valley. There are no direct effects upon the economic or social welfare of the community as a result of the upgrades.

5. ***The proposed action does not affect public health***

The project will result in conformance with applicable safe drinking water standards which is beneficial from the standpoint of public health.

6. ***No substantial secondary impacts, such as population changes or effects on public facilities, are anticipated***

No significant secondary impacts are anticipated from the project.

Population parameters are not expected to be affected by the project. There should be virtually no effect upon the area's roadways. There is no connection to the County's sewer system. Drainage patterns will remain unchanged. The project is not expected to impact public services, such as police, fire and medical services. Impacts upon recreational, educational and solid waste parameters are also negligible.

7. ***No substantial degradation of environmental quality is anticipated***

During the construction phase of the project, there will be short-term air quality and noise impacts. However, in the long term, there should be no effect upon air quality and noise parameters. The project should not have a significant effect upon the open space and scenic character of the area.

No degradation of environmental quality resulting from the project is anticipated.

8. ***The proposed action does not involve a commitment to larger actions, nor would cumulative impacts result in considerable effects on the environment***

The proposed project does not involve a commitment to larger actions.

9. ***No rare, threatened or endangered species or their habitats would be adversely affected by the proposed action***

There are no biological resources found in the project corridor that require consideration for planning, as long as impacts to the corridor are kept to a minimum.

10. ***Air quality, water quality or ambient noise levels would not be detrimentally affected by the proposed project***

Construction activities will result in short-term air quality and noise impacts primarily in areas involving trenching within dirt roads. These areas will be backfilled immediately after the waterline is placed within the trench. Construction will also be limited to daylight hours.

In the long term, the project is not anticipated to have a significant impact on air quality or noise parameters.

No work is being proposed within gulches or streams. Thus, the project

should have no adverse effect upon water or stream quality.

11. ***The proposed project would not affect environmentally sensitive areas, such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters***

The project would not affect environmentally sensitive areas. The project site is not located in areas prone to flooding or tsunami inundation. The proposed waterline will be placed on top of the existing ground surface except for portions of the alignment within dirt roads. Thus, the project should not significantly affect soils of the project area. There are no geologically hazardous lands, estuaries, or coastal waters affected by the project. Fresh waters and streams would not be affected since the proposed waterline would be suspended above the stream bed.

12. ***The proposed action would not substantially affect scenic vistas and viewplanes identified in County or State plans or studies***

The proposed action will not affect scenic vistas and viewplanes.

13. ***The proposed action would not require substantial energy consumption***

The project will not adversely affect energy consumption patterns.

Based on the foregoing findings, it is concluded that the proposed action will not result in any significant impacts.

Chapter IX

Agencies/Organizations Consulted in the Preparation of the Environmental Assessment and Responses Received

IX. AGENCIES/ORGANIZATIONS CONSULTED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT AND RESPONSES RECEIVED

1. Neal Fujiwara, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100

2. Lolly Silva
Department of the Army
U.S. Army Engineer District, Hnl.
Attn: Operations Division
Bldg. T-1, Room 105
Fort Shafter, Hawaii 96858-5440

3. Brooks Harper
U. S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96850

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

5. Herbert Matsubayashi
District Environmental Health Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793

6. Michael Wilson, Director
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

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

8. Ronald Davis, Chief
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732

9. Lisa Nuyen, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

10. Charles Jencks, Director
County of Maui
Department of Public Works and Waste Management
200 South High Street
Wailuku, Hawaii 96793

11. Greg Kauhi
Maui Electric Company, Ltd.
P. O. Box 398
Kahului, Hawaii 96732

12. West Maui Taxpayers Association
P.O. Box 10358
Lahaina, Hawaii 96761

Chapter X

Comments Received During the Public Comment Period and Applicable Responses

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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

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

Tel.: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-7766

October 26, 1998

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa, & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

Subject: Honokohau Water System Improvements

We appreciate your notification of the Environmental Assessment (EA) for the Honokohau Water System Improvements project. We understand that the project will install water system improvements to upgrade water services to users in Honokohau Valley, Maui.

To further assist the County of Maui's review of the EA, an assessment of the proposed project's compliance with the objectives and policies of Chapter 205A, Hawaii Revised Statutes, should be conducted. In addition, the EA should describe mitigation measures to control soil erosion and other polluted runoff during and after the project.

If there are any questions, please contact Steve Olive of our Coastal Zone Management Program at 587-2877.

Sincerely,

Bradley J. Mossman
Director
Office of Planning

cc: Planning Department, County of Maui

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

210 Imi Kala St.
Suite 209
Wailuku, HI
96793-2100

Our People...Our Islands...In Harmony

October 30, 1998

Mr. Milton Arakawa, Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High St., Suite 104
Wailuku, HI 96793-2100

Dear Mr. Arakawa,

Subject: Honokohau Water System Improvements
Kulamalu Water Tank

I have no comments to offer on either subject at this time.

Thank you for the opportunity to comment.

Sincerely,

Neal S. Fujiwara
District Conservationist

NOV 0 6 1998

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

November 2, 1998

Operations Branch

Mr. Milton Arakawa
Munekiyo, Arakawa and Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

This is in response to your letter dated October 20, 1998, regarding the proposal to upgrade water services to users in Honokohau Valley, Maui. The project involves installation of a booster pump station, construction of a 20,000 gallon storage tank, and installation of 5,100 linear feet of ductile iron pipe and 28,500 linear feet of water line that traverses several gulches and an unnamed tributary to Honokohau Stream.

Due to the preliminary nature of the information provided, it is not possible to reach a conclusive determination regarding Department of the Army (DA) permit requirements at this time. For your reference, the proposed work will not require a DA permit provided: (a) the waterline crossings at streams and gulches will be suspended above the ordinary high water mark; (b) footings used to support the waterline at the stream crossings are spaced at sufficient intervals so they do not have the effect of a discharged fill material (i.e. impede or change the direction of flow within the stream); and (c) the project does not involve any other work which will result in the discharge of dredge or fill material into jurisdictional waters of the U.S., including wetlands. A final determination regarding DA permit requirements for this project will be made after our office has had the opportunity to review the Environmental Assessment (EA).

Thank you for the opportunity to review the preliminary project scope. Please provide our office a copy of the draft EA when it is available. File Number 990000034 is assigned to this project. Please refer to this number in any future correspondence with our office. Should you need additional information, please feel free to contact Ms. Lolly Silva of my staff at (808) 438-9258, extension 17.

Sincerely,

George P. Young, P.E.
Chief, Operations Branch

LINDA LINGLE
Mayor

LISA M. NUYEN
Director

DONALD A. SCHNEIDER, II
Deputy Director

NOV 0 6 1998

CLAYTON I. YOSHIDA
Planning Division

AARON H. SHINMOTO
Zoning Administration and
Enforcement Division

COUNTY OF MAUI
DEPARTMENT OF PLANNING

November 4, 1998

Mr. Milton Arakawa, Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

RE: Preparation for Environmental Assessment (EA) - Honokohau Water System Improvements at TMK: 4-2-01:Portion 01 and Portion 09, Honokohau Valley, Island of Maui, Hawaii

The Maui Planning Department (Department) has received your letter of October 20, 1998 regarding early consultation for the above-referenced subject matter. The land use and zoning classifications are as follows:

State:	Agriculture and Conservation
Community Plan:	Agriculture and Conservation
Zoning:	Interim on Agricultural lands and no zoning on Conservation lands

The Department of Land and Natural Resources, State Historic Preservation Division; Department of the Army, Corps of Engineers; State Water Commission, Department of Agriculture, Natural Resources Conservation Service; and the State Department of Health are some of the agencies the Department recommends that you contact regarding any issues relating to cultural resources, effects and permits relating to the streams, erosion control and water-quality issues.

At this time, the Department has no additional comments. Should you have any questions, please call this office at 243-7814.

Sincerely,

for LISA M. NUYEN
Director of Planning

LMN:JH:osy
Enclosures
c: Clayton Yoshida, AICP, Planning Program Administrator
Julie Higa, Staff Planner (w/Enclosures)
Project File
General File
(S:\ALL\JULIE\ENVIRONM\HONOKOHA.DWS)

NOV 1 2 1998

BENJAMIN J. CAYETANO
GOVERNOR

LAWRENCE MIIKE
DIRECTOR OF HEALTH

ALFRED M. ARENSDORF, M.D.
District Health Officer

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 10, 1998

Milton Arakawa
Project Manager
Munekiyo, Arakawa &
Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

Subject: Honokohau Water System Improvements
TMK: (2) 4-2-1: por. 1 & 9

Thank you for the opportunity to provide input prior to the Environmental Assessment. We have the following comments to offer:

1. NPDES coverage will be required for discharges into state waters.

2. Any work involved in the crossing of streams may require the approval of the Army Corps of Engineers (COE). The applicant should contact the COE to identify whether a federal permit is required. A Section 401, Water Quality Certification is required when a federal permit is required.

3. The approval of the Safe Drinking Water Branch (SDWB) of the Department of Health is required. It is recommended that the Department of Water Supply contact the SDWB if it has not already done so.

Should you have any questions, please call me at 984-8230.

Sincerely,

HERBERT S. MATSUBAYASHI
District Environmental Health Program Chief

NOV 1 2 1998

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD/CWB

November 6, 1998

P1106KP

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Arakawa:

Subject: **County of Maui/Department of Water Supply**
Honokohau Water System Improvements
Honokohau Valley, Maui

In response to your letter dated October 27, 1998, the Department of Health, Clean Water Branch, has the following comments:

1. The U.S. Army Corps of Engineers (COE) should be contacted to identify whether a Federal permit (including a Department of the Army (DA) permit) is required for this project. A Section 401 Water Quality Certification (WQC) is required for "Any applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...", pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act (CWA)").

2. If the project involves any of the following discharges into State waters, including dry gulches, a National Pollutant Discharge Elimination System (NPDES) general permit is required for each activity:

   a. Storm water runoff associated with construction activities (including clearing, grading, and excavation), that result in the disturbance of equal to or greater than five (5) acres of total land area;

   b. Construction dewatering effluent;

   c. Hydrotesting effluent;

   d. Noncontact cooling water; and

e. Treated contaminated groundwater from underground storage tank remedial activity.

3. An NPDES individual permit is required if the operation of the proposed facility involves any discharge into State waters.

Should you have any questions, please contact Ms. Kris Poentis, Engineering Section of the Clean Water Branch, at (808)586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP/rg

... Electric Company, Ltd. • 2'' West Kamehameha Avenue • PO Box 398 • K'' ilui, Maui, HI 96733-6898 • (808) 871-8461

NOV 1 2 1998

November 5, 1998

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High St., Suite 104
Wailuku, HI 96793

Dear Mr. Arakawa:

Subject: Honokohau Water System Improvements

Thank you for allowing us to comment on the subject project.

In reviewing the information transmitted and our records, we have no objection to the subject project. We have existing overhead lines which services Kapalua Well No. 1. We encourage the developer's electrical consultant to meet with us as soon as practical to verify the project's electrical requirements so that service can be provided on a timely basis.

If you have any questions or concerns, please call Dan Takahata at 871-2385.

Sincerely,

Edward L. Reinhardt
Manager, Engineering

ELR/dt:lkh

NOV 1 6 1998

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3122
Box 50088
Honolulu, Hawaii 96850

NOV 1 3 1998

In Reply Refer To: DH

Milton Arakawa
Munekiyo, Arakawa & Hiraga, Inc.
305 High St, Suite 104
Wailuku, HI 96793

Re: Honokohau Water System Improvements, Maui, Hawaii

Dear Mr. Arakawa;

The U.S. Fish and Wildlife Service (Service) has reviewed your letter indicating that you will be preparing a Draft Environmental Assessment and a Conservation District Use Application (DEA) for the Honokohau Water System Improvements project and requesting our early input. The project sponsor is the County of Maui Department of Water Supply (DWS). The proposed project is to convey municipal water from existing wells at Kapalua to the Honokohau Water Service System utilizing a booster pump and a series of two- to four-inch water pipes. The Service offers the following comments for your consideration.

In general, the DEA should describe the proposed project and alternatives and identify the significant fish and wildlife species and habitats at the proposed project site. Anticipated project-related impacts to fish and wildlife resources, particularly to any endangered or threatened species, should be assessed. The DEA should describe how unnecessary impacts will be avoided and how unavoidable impacts will be minimized and should propose compensation for any significant impacts to fish and wildlife resources.

The project summary provided by your office does not clearly describe where construction of the new pipeline will impact areas not previously disturbed (*e.g.*, those without previous pipelines or roads). The DEA should clearly indicate where the proposed pipeline will cross undisturbed areas versus those sections of the pipeline that will cross previously disturbed areas. The DEA should also adequately address other construction activities such as clearing of vegetation and should provide potential mitigation measures for those activities.

Honokohau Water System Improvements
Maui, Hawaii

The Service encourages the early review of proposed projects and we appreciate the opportunity to provide early input on this proposal. We hope this information is of use to you in the completion of the DEA and look forward to receiving a copy of it when it is completed. If you have questions regarding our comments, please contact Fish and Wildlife Biologist David Hopper by phone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,

Barbara A. Maxfield, acting

for Robert P. Smith
Pacific Islands Manager

cc: DOFAW, Maui
DWS, Maui

MUNEKIYO, ARAKAWA & HIRAGA, INC.

August 11, 1999

Robert P. Smith
Pacific Islands Manager
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3122
Box 50088
Honolulu, Hawaii 96850

SUBJECT: Honokohau Water System Improvements, Maui, Hawaii

Dear Mr. Smith:

Thank you for your letter dated November 13, 1998 pertaining to the subject project.

We have formulated the Draft Environmental Assessment (EA) for the subject project. A biological resources survey has been done for the project and will be included as part of the EA. Since a Conservation District Use Permit will be required, we will coordinate with the Department of Land and Natural Resources to circulate a copy of the application for your review.

If you have any questions, please feel free to call me. Thank you for your interest in the project.

Very truly yours,

Milton Arakawa

Milton Arakawa, A.I.C.P.
Project Manager

MA:tav
com\dwa\kohau\smith.ltr

environment

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • email: mahinc@aloha.net

NOV 1 9 1998

LINDA LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 243-7845
Fax: (808) 243-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

November 17, 1998

Mr. Milton Arakawa
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

SUBJECT: EARLY CONSULTATION
HONOKOHAU WATER SYSTEM IMPROVEMENTS
TMK (2) 4-2-001:001 & 009

We reviewed the subject submittal and have the following comment.

1. All grading work and pipe placement shall comply with all applicable laws to protect watershed areas from erosion and water pollution.

If you have any questions, please call David Goode at 243-7845.

Sincerely,

FOR CHARLES JENCKS
Director of Public Works
and Waste Management

DG:co/mt
S:\LUCA\CZM\HONOKOHA.WPD

NOV 2 0 1998

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P.O. BOX 621
HONOLULU, HAWAII 96809

NOV 1 9 1998

Mr. Milton Arakawa
Project Manager
Munekiyo Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, HI 96793

Dear Mr. Arakawa:
Subject: Honokohau Water System Improvements

Thank you for the opportunity to review the prepared material related to the development of a Draft Environmental Assessment on the subject matter. We have no comments to offer at this time.

Should you have any questions, or require further assistance please contact staff planner Ed Henry at (808) 587-0380.

Aloha,

for Michael D. Wilson,
Chairperson

NOV 2 3 1998

LINDA CROCKETT LINGLE
MAYOR

RONALD P. DAVIS
CHIEF

HENRY A. LINDO, SR.
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE CONTROL

200 DAIRY ROAD
KAHULUI, MAUI, HAWAII 96732
(808) 243-7561

October 28, 1998

Mr. Milton Arakawa, Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street
Wailuku, HI 96793

RE: Honokohau Water System Improvements

Dear Mr. Arakawa,

Thank you for the opportunity to comment on the Honokohau Water System Improvements Environmental Assessment.

The Department of Fire Control has reviewed the summary provided, and comments as follows:

Paragraph No. 3 states that the water is to transported through a 2-inch pipe from the 20,000 gallon storage tank to the proposed pressure break tank, then through an existing 4-inch water line for distribution to the service users. No mention is made as to fire protection hydrants or standpipes for fire department use.

If you have any questions, direct them in writing to the Fire Prevention Bureau, 21 Kinipopo Street, Wailuku, HI 96793.

Sincerely,

LEONARD F NIEMCZYK
Captain, Fire Prevention Bureau

MFD-Honokohau Water (11.98)

MUNEKIYO, ARAKAWA & HIRAGA, INC.

August 11, 1999

Leonard Niemczyk
Captain
Fire Prevention Bureau
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732

SUBJECT: Honokohau Water System Improvements

Dear Mr. Niemczyk:

Thank you for your letter of October 28, 1998 pertaining to the subject project. In response to your comments, we would like to note that the project traverses pasture and gulch lands which are largely undeveloped and uninhabited as well as inaccessible except by permission from the landowner, Maui Land and Pineapple Company, Inc. Accordingly, there are no fire hydrants or standpipes which are included in the scope of this project.

If you have any questions, please call me.

Very truly yours,

Milton Arakawa

Milton Arakawa, Project Manager

MA:tav
com\dwahkoha\mfd.ltr

environment

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • email: mahinc@alohu.net

REC'D DEC - 3 1998

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / SDWB

December 1, 1998

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa, & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

SUBJECT: HONOKOHAU WATER SYSTEM IMPROVEMENTS

The Department of Health (DOH) acknowledges your request for advanced comments regarding the Environmental Assessment to be completed for the Honokohau Water System Improvements Project. We have reviewed the submitted document and have the following comments:

1. The proposed pipeline is approximately 28,500 lineal feet consisting of 2-inch and 4-inch high density polyethylene pipe. Is the waterline adequately sized? Why is the pipe going to be laid on the ground surface through pastures, trails, etc.? What Department of Water Supply standards will be followed when using polyethylene pipe? What is the expected life of the polyethylene pipe when installed above ground?

2. Is the connection from the Kapalua Well No. 1 to the booster pump before or after the chlorine injection point? How and where is the proposed Honokohau system going to disinfect.

3. The ownership and maintenance of the proposed pipeline needs to be addressed including its effect on the Kapalua water system.

4. A contingency plan should be included which discusses alternative drinking water sources for Honokohau should the transmission system from Kapalua be out of service.

If you should have any questions, please contact Mr. Mark Yonamine of the Safe Drinking Water Branch, Engineering Section, in Honolulu at 586-4258, or dial direct from Maui on our toll free number 984-2400, ext. 64258.

Sincerely,

William Wong

WILLIAM WONG, P.E., Chief
Safe Drinking Water Branch
Environmental Management Division

MY:la

c: Gordon Muraoka, SDWB Sanitarian, Maui
David Craddick, MDWS
Barry Pollock, EPA San Francisco

MUNEKIYO, ARAKAWA & HIRAGA, INC.

August 11, 1999

William Wong, P.E.
Chief
Safe Drinking Water Branch
Environmental Management Division
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

SUBJECT: Honokohau Water System Improvements

Dear Mr. Wong:

Thank you for your letter of December 1, 1998 pertaining to the subject project. We would like to provide the following response to your comments.

1. The service area of the proposed project is Honokohau Valley which consists of approximately 13 water meters. The 2-inch and 4-inch pipe should be adequately sized to service this need. The waterline is proposed to be placed on the ground surface for portions of the project because of the temporary emergency nature of the project. Moreover, it is an expeditious method of construction, does not adversely affect use of the land and results in minimal impact to the existing landscape. The use of polyethylene has been reviewed and approved by the Department of Water Supply (DWS). Regarding expected life of the pipe, carbon black will be included as an additive to enhance weathering characteristics.

2. The booster pump connection at the Kapalua Wells is located before the chlorine injection point. It is noted that the chlorine disinfection system is an existing hypochlorite feed system which is located at the existing tank in Honokohau.

3. The proposed improvements will be owned and maintained by the DWS. An easement encompassing the project area through Maui Land and Pineapple Company, Inc. lands will be prepared.

4. Water is presently being trucked to an existing pump line near Honoapiilani Highway where it is pumped to the existing tank in Honokohau Valley. Should the proposed transmission system be out of service, water can then be trucked to the

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • email: mahinc@aloha.net

site as a contingency measure. Also, plans to develop an exploratory well to determine the feasibility of a ground water source in Honokohau Valley to meet the domestic demands of the system are being considered.

If you have any questions, please feel free to call me. Since a Conservation District Use Permit will be required, we will coordinate with the Department of Land and Natural Resources to circulate a copy of the application for your review.

Very truly yours,

Milton Arakawa, A.I.C.P.
Project Manager

MA:tav
com\dwshkoha\wong.001

DLNR-LAND DIVISON
ENGINEERING BRANCH

REF:PB:LT

COMMENTS

Our current projects and programs are not affected by the proposed project.

We confirm that the project site, according to FEMA Community Panel Number 150003 0139 B is located in Zone C. This is an area of minimal flooding (No shading).

GOVERNOR

Land Division

DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

Oct 25 11 :a 44 '99

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

STP 8.9305

October 15, 1999

TO: THE HONORABLE TIMOTHY E. JOHNS, CHAIR
BOARD OF LAND AND NATURAL RESOURCES
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: KAZU HAYASHIDA
DIRECTOR OF TRANSPORTATION

SUBJECT: HONOKOHAU WATER SYSTEM IMPROVEMENTS
CONSERVATION DISTRICT USE PERMIT (CDUP) APPLICATION
TMK: 4-1-01: POR. 09 AND 4-1-02: POR. 01, HONOKOHAU VALLEY, MAUI

Thank you for your transmittal requesting our review of the subject application.

The subject proposal will not impact our State transportation facilities.

We appreciate the opportunity to provide comments.

Land
cc: Liuml - PKF

Oct 25 3 35 PM '99

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

99 OCT 26 A8:12

October 18, 1999

(PA #309)

Mr. Timothy E. Johns
Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Re: Conservation District Use Permit (CDUP) Application
and Draft Environmental Assessment (Draft EA)
for the proposed Honokohau Water System Improvements;
TMK: 4-1-01: por. 09 and 4-1-02 por. 01
Honokohau Valley, Maui

Dear Mr. Johns,

Thank you for the opportunity to comment on the CDUP Application and Draft EA for the above referenced project. The County of Maui, Department of Water Supply (DWS) proposes to construct water system improvements to upgrade service to users in Honokohau Valley, Maui, Hawai'i.

According to the Draft EA, the proposed project involves the installation of approximately 33,000 lineal feet of waterline extending from the existing Kapalua Wells located between Honokohau Stream and Mokupea Gulch to a proposed pressure break tank located near an unnamed tributary to Honokohau Stream.

The Office of Hawaiian Affairs (OHA) has some concerns regarding the proposed project. According to Section 174C-101, Hawai'i Revised Statutes (HRS), persons of Hawaiian ancestry have preferential rights to water pursuant to the Hawaiian Homes Commission Act, 1920, as amended and pursuant to traditional and customary rights. The traditional rights include gathering rights to 'opae, hihiwai and 'o'opu, which require streams with sufficient water to allow them to thrive, and the appurtenant water rights guarantee water sufficient to produce taro and provide for other traditional kuleana uses. Every effort should be made to ensure that the proposed project will have no adverse impacts to these rights.

In addition, OHA is opposed to any potential damage to (prehistoric) archaeological sites, native plant species, and natural resources that the construction of the proposed project may cause. According to OHA's Master Plan, OHA is mandated, "To assist and encourage the conservation and culturally responsive management of historic and culturally significant Hawaiian sites and natural resources to prevent further destruction."

Moreover, we suggest that you require the preparation of a cultural impact statement for the proposed project area. We further suggest that the cultural expert chosen to work on the statement be someone recognized within the Hawaiian community for his/her cultural expertise. The concerns of the community will not be addressed if the cultural impact statement contains information and analysis provided solely by a person whose knowledge of Hawaiian culture is limited to a study of archaeology or anthropology.

If you have any questions, please contact Mark A. Mararagan, Policy Analyst at 594-1945. Please refer to the document number noted at the top of this letter in any future correspondence.

Sincerely,

Colin Kippen
Deputy Administrator

cc: OHA Board of Trustees
Maui CRS

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21, 1999

Mr. Colin Kippen
Deputy Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Re: Honokohau Water System Improvements (PA #309)

Dear Mr. Kippen:

We have received a copy of your October 18, 1999 letter to Timothy Johns of the Department of Land and Natural Resources pertaining to the subject project. We would like to provide the following response.

We do not believe that the project would have adverse effects upon any water rights asserted pursuant to the Hawaiian Homes Commission Act through Section 174C-101, Hawaii Revised Statutes. The project provides potable water in compliance with applicable Federal and State standards to approximately thirteen (13) residential water meters in Honokohau Valley. The average daily usage for the meters is less than 2000 gallons/day. The proposed source of water would be an existing Kapalua Land Company, Ltd. well located at approximately the 765-foot elevation between Honokahua Stream and Mokupea Gulch. The former source of potable water for the residential water meters was from an unnamed tributary to Honokohau Stream. Although a new source of water is proposed, the extent of water usage is relatively low and should not affect stream flow as well as applicable water rights.

The project would involve no adverse effects upon archaeological sites, native plant species, and other natural resources. An archaeological inventory survey was conducted for the subject project. Two (2) previously unrecorded sites (4782 and 4783) were found and portions of the water system associated with the Honokohau District (Site 1591) were located during the inventory survey of the project area. Site 4782 is tentatively interpreted as a precontact site with an unknown function. However, it is

located outside of the project corridor and will not be affected by the project. Site 4783 is interpreted as an old retaining wall associated with an abandoned, unimproved pineapple road. Site 4783 is no longer considered significant for its information content. Regarding Site 1591, the proposed waterline would parallel portions of existing ditch systems and tunnels. The applicant will be working with the State Historic Preservation Division on applicable mitigation such as detailing of the pipe installation methodology and possible monitoring during construction.

Regarding native plant species, a biological resources survey was conducted but did not find any species of vascular plant which has protection under Federal or State law.

It is noted that the proposed waterline would be placed underground within existing dirt roads. For other portions of the waterline alignment through pastures, trails, gulches and tunnels, the waterline is proposed to be laid on the ground surface. Waterline crossings at streams and gulches are proposed to be suspended above the stream bed. Thus, the construction methodology minimizes any possible adverse effects upon archaeological, botanical and other natural resource parameters.

With regard to cultural impact, we do not believe that the proposed project results in any adverse effect upon cultural resources. As noted above, the impact on the existing environment is minimized to the greatest extent practicable. Thus, we do not believe that a cultural impact statement would be warranted.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dwshkoha\oha.ltr

Mayor
JOHN E. MIN
Director
CLAYTON I. YOSHIDA
Deputy Director

Oct 20 9 58 AM '99

COUNTY OF MAUI
DEPARTMENT OF PLANNING

October 18, 1999

99 OCT 20 A8:38

Mr. Timothy Johns, Director
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Attention: Lauren Tanaka

Dear Mr. Johns:

RE: Conservation District Use Application for the Honokohau Water System Improvements, TMK: 4-2-001:Por. 1 and 4-1-001:Por. 9, Honokohau, Maui

The Maui Planning Department has reviewed the above-referenced application and has the following comments:

1. The portions of the project located within the State Agricultural District are also zoned County Agricultural District. Pursuant to Chapter 19.30A Agricultural District, Section 19.30A.050(6) "*Minor utility facilities* as defined in Section 19.04.040, Maui County Code" (MCC), is identified as a permitted use. Pursuant to Section 19.04.040, MCC, minor utility facilities are defined as "transmission lines used directly in the distribution of utility services that have minor impact on adjacent land uses which include, but which are not limited to, twenty-three kilovolt transmission substations, vaults, *water wells, tanks and distribution equipment*, sewage pump stations, and *other similar type uses*." The installation of the tanks, distribution equipment and four-inch transmission lines qualifies as minor utility facilities and is a permitted use in the County Agricultural District.

2. The subject properties are located outside the boundaries of the Special Management Area for Maui Island and are not subject to the Special Management Area Rules of the Maui Planning Commission.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

Thank you for your cooperation. If additional clarification is required, please contact Ms. Colleen Suyama, Staff Planner, of this office at 270-7735.

Very truly yours,

JOHN E. MIN
Planning Director

JEM:CMS:cmb
c: Clayton Yoshida, AICP, Deputy Planning Director
Colleen Suyama, Staff Planner
Milton Arakawa, Munekiyo, Arakawa & Hiraga, Inc.
Project File
General File
(S:\\CMS\Honoka1)

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

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

October 21, 1999

Dean Uchida, Administrator
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Lauren Tanaka

Dear Mr. Uchida:

Subject: Draft Environmental Assessment (EA) for Honokohau Water System Improvements, Honokohau, Maui

We find this document to be thorough and complete, and will use it as an example of a well-written draft EA.

We have only one suggestion. In order to reduce bulk and conserve paper, we recommend printing on both sides of the pages in the final document.

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

Sincerely,

GENEVIEVE SALMONSON
Director

c: Milton Arakawa
David Craddick, Dept. of Water Supply

Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

October 22, 1999

Mr. Timothy E. Johns, Chair
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

RE: Conservation District Use Permit (CDUP) Application for the Proposed Honokohau Water System Improvements, TMK: 4-1-01: Portion 09 and 4-1-02:Portion 01, Honokohau Valley, Island of Maui, Hawaii

The Maui Planning Department has reviewed the application and has the following comments to offer:

1. The proposed project is outside of the Special Management Area (SMA), pursuant to Chapter 205A, Hawaii Revised Statutes, therefore, it does not require an SMA Use Permit; and

2. The portions of the project that traverse State Land Use Agricultural lands are Community Planned Agriculture and zoned Agriculture District. The proposed use is permitted in the Agriculture District Zone.

Should you have any questions, please contact Ms. Robyn Loudermilk, Staff Planner, of this office at 270-7735.

Very truly yours,

JOHN E. MIN
Planning Director

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

JEM:RLL:osy
c: Clayton I. Yoshida, AICP, Deputy Planning Director
Robyn L. Loudermilk, Staff Planner
Project File
General File
S:\ALL\ROBYN\CDUPS\MA-2952.LTR

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS
CHAIRPERSON

BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

October 22, 1999

OCT 25 3 37 PM '99

TO: Mr. Dean Uchida, Administrator
Land Division

FROM: Linnel T. Nishioka, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Honokohau Water System Improvements CDUA

FILE NO.: MA-2952

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas which are important for the maintenance of streams and the replenishment of aquifers.

[x] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows which may require an instream flow standard amendment.

[X] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[X] OTHER:

We had made similar comments earlier, which did not make it into the DLNR comment on the EIS (see attached).

If there are any questions, please contact Charley Ice at 587-0251.

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21,1999

Ms. Linnel T. Nishioka
Deputy Director
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Re: Honokohau Water System Improvements

Dear Ms. Nishioka:

We have received a copy of your October 22, 1999 memorandum to Dean Uchida pertaining to the subject project. We would like to provide the following response.

It is noted that the proposed waterline would be placed underground within existing dirt roads. For other portions of the waterline alignment through pastures, trails, gulches and tunnels, the waterline is proposed to be laid on the ground surface. Waterline crossings at streams and gulches are proposed to be suspended above the stream bed. Thus, the proposed project minimizes any impact upon streams and gulches as well as adjacent slopes.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dvshkoha\cvrm.ltr

od States
artment of
culture

ural
ources
servation
vice

). Box 50004
nolulu, HI
150

Our People...Our Islands...In Harmony

October 29, 1999

Ms. Lauren Tanaka
DLNR - Land Division, Planning Branch
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Tanaka:

Subject: File No. MA-2952 - Conservation District Use Permit (CDUP) Application fro the Proposed Honokohau Water System Improvements, Honokohau Valley, Maui

We have reviewed the above mentioned document and have no comments to offer at this time.

Thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOHN M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P.O. BOX 1879
HONOLULU, HAWAII 96805

November 1, 1999

To: The Honorable Timothy E. Johns, Chairperson
Board of Land and Natural Resources

From: Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Conservation District Use Permit Application for the Proposed Honokohau Water System Improvements; Tax Map Key 4-1-01: por. 09 and 4-1-02: por. 01, Honokohau Valley, Maui

The Department of Hawaiian Home Lands has reviewed the subject application regarding the County of Maui, Department of Water Supply's proposal to construct water system improvements to upgrade service to users in Honokohau Valley, Maui. We have no comments to offer at this time.

If you have any questions, call me at 586-3801 or have your staff call Rebecca Alakai of our Planning Office at 587-6423.

November 4, 1999

VIRGINIA KAAI
277 WILI KO PLACE #40
LAHAINA, HAWAII 96761

RECEIVED
1999 NOV -8 PM 3:17
DEPT. OF WATER SUPPLY
COUNTY OF MAUI

MR DAVID CRADDICK
DEPARTMENT OF WATER SUPPLY
P.O. BOX 1109
WAILUKU, HAWAII 96793

Dear Mr. Craddick -

I read the recent article in the Lahaina News regarding the proposed adjustment in selling pure water to the residents at Honokōhau Valley. As a resident of the Valley for the past twenty-five years I do have an interest in this matter - and an opinion.

You mentioned cost as the primary factor in seeking alternative water sources. I am well aware of the challenges of getting potable water to Honokōhau Valley residents which has been an ongoing concern for many years. In truth the water which was supplied to us lives not fit to drink.

Trucking water to the Valley is viewed as a temporary measure; now the proposed line from Mokapea Gulch has many drawbacks and also seems unreasonable.

I have a solution which is practical, inexpensive, easily maintained, available and has been proven for many years. The enclosed brochure will describe to you a simple, effective means of purifying water where it is consumed - in the home. I encourage you to peruse this information; I am willing to answer all questions you may have.

A new Water Treatment System from Kenway costs less than $500.00 including the filter (this price also includes the auxiliary faucet for under the counter installation).

The filters require changing once or twice a year with the new filter price being under $125.00. Maui County Department of Water could supply a Water Treatment System to each household in Honokohau Valley and provide new filters as needed with minimal expense and maintenance costs.

The original water system could be re-established. This method of resolving the water problems at Honokohau Valley is so basic, affordable, efficient and easily maintained can there be any reason not to implement it immediately? (As you may have guessed, our household has been using this reliable system trouble free for many years.)

I shall await your reply.

Aloha-

VIRGINIA KA'AI

P.S. If necessary you could require signs at each external faucet stating "non-potable water."

Amway
WATER
TREATMENT
System

Distributed by:

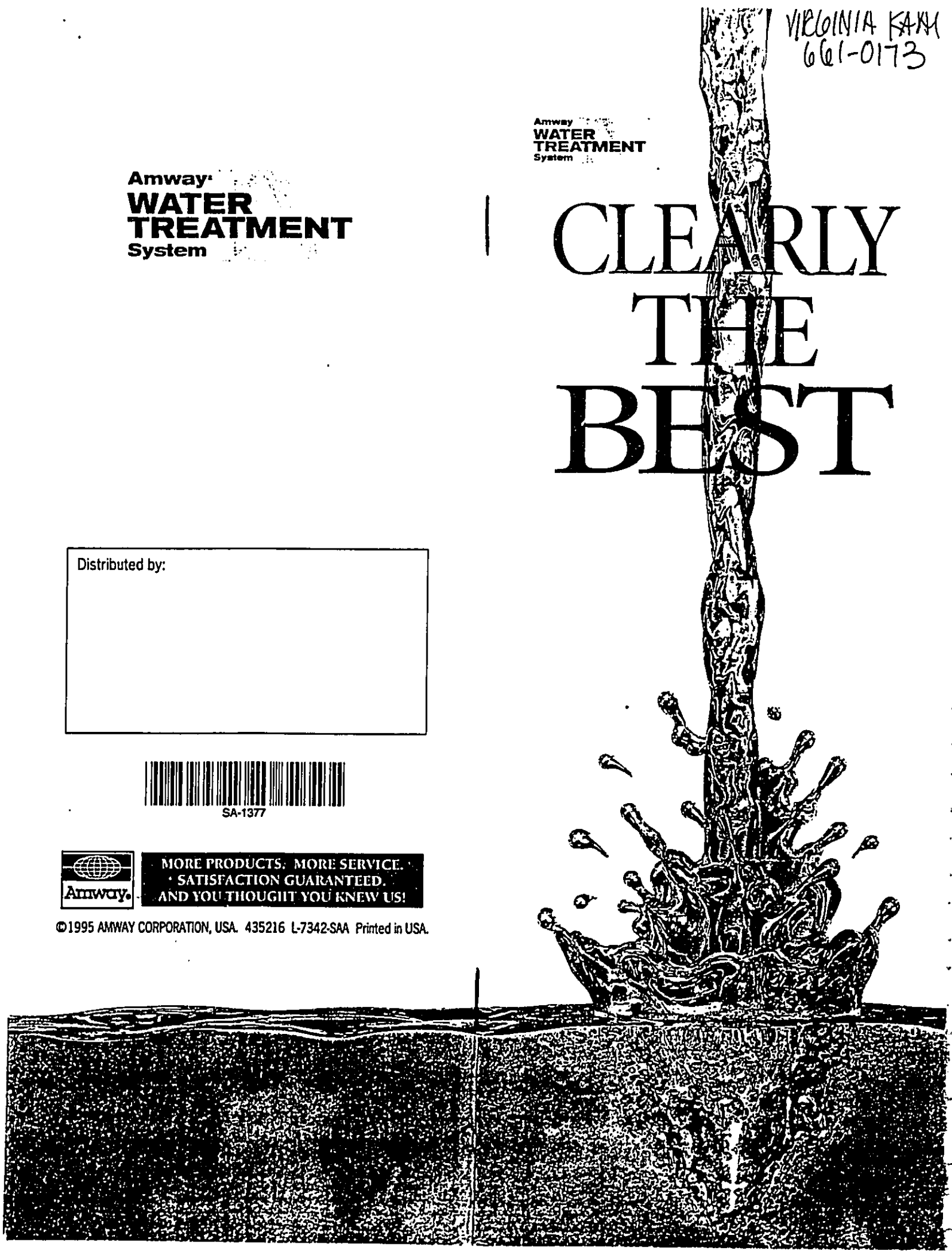
SA-1377

MORE PRODUCTS. MORE SERVICE.
SATISFACTION GUARANTEED.
AND YOU THOUGHT YOU KNEW US!

VIRGINIA KAM
661-0173

Amway
WATER
TREATMENT
System

CLEARLY THE BEST



WATER IS GOOD FOR YOU, IF IT'S GOOD WATER

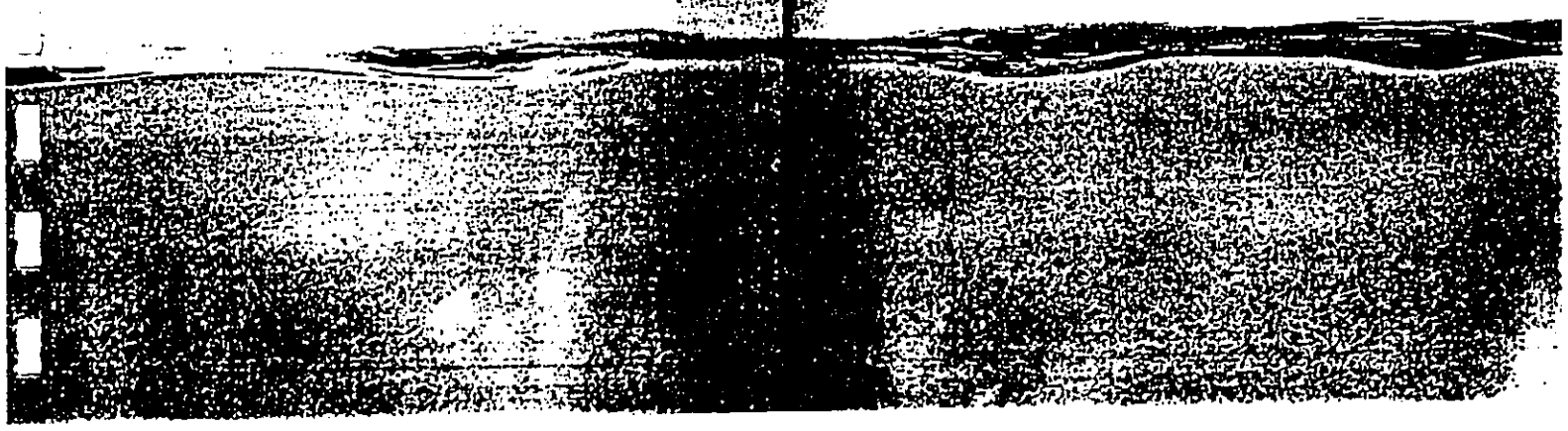
When you think of your health, what comes to mind? The air you breathe? The food you eat? How about the water you drink every day?

Every day of our lives, without a second thought, we turn on our water taps to drink, bathe, wash dishes, cook, or clean clothes. We tell ourselves that in the United States, water is basically safe to drink. We reassure ourselves that contaminated drinking water is only in emerging countries or perhaps a few isolated spots in North America.

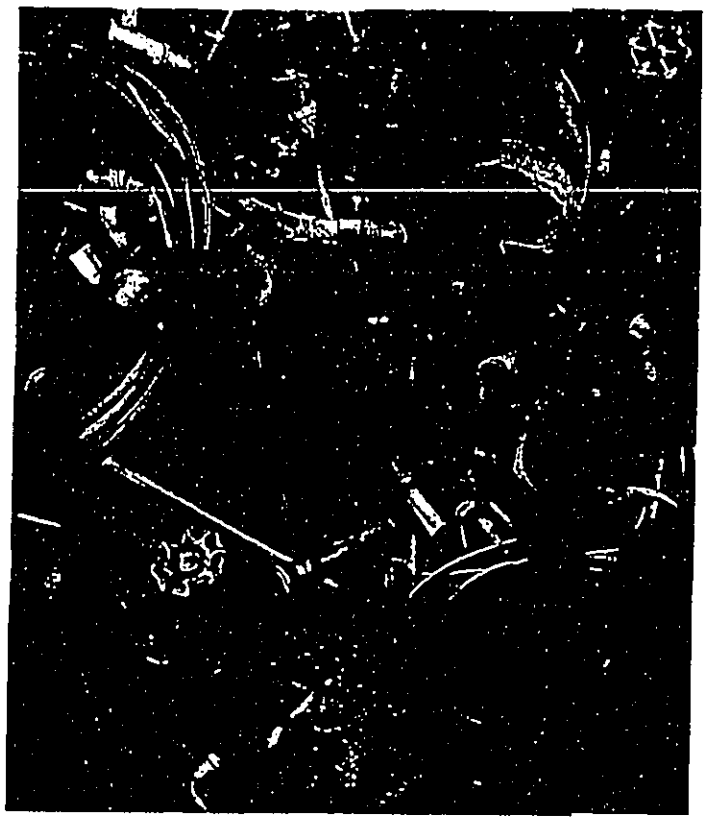
Without water, arms couldn't flex, eyes couldn't see, and the heart couldn't beat. Water is an element so fundamental in our lives that it comprises 60% of our body weight. Most people can't live without water for more than a week. Water is indeed an elixir of life we frequently take for granted.

But across North America, reports about contaminated drinking water occur frequently. Incidents that make news, however, are only a part of the problem. North Americans can be ingesting any number of different contaminants without even knowing it.

Concern about the quality of drinking water is growing. Many residents believe their tap water quality is poor or only fair at best. Have you thought about the quality of your tap water?



LEAD



Across the continent, millions of people are drinking lead-polluted water. In fact, drinking water supplied to 30 million people in 819 cities contains unacceptable levels of lead, according to a recent survey by the U.S. Environmental Protection Agency (EPA).

You cannot smell, taste, or see lead in drinking water. But once lead enters the body, it's there to stay, building up in the body over many years. Those most at risk for lead exposure are pregnant women and children, because amounts of lead that won't hurt adults can slow down normal mental and physical development of young growing bodies.

EFFECTS OF LEAD POISONING IN CHILDREN:

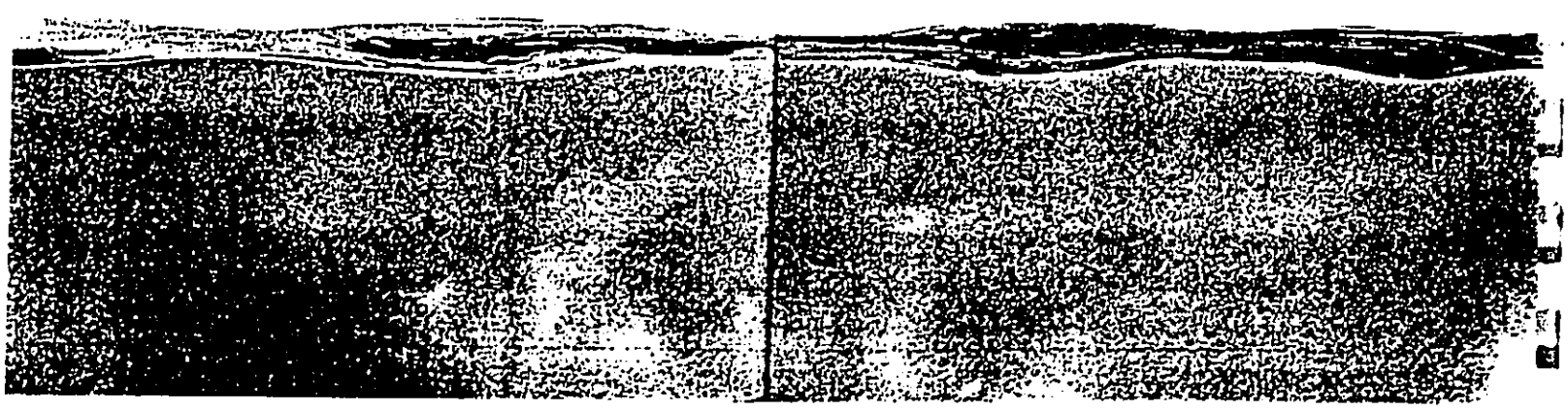
- Interferes with red blood cell formation which can cause anemia
- May reduce newborn birth weight
- May cause premature birth
- May delay mental/physical development
- May impair mental abilities and can permanently lower I.Q.

Most of the lead found in tap water is leached from plumbing materials such as lead pipes, lead service connections, and lead solder – which is banned in new construction.

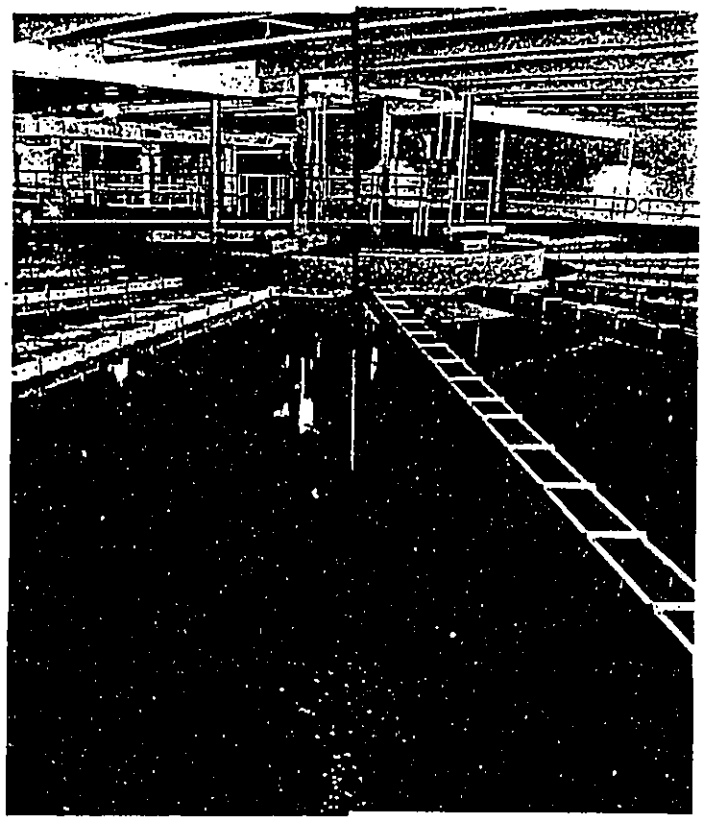
To avoid high lead levels in your water, the EPA and water suppliers suggest you flush water pipes before drinking, usually one or two gallons of water. They also advise that you never cook with or drink hot tap water, because hot water leaches lead more quickly than cold water. If the level of lead in your water is still above the recommended maximum of 15 parts per billion, the EPA suggests considering a home water treatment system that reduces lead from your drinking water.

EFFECTS OF LEAD POISONING IN ADULTS:

- May raise blood pressure
- May interfere with hearing
- Can cause anemia, kidney damage, and brain inflammation



CHLORINE

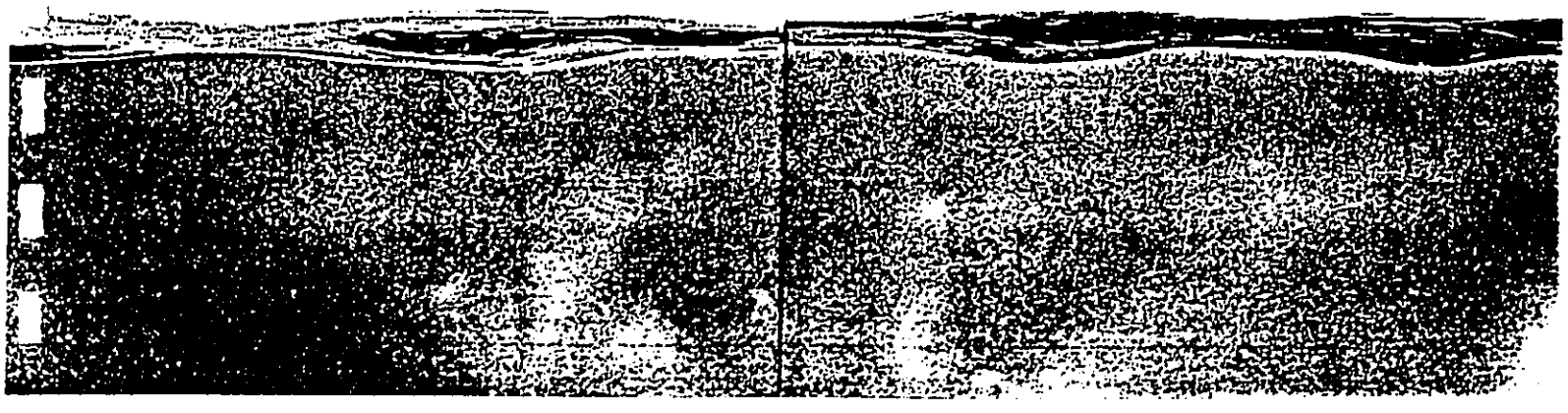


When municipalities began chlorinating their water supplies in the early 1900s as a disinfectant for cholera, typhoid fever, and other diseases, it was hailed as one of the most effective public health measures of the century.

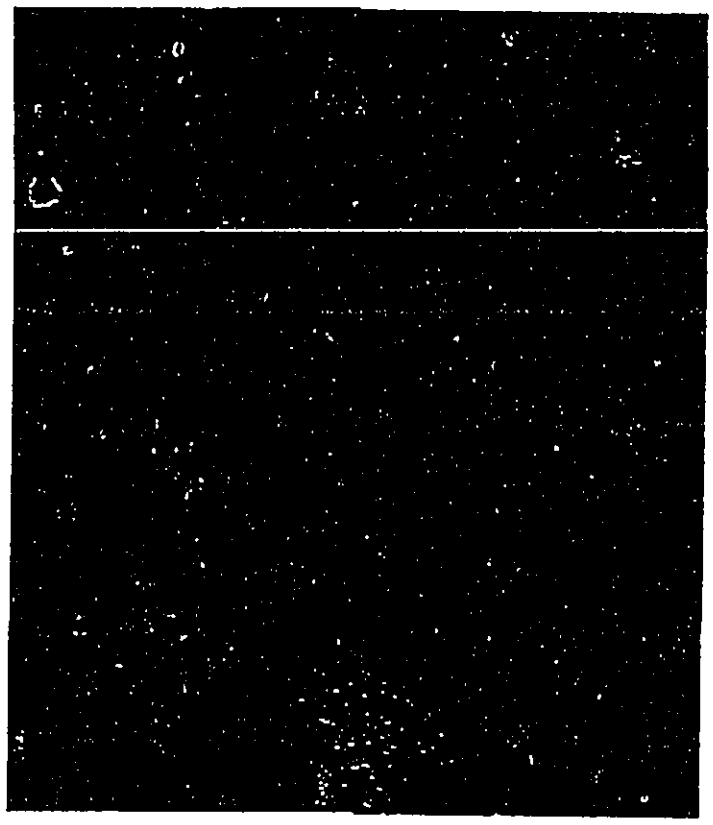
The addition of chlorine saved untold lives. Years later, however, scientists discovered that chlorine can react with organic material in water–such as decaying leaves–to produce chemical compounds called trihalomethanes (THMs). One of these THMs–chloroform–is associated with an increased risk of cancer.

During the summer, when more chlorine is added to water supplies, levels of these disinfection byproducts can jump above recommended levels. But technically, cities are rarely out of compliance because their utilities are allowed to average test results over the entire year.

Chlorine is widely used across the country. In fact, 75% of households drink chlorinated water. Chlorine is also one of the most prevalent reasons why water can taste and smell bad. Taste and smell are the leading reasons why people choose alternatives to tap water.



PARA SITES



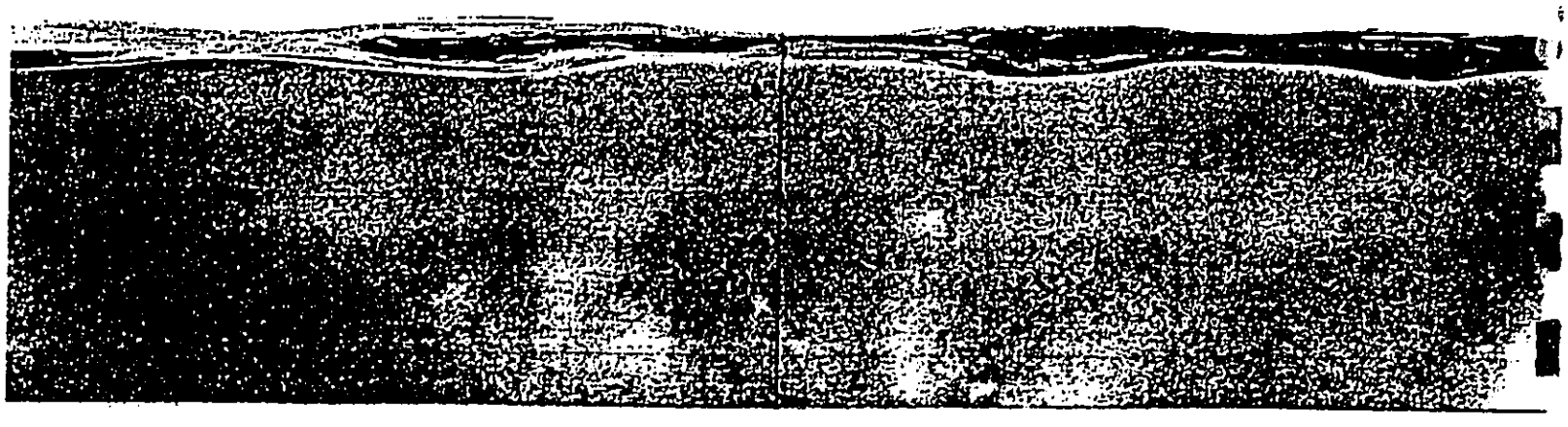
Unfortunately, common disinfection practices by municipal water suppliers are not necessarily sufficient to kill the parasites that have been found in water, such as Cryptosporidium oocysts and Giardia lamblia cysts. Cryptosporidium is so resistant that studies show a cyst can survive and spread infection even after 18 to 24 hours in a concentrated solution of bleach!

Ingesting either of these waterborne microbes can cause vomiting, diarrhea, and other flu-like symptoms which can be particularly hazardous for the elderly, children and individuals with underlying diseases.

THOUSANDS SICKENED

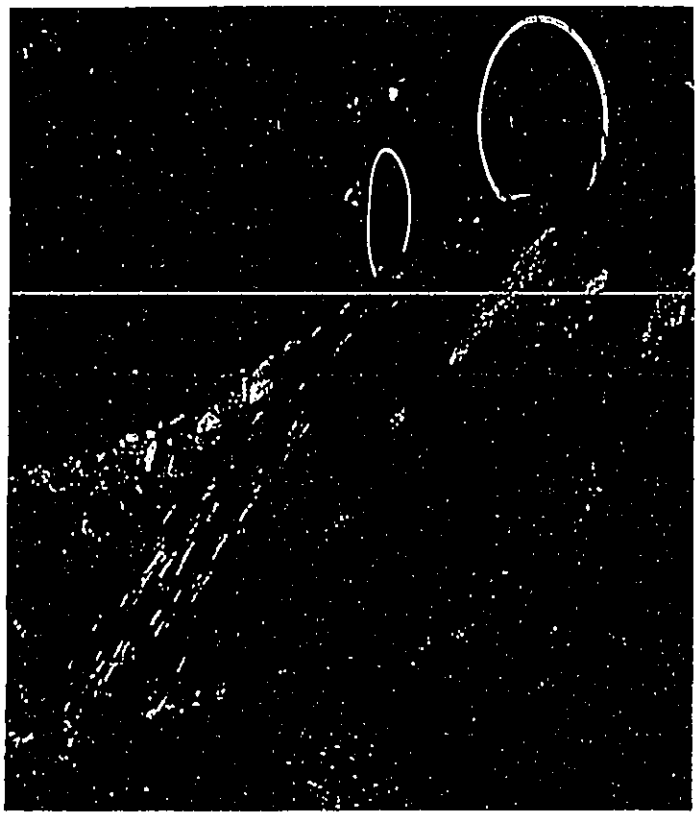
In 1993, the nation's worst outbreak of a waterborne illness struck Milwaukee. Cryptosporidium got through the municipal water treatment system, sickening more than 400,000.

It took several days before the cause of the problem was linked to the drinking water. The parasite entered the system from barnyard runoff flowing into Lake Michigan near the city water intakes during heavy rains. Residents had no forewarning, because, like many drinking water contaminants, the microscopic parasite is odorless and tasteless.



OTHER CONTAMINANTS

In addition to lead, chlorine, and parasites, many other contaminants have been identified in drinking water.



RADON

Virtually everyone has some level of radon in their water and almost no one knows it. It's a tasteless, odorless, and colorless radioactive gas that's produced by the natural breakdown of uranium found in many soils and rocks. There is accumulating evidence of a relationship between the ingestion of radon in drinking water and the increased risk of stomach cancer.

FERTILIZERS AND PESTICIDES

Agricultural pesticides and fertilizers have been detected in drinking water from Connecticut to California. This contamination is not limited to agricultural areas, since spraying of parks, trees, golf courses, and along roadsides is common. Many people also apply these products to their lawns and home gardens.

A 1994 study by the Environmental Working Group revealed that 14.1 million Americans routinely consume pesticides in their drinking water.

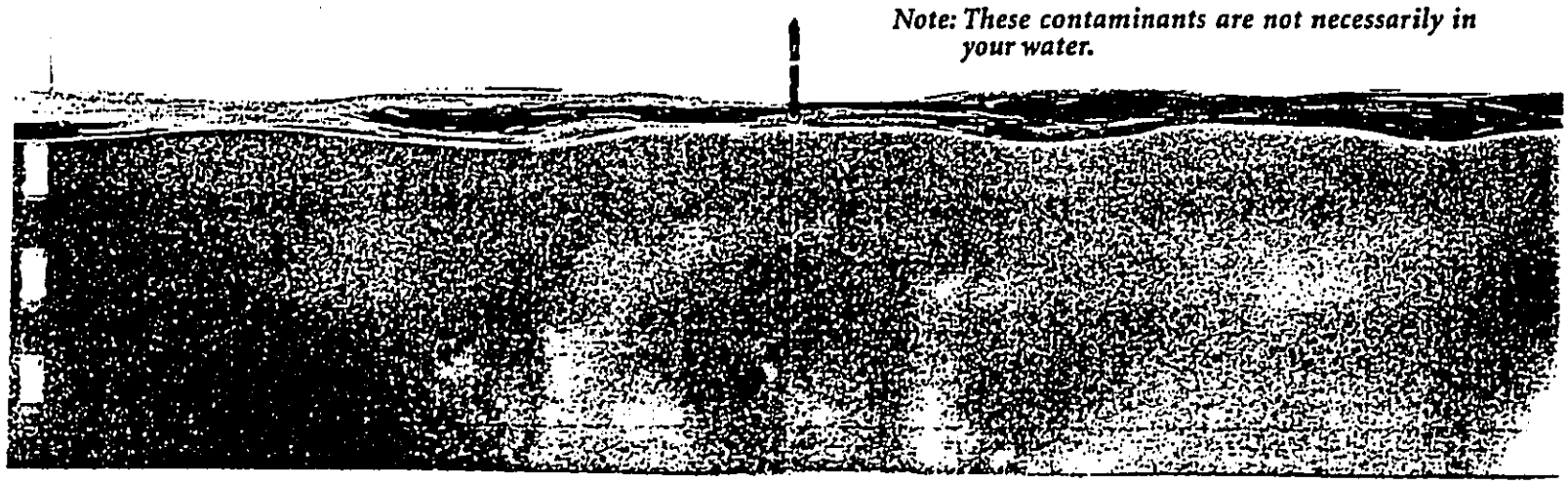
VOLATILE ORGANIC CHEMICALS

Volatile organic chemicals (VOCs) are chemicals that vaporize readily in open air. They are commonly used in industrial products, such as solvents, degreasers, fumigants, and dry cleaning chemicals. These chemicals can pose health risks if they seep into the ground water.

They get into ground water from improper storage and disposal, accidental spills, leaks, and industrial discharges and runoff. Once there, they percolate relatively quickly into wells and aquifers and don't break down easily. Adding to the dilemma is improper disposal of household wastes, especially motor oil and cleaning fluids.

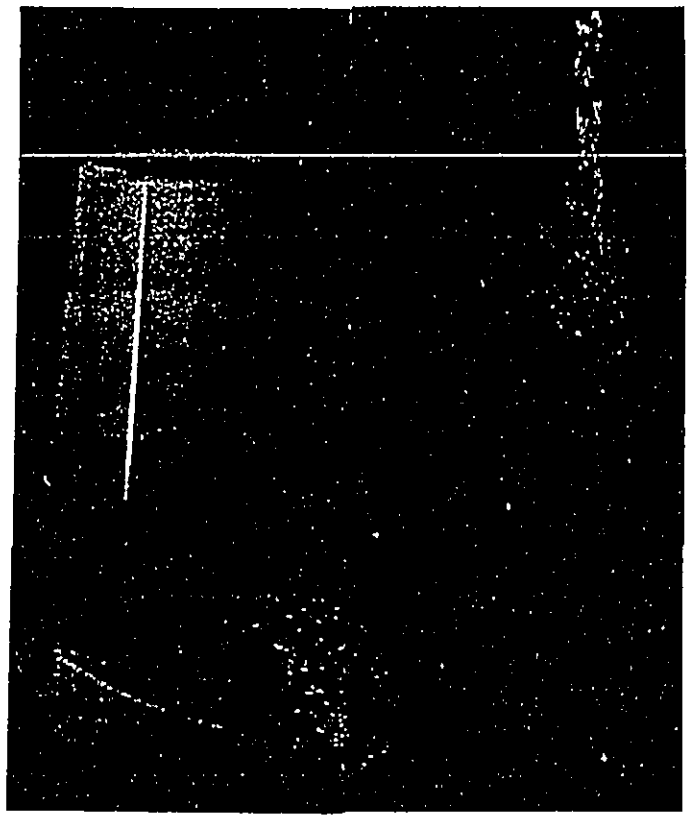
Studies have linked exposure to VOCs to a variety of health problems.

Note: These contaminants are not necessarily in your water.



THE AMWAY SOLUTION

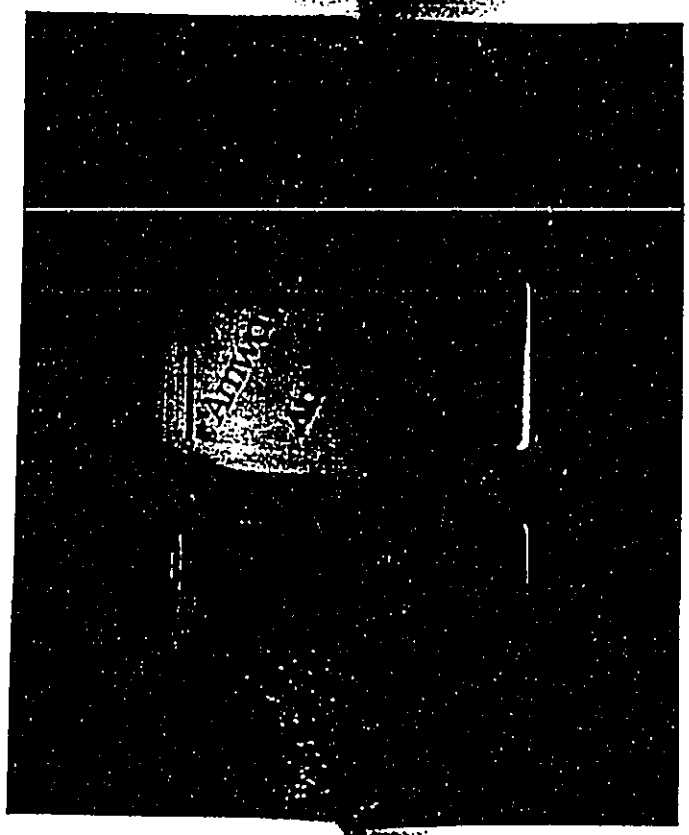
For more than a decade, families have counted on the AMWAY Water Treatment System to ensure the quality of their drinking water. With the latest product improvements, the AMWAY Water Treatment System IV is better than ever – and clearly the best!



- Patented four-stage solid carbon-block technology filters more than 125 contaminants which may be found in drinking water.
- Filters 1,250 gallons of water (or for one year, whichever comes first).
- Has a replaceable filter cartridge.
- Filter Change Indicator tells you when to change the filter.
- Improves water taste, odor, and clarity.
- Reduces a wide variety of contaminants which may be found in drinking water.
- Can be hooked to existing faucet and placed on a countertop or can be installed with a separate water faucet and placed below the sink.
- *Designed for use on cold,* potable, water.
- Certified by the National Sanitation Foundation (NSF) International.

NSF International is an independent, third-party organization in Ann Arbor, Michigan that tests and certifies industry products per established standards. It is widely known and respected in the industry. Consumers are commonly encouraged to consult NSF listings before purchasing a home water treatment system.

COMPARE TO OTHER CARBON SYSTEMS



The best way to objectively compare the AMWAY Water Treatment System IV is to analyze the National Sanitation Foundation (NSF) International listings.

NSF certifies carbon-based water treatment systems by testing under two performance standards:

Standard 42 – This standard rates a system's ability to reduce chlorine, particulates, and other contaminants affecting water's taste, odor, and clarity. Many products on the market are certified only under Standard 42 because it is relatively easy to achieve.

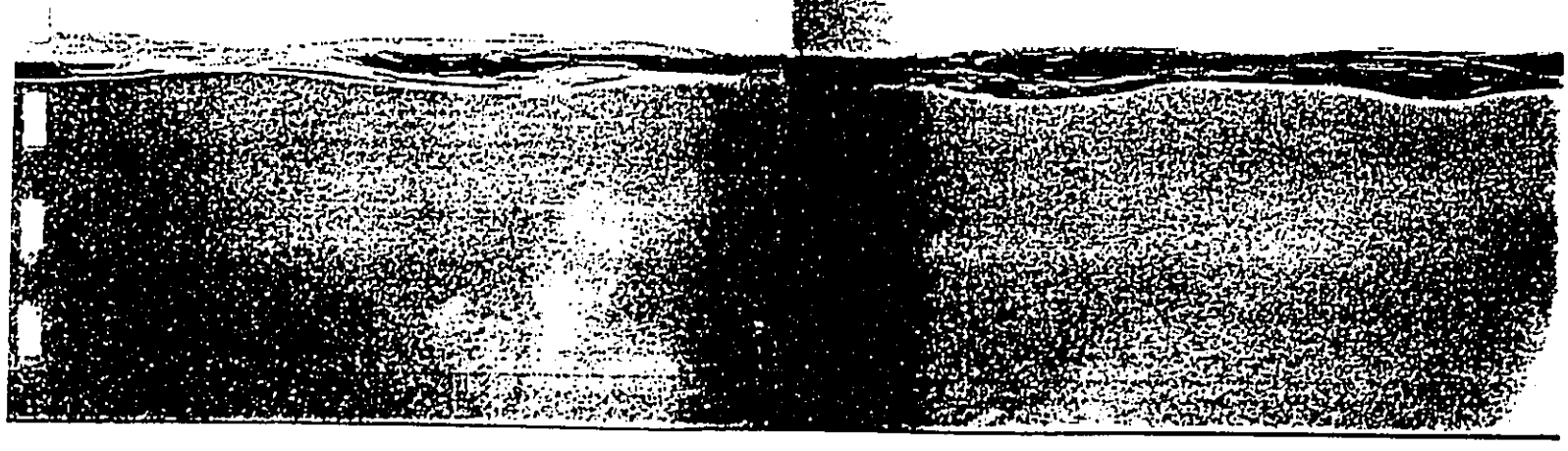
Standard 53 – This standard is much more difficult to achieve. It rates a system's effectiveness for reducing contaminants with potential health effects, such as chloroform and lead, which are more difficult to reduce than chlorine. Under this standard, the ***AMWAY Water Treatment System is certified for the reduction of more contaminants than any other certified carbon-based system on the market!***

CLEARLY THE BEST

The AMWAY Water Treatment System's superiority can be demonstrated in many other ways.

- At 1,250 gallons, it has the ***highest*** rated filter life of any NSF International Standard 53 certified system with a minimum of one gallon per minute flow rate.
- It is the ***first*** carbon-based system certified by NSF International with a Filter Change Indicator that monitors time and gallons.
- It is the ***first*** carbon-based system certified by NSF International for lead reduction.
- Is the ***first*** and one of the few carbon-based system with documented radon reduction.
- It is backed by ***more*** extensive testing and substantiation of reduction claims than any other carbon system certified under Standard 53 by NSF International.

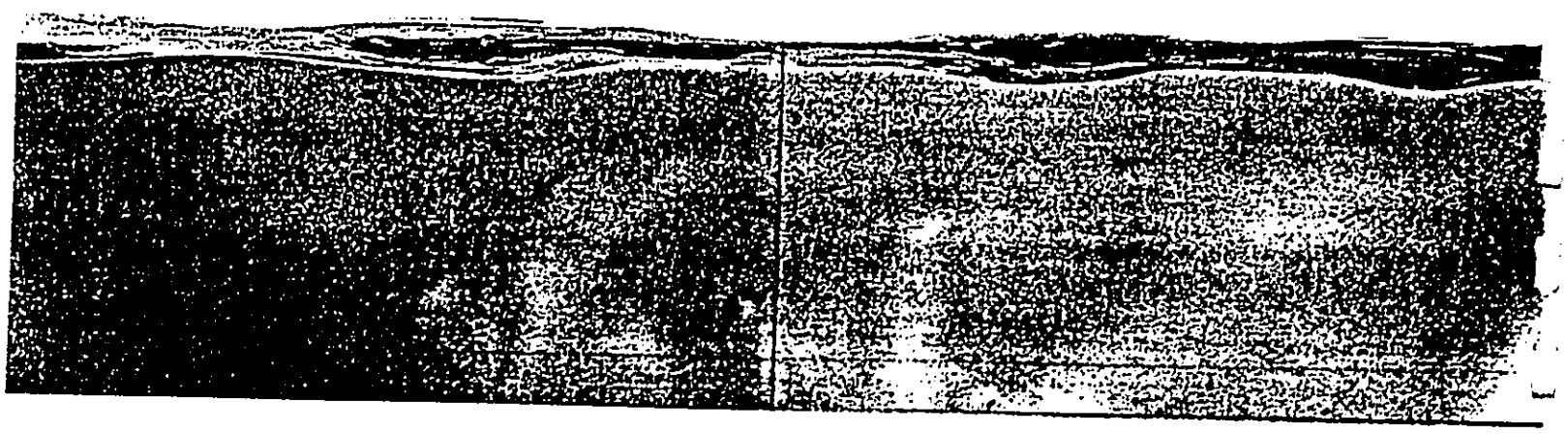
Note: These contaminants are not necessarily in your water.



COMPARE TO BOTTLED WATER

Buying bottled water may seem like an easy and simple solution to ensure quality drinking water for your family. But think again. Compared to bottled water, the AMWAY Water Treatment System:

- Provides more consistent quality water. Regulations for bottled water are no more stringent than for tap water and they also are loosely enforced. While three-fourths of the bottled water comes from springs and wells, an estimated one-fourth is sourced from municipal water systems. As a result, the quality of bottled water varies widely and may be no better than untreated tap water.
- Can be less expensive over the long run, at roughly 30¢ a gallon for the first year and 8¢ a gallon after that. A national supermarket survey in November 1994 shows the average cost for bottled water is 88¢ a gallon.
- There are no empty bottles to end up in cluttered landfills, so a water treatment system is, environmentally, a better choice.
- Is more convenient. Just turn on your tap and filtered water is at your fingertips. It's much easier than transporting, storing and discarding heavy bottles.



THE AMWAY SYSTEM REDUCES THESE CONTAMINANTS

The AMWAY System is listed by NSF International to reduce these contaminants

- Alachlor
- Asbestos
- Atrazine
- Chlordane
- Chlorine taste and odor
- Class I listing for particulate contaminants, including rust, sediment, dirt, and scale down to 0.5 microns in size
- Ethylene dibromide
- Dibromochloropropane
- Heptachlorepoxide
- Lead
- Lindane
- Mercury
- Methoxychlor
- PCBs
- Toxaphene
- Trihalomethanes (THMs)
- Turbidity (cloudiness)
- Volatile Organic Chemicals (VOCs)* – as chloroform
- Xylenes
- Waterborne parasites (cysts), including cryptosporidium, one of the smallest waterborne parasites known to be infectious to humans
- 2,4-D
- 2,4,5-TP

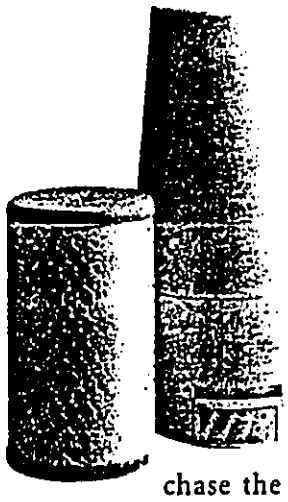
Other contaminants that the Water Treatment System IV reduces:

- More than 100 pollutants listed as "priority" by the U.S. Environmental Protection Agency (EPA)
- Hydrocarbons commonly found in gasoline, kerosene, and diesel fuel
- Particles as small as 1/300 the diameter of a human hair (0.2 microns)
- Dioxin
- Radon and radon-decay products
- Other industrial chemicals, such as PBB

**VOCs include alachlor, atrazine, benzene, carbofuran, carbon tetrachloride, chlorobenzene, dibromochloropropane, 1,2-dichlorobenzene, p-dichlorobenzene, 1, 1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethene, 1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,2-dichloropropane, cis-1,3-dichloropropene, dinoseb, endrin, ethylbenzene, ethylene dibromide, heptachlor, heptachlorepoxide, hexachlorobutadiene, hexachlorocyclopentadiene, lindane, methoxychlor, pentachlorophenol, simazine, styrene, 1,1,2,2-tetrachloroethane, tetrachloroethylene, toluene, 1,2,4-trichlorobenzene, 1,1,1,-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, trihalomethanes (including chloroform as a surrogate chemical), m-xylene, ortho-xylene, p-xylene, 2,4-D, and 2,4,5-TP (silvex)*

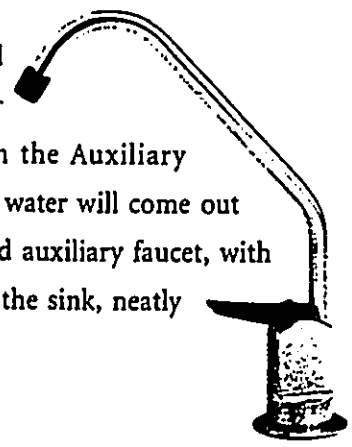
Note: These contaminants are not necessarily in your water.

INSTALLATION OPTIONS



When you purchase the AMWAY Water Treatment System, you'll need to determine whether you want the unit above or below the kitchen countertop. Depending upon your answer, you'll also purchase the Auxiliary Faucet Kit or the Existing Faucet Kit – to properly hook up the system.

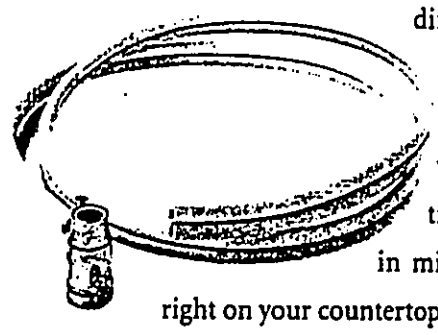
AUXILIARY FAUCET



For a more finished look, hook up the Water Treatment System with the Auxiliary Faucet Kit. Your treated water will come out of a sleek, chrome-plated auxiliary faucet, with all tubing tucked under the sink, neatly out of sight.

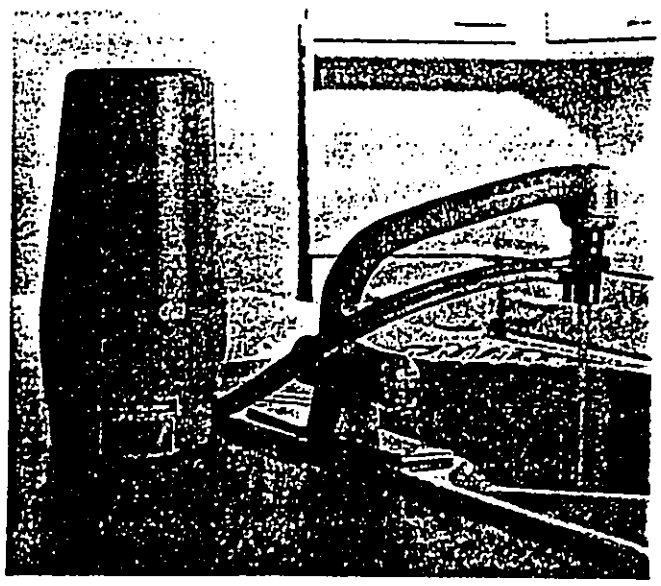
Install the Auxiliary Faucet in a newly drilled opening or in the opening designed for your hand-held sprayer. The Water Treatment System sits under the sink and is plumbed into the cold water line with a self-piercing saddle valve.

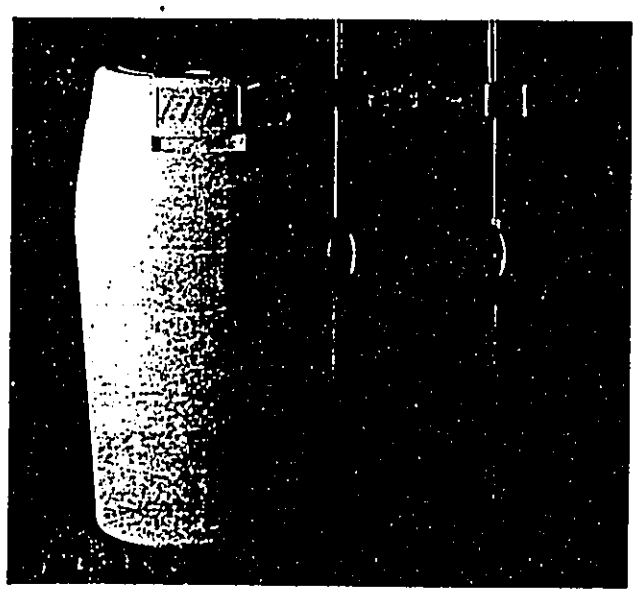
EXISTING FAUCET



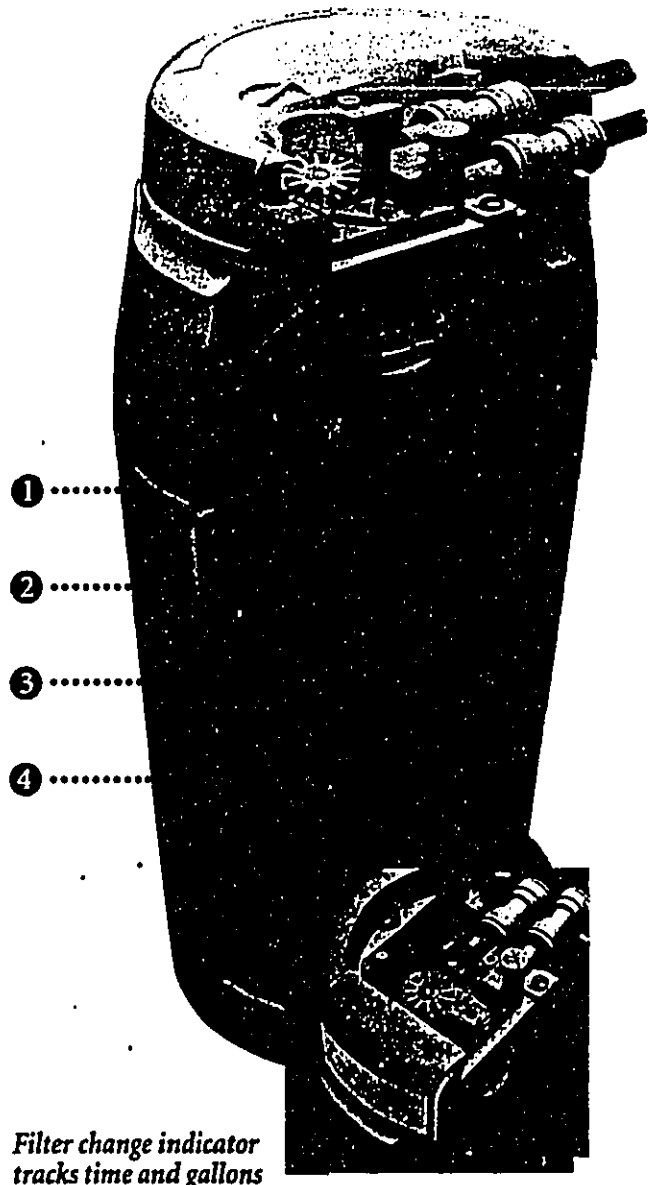
For a simpler and faster way to hook up your new AMWAY Water Treatment System, connect it directly to your faucet with the Existing Faucet Kit. This is a very simple connection that can be done in minutes. The unit sits right on your countertop.

Whichever way you choose, you'll enjoy quality drinking water right at your tap from what is clearly the best – the AMWAY Water Treatment System IV!





HIGH-EFFICIENCY, PATENTED CARBON-BLOCK FILTER SYSTEM WORKS IN FOUR STAGES



Filter change indicator tracks time and gallons to let you know when your filter needs replacing.

1. First, large particulates are reduced by outer non-woven pre-filter.
2. Smaller particulates, such as sediment and clay, are then filtered by inner non-woven pre-filter.
3. Solid carbon-block filter effectively reduces very fine particulates, parasites, lead, and organic chemical contaminants such as THMs, pesticides, VOCs, and industrial wastes.
4. Porous polymer filter core provides structure for the carbon-block and a channel for the treated water to exit the filter.

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 22, 1999

Ms. Virginia Kaai
277 Wili Ko Place #40
Lahaina, Hawaii 96761

Re: Honokohau Water System Improvements

Dear Ms. Kaai:

We have received a copy of your November 4, 1999 letter relating to the subject project. You have raised the question as to whether water treatment systems such as an Amway system placed in an individual's home could be feasible for Honokohau residents, in conjunction with a surface source. We would like to provide the following response.

As you know, surface water traditionally provided the source for Honokohau residents. The water was also chlorinated before distribution to consumers. However, surface water with chlorination does not meet applicable Federal and State clean drinking water standards for the number of consumers in Honokohau Valley. Thus, the Department of Water Supply (DWS) is proposing utilization of a groundwater source with chlorination which would meet applicable standards.

We have reviewed the specific literature on the Amway home treatment system which you submitted. While we believe that the system may be useful as a supplemental treatment, no claims were made by the manufacturer that the raw water, after treatment with the Amway home treatment system, would comply with applicable Federal and State health requirements. Moreover, the literature clearly states that the home treatment system is intended for use on cold potable water.

In the State of Hawaii, we understand that there are no home treatment systems for placement in individual homes which have been tested and approved by the State Department of Health. To be in compliance with applicable Federal and State standards, water is required to undergo a 28-day laboratory test so that it does not exceed maximum allowable concentrations of inorganic and organic chemicals, parasites, turbidity, and other contaminants. Thus, any home treatment system would be required to meet this test.

Moreover, each service will be required to be monitored for compliance with State Department of Health requirements. The Department will not be able to provide this kind of monitoring requirements with the personnel having to perform the collection of samples and testing on a daily basis. The Department does not have the manpower to provide this kind of service.

While we appreciate your suggestions, we believe that the proposed project represents the most feasible alternative to provide potable water to the residents of Honokohau Valley. If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dwshkoha\kaai.ltr

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Blvd., Room 3-122
P.O. Box 50088
Honolulu, Hawaii 96850

In reply refer to: DH

NOV - 8 1999

Please Give
Applicant Address
Thank You
ASAP Sam

Mr. Timothy Johns, Chairperson
Hawaii Dept. Land and Natural Resource
P.O. Box 621
Honolulu, HI 96809

Re: Conservation District Use Permit Application for Proposed Honokohau Water Systems Improvements, Honokohau, Maui

Dear Mr. Johns:

The U.S. Fish and Wildlife Service (Service) has reviewed the Conservation District Use Permit Application and Draft Environmental Assessment for Proposed Honokohau Water Systems Improvements (DEA). The project sponsor is the State of Hawaii Department of Land and Natural Resources (DLNR). The proposed project includes the construction of a 33,000 foot waterline, booster pump, and other improvements between Kapalua Wells and Honokohau Gulch and the installation of a 20,000 gallon storage tank on Mahana Ridge. The Service offers the following comments for your consideration.

The Service feels that the DEA does not adequately describe all of the biological resources that may occur within the area or the potential impacts that this project might have on endangered, threatened, or other sensitive species. Although there are no endangered or threatened plants that lie along the proposed pipeline route, recent studies of the endangered Dark-rumped Petrel (*Pterodroma phaeopygia sandwichensis*) have shown this species to fly between the uplands of west Maui and marine foraging areas.

On the island of Kauai, a threatened seabird, the Newell's Shearwater (*Puffinus auricularia newelli*), exhibits a similar nocturnal foraging behavior. Appurtenances such as telephone lines and cables, that are placed along the flight corridors of these birds (stream drainages and gulches) often result in seabird collision and fallout. Our recent communications with the consultants who conducted the biological and archaeological surveys and prepared the DEA for this project, Xamaneek Researchers, indicated that there had been no nocturnal surveys conducted to determine if seabirds passed through the project area. The DEA states that portions of the waterline that pass over streams and gulches will be suspended above them, but it does not provide enough detail for Service reviewers to determine if the suspended pipes will have impacts on the area's avifauna such as the Dark-rumped Petrel noted above. Pipes are typically

suspended over gulches with cable systems. Such cables can present an additional hazard to seabirds and other night-flying birds as they pass through the area. Therefore, these structures need to be made highly visible (e.g., threading the cables through white PVC pipe) in order to allow birds to detect and avoid them.

The Service recommends that the final environmental assessment address the above concerns by determining if seabirds use the project area, by better describing at what height above and by what methods the waterline will be suspended above the stream beds or gulches to be crossed, and by providing mitigation for this portion of the project if it is determined that there is a potential for the project to impact any endangered or threatened species.

The Service encourages the early review of proposed projects and we appreciate the opportunity to provide early input on this proposal. We hope our comments will assist you in the completion of the Final Environmental Assessment and look forward to receiving a copy when it is completed. If you have questions regarding our comments, please contact Fish and Wildlife Biologist David Hopper by phone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,

Robert P. Smith
Pacific Islands Manager

cc: DOFAW, Hawaii

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21, 1999

Mr. Robert P. Smith, Pacific Islands Manager
United States Department of the Interior
Fish and Wildlife Service, Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
P.O. Box 50088
Honolulu, Hawaii 96850

Re: Honokohau Water System Improvements

Dear Mr. Smith:

We have received a copy of your letter dated November 8, 1999 to Timothy Johns pertaining to the subject project. We would like to provide the following response.

Your letter expressed a concern that there may be obstructions resulting from the project which may interfere with the flight paths of the endangered Dark-rumped petrel. We would like to clarify that a portion of the proposed waterline would be placed underground within existing dirt roads. Other segments of the waterline are routed through pastures, trails, gulches and tunnels. These portions of the waterline would be laid on the ground surface. Waterline crossings at streams are proposed to be suspended above the stream bed. Concrete footings above the high water mark would anchor the waterline. There are no plans to erect telephone poles or cables suspended over the gulches. We would like to emphasize that no portion of the waterline is proposed to be erected above the existing vegetation canopy. Thus, we do not believe that the waterline will impose a hazard to seabirds and other night-flying birds should they pass through the area.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director
DC:tav
com\dwshkoha\fws.ltr

97139

LD

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply please refer to
File:

November 15, 1999

99-219/epo

NOV 19 1 38 PM '99

TO: The Honorable Timothy E. Johns, Chairperson
Department of Land and Natural Resources

FROM: Bruce S. Anderson, Ph.D., M.P.H.
Director of Health

SUBJECT: CONSERVATION DISTRICT USE APPLICATION

Applicant: Department of Water Supply, County of Maui
File No.: MA-2952
Request: Honokohau Water System Improvements
Location: Honokohau Valley, Maui
TMK: 4-1-1: por. of 9 and 4-2-1: por. of 1

Thank you for allowing us to review and comment on the subject application. We have the following comments to offer:

Safe Drinking Water Branch

1. The proposed improvements to the Honokohau system does not change its status, and it would still be regulated as a public water system, because the connection point to the existing Kapalua wells, according to figure 2, is before any treatment by the Kapalua water system.

2. Is the installation of high density polyethylene pipe pursuant to Maui County's standard design? Are there any design standards for the placement of polyethylene pipe next to non-potable irrigation waterlines?

3. The existing distribution system in Honokohau valley is identified in the text on page 6 as a 4-inch line after the pressure break tank. In figure 3, the existing pipe is identified as 6-inch pipe.

If you have any questions concerning these comments, please contact Mr. Mark Yonamine of the Safe Drinking Water Branch at 586-4258.

Polluted Runoff Control

Proper planning, design and use of erosion control measures and management practices will substantially reduce the total volume of runoff and limit the potential impact to the coastal waters from polluted runoff. Please refer to the *Hawaii's Coastal Nonpoint Source Control Plan*, pages III-117 to III-119 for guidance on these management measures and practices for specific project activities. To inquire about receiving a copy of this plan, please call the Coastal Zone Management Program in the Planning Office of the Department of Business and Economic Development and Tourism at 587-2877.

The following practices are suggested to remove solids and associated pollutants in runoff during and after heavy rains:

1. Sediment basins.

2. Sediment traps.

3. Fabric filter fences.

4. Straw bale barriers.

5. Vegetative filter strips.

Any questions regarding these matters should be directed to the Polluted Runoff Control Program in the Clean Water Branch at 586-4309.

c: SDWB
CWB

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21, 1999

Bruce S. Anderson, Ph.D., M.P.H.
Director
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Re: Honokohau Water System Improvements

Dear Dr. Anderson:

We have received a copy of your November 15, 1999 memorandum to Timothy Johns of the Department of Land and Natural Resources pertaining to the subject project. We would like to provide the following response.

Safe Drinking Water Branch

1. We acknowledge that the proposed project would be regulated as a public water system.

2. When determined applicable, the Department has used high density polyethylene (HDPE) pipe for installations related to the Department's projects. Applicable use of (HDPE) pipe is made on a case by case basis.

3. There is an existing 6-inch line after the pressure break tank in Honokohau Valley. Figure 3 hs been revised accordingly in the Final EA.

Polluted Runoff Control

It is noted that excavation associated with the project is anticipated to be minimal. Waterline segments which are proposed to be placed underground are limited to those portions within existing dirt roads. Other waterline segments through pastures, trails, gulches and tunnels will be placed on the ground surface. We do not believe that the quality and quantity of runoff in the area will be affected to any significant degree due to the project.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dwshkoha\doh.ltr

31731

JAMES "KIMO" APANA
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

RON H. RISKA, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

ANDREW M. HIROSE
Solid Waste Division

November 15, 1999

Mr. Timothy E. Johns
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

SUBJECT: CONSERVATION DISTRICT USE PERMIT APPLICATION
HONOKOHAU WATER SYSTEM IMPROVEMENTS
TMK: (2) 4-1-001:009 (PORTION) & 4-2-001:001 (PORTION)
CDUP MA-2952

We reviewed the subject application and have no comment.

If you have any questions, please call David Goode at 270-7845.

Sincerely,

for CHARLES JENCKS
Director of Public Works
and Waste Management

DG:msc/mt
S:\LUCA\CZM\HONOKO.WPD

References

References

Community Resources, Inc., Maui County Community Plan Update Program Socio-Economic Forecast Report, January 1994.

County of Maui, The General Plan of the County of Maui, 1990 Update.

County of Maui, Wailuku-Kahului Community Plan, 1987.

Scott, Michael J., et al., Forest Bird Communities of the Hawaiian Islands: Their Dynamics, Ecology and Conservation, Studies in Avian Biology No. 9, 1986.

State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development, Kahakuloa Water Study, Report Number: R54, December 1977.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition, 1983.

U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii, 1972.

Wilson Okamoto & Associates, Inc., Maui Community Plan Update Infrastructure Assessment, September 1992.

Appendices

Appendix A

Botanical Resources Survey

BIOLOGICAL RESOURCES SURVEY FOR THE PROPOSED HONOKOHAU WATER SYSTEM IMPROVEMENTS PROJECT WEST MAUI, HAWAI'I

Prepared for:

Department of Water Supply
County of Maui
Wailuku, Maui

Prepared by

David Paul
Xamanek Researches
Pukalani, Maui

June 1998

BIOLOGICAL RESOURCES SURVEY

SUMMARY:

No vascular plant species was found in the project area that has protection under Federal or State Law. With the exception of the Pacific golden plover (a migratory bird), no avian or mammalian animal species were found in the project area that have protection under Federal or State Law. Therefore there are no biological resources found in the proposed corridor for the project that require consideration for planning, as long as impacts from the actions of the project are kept to a minimum. The County of Maui plans to place plastic waterline (mostly 2 inches in diameter) on the surface of the proposed corridor. It is recommended that this pipeline cross streambeds aerially in order to minimize potential impacts to the environment.

INTRODUCTION:

On October 19 & 20, 1998, and May 24, 1999, a Biological Resources Survey of the area proposed for the Honokohau Waterline Project in West Maui, Hawai'i, was conducted by David Paul and Erik Fredericksen of Xamanek Researches. Portions of the proposed corridor had been previously inspected by Erik Fredericksen on 6 October 1998. The proposed corridor for the waterline project begins near Honokahua Gulch, crosses Mokupea Gulch, Honolua Gulch, Papua Gulch and Pohakupule Gulch and ends at an existing waterline that goes into Honokohau Valley (see Map 2). The entire length of the proposed corridor for the project crosses previously disturbed areas including roadways, cattle pastures, access trails, shoulders of water ditch systems, and through two tunnels.

The survey provided information necessary to describe the vegetation and macrofauna in the area and determine if any species of vascular plant or animal found there is protected under Federal or State Law, and would require consideration for planning in the project.

METHODS:

The survey was conducted by traversing the entire length of the proposed project corridor and recording every vascular plant, avian, and mammalian species encountered in the area. The species of plants occurring there were placed into Unique Biological Communities. Identifying unique communities helps to locate areas that support rare (legally protected) species.

The survey also worked to identify any stream or wetland habitats in the project area.

Each plant species was identified by using keys and descriptions from *In Gardens of Hawai'i* (Neal, M.C., 1965), *PTERIDOPHYTES OF HAWAI'I: Identification Key* (Wagner, W.H., & Wagner, F.S., 1992), *Manual of the Flowering Plants of Hawai'i* (Wagner, W.L., et al, 1990), and *Ferns of Hawai'i* (Valier, K. 1995).

Each avian species was identified by using descriptions from *A Field Guide To The Birds of Hawaii and the Tropical Pacific.* (Pratt, H.D., 1987).

Each mammalian species was identified by using descriptions from *Mammals in Hawai'i.* (Tomich, P.Q., 1986).

Unique Biological Communities were identified using descriptions from *Vegetation* (Gagne & Cuddihy, 1990).

Plants which are given legal protection were reviewed *from Listed and Candidate Species, as Designated Under the U.S. Endangered Species Act: Hawaiian Islands Plants – Updated January 9, 1998* (USFWS, 1998).

Known locations of legally protected species were inquired about through The Nature Conservancy's *Hawaiian Islands Natural Heritage Program* (Gon, S., Personal Communication, Oct. 19, 1998), and the *Draft Recovery Plan for the Multi-Island Plants* (USFWS, 1998).

RESULTS:

The species of vascular plants which were encountered during the Biological Resources Survey (Oct. 19 & 20, 1998, and May 24, 1999) are members of Unique Biological Communities. Those communities may contain rare species that have protection under Federal or State Law. Therefore, each species of vascular plant, avian, and mammal encountered during the Biological Resources Survey was placed into a *List of Vascular Plants* (Table 1.), *List of Avians* (Table 2.), and *List of Mammals* (Table 3.) to represent each distinct form of life and show if any legally protected species occurs in the project area which requires consideration for planning. The following sections describe the vegetation and macrofauna of the project area in detail.

Unique Biological Communities:

Four communities were identified in the project area; Lowland Dry Forest, Lowland Mesic Grassland, Lowland Mesic Shrubland, and Lowland Mesic Forest.

Lowland Dry Forest is dominated by *lama* (Diospyros sandwicensis) with *'akia* (Wikstroemia oahuensis), *'akoko* (Chamaesyce multiformis), *alahe'e* (Canthium odoratum), *'ala'ala wai nui* (Peperomia leptostacya), *'ala'ala wai nui pua ki* (Plectranthus parviflorus), and *'ilima* (Sida fallax) commonly found in the understory. A single vine of *maile* (Alyxia oliviformis) was observed; and *'ohi'a* (Metrosideros polymorpha) is an occasional canopy tree. This community is the least extensive

community found in the project area, and is located along the outer slopes and ridges of Honolua and Papua Gulches.

Lowland Mesic Grassland is found in two types in the project area, both of which are disturbance communities. The most extensive being dominated by pastures of Hilo grass (Paspalum conjugatum), violet crabgrass (Digitaria violescens), Glenwood grass, (Sacciolepis indica), yellow foxtail (Setaria gracilis), and broomsedge (Andropogon virginicus); and is located on tablelands above and between Honokahua, Mokupea, and Honolua Gulches. Within this community cattle (Bos taurus), horses (Equus caballus caballus), and feral pigs (Sus scrofa scrofa) were observed grazing. Evidence (feces) of feral cats (Felis catus) was found Lowland Mesic Grassland is found in two types in the project area, both of which in the pastures, and the Pacific golden plover or *kolea* (Pluvialis dominica pacifica), a migratory bird was encountered in the pastures in October.

The other grassland is found along access trails, roadways, and shoulders of water ditch systems in the proposed project corridor, and is dominated by molasses grass (Melinus minutifolia). The grassland communities in the project area are highly impacted and lacking in native (indigenous & endemic) vegetation.

Lowland Mesic Shrubland is dominated by *'a'ali'i* (Dodonaea viscosa), *'akia* (Wikstroemia oahuensis), *alahe'e* (Canthium odoratum), and *uluhe* (Dicranopteris linearis). *'Ohi'a* (Metrosideros polymorpha), *lama* (Diospyros sandwicensis), *'akoko* (Chamaesyce multiformis), *'ama'u* (Sadleria cyatheoides), and Hawaiian cliff sedge (Carex wahuensis) are common associates of this community. *'Akia papa* (Wikstroemia uva-ursi) is occasional on ridges of Honolua Gulch; *neneleau* (Rhus sandwicensis) and *'iliahi* (Santalum ellipticum) are uncommon on ridges of Honokohau Valley. This community is extensive on exposed ridges and slopes from Mokupea Gulch to Pohakupule Gulch.

Lowland Mesic Forest is represented in the project area by two general types. At Mokupea Gulch, *koa* (Acacia koa) is the dominant tree at the inner reaches of the project area on table lands in a forest highly impacted by Christmasberry (Schinus terebinthifolius), Formosan *koa* (Acacia confusa), and Moreton Bay fig (Ficus macrophylla). *Alahe'e* (Canthium odoratum) and *uluhe* (Dicranopteris linearis) are dominant in the understory, with *olopua* (Nestegis sandwicensis) and *ni'ani'au* (Neprolepis exaltata) being common associates. An occasional patch of *palapalai* (Microlepia strigosa) was found, and a single tree of *hao* (Rauvolfia sandwicensis) was located at the top of the southern slope of the gulch near the end of the defined project corridor which has the site of the proposed water tank.

In Pohakupule Gulch and the upper portion of Honokohau Valley, the mesic forest community is dominated by *lama* (Diospyros sandwicensis) and *'ohi'a* (Metrosideros polymorpha). *'Akia* (Wikstroemia oahuensis), *alahe'e* (Canthium odoratum), *uluhe* (Dicranopteris linearis),

and *'a'ali'i* (Dodonaea viscosa) are commonly found, with *alahe'e* and *'a'ali'i* becoming arborescent in many locations. Several trees of *ho'awa* (Pittosporum glabrum) were observed in Papua Gulch, just past the *mauka* end of the first tunnel which the project corridor runs through. Several trees of *maua* (Xylosma hawaiiense) were located at the end of the project area in Honokohau Valley, just past the *mauka* end of the second tunnel. A small stand of mature *hala* (Pandanus tectorius) was noted to the north of Honolua Ditch, part of Honokahua District (SIHP 50-50-01-1591). *Hala* was not observed elsewhere in the corridor. The presence of these *hala* trees in the valley area suggests that they may be associated with an indigenous habitation area in the general vicinity of the project corridor.

Within the lesser sloping areas of the mesic forest, several plants have been cultivated in the past and are naturalized; including *'ulu* (Artocarpus altilis), *ki* (Cordyline fruticosa), *'ohi'a 'ai* (Syzygium malaccense), mango (Mangifera indica), coffee (Coffea arabica), and cinnamon (Cinnamomum verum).

The mesic forest community is the most extensive and diverse habitat in the project area. It contains the greatest number of indigenous, endemic, and Polynesian plants, but it also contains the most invasive alien species.

Rats (Rattus sp.) were seen in this community, as well as evidence of their feeding on *kukui* (Aleurites moluccana) nuts.

Most of the animal species encountered were located in pastures of the mesic grassland community, although alien avian species, such as mynahs (Acridotheres tritis), Northern cardinals (Cardinalis cardinalis), spotted doves (Streptopelia chinensis), zebra doves (Geopelia striata), Japanese white-eyes (Zosterops japonicus), and house finches (Carpodacus mexicanus) were found thoughout the project area, but none were found in any sizeable numbers.

Rare Plants:

For the purpose of this report, Rare Plants are those plants which have protection under Federal or State Law and are Listed as Endangered or Threatened by the U.S Fish & Wildlife Service. These plants require consideration for planning in development projects.

No species of vascular plant was found in the project area that has protection under Federal or State Law. Therefore, there are no Botanical Resources found in the proposed project corridor that require consideration for planning, as long as the impacts from the actions of the project are kept to a minimum.

Historical locations of Rare Plants in the vicinity of the project corridor are unknown (Gon, S., Personal Communication, Oct. 19, 1998), although three Listed Endangered plant species have been found above and below the project area.

Haha (Cyanea grimesiana ssp. grimesiana) a rare rainforest lobeliad was previously found above 2,000 ft. elevation in Honokohau Gulch, approximately five miles mauka of the project area (Rock, J.F., 1919, & USFWS, 1998). This species is no longer known to exist there.

'Awiwi (Centaurium sebaeoides) is a rare coastal herb previously found at Honolua Bay, well makai of the project area (USFWS, 1998). It is no longer known to exist there.

'Ohai (Sesbania tomentosa) is a rare coastal and lowland shrub currently found at Nakalele Point, a few miles makai and North from the project area (USFWS, 1998). This species is known to occur in arid lowland habitats. This plant species was not found in the survey area.

Rare Animals:

The only historical location of Listed Endangered animals is one account of a rare tree snail known as *kahuli* (Achatinella sp.) which was found above 3,000 ft. elevation in Honokohau Valley, more than five miles mauka of the project area (Gon, S., Personal Communication, 1998). This species is not known to exist there currently.

The only animal species encountered in the project area that has legal protection is the Pacific golden plover or *kolea* (Pluvialis dominica pacifica). The Pacific golden plover is a migratory bird species that inhabits low-lying grasslands, roadsides, sandy beaches, and mudflats (Pratt, H.D., et al, 1987). It is found in Hawai'i during Spring and Fall as a stop-over on it's way to Alaska and New Zealand. It was encountered in the project area in October, 1998 on pasturelands.

The Pacific golden plover commonly inhabits areas close to humans, and quickly repositions itself when approached by humans or other animals. It is not Endangered.

Stream and Wetland Habitats:

Several intermittent streams were crossed where the proposed project corridor passes through gulches. Intermittent streams are flowing only after periods of substantial rainfall. These streambeds were lined with cobble-stones, and there were no pools of water found within the streams, in or adjacent to the project area.

Downhill from the project area the stream habitats are bordered by pineapple (Ananas comosus) fields at the tops of the gulches.

There were no wetland habitats found anywhere in the project area, or adjacent to it.

Lists of Plants and Animals:

The List of Vascular Plants found during the Biological Resources Survey (Oct. 19 & 20, 1998, and May 24, 1999) is displayed in Table 1., at the end of this report.

The List of Avians encountered during the survey is displayed in Table 2., and the List of Mammals is displayed in Table 3.

The distribution of species found in the project area is Endemic, Indigenous, Polynesian, or Alien; and cult. means the plant is actively being cultivated.

RECOMMENDATIONS:

No species of vascular plant was found in the project area that has protection under Federal or State Law.

Although legally protected plants were not found in the study area, they have the potential of establishing in all of the Unique Biological Communities in the project area, with the exception of the Lowland Mesic Grassland habitats, due to ongoing disturbances.

The only animal species encountered in the project area that has legal protection was the Pacific golden plover or *kolea* (Pluvialis dominica pacifica). The Pacific golden plover is a migratory bird species which is seasonal in Hawai'i and is not Endangered. It inhabits areas close to humans, and quickly repositions itself when humans or other animals approach it. Therefore the impacts to this animal, from the actions of the project, should be minimal.

There are no biological resources found in the project corridor that require consideration for planning, as long as impacts to the proposed corridor be kept to a minimum.

The stream habitats found in the project area were intermittent and did not have any standing bodies of water at the time of the survey. However, to avoid impacts to the stream during periods of substantial rainfall, the proposed 2-inch waterline should be suspended aerially where the corridor for the project crosses the intermittent streams. This installation methodology will mitigate potential negative impacts to the stream habitats.

The entire proposed corridor for the project runs across previously disturbed areas consisting of access trails, roadways, cattle pastures, shoulders of water ditch systems, and through two tunnels. Therefore, impacts to the environment from the proposed actions of the project should be minimal.

REFERENCES:

Gagne, W.C. & Cuddihy, L.W. 1990. *Vegetation* in Wagner, W.L., et al, Eds. 1990. *Manual of the Flowering Plants of Hawai'i.* University of Hawai'i Press. Honolulu, HI. Vol. 1 pp. 45-114.

Gon, Sam. Oct. 19, 1998. "The Nature Conservancy: Hawaiian Islands Natural Heritage Program." Personal Communication.

Neal, Marie C. 1965. *In Gardens of Hawai'i.* BMSP No. 50. Bishop Museum Press. Honolulu, HI. 924p.

Pratt, H.D., Bruner, P.L., & Berrett, D.G. 1987. *A Field Guide To The Birds of Hawaii and the Tropical Pacific.* Princeton University Press. Princeton, NJ. 409p.

Rock, J.F. 1919. *A Monographic Study of the Hawaiian Species of the Tribe Lobelioideae, Family Campanulaceae.* BMSP 7. Bishop Museum Press. Honolulu, HI. 395p.

Tomich, P.Q. 1986. *Mammals in Hawai'i.* BMSP 76. Bishop Museum Press. Honoluiu, HI. 375p.

USFWS. 1998. *Listed and Candidate Species, as Designated Under the U.S. Endangered Species Act.: Hawaiian Islands Plants- Updated January 9, 1998.* USFWS, Pacific Islands Office. Honolulu, HI. 18p.

USFWS. 1998. *Draft Recovery Plan for the Multi-Island Plants.* USFWS. Portland, OR. 200p.

Wagner, W.H.,& Wagner, F.S. 1992. *PTERIDOPHYTES OF HAWAI'I: Identification Key.* Privately Published. Ann Arbor, Michigan. 41p.

Wagner, W.L., Herbst, D.R., & Sohmer, S.H. 1990. *Manual of the Flowering Plants of Hawai'i.* University of Hawai'i Press. Honolulu, HI. 2 vol. 1853p.

Valier, Kathy. 1995. *Ferns of Hawai'i.* University of Hawai'i Press. Honolulu, HI. 88p.

TABLE 1

List of Vascular Plants

PTERIDOPHYTES

FAMILY Genus/species	Common Name	Distribution
ADIANTACEAE	Maidenhair Fern Family	
Adiantum hispidulum Sw.	five finger maidenhair	A
Adiantum raddianum	*'iwa'iwa*	A
Cheilanthes decipiens	*'iwa'iwa*	E
Pityrogramma austroamericana	gold fern	A
ASPLENIACEAE	Spleenwort Fern Family	
Asplenium nidus L	*hoe a Maui*	I
BLECHNACEAE	Blechnum Fern Family	
Blechnum occidentale L.	blechnum	A
Sadleria cyatheoides Kaulf.	*'ama'u*	E
DENNSTAEDTIACEAE	Hay-scented Fern Family	
Microlepia strigosa (Thunb.)Presl	*palapalai*	I
Pteridium decompositum (Gaud.)Tryon	*kilau*	E
GLEICHENIACEAE	Wing Fern Family	
Dicranopteris linearis (Burm.)Underw.	*uluhe*	I
LINDSAEACEAE	Lace Fern Family	
Odontosoria chinensis (L.)J.Sm.	*pala'a*	I
LYCOPODIACEAE	Club Moss Family	
Palhinhaea cernua (L.)Fran.& Carv. Vasc.	*wawae'iole*	I
NEPHROLEPIDACEAE	Sword Fern Family	
Nephrolepis exaltata (L.)Schott. var. hawaiiensis	*ni'ani'au*	E
Nephrolepis multiflora	sword fern	A
OPHIOGLOSSACEAE	Adder's Tongue Fern Family	
Ophioderma pendula	*puapuamoa*	I
POLYPODIACEAE	Common Fern Family	
Lepisorus thunbergianus	*pakahakaha*	I
Phlebodium aureum (L.)J.Sm.	*laua'e haole*	A
Phymatosorus scolopendrium	*laua'e*	A

PSILOTACEAE		Wisk Fern Family	
	Psilotum nudum (L.)Beauv.	*moa*	I
THELYPTERIDACEAE		Maiden Fern Family	
	Thelypteris dentata	oak fern	A

GYMNOSPERMS

ARAUCARIACEAE		Island Pine Family	
	Araucaria columnaris (Forst.)Hook.	Cook Island pine	A
	Araucaria cunninghamii Ait.ex Lamb.	hoop pine	A
	Araucaria heterophylla (Salisb.)Franco	Norfolk Island pine	A
CUPRESSACEAE		Cypress Family	
	Cupressus arizonica	Arizona Cypress	A

MONOCOTYLEDONS

AGAVACEAE		Agave Family	
	Cordyline fruticosa (L.)Chev.	*ki*	P
ARACEAE		Arum Family	
	Cyrtosperma chamissonis (Schott)Merr.	swamp taro	A
ARECACEAE		Palm Family	
	Cocos nucifera L.	coconut	P cult.
CANNACEAE		Canna Family	
	Canna indica L.	*ali'ipoe*	A
COMMELINACEAE		Spiderwort Family	
	Commelina diffusa Burm.	*honohono*	A
CYPERACEAE		Sedge Family	
	Carex wahuensis ssp. wahuensis Mey.	Hawaiian cliff sedge	E
	Cyperus papyrus L.	papyrus	A
	Fimbristylis dichotoma (L.)Vahl.	*mau'u 'aki'aki*	I
	Kyllinga brevifolia Rottb.	*kili'o'opu*	A
	Macherina mariscoides (Gaud.)Kern	*'uki*	I
	Pycreus polystacyos ssp. polystacyos (Rottb.)Beauv.	nutsedge	I
DIOSCOREACEAE		Yam Family	
	Dioscorea bulbifera L.	*hoi*	P

MUSACEAE	Banana Family	
Musa paradisiaca ssp. normalis (L.)Ktze.	plantain	A cult.
ORCHIDACEAE	Orchid Family	
Spathoglottis plicata Blume	Philippine ground orchid	A
PANDANACEAE	Screwpine Family	
Freycinetia arborea Gaud.	*'ie'ie*	I
Pandanus tectorius Park.ex Z	*hala*	I
POACEAE	Grass Family	
Andropogon virginicus L.	broomsedge	A
Chloris radiata (L.)Sw.	radiate fingergrass	A
Chloris virgata Sw.	feather fingergrass	A
Coix lachryma-jobi L.	*pu'ohe'ohe*	A
Cynodon dactylon (L.)Pers.	*manienie*	A
Digitaria insularis (L.)Mek.ex Ek.	sourgrass	A
Digitaria violascens Link	violet crabgrass	A
Melinus minutiflora Beauv.	molasses grass	A
Oplismenus hirtellus (L.)Beauv.	*honohono*	A
Panicum maximum Jacq.	Guinea grass	A
Paspalum notatum flugge	Bahia grass	A
Paspalum conjugatum Berg.	Hilo grass	A
Paspalum scrobiculatum L.	*mau'u laiki*	I
Pennisetum purpureum Schum.	elephant grass	A
Rhynchelytrum repens (Willd.)Hubb.	Natal redtop	A
Saccharum officinarum L.	white Tanna sugarcane	A
Sacciolepis indica (L.) Chase	Glenwood grass	A
Setaria gracilis Kunth	yellow foxtail	A
Sporobolus indicus (L.)R.Br.	smutgrass	A
ZINGIBERACEAE	Ginger Family	
Hedychium coronarium Konig	white ginger	A
Zingiber zerumbet (L.)Sm.	*'awapuhi*	P

DICOTYLEDONS

ACANTHACEAE	Acanthus Family	
Thunbergia fragrans Roxb.	white thunbergia	A
ANACARDIACEAE	Mango Family	
Mangifera indica L.	mango	A
Rhus sandwicensis A.Gray	*neneleau*	E
Schinus terebinthifolius Raddi	Christmasberry	A

APIACEAE	Parsley Family	
Centella asiatica (L.)Urb.	Asian pennywort	A
Ciclospermum leptophyllum (Pers.)Sprg.	fir-leaved celery	A
APOCYNACEAE	Dogbane Family	
Alyxia oliviformis Gaud.	*maile*	E
Rauvolfia sandwicensis A.DC	*hao*	E
ARAILIACEAE	Ginseng Family	
Schefflera actinophylla (Endl.)Harms	octopus tree	A
ASTERACEAE	Sunflower Family	
Acanthospermum australe (Loef.)Ktze.	spiny-bur	A
Adenostemma laevina (L.)Ktze.	*kamanamana*	I
Ageratina adenophora (Sprg.)King & Robs.	*pamakani*	A
Ageratina riparia (Rgl.)King & Robs.	*pamakani*	A
Ageratum houstonianum Mill.	*maile hohono*	A
Bidens pilosa L.	*ki nehe*	A
Conyza bonariensis (L.)Cronq.	hairy horseweed	A
Conyza canadensis (L.)Cronq.	horseweed	A
Crassocephalum crepidioides (Benth.)Mr.	*pualele*	A
Emilia sonchifolia (L.)DC	Flora's paintbrush	A
Erectites valerianifolia (L.)DC	*pualele*	A
Gnaphalium japonicum Thunb.	cudweed	A
Hypochoeris radicata L.	cat's ear	A
Pluchea symphytifolia (Mill.)Gillis	sourbush	A
Synedrella nodiflora (L.)Gaertn.	nodeweed	A
Vernonia cineria (L.)Less.	little ironweed	A
Youngia japonica (L.)DC	Asian hawksbeard	A
BUDDLEIACEAE	Buttefly-bush Family	
Buddleia asiatica Lour.	dogtail	A
CARICACEAE	Papaya Family	
Carica papaya L.	papaya	A
CARYOPHYLLACEAE	Pink Family	
Drymaria cordata (L.)Willd.ex Rm.& Schlt.	*pipili*	A
CASUARINACEAE	She-oak Family	
Casuarina equisetifolia L.	ironwood	A
CONVULVULACEAE	Morning Glory Family	
Ipomoea indica (Burm.)Merr.	*koali*	I
Ipomoea violacea L.	moon flower	A

CRASSULACEAE	Orpine Family	
Kalanchoe pinnata (Lam.)Pers.	air plant	A
EBENACEAE	Persimmon Family	
Diospyros sandwicensis (A.DC)Fosb.	*lama*	E
EPACRIDACEAE	Epacris Family	
Styphelia tameiameiae (Cham.& Schlech.)F.v.Muell.	*pukiawe*	I
EUPHORBIACEAE	Poinsettia Family	
Aleurites moluccana (L.)Willd.	*kukui*	P
Chamaesyce hypericifolia (L.)Millsp.	graceful spurge	A
Chamaesyce multiformis (Hook.& Arn.)Croi.& Deg.	*'akoko*	E
Phyllanthus debilis Klein ex Willd.	niruri	A
Ricinus communis L.	*koli*	A
FABACEAE	Bean Family	
Acacia confusa Merr.	Formosan *koa*	A
Acacia koa A.Gray	*koa*	E
Chamaecrista nictitans (L.)Moench	partridge pea	A
Crotalaria pallida Aiton	smooth rattlepod	A
Desmanthus virgatus (L.)Willd.	slender mimosa	A
Desmodium tortuosum (Sw.)DC	Florida beggarweed	A
Desmodium triflorum (L.)DC	tick clover	A
Desmodium uncinatum (Jacq.)DC	begger's tick	A
Glycine wightii (Wht.& Arn.)Verdc.	beggarweed	A
Indigofera spicata Forssk.	creeping indigo	A
Indigofera suffruticosa Mill.	indigo	A
Leucaena leucocephala (Lam.)de Wit	*koa haole*	A
Macroptilium lathyroides (L.)Urb.	cow pea	A
Mimosa pudica L.	sleepy grass	A
Paraserianthes falcataria (L.)Niel.	albizia	A
Senna septemtrionalis (Viv.)Irw.& Barn.	*kolomona*	A
FLACOURTIACEAE	Flacourtia Family	
Xylosma hawaiiense Seem.	*maua / a'e*	E
LAMIACEAE	Mint Family	
Plectranthus parviflorus Willd.	*'ala'ala wai nui pua ki*	I
LAURACEAE	Laurel Family	
Cassytha filiformis L.	*kauna'oa*	I
Cinnamomum verum Presl	cinnamon	A
Persea americana Mill.	avocado	A

LYTHRACEAE	Loosestrife Family	
Cuphea carthagenensis (Jacq.)Macbr.	tarweed	A
MALVACEAE	Hibiscus Family	
Abutilon grandifolium (Willd.)Sweet	false *'ilima*	A
Malvaviscus penduliflorus DC	Turk's cap	A
Sida fallax Walp.	*'ilima*	I
Sida rhombifolia L.	false *'ilima*	A
MELASTOMATACEAE	Melastoma Family	
Tibochina herbacea (DC)Cogn.	glorybush	A
MENISPERMACEAE	Moonseed Family	
Cocculus trilobus (Thunb.)DC	*huehue*	I
MORACEAE	Fig Family	
Ficus macrophylla Desf.	Moreton Bay fig	A
Artocarpus altilis (Parkins.)Fosb.	*'ulu*	A
MYRSINACEAE	Myrsine Family	
Ardisia elliptica Thunb.	shoebutton tree	A
MYRTACEAE	Myrtle Family	
Eucalyptus globulus Labill.	blue gum	A
Eucalyptus robusta Sm.	swamp mahogany	A
Eucalyptus saligna Sm.	Sydney blue gum	A
Eucalyptus sideroxylon Cunn.ex Woolls	red ironbark	A
Melaleuca quinquenervia (Cav.)Blake	paperbark	A
Metrosideros polymorpha Gaud.	*'ohi'a*	E
var. glaberrima		
var. incana		
var. macrophylla		
var. polymorpha		
Psidium cattleianum Sabine	*waiawi*	A
Psidium guajava L.	guava	A
Syzygium cumini (L.)Skeels	Java plum	A
Syzygium jambos (L.)Alston	rose apple	A
Syzygium malaccense (L.)Merr.& Perry	*'ohi'a 'ai*	P
OLEACEAE	Olive Family	
Fraxinus uhdei (Wenzig)Lingelsh.	tropical ash	A
Nestegis sandwicensis	*olopua*	E
(A.Gray)Deg., Deg.,& Johnson		
ONAGRACEAE	Evening Primrose Family	
Ludwigia octovalis (Jacq.)Raven	*kamole*	P

OXALIDACEAE	Wood Sorrel Family	
Oxalis corniculata L.	*'ihi*	P
PASSIFLORACEAE	Passion Flower Family	
Passiflora laurifolia L.	yellow granadilla	A
Passiflora suberosa L.	*huehue haole*	A
PIPERACEAE	Black Pepper Family	
Peperomia leptostacya Hook.& Arn.	*'ala 'ala wai nui*	I
PITTOSPORACEAE	Pittosporum Family	
Pittosporum glabrum Hook.& Arn.	*ho 'awa*	E
PLANTAGINACEAE	Plantain Family	
Plantago major L.	*laukahi*	A
POLYGALACEAE	Milkwort Family	
Polygala paniculata L.	milkwort	A
PROTEACEAE	Protea Family	
Greyvillea robusta Cunn.ex R.Br.	silver oak	A
ROSACEAE	Rose family	
Osteomeles anthyllidifolia (Sm.)Lindl.	*'ulei*	I
Rubus rosifolius Sm.	thimbleberry	A
RUBIACEAE	Coffee Family	
Canthium odoratum (Forst.)Seem.	*alahe'e*	I
Coffea arabica L.	coffee	A
Morinda citrifolia L.	*noni*	P
SANTALACEAE	Sandalwood Family	
Santalum ellipticum Gaud.	*'iliahi*	E
SAPINDACEAE	Soapberry Family	
Dodonaea viscosa Jacq.	*'a'ali'i*	I
SOLANACEAE	Nightshade Family	
Physalis peruviana L.	*poha*	A
Solanum capsicoides All.	*kikania*	A
STERCULIACEAE	Chocolate Family	
Waltheria indica L.	*'uhaloa*	I

THYMELAEACEAE	*'Akia* Family	
Wikstroemia oahuensis var. oahuensis (A.Gray)Rock	*'akia*	E
Wikstroemia uva-ursi A.Gray	*'akia papa*	E
TILIACEAE	Linden Family	
Triumfetta semitriloba Jacq.	bur bush	A
URTICACEAE	Nettle Family	
Pipturus albidus (Hook.& Arn.)A.Gray	*mamaki*	E
VERBENACEAE	Verbena Family	
Lantana camara L.	lantana	A
Stachytarpheta jamaicensis (L.)Vahl	Jamaican vervain	A
Stachytarpheta urticifolia (Salisb.)Sims	nettle leaved vervain	A
Verbena litoralis Kunth	*ha'uoi*	A

TABLE 2

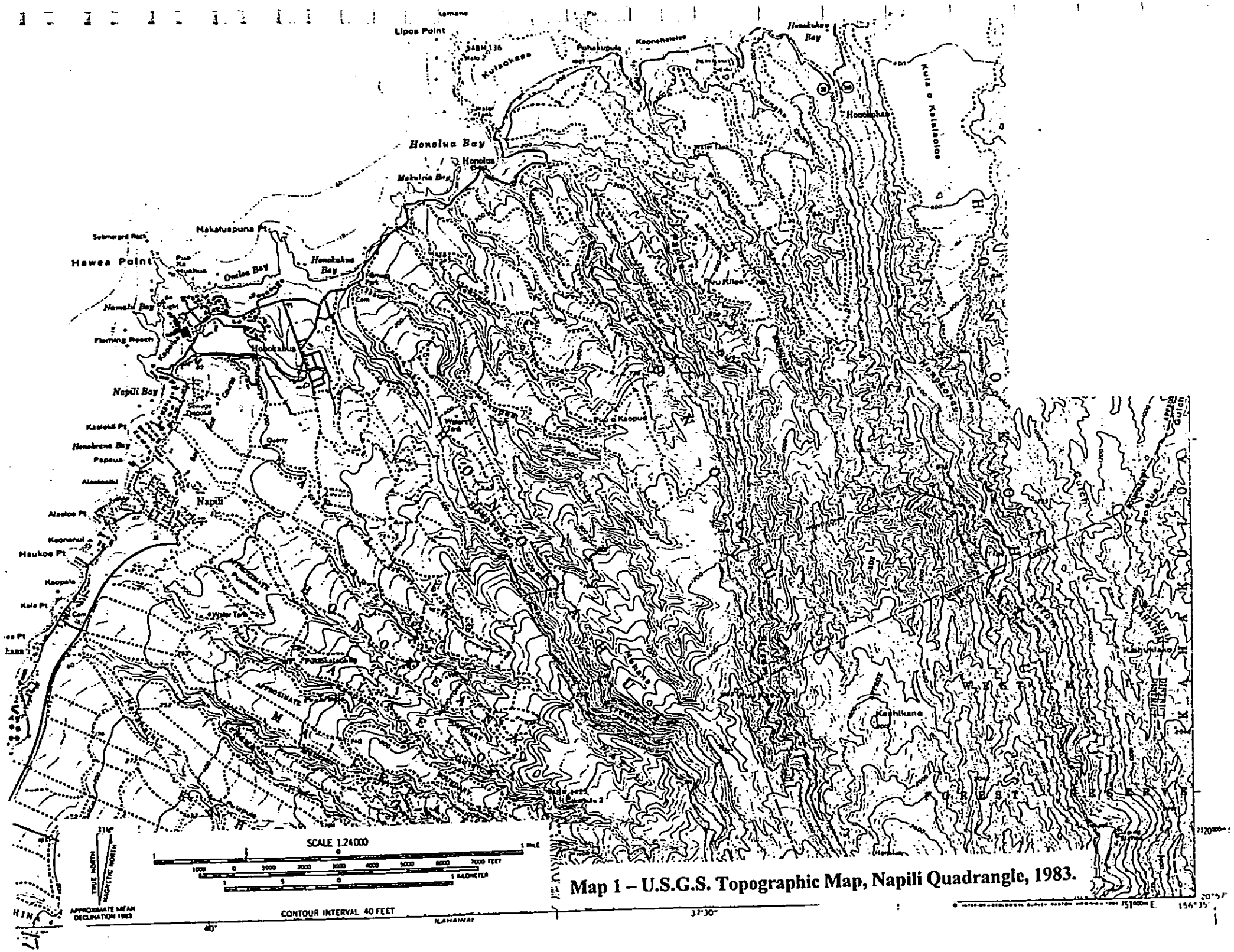
List of Avians

Acridotheres tritis	mynah	A
Cardinalis cardinalis	Northern cardinal	A
Carpodacus mexicanus	house finch	A
Geopelia striata	zebra dove	A
Pluvialis dominica pacifica	Pacific golden plover	I
Streptopelia chinensis	spotted dove	A
Zosterops japonicus	Japanese white-eye	A

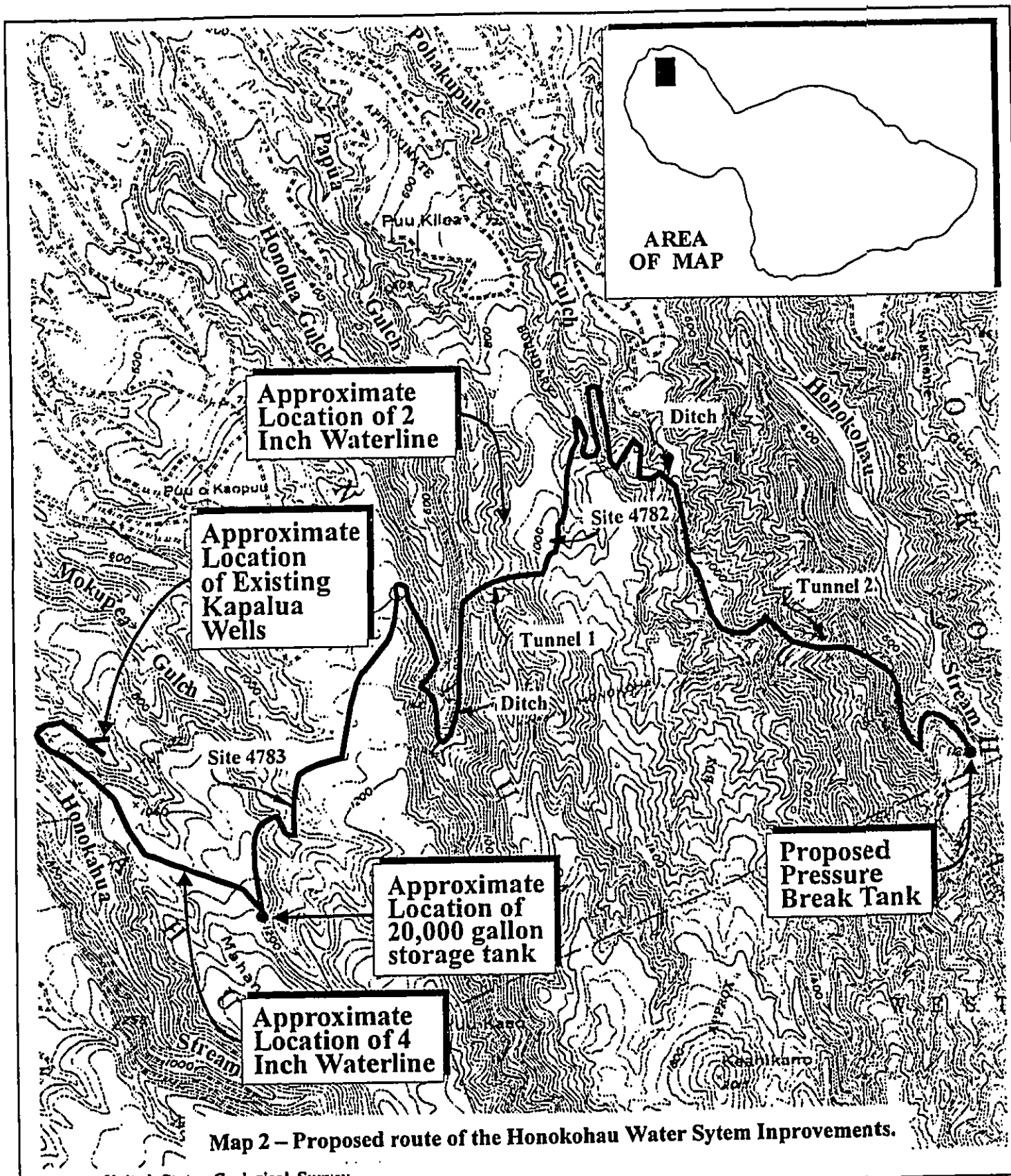
TABLE 3.

List of Mammals

Bos taurus	cattle	A
Equus caballus caballus	horse	A
Felis catus	feral cat	A
Rattus sp.	rat	A
Sus scrofa scrofa	feral pig	A



Map 1 – U.S.G.S. Topographic Map, Napili Quadrangle, 1983.



Map 2 – Proposed route of the Honokohau Water Sytem Inprovements.

Source: United States Geological Survey

Figure 1

Honokohau Water System Improvements

Regional Location Map

MUNEKIYO ARAKAWA & HIRAGA, INC.

18

Prepared for: County of Maui, Dept. of Water Supply

Appendix B

Archaeological Inventory Survey

ARCHAEOLOGICAL INVENTORY SURVEY FOR THE PROPOSED HONOKOHAU WATER SYSTEM IMPROVEMENT PROJECT, HONOKOHAU, HONOLUA, AND HONOKAHUA *AHUPUA`A*, KA`ANAPALI DISTRICT MAUI ISLAND (TMK 4-2-01: por. 1, por. 9)

Prepared for:

County of Maui
Department of Water Supply
Wailuku, Hawaii

DRAFT

Prepared by:

Xamanek Researches
Pukalani, Hawaii

Erik M. Fredericksen
Demaris L. Fredericksen

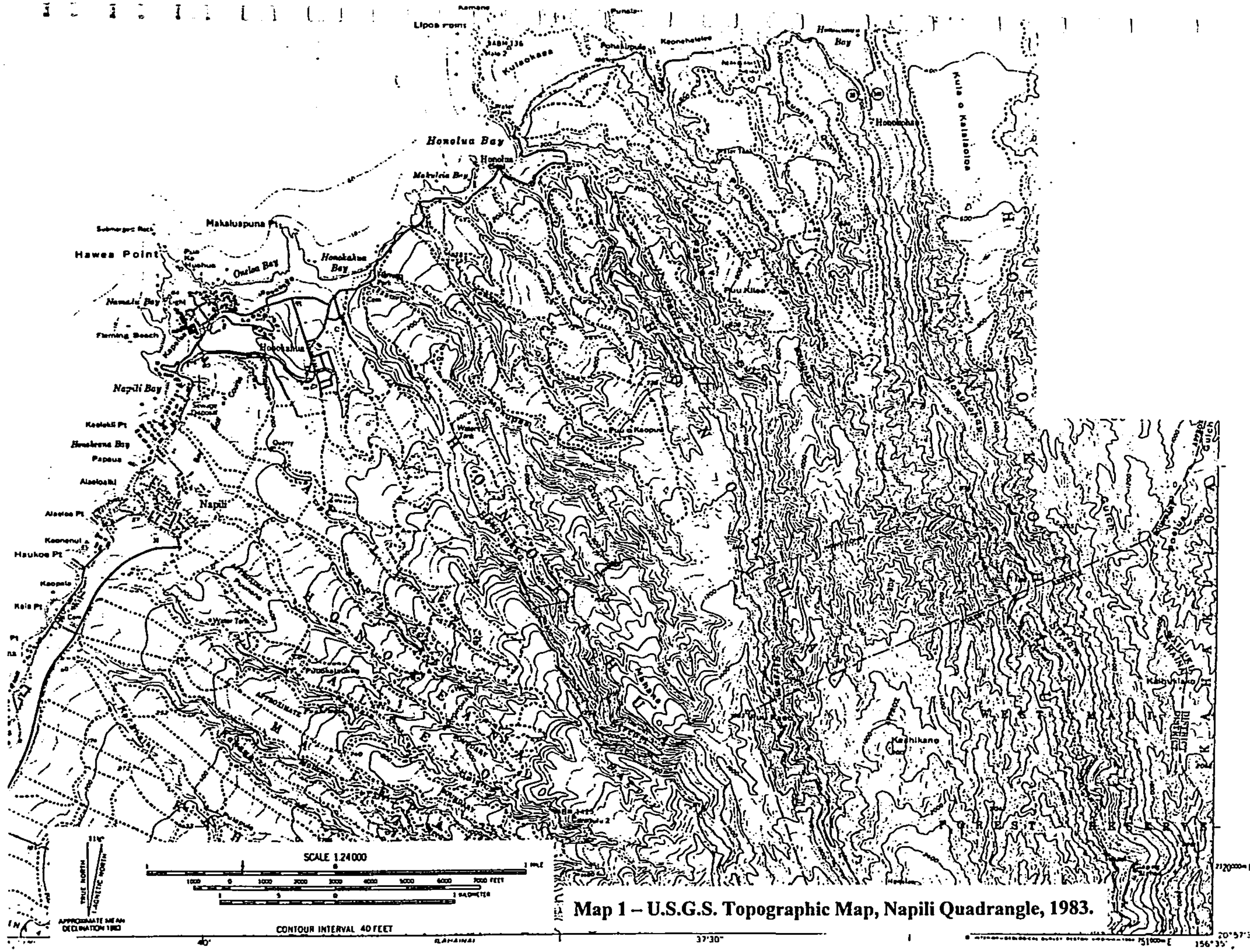
July 26, 1999

ABSTRACT

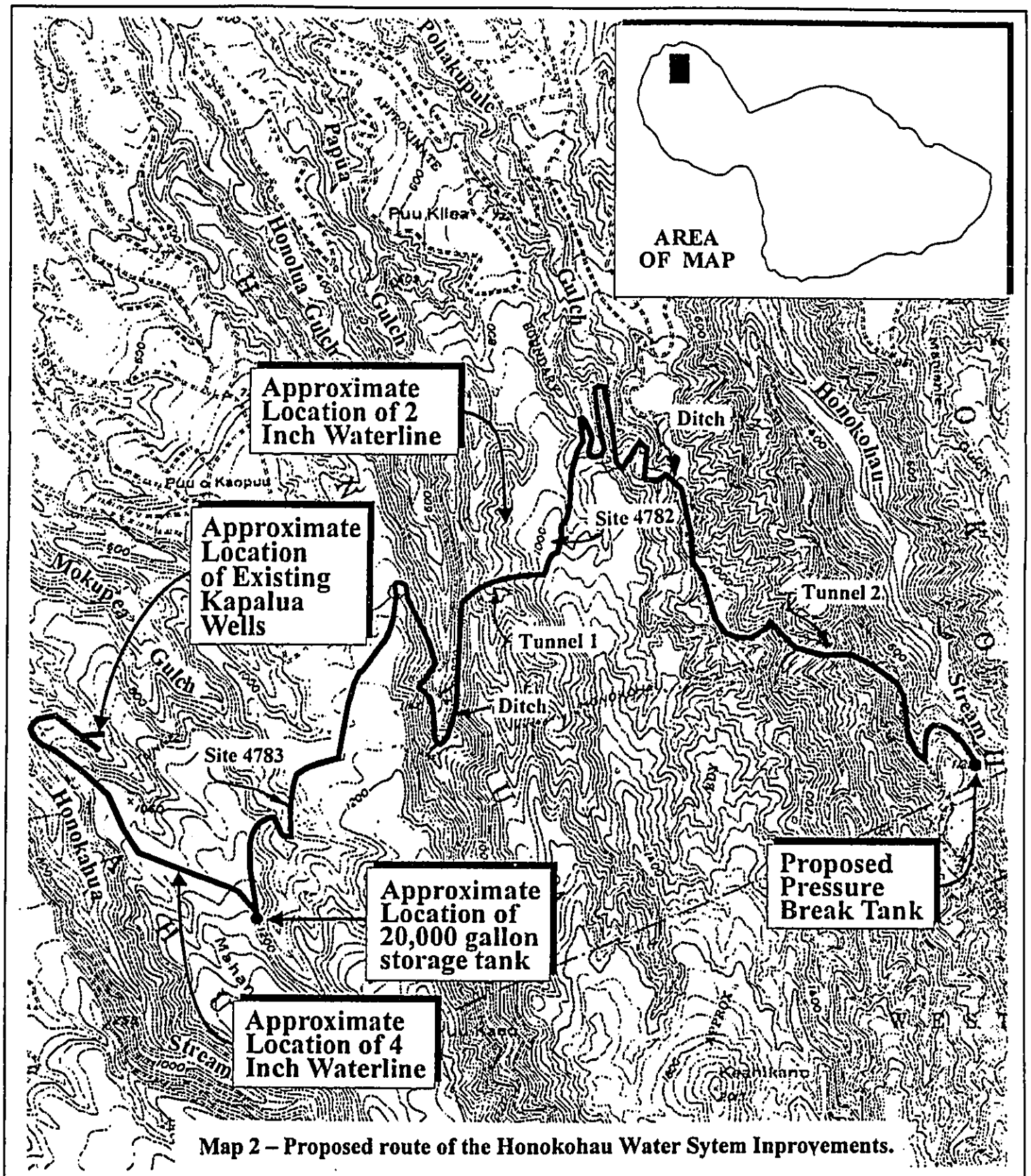
Xamanek Researches conducted archaeological inventory survey level work in a proposed c. 8.7 km. long by 10 m. wide corridor in late 1998 and mid-1999 in West Maui (TMK: 4-2-01: por 1, por. 9). The County of Maui Department of Water Supply proposes to install water system improvements to comply with environmental Protection Agency standards of the Safe Drinking Water Act. This upgraded system will serve water meter owners in Honokohau Valley, Maui.

Two previously unidentified archaeological sites and portions of the Honokohau and Honolua water systems (part of Honokahua District—Site 50-50-01-1591) were noted in the area. The new sites are Site 4782, an eroding surface scatter of waterworn coral cobbles, and Site 4783, an historic retaining wall. Both of these new sites qualify for significance under Criterion "D". Site 4782 lies just outside the surveyed corridor and remains significant under Criterion "D". Site 4783 is no longer considered significant for its information content. The Honokohau and Honolua water systems (part of Site 1591) remain significant under multiple criteria.

TABLE OF CONTENTS



Map 1 – U.S.G.S. Topographic Map, Napili Quadrangle, 1983.



Map 2 – Proposed route of the Honokohau Water Sytem Inprovements.

Source: United States Geological Survey

Figure 1

Honokohau Water System Improvements

Regional Location Map

MUNEKIYO ARAKAWA & HIRAGA, INC.

1000 0 2000 4000 Feet

Prepared for: County of Maui, Dept. of Water Supply

INTRODUCTION

The County of Maui Department of Water Supply proposes to install water system improvements to upgrade service to water meter owners in Honokohau Valley, Maui Island. The proposed waterline will begin at 2 existing Kapalua wells near Honokahua Gulch and cross a c. 8.7 km. (28,000 feet) long corridor that ends at Honokohau Valley (Map 2). In order to comply with Environmental Protection Agency standards set forth by the Safe Drinking Water Act, the Department of Water Supply plans to transport via the pipeline, groundwater from the existing Kapalua wells to Honokohau Valley water meter owners.

The 2 wells mentioned above are part of an in-place private water system that supplies water to customers in Kapalua. Three components of this proposed project are listed below (Project Summary, Munekiyo, Arakawa, and Hiraga, Inc., October 1998).

1. There are two existing Kapalua wells located at c. 765 feet AMSL between Honokahua Gulch and Mokupea Gulch. The planned project includes THE installation of a booster Pump to be installed near Kapalua Well No. 1.
2. Water will be pumped through a 4-inch diameter ductile iron pipe extending approximately 5,100 lineal feet (c. 1554 meters) from the booster pump to a planned 20,000 gallon storage tank to be located near the edge of Mokupea Gulch at c. 1200 feet AMSL.
3. Water is proposed to be transported from this water tank through a 2-inch high-density polyethylene pipe which will traverse Mokupea Gulch and cross an existing pasture. The waterline will then follow an existing dirt road that extends near the bottom of Honolua Gulch. The waterline is then proposed to be placed next to an existing 6-inch pipeline that follows an existing trail and a c. 100-meter long access tunnel.[1] The planned County of Maui waterline will then traverse Papua Gulch and cross a pasture before crossing Pohakupule Gulch. The waterline would then be placed along an existing dirt road which crosses an unnamed tributary of Honokahua Stream. The 2-inch waterline would then be installed within a existing c. 300-meter long access tunnel. The waterline would then exit the tunnel above the upper slope of

[1] The existing 6-inch waterline is utilized by Maui Land and Pineapple Company, Inc. for irrigation purposes.

Honokohau Valley and be placed along an existing trail to a proposed pressure break tank (5 x 5 x 5 feet). From this point, water will be transported through an existing 4-inch line which is part of the distribution system to service users in Honokohau Valley.

The majority of the waterline will cross Maui Land and Pineapple Company, Inc. land (agricultural zoning). However, c. 7,500 lineal feet (c. 2,300 meters) of the waterline in the Honolua District and c. 4,500 lineal feet (c. 1,370 meters) near the Honokohau District will pass through the State Conservation District. Xamanek Researches conducted archaeological and biological resource surveys in the project corridor.

STUDY AREA

The project is located on the southern flank of the West Maui Mountains. It begins at Kapalua Well No. 1 near Honokahua Gulch and extends c. 8.7 km. to an existing waterline that enters Honokohau Valley (Photos 1-3). A total of 4 gulches are crossed by the corridor—Mokupea, Honolua, Papua and Pohakupule (TMK: 4-2-01: por. 1, por. 9). Each of these drainage areas contains intermittent streams, all of which were dry when the archaeological and biological resources surveys were conducted. Orographic rainfall in this area is about 40 to 60 inches annually.

The soils in the project corridor are of the Waiakoa-Keahua-Molokai association. This means they are moderately deep and deep, nearly level to moderately steep, well-drained soils that have a moderately fine textured subsoil on the low uplands. Farther inland they become part of the Honolua-Olelo association—deep, gently sloping to moderately steep well-drained soils on intermediate uplands (Foote, et. al, 1972).

A total of 4 plant communities were identified during our biological resources survey (Paul, June 1999). These included Lowland Dry Forest, Lowland Mesic Grassland, Lowland Mesic Shrubland, and Lowland Mesic Forest. Indigenous and endemic plant species were present in all 4 communities. The Lowland Mesic Grasslands community contained the fewest native species, which the Lowland Mesic Forest yielded the greatest number of indigenous and endemic plants. The most common plant species in each of the communities are summarized below.

The **Lowland Dry Forest** is dominated by endemic *lama* (Diospyros sandwicensis) trees and also contains scattered *`ohi`a* (Metrosideros polymorpha) trees. Common native (indigenous) understory plants include *`akoko* (Chamaesyce multiformis), *alahe`e* (Canthium odoratum), *`ala`ala wai nui* (Peperomia leptostacya) and *`ilima* (Sida fallax). This community represents the least extensive one present in the project area and is located along the slopes and ridges of Honolua and Papua Gulches.

The **Lowland Mesic Grassland** community consists of pastureland, which is dominated by alien vegetation. Few native flora species were present in this community. The **Lowland Mesic Shrubland** is dominated by native species including *`a`ali`i*

(Dodonea viscosa), *`akia* (Wikstroemia Oahuensis), *alahe`e* (Cantheium odoratum) and *uluhe* (Dicranotpteris linearis). Less common native species include *`ohi`a* and *lama* trees, *`ama`u* (Sadlena cyatheoides) shrubs, and Hawaiian cliff sedge (Carex wahuensis). This community is present on exposed ridges and slopes from Mokupea Gulch to Pohakupule Gulch.

The fourth plant community, the **Lowland Mesic Forest**, is represented by two general types in the study area. *Koa* (Acacia koa) trees are dominant in the inner portions of Mokupea Gulch. The final pipeline corridor does not directly cross this community. In Pohakupule Gulch and the upper portion of Honokohau Valley, the Lowland Mesic Forest is dominated by *lama* and *`ohi`a* trees.

It is important to note that alien plants are present in all of the communities discussed above.

BACKGROUND HISTORICAL INFORMATION

Precontact

To the north of Lahaina are 5 valleys in the western portion of the West Maui Mountains. They are Honokawai, Kahana, Honokahua, Honolua, and Honokohau. Handy and Handy (1972, pg. 494) note:

"The first four all had extensive lo`i lands in their valley bottoms, where terraces rose tier on tier in symmetrical stone-faced lo`i. On this part of the coast there is no sloping kula land seaward of the valleys as there is back of Lahaina and southeastward. Honokohau in particular, which is watered by a large rivulet flowing from far back in the mountains, had the most extensive system of lo`i along this coast."

The 5 valley agricultural systems no doubt supplied much of the food required by a fair-sized population, which lived in clusters at the mouths of them. The traditional district or *moku* of Ka`anapali was the location of one of the encounters between chiefs of Maui and the Island of Hawaii, as they struggled for ascendancy. Samuel Kamakau (1992, p. 74) tells about the conflict that took place in 1738, after an entire year of preparation by the Big Island chief Alapa`i. He states:

"What was this war like? It employed the unusual method in warfare of drying up the streams of Kaua`ula, Kanaha, and Mahoma (which is the stream near Lahainaluna). The wet taro patches and the brooks were dried up so that there was no food for the forces of Ka-uhi or for the country people. Alapa`i's men kept close watch

over the brooks of Olowalu, Ukumehame, Wailuku and Honokawai. When Pele-io-holani[2] *heard that Alapa`i was at Lahaina he gathered all his forces at Honokahua and at Honolua. At Honokawai an engagement took ploace between the two armies and the forces of Alapa`i were slaughtered and fled to Keawawa. There Alapa`i heard that Pele-io-holani had landed at Honokahua and had an army stationed at Keawawa, and he disposed his forces, some on sea and some on land. Although Pele-io-holani had but 640 men against Alapa`i's 8,440 from the six districts of Hawaii, there were among them some famous warriors. ...Pele-oi-holani intended to unite his forces with those of Ka-uhi, but Alapa`i's men held Lahaina from Ukumehame to Mala on the north...Pele-oi-holani was surrounded on all sides, mauka and makai, by the forces of Alapa`i.... The two ruling chiefs met there again, face to face, to end the war and become friends again, so great had been the slaughter on both sides...."*

Post-contact

Post-contact land management in this par of Maui is fully discussed by Silva (1986) and is summarized here. In the late 18th or early 19th century, Kamehameha I gave the entire *ahupua`a* of Honokahua to Isaac Davis, in return for his help in Kamehameha's wars of conquest. Davis, along with another Englishman named John Young, had been "detained" by Kamehameha. Davis' ship, the Fair American, had been captured and all aboard except him had been killed. Young was kept ashore until his ship, the Eleanora departed without him. Both men were treated so well by Kamehameha that they were quite willing to remain with him, acting as his advisors while he consolidated his power within the islands.

Upon the sudden death of Isaac Davis in 1810, his land holdings in Honokahua were managed by John Young. When Young died in 1835, the land was divided among both Young's and Davis' heirs. During the Mahele in 1848, a formal 2,650 acre grant was awarded formally to Davis' daughter, Kale (Sally) Davis (LCA 8522-B, RP 2236), who was the wife of Alexander Adams, another favorite of Kamehameha I. The study parcel is located in this grant land. There were no *kuleana* awards granted in Honokahua.

The *ahupua`a* of Napili 1-3 (603 acres) was awarded to Laura Konia, a daughter of Kamehameha, and the wife Abenera Paki. Konia and Paki were the parents of Bernice Pauahi Bishop. No *kuleana* awards were awarded in Napili 1-3 either (Silva, 1986).

A census taken in 1831 estimated that the entire population of Ka`anapali totaled only 8.5% of the island total of 35,062—about 2,980 (Schmitt, 1973, p. 18). By 1836, it had dropped to about 5.5% of the island total—1,341 (Ibid., p. 38).

Post-1850s

The population of West Maui continued to decline in the second half of the 19th

[2] Pele-io-holani was chief of Oahu, and an ally of Ka-uhi, a son of Kekaulike. Another name for Ka-uhi is Ka`ihu-pu-mai-ka-hoaka—Ka-uhi-covered-by-the-shadow-of-the-cresent-moon (Kamakau, p. 73).

century following the collapse of the Pacific whaling industry in the 1860s, prompted by the discovery of oil in Pennsylvania a decade or so earlier. Those who had worked in the support occupations for supplying whaling ships since the 1840s had to look elsewhere for their livelihood.

In Lahaina, sugar production began to develop, while to the north in Ka`anapali district, other options such as ranching and different crops were tried, including coffee and pineapples. The lands of Kale Davis became part of the Campbell Estate in the later part of the 19th century. Honolua Ranch was established, and began cattle production in the area. In 1890, Henry Perrine Baldwin, the son of missionary Dwight Baldwin, acquired the Campbell lands, including Honolua Ranch, and continued ranching activities and initiated coffee production. The coffee venture proved unprofitable, and was terminated.

Following Baldwin's death in 1911, David T. Fleming became manager of Honolua Ranch. He had had experience with pineapple growing in Haiku, and gradually began shifting to pineapple production. In 1915, the Honolua Ranch/Baldwin Packers complex was moved from Honolua to Honokahua. A pineapple cannery was built, as were the Honolua Stables. By the 1920s, pineapple was being grown in West Maui on a large scale, becoming the dominant crop.

In reference to the system of irrigated terraces built for taro production in precontact times, which were located in the vicinity of the study area, Handy and Handy (1974, pg. 494) note that, during early part of the 20th century:

"Honokohau in particular, which is watered by a large rivulet flowing from far back in the mountains, had the most extensive system of lo`i along this coast. In 1931 a greater proportion of lo`i were still planted here than anywhere else on this side of Maui, but by 1934 commercial planting and exhaustion of the soil had brought in root-rot, and some of the large lo`i were abandoned, and some were planted in rice."

The small plantation communities of Honokahua and Napili developed around the Honolua Ranch/Baldwin Packers pineapple operations, and the population of Lahaina District increased in the first 4 decades of the 20th century. Honolua Stable is thought to have ceased operation in 1963, following the merger of Baldwin Packers with Maui Land and Pineapple Company, which had been formed in 1962. As early as 1964, Maui Land and Pineapple Co. began planning resort development, which has culminated in the Kapalua/Ritz-Carlton complex that exists today.

ARCHAEOLOGICAL BACKGROUND RESEARCH

Maui Land and Pineapple Company Development

The project area is within the Honokahua Historic District (Site 50-50-1591). This Historic District, as described in the 1973 State Inventory of Historic Places, includes the plantation village, the cannery facilities of Baldwin Packers, Honolua Ranch Stables, Honolua Ditch, the Maui Pineapple Office, the Honolua Store, plantation camp housing and two churches (Wright, 1974, short form data sheet).

In a 1973 survey for Maui Land and Pineapple Company, in connection with the Honolua Development, the Bishop Museum's Department of Anthropology did work at Fleming Beach (at Kapalua), to the northeast of the subject parcel (Kirch, 1973). Kirch also worked at Fleming Beach Park at Honokahua Bay, and at Hawea Point Oneloa Bay and Makaluapuna Point. A site-complex made up of 8 features (Site 1346) was identified at Hawea Point, and was interpreted as a temporary Hawaiian settlement for marine exploitation and dated from c. AD 1500. Another site (Site 1347) was a cave shelter on the cliff face of Hawea Point, while a third, Site 1348 was identified as a stone terrace platform, and was located on a promontory overlooking Oneloa Bay. During this survey the Honokahua Burial Site (Site 1342) was first identified. Several sites were located and described, including a house site, terrace, enclosure and midden deposits, along the south band of Honokahua Stream on the east side of Fleming Beach Park (Site 1345) [Kirch, 1973].

Numbers of archaeological projects have been undertaken and completed in the general Kapalua Resort complex in the intervening years. Archaeological research for Kapalua Hotel Development, Parcel 2-H was divided into three phases of investigation—reconnaissance survey, intensive survey and testing, and data recovery/mitigation excavations. In early 1986, initial clearing for access roads exposed disturbed human skeletal material. The pedestrian survey pinpointed 6 areas where human remains were present, expanding the boundaries of the Honokahua Burial area, and calling for a more detailed intensive survey to be conducted (Haun and Rosendahl, 1986).

This intensive survey was conducted, and included both surface and systematic soil coring and test excavations. A total of 8 sites were identified, including Honokahua Burial Site (site 1342). The probable boundaries for this burial site were defined, and areas of probability for burial recovery were formulated. Other prehistoric sites reported included segments of a prehistoric trail (Site 2015), and a subsurface cultural deposit (Site 2016). Three historic sites were associated with ranching—Honolua Ranch Stables, a concrete water trough and an enclosure (BPBM D12-15). Two other sites—a walled

shelter near a trail and a recent hearth, and a rubble pile, were of indeterminate age (Donham, 1986).

Beginning in March of 1987, the data recovery and mitigation excavations began and continued until December 1988, when fieldwork was halted, due to external pressures. The interim results of the fieldwork were presented in an informational report describing the Honokahua Burial area as a multi-component burial site with over 1000 prehistoric burials. The site could have been used from as early as AD 600, according to radiocarbon analysis (Donham, 1989). The final report on archaeological findings is still being prepared. Archaeological work associated with the development of the Kapalua/Ritz-Carlton Resort complex by PHRI resulted in over 24 reports between 1986 and 1992.

Archaeological monitoring strategy for the Ritz-Carlton Hotel site included additional research in areas contiguous to the Honokahua burial grounds. The project work was divided into 3 areas (Guerriero, et. al., April 1993, p. 31). Area I contained 5 sites (Sites 2869, 2870, 2971, 2874 and 2875). One site was identified in Area II—Site 2872; in Area III—three sites were located (Sites 1342A, 2873 and 2876).

Site 2869 consists of 2 historic subsurface cultural deposits, and one historic feature containing 694 historic artifacts primarily of Japanese origin. The other feature also contained historic materials, although considerably fewer in number. These deposits probably represent a refuse dump for the nearby Japanese Plantation Camp (Ibid., p. 34). Site 2870 is part of another refuse dump, including structural remnants related to Honolua School and its outbuildings. Site 2871 consists of features (dwellings, tennis court, grandstands, Quonset hut, potting area) associated with late-plantation-era mid-management personnel activity during the 1940s through the 1960s (Ibid., p. 36). Site 2872 consists of historic stone-faced terracing and retaining walls. Site 2872 is composed of 6 features, a communal outhouse, a stone pile placed on corrugated roofing, 2 pits containing non-indigenous material and shell midden, and 2 bowl-shaped fire pits (*imu*). All features are considered modern. Site 2875 is a concrete foundation floor, perhaps a relic of plantation life in the early to mid-20th century (Ibid., pp. 38-41).

In Area III, 3 sites were identified. Site 1342A consists of 10 prehistoric human burials peripheral to the central burial ground. Site 2873 consists of precontact cultural deposits and fire pits indicative of prehistoric habitation, and Site 2876, which is a prehistoric trail remnant (Ibid., pp. 41-49). In Site 1342A, BU-2 was located 1.7-1.8 m. below surface and produced two datable radiocarbon samples. One ranged from AD 1703-1918, and another, recovered from a deeper level yielded a date range from AD 1270-1650. A third radiocarbon date of AD 1670-1950 was recovered from BU-7 (Ibid.).

Although two dates could be within the post-contact period, the method of burial (flexed) is precontact in configuration. Site 2873 consists of a series of *imu.* Charcoal from 3 of these fire pits dated the utilization of the area between AD 1423-1680 (Ibid., pp. 58-60). Such features are ordinarily associated with habitation, but no clear

habitation sites were found in Area III.[3]

Site 2876 is a trail segment located among the burials and is probably a segment of the prehistoric trail mentioned earlier—Site 2015. It consists of 2 parallel alignments of large angular and subangular basalt bounders, stacked roughly in 2 courses. The interior is paved with angular basalt and small cobbles, with some scattered waterworn coral fragments present as well (Guerriero, et. al., p. 60).

In May of 1994, Xamanek Researches conducted an archaeological inventory survey on a 12.1-acre area referred to as the Kapalua Bay Hotel and The Bay Club grounds. A series of 28 subsurface backhoe tests were excavated. While no significant sites were located during our survey, an area of sand dune deposits was noted at the northern end of the project parcel. It was impossible to test the area at the times, because of underground sprinkler systems and electrical conduits. The recommendation was to survey this portion in the event that the area was to be developed in the future (Fredericksen, et. al., September 1994).

In May of 1996, Xamanek Researches returned to examine the previously untested dune areas, near the Kapalua Bay Hotel. As an addendum to the original inventory survey, the findings, which were negative, were reported in September 1996 (Fredericksen, et.al.). However, archaeological monitoring was recommended during any future earthmoving activities in the dune area (Zone B).

In June through July of 1997, Cultural Surveys Hawaii, Inc. undertook an inventory survey of c. 450 acres, identified as Project District 2, and located on the *mauka* side of Honoapiilani Highway, south of the present project area (Devereux, Folk and Hammatt, Draft February, 1998). Eight sites were identified—seven of which had been previously unrecorded. They consist of walls, boulder terraces and a boulder pavement, an overhang shelter cave, an historic reservoir, a road bridge, and a cemetery. The eighth is Site 1591, the Honokahua Historic District. None appeared to be precontact.

In November of 1997, Xamanek Researches conducted a reconnaissance survey for the proposed 11-acre Spa Resort Project at Kapalua. This parcel is bordered on the south by Honoapiilani Highway, on the west by the Pineapple Hill Subdivision, on the north by Simpson Way and on the east by Office Road (Fredericksen, November 17, 1997). The now-closed Pineapple Hill Restaurant is located in the center of the parcel. The building was built in 1915, and was the home of D. T. Fleming, manager of Honolua Plantation. The survey did not locate any significant material remains, except for the aforementioned building. Since the building has been severely damaged by termite activity, it was recommended that photo documentation of the structure be done, if the owner decided to demolish the building. While no other archaeological work was deemed necessary, on-call monitoring was recommended, in the event that any

[3] At Fleming Beach Park located west of the archaeological sites just discussed, where Honokahua Stream enters the ocean, Kirch found habitation indicators such as midden deposits (Kirch, 1973). Site 2873 may be associated with that complex.

significant material cultural remains are encountered during construction activities.

In 1998 Xamanek Researches carried out an archaeological inventory survey on a c. 35-acre parcel of land at Kapalua, where the proposed Golf Academy was to be constructed. Three historic sites were identified (Sites 4501, 4510 and 4513). These consisted of a wall, modified sections of an outcrop, and a garden area, associated with the former plantation camp referred to as Japanese Camp. The 3 sites were considered no longer significant for their information content, and no further work was recommended (Fredericksen and Fredericksen, June 15, 1998).

Fleming Beach Park

Fleming Beach Park lies to the northwest of the present project area, and is a popular recreation park, maintained by the County of Maui. In February and March of 1994, Xamanek Researches undertook subsurface testing in the areas of the park destined for renovation work (Fredericksen, et. al., May 1994). Renovation plans called for the construction of a restroom facility on a sand dune area, and a connecting walkway path from the existing parking A total of 10 manual 1.0 x 2.0 meter test units were excavated, and ranged in depth from 1.2 to 2.2 meters in depth. A further 109 auger tests were placed at 2 meter intervals over the area, and ranged from 0.3 to 1.2 meters in depth. The manual testing was required as part of an agreement between the County of Maui Recreation Department, the Maui/Lana'i Islands Burial Council, and the State Historic Preservation Division. The testing was designed to assure a "buffer" zone of at least 1 meter between surface construction and possible cultural material and/or human remains that might lie below that depth.

At sometime in the past, in an effort to stabilize the sand dune, a cap of reddish brown clay had been placed on the loose sand. It ranges in thickness from 0.4 to 1.0 meter in tested locations. It most likely was obtained from the stream bed to the south. No indigenous cultural material was found *in situ.* However, one test unit contained some indigenous artifacts and shell midden, mixed with modern materials. It appeared that this area of the park had been filled in the relatively recent past. It is not known from where the fill material originated. Finally, there were no human remains located in the tested areas (Fredericksen, et. al., May 1994).

On August 29, 1995, human remains were uncovered while workers were digging a sewer line. Xamanek Researches investigated and found the remains to be part of an *in situ* burial, contained within a basin-shaped pit. Given that the individual was buried in a flexed position, it was determined that the remains were that of a native Hawaiian, probably peripheral to the Site 1342A burial complex on the adjacent property (Fredericksen, et. al., February 1996, p. 4). Mitigation of this burial included sifting the disturbed sands to recover displaced skeletal remains, construction of a concrete enclosure and cement cap, and refilling the excavation.

Settlement Patterns and Expectation of Findings

The precontact settlement pattern in this region of Maui, includes permanent habitation sites, which are located along the coastal regions, and temporary habitation sites in the inland valleys, associated with the extensive *lo'i* systems. While the population of Honokahua in the 1830s was not estimated to be very large, the precontact population was likely to have been considerably larger. The extensive burial ground at Honokahua also suggests a sizable precontact population.

The kinds of sites that might be expected along the coast associated with habitation would be stone structures such as enclosures, midden deposits, and burial areas. In the valleys, sites such as stone walls, enclosures, pond fields and irrigation ditches associated with taro production and temporary might be expected. Temporary habitation sites could also take the form of rock shelters if such features were present in the valleys.

The inland, colluvial slopes between valleys of this region have been under pineapple cultivation and/or used for pasturage for decades. While these areas were no doubt utilized in precontact times for gathering of forest products, and perhaps some dryland cultivation, it would not be expected to find remaining evidence of this activity in post-contact agricultural areas.

ARCHAEOLOGICAL FIELD METHODS

This Xamanek Researches project was carried out after we conducted a reconnaissance survey of much of the project corridor (Fredericksen, November 10, 1998). The entire 8.7 km. long project area was traversed during the fall of 1998, and the summer of 1999. This c. 10-meter wide corridor which extends from the 2 existing Kapalua wells near Honokohua Gulch to Honokohau Valley was inspected by Erik Fredericksen and David Paul. In addition, Erik Fredericksen revisited portions of the study area to reassess cultural resources in the summer of 1999.

The inventory survey consisted of a 100% pedestrian walk-over of the project corridor. In addition, sites were recorded and evaluated in the field. When possible, a c.

5-meter spacing was maintained during our surface inspection of the corridor.[4] Information on sites was gathered with metric survey Tapes and hand-held compasses. Photographs were taken with color film.

No subsurface testing was conducted and no significant portable remains were noted or collected. Locations of 2 previously unrecorded sites were discussed with Ms. Wendy Taomoto, Engineering Division, Department of Water Supply, and these were plotted in on the existing project map.

ARCHEOLOGICAL FINDINGS

Two previously unrecorded archaeological sites were found during our inventory survey of the study area. These sites consist of a surface scatter of waterworn coral, and a post-contact retaining wall. Both were assigned SHIP numbers. The waterworn coral scatter (Site 50-50-01-4782) lies just outside the proposed surface pipeline corridor and can be avoided. The post-contact retaining wall (Site 50-50-01-4783) is associated with an early pineapple plantation era road, and lies within the proposed pipeline corridor. In addition, portions of the Honokohau and Honolua water delivery systems were noted in parts of the project area. Both of these systems are part of the large Honokahau District (Site 50-50-01-1591). A discussion of our field findings follows.

Site 50-50-01-4782

This site is located on a ridge of land that separates Pohakupule and Papua Gulches. It lies at c. 930 feet AMSL in a pasture. Vegetation observed in the general vicinity included alien species such as guava trees, ironwood trees, various annual weeds, and kikuyu or pasture grass.

Site 4782 consists of a surface scatter of waterworn coral that appears to have been partially displaced and/or exposed by cattle or previous pasture maintenance activities. Several cobbles ranging from c. 8 to 12 cm. in diameter were noted in a c. 6 to 8 square meter area. A few of the pieces of coral were partially exposed and 2 were on the surface. No other material culture remains were noted in the area.

While the function of this site remains unclear, the lack of any other cultural materials associated with the exposed pieces of coral suggests that the area was probably

[4] In steep areas, it was often necessary to stay on trails for safety reasons. It is important, however, to point out that the marked pipeline follows trails and/or unimproved roads in most instances except where pastures are traversed.

not used for habitation. No subsurface testing was conducted because the site lies outside the project corridor. Site 4782 is tentatively interpreted as a probable indigenous site.

Site 50-50-01-4783

This second site is located in Mokupea Gulch at about the 800-foot level of elevation. Observed vegetation in the area consisted primarily of alien species, such as guava and Java plumb trees, coffee plants, various grasses and annual weeds, and ferns. In addition, at least 1 indigenous fern species, *pakahakaha* (Lepisorus thunbergianus) was noted relatively nearby. Finally, several *kukui* nut trees were growing in the immediate vicinity of the wall.

Site 4783 is interpreted as a post-contact retaining wall, associated with an old pineapple plantation-era road. This road is very deteriorated from disuse and lack of maintenance. It was a maximum of 6 meters wide, and the corridor follows it for c. 300 meters. The retaining wall is 20 meters long and up to 3.7 meters in height. It is constructed with subangular basalt cobbles and boulders that range from 20 to 70 cm. in diameter. The wall ranges from 8 to 18 rock-courses in height. Overall construction technique is generally good, and site condition ranges from poor to good.[5]

An old concrete and rock culvert was noted at the base of the wall (Photo 4). This culvert was c. 35 cm. in diameter. No other material cultural remains were noted. The abandoned road was up to 6 meters wide in this portion of the project area.

Site 50-50-01-1591

The Honokahua District is a large historic district which encompasses Kapalua as well as much of the project area. Both the Honokohau and the Honolua Ditch systems are considered to be a part of this district.

The Honokohau Ditch system was begun in 1901 as part of a water agreement between Honolua Ranch and Pioneer Mill. The latter's success depended on water delivered from the watershed controlled by Honolua Ranch (later known as Baldwin Packers, then Maui Pineapple Company, and finally Maui Land and Pineapple Company in 1969). Construction of Honokohau Ditch began in 1902 and was completed in 1904. The ditch and flumes ran along soft hillsides where landslides frequently filled it with dirt and damages the flumes (Wilcox, 1996, p. 127).

By 1912, it was leaking badly and was in very poor condition, and David T. Fleming, manager of Honolua Ranch determined to build an entirely new system. This was called the Honolua Ditch to avoid confusion with the earlier water system. Work began on the new system, incorporating 2 features to minimize seepage. It was totally lined with cement, and wooden flumes were eliminated—relying on tunnels instead. The final plan called for 31 tunnels, which constituted 34,241 feet of the c. 12.5 mile system

[5] Several guava and *kukui* nut trees were noted growing out of the lower portions of the retaining wall.

(Ibid.). The increased water delivery system was successful, and the money from water sales to Pioneer Mill constituted over half of the annual revenues of Honolua Ranch in 1914 (Ibid., p. 130).

Portions of this ditch system and 2 associated tunnels lie within the project corridor.[6] The first of these tunnels is c. 100 meters long (Tunnel 1), while the second one is c. 300 meters long. Both tunnels range from c. 1.5 to 2.2 meters in height and are c. 2.5 to 3 meters wide (Tunnel 2; Photo 6). The shorter tunnel is in generally poor condition and is considered to be somewhat dangerous. The longer tunnel is in generally fair condition and appears to be relatively stable. These tunnels were hand excavated by laborers through 2 ridges. The longer one accesses the upper portion of Honokahau Valley.

Inspected segments of the Honokohau Ditch in the project corridor ranged from poor to fair condition (Photo 7). Construction technique tended to range from fair to good. In general, the rock-lined ditch sections did not contain large amounts of mortar. The bulk of the water system present in the project area consists of the Honokohau Ditch, which is not longer in use.

The Honolua water system—constructed later—between 1912 and 1914—tended to be in better condition. Concrete and mortar were more extensively utilized in the Honolua water delivery system, than in the older one.

Discussion

The proposed pipeline route will parallel portions of the Honokahau and Honolua Ditch systems. Sections of both ditches will likely lie within 5 meters of the proposed surface waterline. It is estimated that c. 500 to 600 meters of the water ditch system will be paralleled by the waterline. In addition, the pipeline will also traverse 2 existing tunnels associated with the water system.

SUMMARY AND CONCLUSIONS

Two previously unrecorded sites and portions of the water system associated with Honokahau District (Site 1591) were located during our inventory survey of the project area. Site 4782 is tentatively interpreted as a precontact site with an unknown function. This site is located in a pasture and consists of on eroding scatter of waterworn coral

[6] Another section of the Honokohau Ditch tunnel was located just outside the project corridor. An axle from one of the narrow gauge carts used in tunnel construction uas noted near the mouth of the abandoned tunnel (Photo 5).

cobbles. It lies just outside of the proposed waterline corridor. Site 4783 is interpreted as an old retaining wall associated with an abandoned, unimproved pineapple road. This feature was found in Mokupea Gulch and lies within the proposed pipeline corridor.

Portions of Site 1591 were also present in the project area. Sections of the older Honokahua Ditch network and the newer Honolua water system were noted within the corridor. While the above sites were found during our survey, the proposed surface location for the County of Maui Honokahua waterline should provide sufficient flexibility to avoid negative impact of these cultural resources.

Site Significance Evaluations

Sites 4782 and 4783, and the portions of the water delivery system associated with Honokahua District (Site 1591) in the project corridor qualify for significance under Criterion "D" of the Federal and State historic preservation guidelines. In addition, the Honokahau and Honolua Ditch systems (Site 1591) also would be considered significant under Criterion "C".

Mitigation Recommendations

No subsurface evaluation was conducted on the Site 4782 surface scatter because it lies just outside the proposed corridor in a pasture. This site is still considered to be significant under Criterion "D". Data recovery is the recommended mitigation treatment if the proposed pipeline alignment changes and the site is to be impacted. In the event that the corridor remains unchanged, no further work is deemed necessary for the site at this point in time.

Site 4783, the retaining wall in Mokupea Gulch is not longer considered to be significant for its information content. Consequently, no further work is required for this post-contact structure. In any event, placement of the pipeline should not impact this site.

The proposed surface waterline will parallel portions of the Honokahau and Honolua water ditch systems, and go through 2 existing tunnels in the Honokahau system. The sections of the Site 1591 water delivery system that are in the project corridor are still considered significant under both Criteria "C" and "D" of the guidelines. In order to prevent adverse impacts on this historically significant water delivery system, we recommend that the proposed pipe installation methodology for areas along the various ditches be submitted to SHPD for review.

Large and medium-growth trees (i.e. guava, Java plum, *kukui* nut) were noted in close proximity to portions of the ditch system in the project corridor. Mechanical installation of the pipeline could negatively impact the nearby mortar and rock ditch sections. Consequently, it may be necessary to monitor sections of the corridor if mechanical pipeline placement is proposed.

REFERENCES

Devereux, Tom, William H. Folk and H.H. Hammatt
February 1998 — *Archaeological Survey of Lands Comprising Project District 2 At Kapalua,* Prepared for PBR Hawaii, by Cultural Surveys Hawaii Inc. (DRAFT)

Donham, Theresa K.
1986 — *Archaeological Survey Test Excavations, Kapalua Hotel Development Site 2-H, Kapalua Bay Resort,* PHRI Report 224-052286. Prepared for *Kapalua Land Co., Ltd.*

1989 — *Addendum Report: Additional Subsurface Testing of Area III; Subsurface Archaeological Testing, Revised Ritz-Carlton Kapalua Hotel, Project Site Areas I, II, and III, Land of Honokahua, Lahaina District, Island of Maui,* Paul H. Rosendahl, Ph.D., Inc.

Fredericksen, Erik M.
November 17, 1997 — *Report on Archaeological Reconnaissance Surface Survey for the Spa Resort Project, Kapalua Maui, Hawaii (TMK: 4-2-04: por. 23),* Prepared for Mr. Robert McNatt, Kapalua Land Company, Ltd., by Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Erik M., Demaris L. and Walter M.

September 1994 — *An archaeological Inventory Survey of a 12.2 Acre Parcel, Honokahua and Napili 2-3 Ahupua`a, Lahaina District, Maui Island (TMK: 4-2-04: 26),* Prepared for Warren Suzuki, Kapalua Land Co., Ltd., by Xamanek Researches, Pukalani, Hi.

September 1996 — *Additional Archaeological Inventory Survey Subsurface Testing at Kapalua Bay Hotel (TMK: 4-2-04: 26), Honokahua and Napili 2-3 Lahaina District, Maui Island,* prepared for Robert McNatt, Kapalua Land Co., Ltd., Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Walter M., Demaris L. and Erik M.
May 1994 — *Archaeological Subsurface Survey of D.T. Fleming Beach Park, Honokahua Ahupua`a, Lahaina District, Maui Island (TMK: 4-2-04: 16),* Prepared for Leonard Costa, Maui County Parks Department, by Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Walter M. and Demaris L.
February 1996 — *Data Recovery and Preservation of a Burial Peripheral to the Honokahua Burial Site (Site 50-50-01-1342), Located at D.T. Fleming Beach Park,* prepared for Leonard Costa, Maui County Parks and Recreation Department, by Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Erik M. and Demaris L.
June 1998 *Archaeological Inventory Survey for the Proposed Gold Academy Project, Kapalua, Maui, Hawaii (TNK: 4-2-04: por. 23),* prepared For Mr. Robert McNatt, VPDevelopment, Kapalua Land Company, Ltd., by Xamanek Researches, Pukalani, Hawaii.

Guerriero, Diane, A. Charvet-Pond, and S.T. Goodfellow
1993 *Archaeological Monitoring and Data Recovery, Kapalua Ritz-Carlton Hotel Site, Land of Honokahua, Lahaina District, Island of Maui (TMK: 4-2-01: 4, 5, por. 12, 13, por. 18, 34).* PHRI Report 942-030393.

Handy, E.S. Craighill and E. G. Handy
1972 *Native planters in Old Hawaii: Their Life, Lore, and Environment,* Bishop Museum Bulletin 233, Honolulu, Hawaii.

Haun, Alan E., and P.H. Rosendahl
1986 *Archaeological Field Inspection, Kapalua Hotel Development Site, Land of Honokahua, Lahaina, Island of Maui,* PHRI Report 221-021286.

Kamakau, Samuel M.
1992 *Ruling Chiefs of Hawaii,* The Kamehameha Schools Press, Honolulu.

Kirch, Patrick V.
1973 *Archaeological Survey of the Honolua Development Area, Maui (TMK: 4-2-01),* Department of Anthropology, B.P. Bishop Museum, Honolulu, Hawaii, prepared for Maui Land and Pineapple Co., Ltd.

Schmitt, Robert C.
1974 *The Missionary Censuses of Hawaii,* Bishop Museum, Honolulu.

Silva, C.L.
1986 Appendix A: Preliminary Historical Documentation Research, IN *Archaeological Survey Test Excavations, Kapalua Hotel Development Site 2-H, Kapalua Bay Resort, Land of Honokahua, Lahaina, Island of Maui,* PHRI Report 224-052286, prepared for Kapalua Land Co.

Wilcox, Carol
1996 *Sugar Water: Hawaii's Plantation Ditches,* University of Hawaii Press, Honolulu, HI.

Wright, J. C.
1975 Hawaii Register of Historic Places, Short Form, Site 50-01-1591.

Walker, Winslow
1931 *Archaeology of Maui,* manuscript at Maui Historical Society, Wailuku.

Photo 1 – General view of a portion of the project area—Moloka`i in background.

Photo 2 – View to wes across Mokupea Gulch—proposed 20,000 gallon tank site in center left.

Photo 3 – Steep section of trail—Pohakupule Gulch.

CORRECTION

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

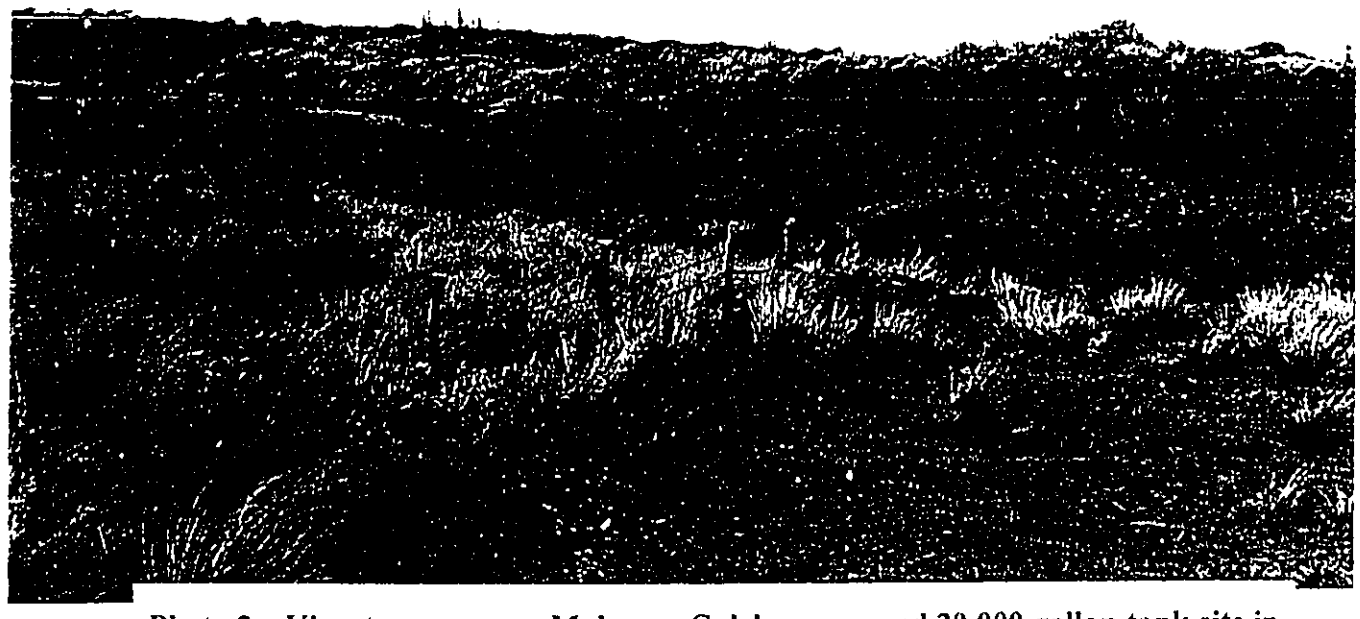


Photo 2 – View to wes across Mokupea Gulch—proposed 20,000 gallon tank site in center left.

Photo 3 – Steep section of trail—Pohakupule Gulch.

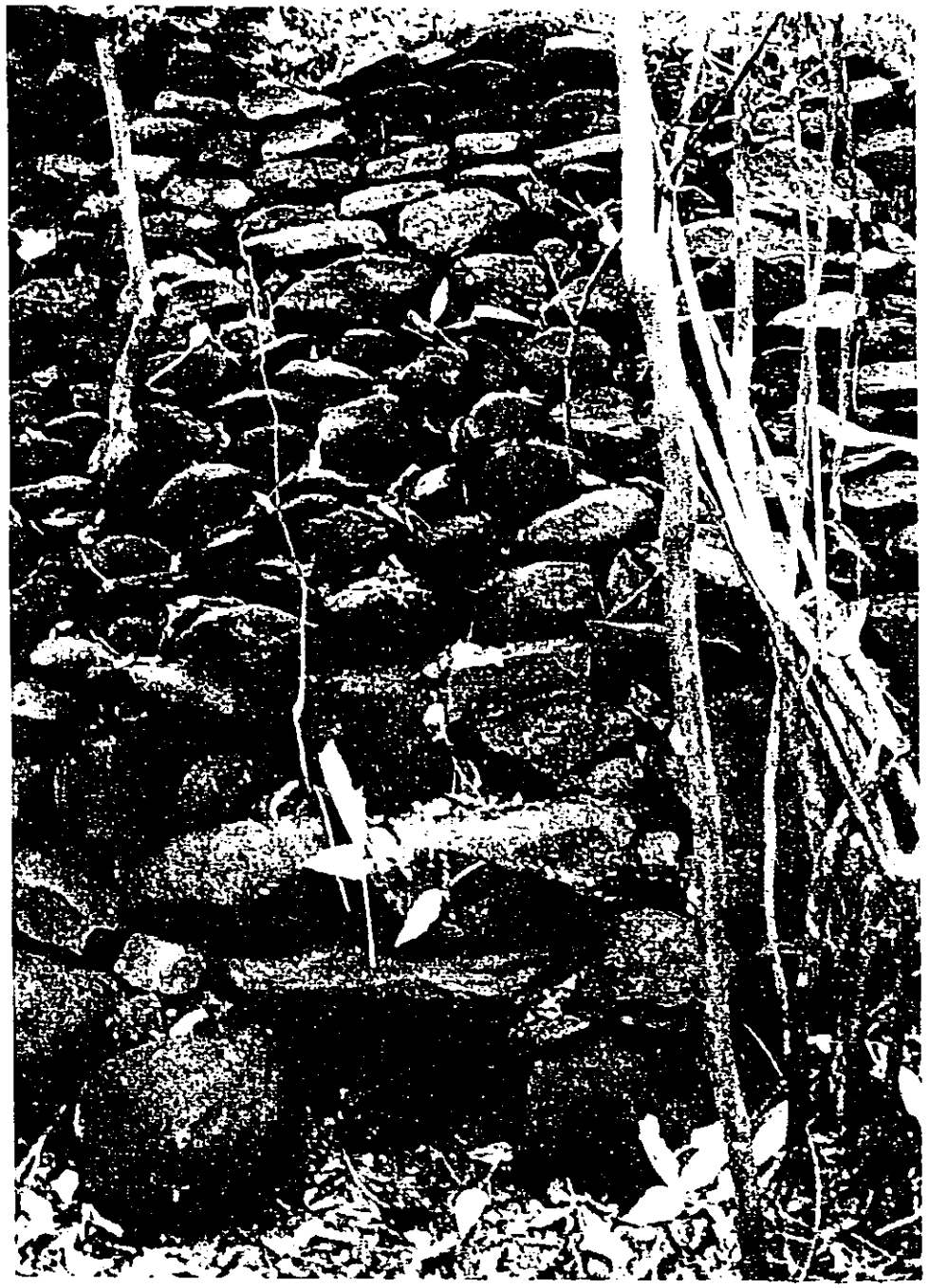


Photo 4 – Section of Site 4783 retaining wall—note rock capping culvert at bottom.

Photo 5 – Collapsed section of Honokohau tunnel—near project corridor—portion of Site 1561).

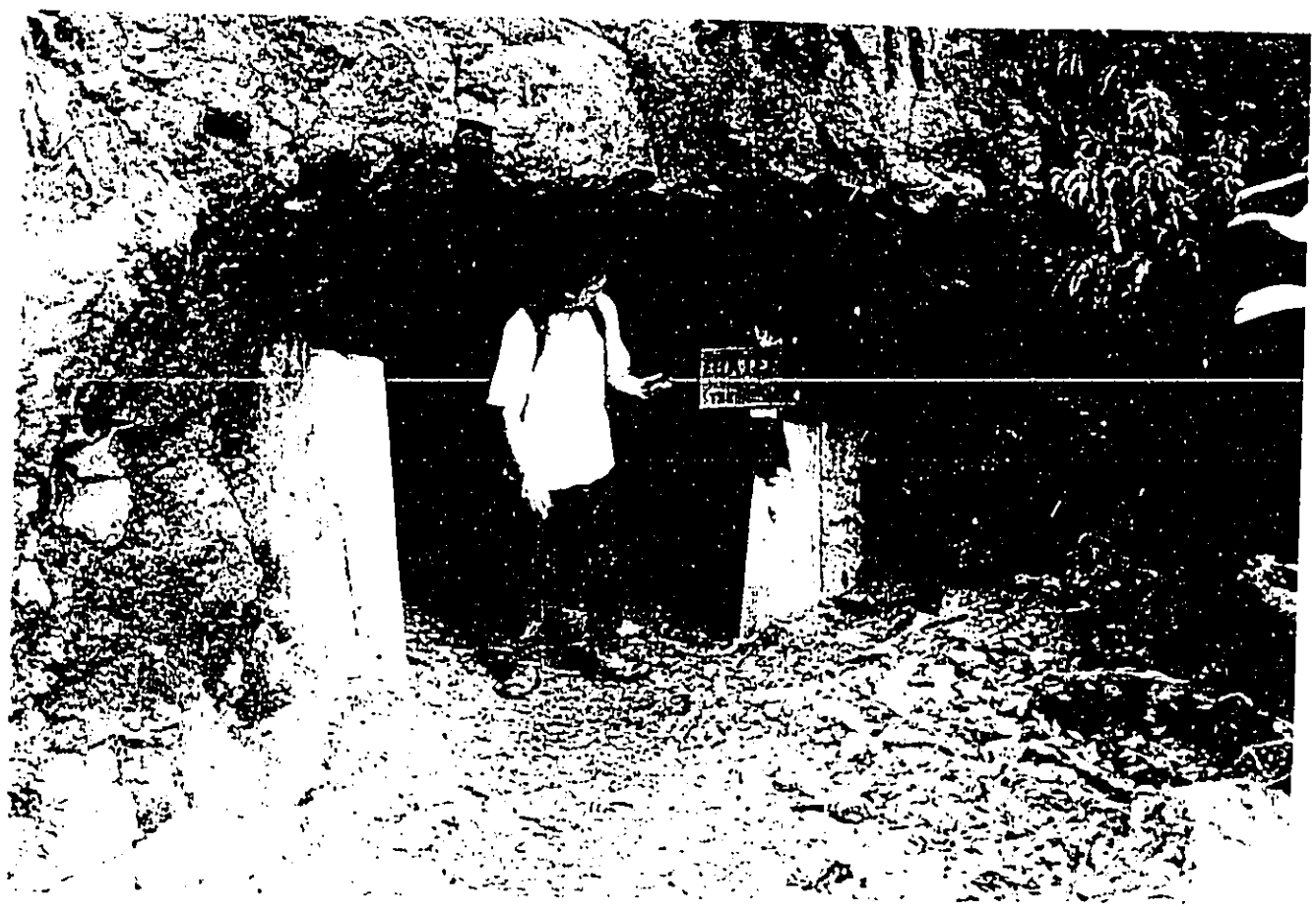


Photo 6 – Honokohau Steam side of Tunnel 2—portion of Site 1561.

Photo 7 – Section of Honokohau Ditch (portion of Site 1561).

2000-02-08-MA-FEA—

Final Environmental Assessment

HONOKOHAU WATER SYSTEM IMPROVEMENTS

Prepared for:

County of Maui,
Department of
Water Supply

January 2000

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Final Environmental Assessment

HONOKOHAU WATER SYSTEM IMPROVEMENTS

Prepared for:

County of Maui,
Department of
Water Supply

January 2000

MUNEKIYO, ARAKAWA & HIRAGA, INC.

CONTENTS

LIST OF APPENDICES

LIST OF FIGURES

Preface

The applicant, County of Maui, Department of Water Supply, proposes to install water system improvements to upgrade water services to users in Honokohau Valley, Maui, Hawaii. Portions of the proposed waterline are within the State Conservation District. Pursuant to Chapter 343, Hawaii Revised Statutes, and Chapter 200 of Title 11, Hawaii Administrative Rules, Environmental Impact Statement Rules, this Environmental Assessment (EA) documents the project's technical characteristics and environmental impacts, and advances findings and conclusions relative to the significance of the project.

Chapter I

Project Overview

I. PROJECT OVERVIEW

A. PROJECT LOCATION, EXISTING USE AND LAND OWNERSHIP

The County of Maui, Department of Water Supply (DWS) is proposing to construct water system improvements to upgrade service to users in Honokohau Valley, Maui, Hawaii. See Figure 1.

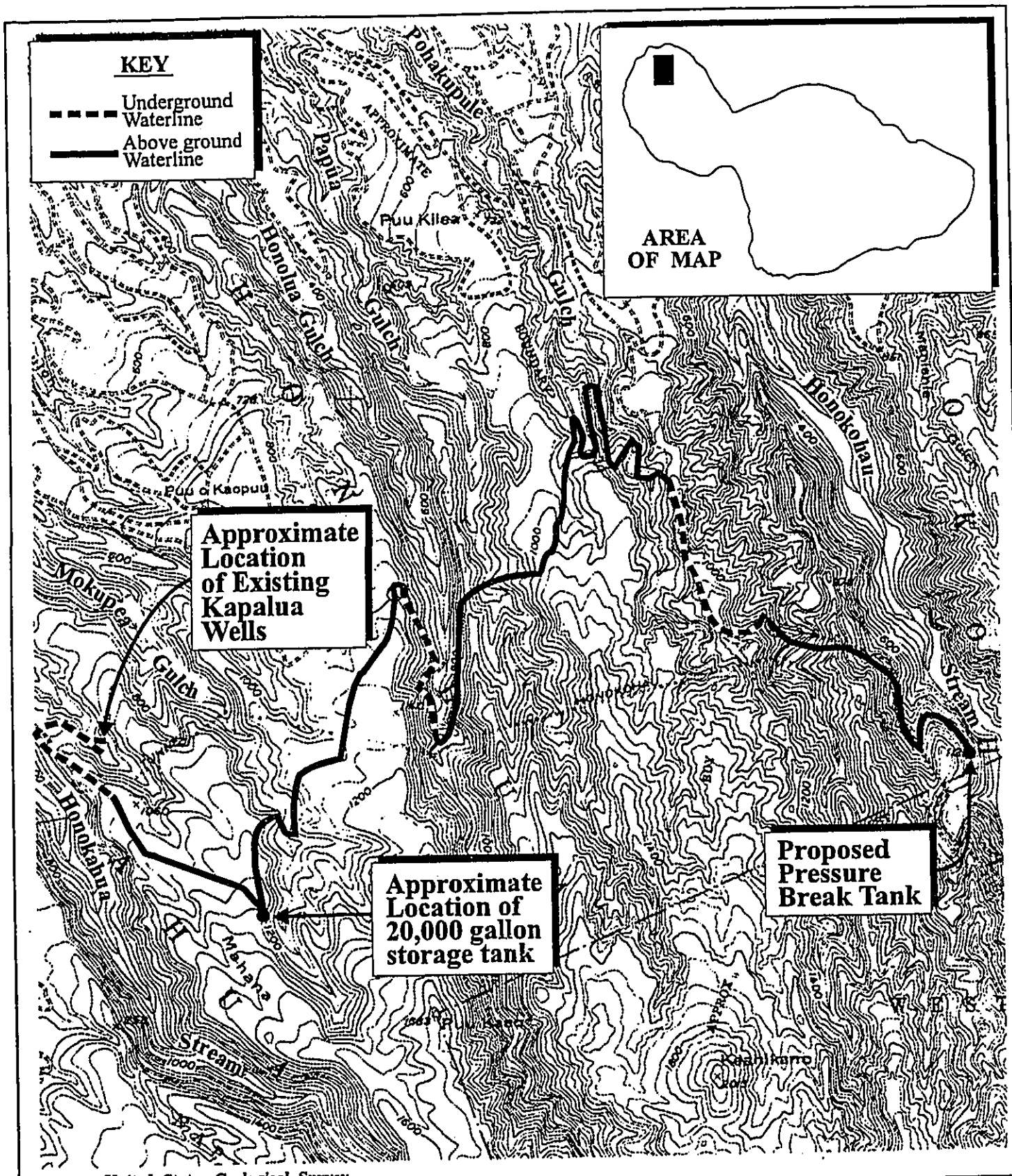
The improvements extend from existing Kapalua Wells located between Honokahua Stream and Mokupea Gulch to a proposed pressure break tank located near an unnamed tributary to Honokohau Stream. The project involves installation of approximately 33,000 lineal feet of waterline and appurtenant improvements. The proposed project will traverse lands in a variety of land uses including vacant lands, dirt access roads, and pasture.

The land on which the proposed improvements would be placed is owned by Maui Land and Pineapple Company, Inc. (TMK 4-2-1: por.1 and 4-1-1:por.9).

B. PROJECT NEED

The source of domestic water to approximately thirteen (13) water meters in Honokohau Valley has traditionally been provided by surface sources. However, in order to comply with Environmental Protection Agency standards promulgated by the Safe Drinking Water Act, the DWS has been transporting water from the Lahaina Water System to an existing storage tank within the valley.

In order to lessen the time and labor involved in filling the existing tank on a daily basis, the DWS is proposing to pipe groundwater from the existing Kapalua Well Nos. 1 and 2 to Honokohau Valley. With chlorine disinfection utilized in the existing distribution system in Honokohau



Source: United States Geological Survey

Figure 1

Honokohau Water System Improvements

Regional Location Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply

Valley, the groundwater can then meet Clean Drinking Water standards.

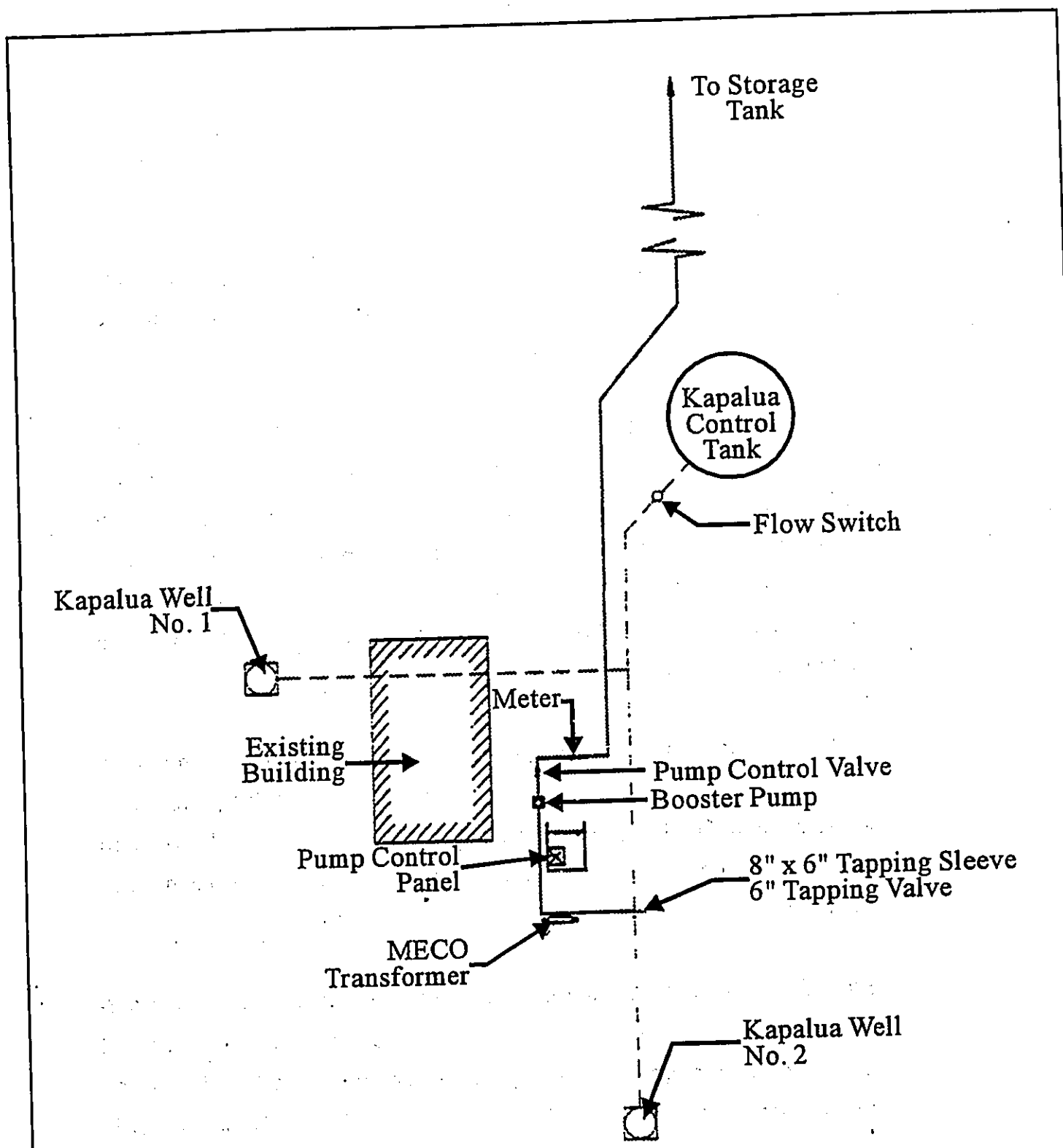
C. ***PROPOSED ACTION***

In addition to installing 33,000 lineal feet of waterline, the proposed action includes installation of a booster pump and appurtenances, a 20,000 gallon storage tank, and a pressure break tank.

The DWS proposes to purchase water from an existing private water system which serves developments in Kapalua. There are two (2) existing Kapalua wells and a control tank located at approximately the 765 foot elevation. The project involves the installation of a booster pump that is proposed to be located near the existing wells. Other appurtenant improvements include a pump control panel, pump control valve, and tapping sleeve and valve. See Figure 2.

Water is proposed to be pumped through a 4-inch ductile iron pipe extending approximately 5,100 lineal feet from the booster pump to an approximately 20,000 gallon storage tank to be located near the western edge of Mokupea Gulch at the approximately 1,200 foot elevation. See Figure 3.

From the storage tank, water is proposed to be transported through a 2-inch high density polyethylene pipe which traverses Mokupea Gulch and then extends through an existing pasture. The waterline then follows an existing dirt road and then extends near the bottom of Honolua Gulch. From this point, the waterline is proposed to be placed next to an existing 6-inch waterline which follows an existing trail and access tunnel to Papua Gulch. The existing 6-inch waterline is utilized for irrigation purposes by Maui Land and Pineapple Company, Inc.



Source: County of Maui, Department of Water Supply

NOT TO SCALE

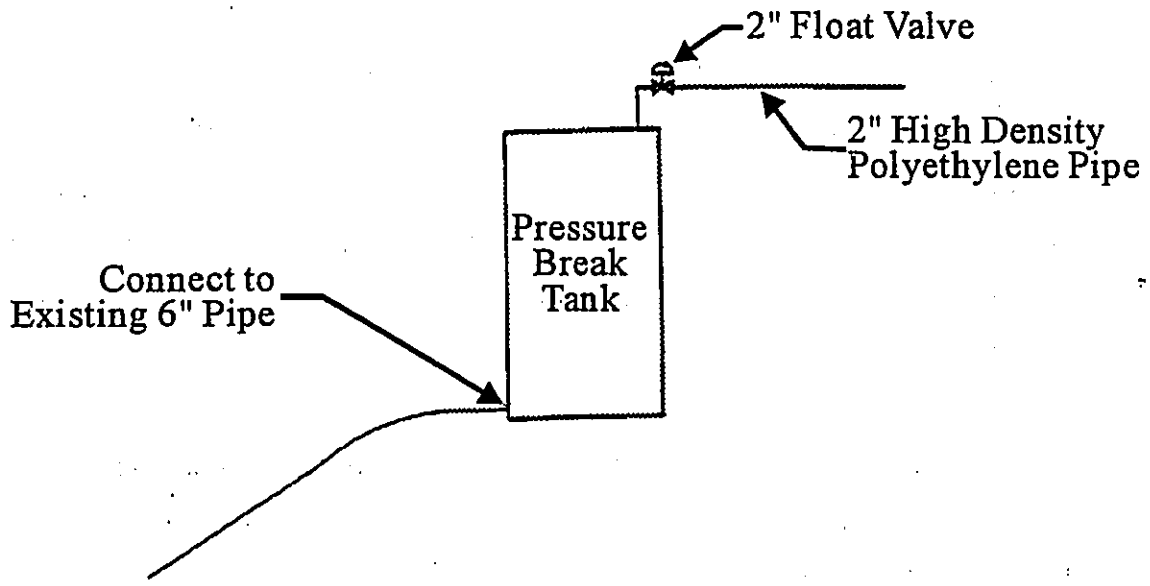
Figure 2

Honokohau Water System Improvements

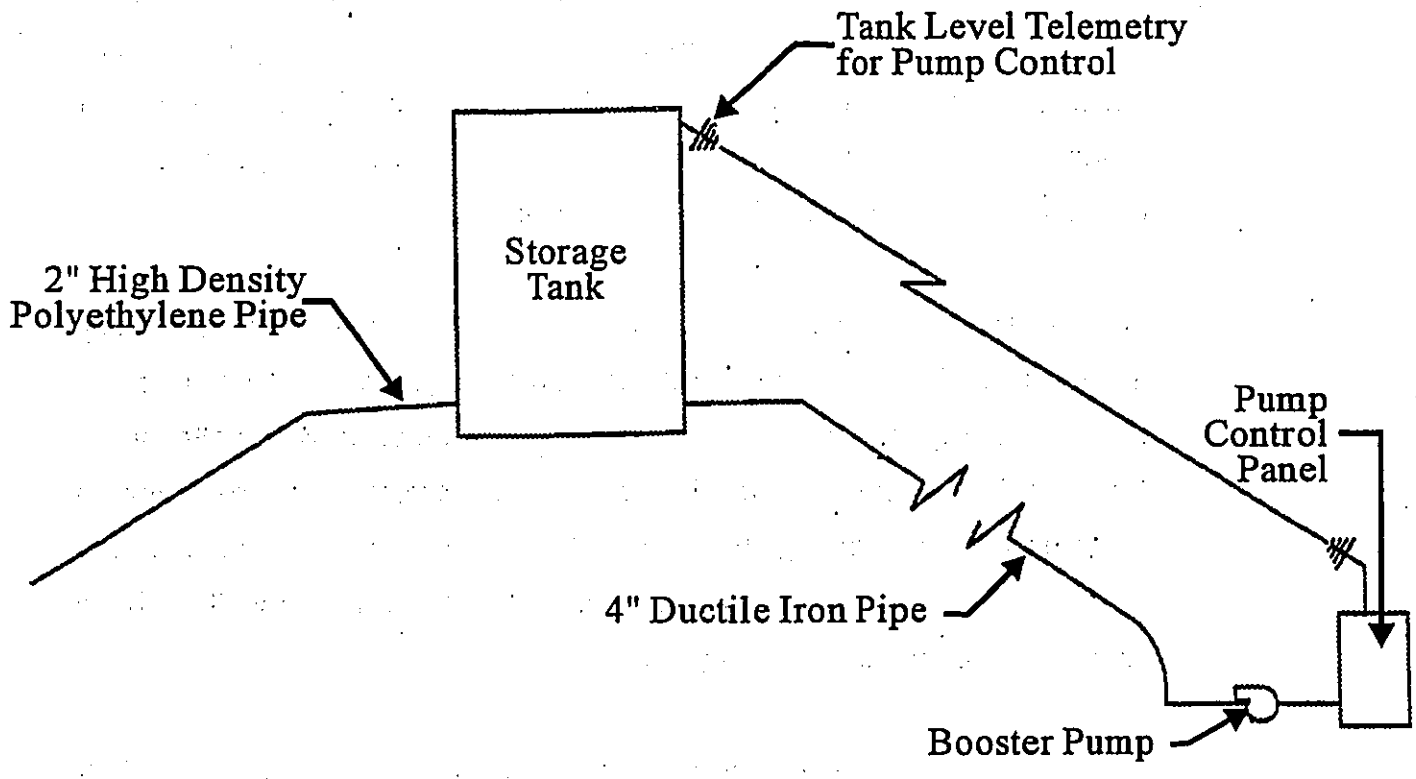
Detail of Booster Pump Station

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply



Detail of Connection to Existing 6" Pipe



Detail of Booster Pump to Storage Tank

Source: County of Maui, Department of Water Supply

NOT TO SCALE

Figure 3

Honokohau Water System Improvements

Detail of Pressure Break Tank, Storage Tank and Booster Pump

MUNEKIYO, ARAKAWA & HIRABA, INC.

Prepared for: County of Maui, Dept. of Water Supply

The waterline traverses Papua Gulch, extending through a pasture area before crossing Pohakupule Gulch. The waterline then would be placed within an existing dirt road and then crosses an unnamed tributary to Honokohau Stream. The waterline would then be placed within an existing access tunnel and an existing trail to the proposed pressure break tank. Refer to Figure 3.

From this point, water will be transported through an existing 6-inch line which is part of the existing distribution system to service users in Honokohau Valley.

The waterline is proposed to be placed underground within existing dirt roads. Alternatively, the waterline may be laid on the ground surface on the side of the road. For other portions of the alignment through pastures, trails, gulches and tunnels, the waterline is proposed to be laid on the ground surface. Waterline crossings at streams and gulches are proposed to be suspended above the stream bed.

With regard to the construction of the waterline, methods would likely involve use of (1) track-mounted mechanical equipment, (2) rubber tire mechanical equipment such as a tractor or backhoe, or (3) installation by hand. It is anticipated that the portion of the project from the Kapalua wells up to and including the storage tank would be constructed by the DWS while the remainder will be constructed by DWS as well as Maui Land and Pineapple Company, Inc.

With regard to the installation of the waterline within dirt roads, it is likely that track-mounted mechanical earth-moving equipment with a plow will be utilized to excavate the trench. A second vehicle will place the waterline into the trench and, at the same time, cover the trench with

backfill. A tractor or backhoe may also be used as an alternative means of construction.

For segments of waterline in pasture areas, track-mounted or rubber tire mechanical equipment will be used to unwind the waterline. For trails and gulches, the use of a tractor or backhoe is anticipated to unwind the waterline. Alternatively, narrow trails will involve installation of the waterline by hand. Within tunnels, the waterline will be installed by hand. Waterline crossings at streams are proposed to be suspended above the stream bed. In order to secure the suspended waterline, concrete footings would likely be constructed on both sides of the stream bed above the high water mark. No portion of the waterline crossings at streams would be erected above the existing vegetation canopy.

Approximately 8,000 lineal feet of waterline through the Honolua District and approximately 4,500 lineal feet of waterline near the Honokohau District are located within the State Conservation District. Accordingly, an Environmental Assessment and a Conservation District Use Application are required.

The proposed improvements will be owned and maintained by DWS. An easement encompassing the project improvements through Maui Land and Pineapple Company lands will be prepared. Preliminary estimates indicate that the project will cost approximately $175,000.00. Assuming all applicable permits are obtained, construction of the proposed project is anticipated to be completed approximately eleven (11) weeks after the start of construction. The start of construction is targeted for March 2000.

Chapter II

Description of the Existing Environment

II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL SETTING

1. Surrounding Environment

The proposed project occupies a narrow corridor and extends approximately 33,000 feet or 6.25 miles from Honokahua to Honokohau.

From the existing Kapalua wells to the proposed pressure break tank, the proposed waterline traverses a number of differing surroundings.

The waterline crosses Mokupea Gulch, Honolua Gulch, Papua Gulch, Pohakupule Gulch and an unnamed tributary to Honokohau Stream. The waterline also crosses several pasture areas utilized for cattle grazing. Additionally, the waterline follows dirt roads, tunnels and trails which are currently utilized by Maui Land and Pineapple Company and/or its lessees for the purposes of access.

The surrounding areas are uninhabited. With the exception of pasture use and other water supply or distribution related improvements, the surrounding uses are vacant.

Lower elevation lands in Honokohau Valley support taro cultivation. Lands makai of the waterline alignment are in pasture use and vacant with pineapple being cultivated on lower elevations. The Kapalua Resort area is located approximately 1.5 miles to the northwest of the existing Kapalua wells.

2. *Climate*

Like most areas of Hawaii, West Maui's climate is relatively uniform year-round. The region's tropical climate, its position relative to storm tracts and the Pacific anticyclone, and the surrounding ocean combine to produce this stable climate. Variations in climate among different regions, then is largely left to local terrain.

Rainfall in this area is highly seasonal, with most precipitation occurring between October and April when winter storms hit the area. Isohyetal data indicate that average annual rainfall in the area of the proposed project ranges from 50 to 100 inches.

The winds in the region are also seasonal. The northeasterly trade wind occurs 90 percent of the time during the summer, and just 50 percent of the time in the winter. Wind patterns also vary on a daily basis, with trade winds generally being stronger in the afternoon. During the day, winds blow onshore toward the warmer land mass. In the evening, the reverse occurs, as breezes blow toward the relatively warm ocean.

3. *Topography and Soils*

At a regional scale, the topography of West Maui ranges from gently sloping areas to steep ridges and large amphitheater valleys. The maximum elevation of the West Maui Mountains is 5,788 feet at Puu Kukui.

The project vicinity contains a number of variations in topography. From the existing Kapalua wells at approximately the 765 foot elevation to the storage tank at approximately the 1,200 feet

elevation, the proposed waterline traverses an existing dirt road and pasture area with slopes ranging from 10 to 15 percent.

From the storage tank, the waterline connects to the existing Honokohau waterline at the 1,135 feet elevation. However, between these two points, the waterlines traverses five (5) gulches. Slopes within the gulches, dirt roads and trails range from moderate to extreme, with a 60 to 70 percent slope not uncommon. Pasture areas have an average slope of 10 to 15 percent.

Underlying the project are soils of the Honolua Olelo association and Rock land-Rough mountainous land association. See Figure 4. The Honolua-Olelo association is characterized by deep, gently sloping to moderately steep, well-drained soils that have a fine-textured subsoil, located on intermediate uplands. The Rock land-Rough mountainous land association is characterized by very shallow, steep and very steep, rock land and rough mountain land.

The specific soil types underlying the corridor include Honolua silty clay, 7 to 15 percent slopes (HwC), Honolua silty clay, 15 to 25 percent slopes (HwD), Rough broken land (rRR) and Rough mountainous land (rRT). See Figure 5.

Honolua silty clay, 7 to 15 percent slopes (HwC) is characterized by moderately rapid permeability, slow to medium runoff, and slight to moderate erosion hazard.

Honolua silty clay, 15 to 25 percent slopes (HwD) is characterized by medium runoff and moderate erosion hazard.

LEGEND

① Pulehu-Ewa-Jaucas association

② Waiakoa-Keahua-Molokai association

③ Honolua-Olelo association

④ Rock land-Rough mountainous land association

⑤ Puu Pa-Kula-Pane association

⑥ Hydrandepts-Tropaquods association

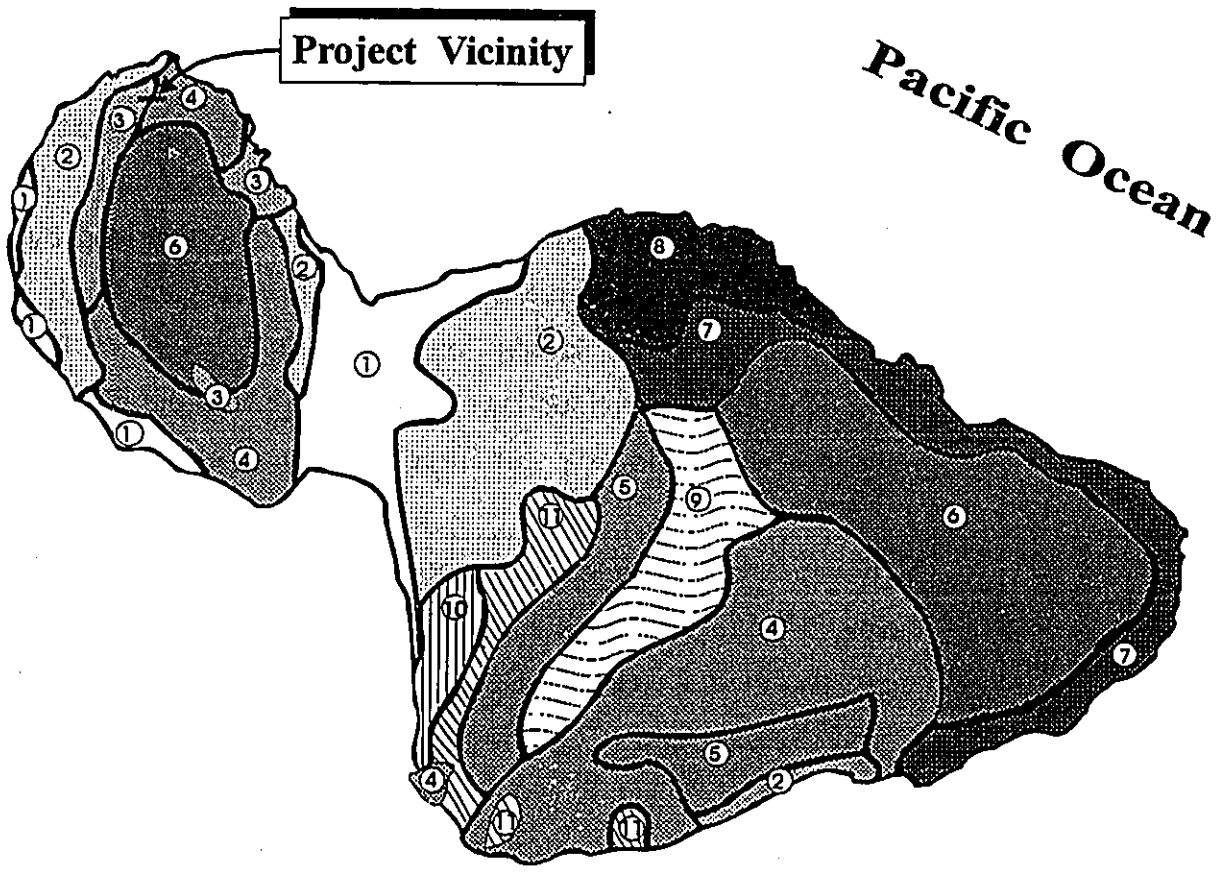
⑦ Hana-Makaalae-Kailua association

⑧ Pauwela-Haiku association

⑨ Laumaia-Kaipoipoi-Olinda association

⑩ Keawakapu-Makena association

⑪ Kamaole-Oanapuka association



Map Source: USDA Soil Conservation Service

NOT TO SCALE

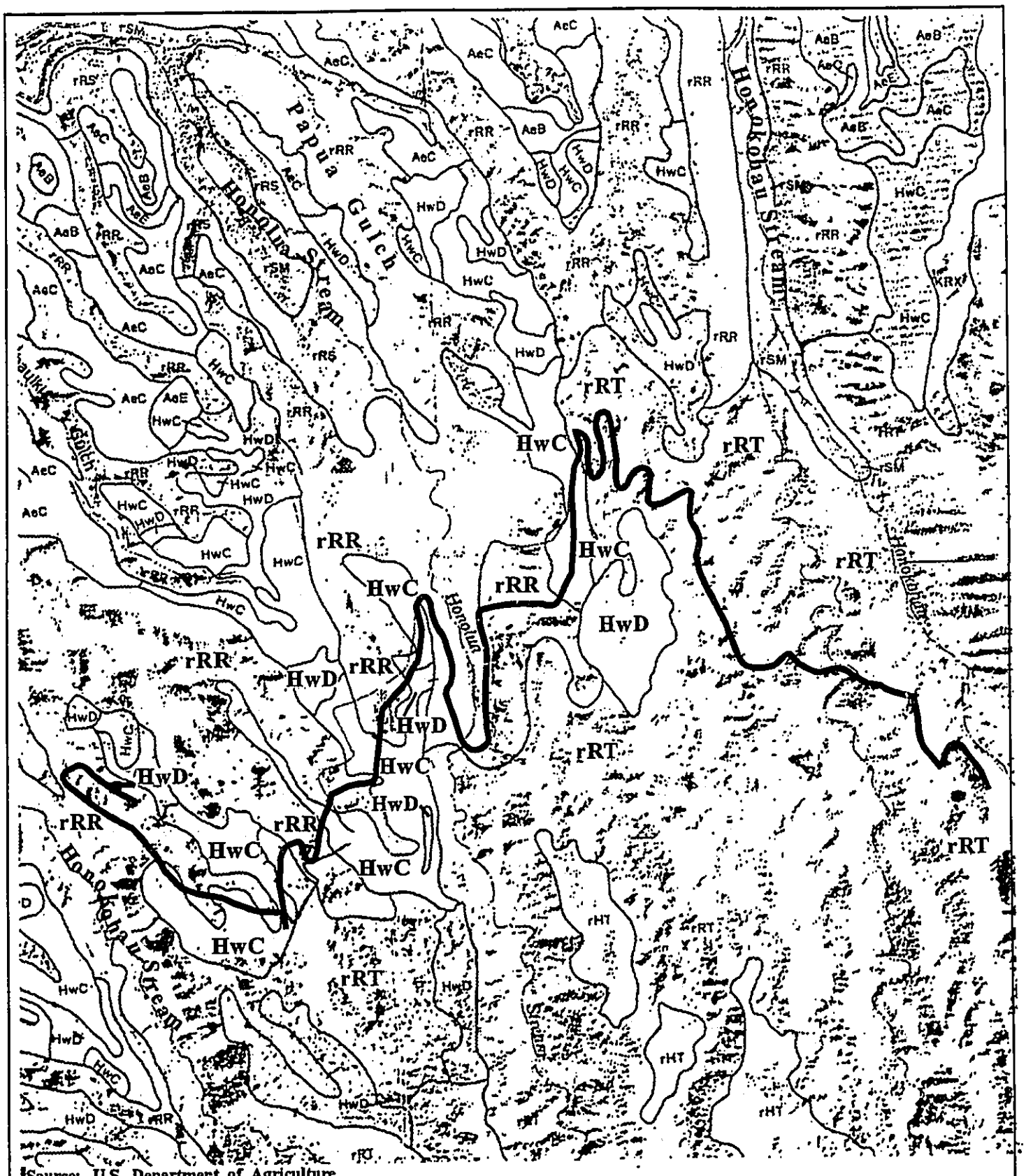
Figure 4

Honokohau Water System Improvements

Soil Association Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Department of Water Supply



Source: U.S. Department of Agriculture

Figure 5

Honokohau Water System Improvements

Soil Classification Map

0 500 1000 2000

MUNEKIYO, ARAKAWA & HIRABA, INC.

Prepared for: County of Maui, Dept. of Water Supply

Rough broken land (rRR) consists of very steep land broken by numerous intermittent drainage channels. Runoff is rapid and the geologic erosion is active.

Rough mountainous land (rRT) also consists of very steep land broken by numerous drainage channels. The land surface is dominated by deep V-shaped valleys that have extremely steep side slopes and narrow ridges between the valleys.

The State Department of Agriculture has established three (3) categories of Agricultural Lands of Importance to the State of Hawaii (ALISH). The ALISH system classifies lands into "Prime", "Unique" and "Other Important Agricultural Land". The remaining lands are "Unclassified". Utilizing modern farming methods, "Prime" agricultural lands have the soil quality, growing season, and moisture supply needed to produce sustained crop yields economically, while "Unique" agricultural lands possess a combination of soil quality, location, growing season, and moisture supply currently used to produce sustained high yields of a specific crop. "Other Important Agricultural Land" includes those which have not been rated as "Prime" or "Unique".

Most of the waterline alignment is "Unclassified" although portions which traverse through pasture areas are considered "Prime" and "Unique". See Figure 6.

The Land Study Bureau's Detailed Land Classification rates the agricultural suitability of soils. A five (5) class productivity rating is applied using the letters A, B, C, D, and E, with "A" representing lands of the highest productivity, or very good, and "E" the lowest,

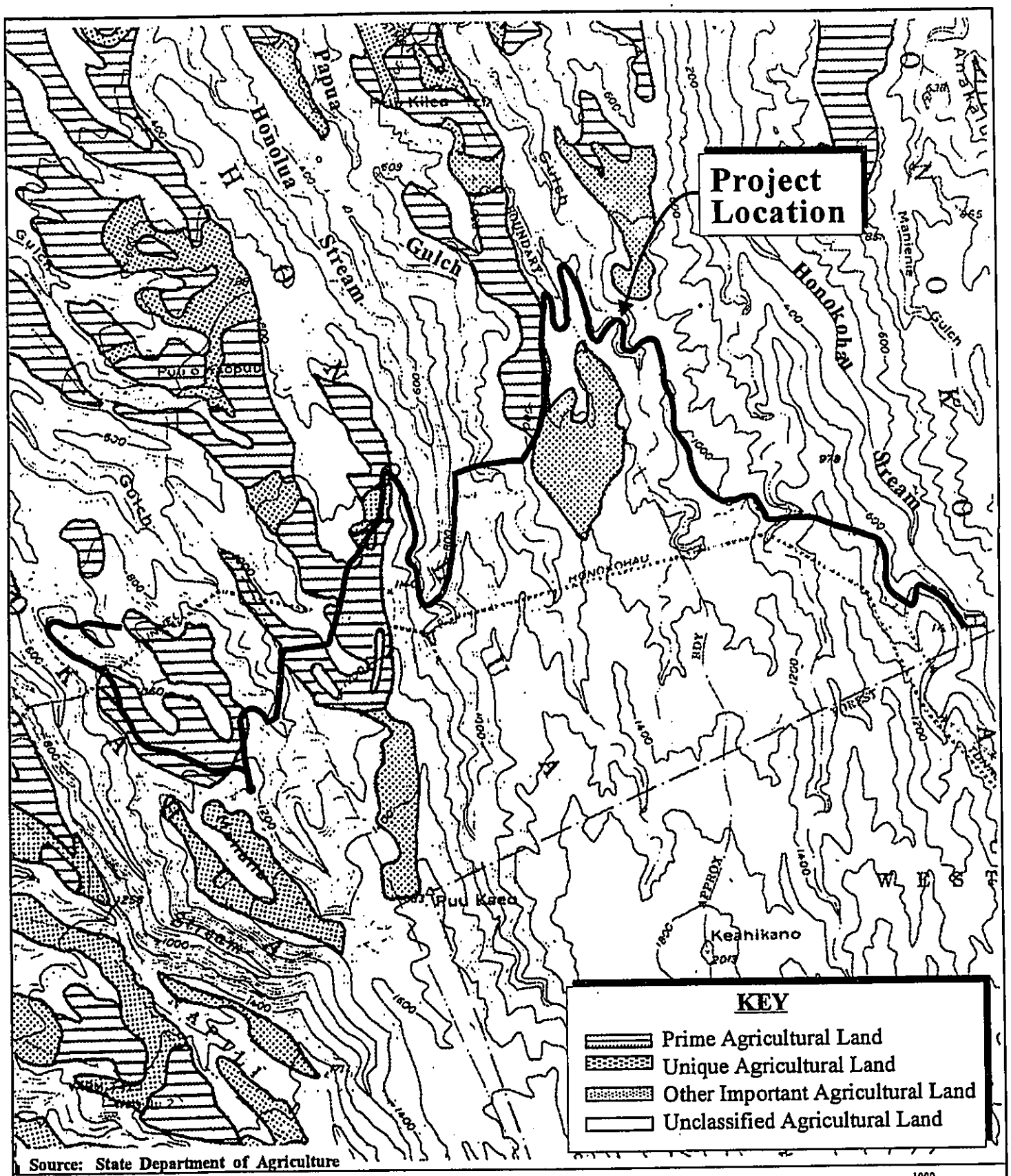


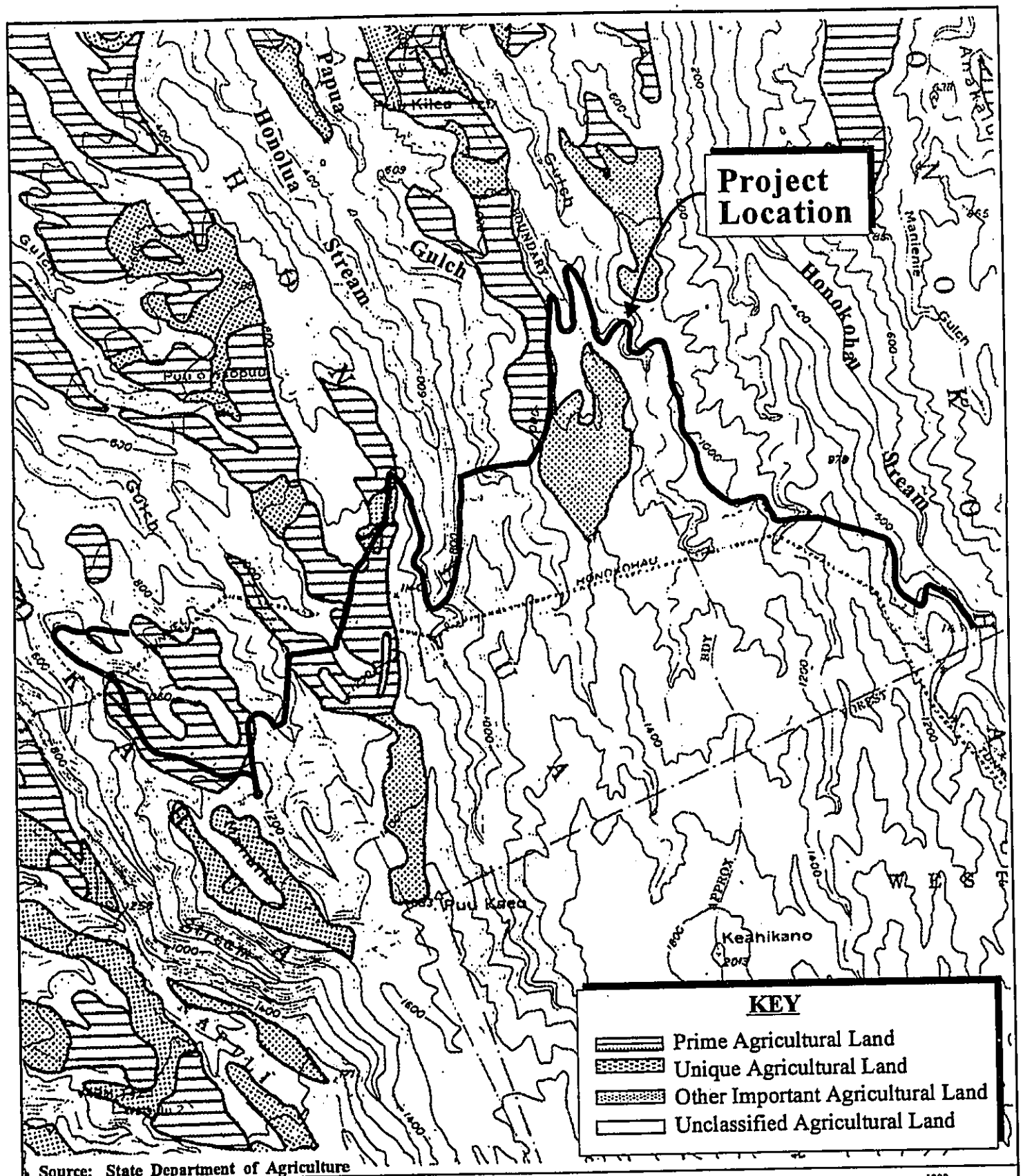
Figure 6 Honokohau Water System Improvements
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply

CORRECTION

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



Source: State Department of Agriculture

Figure 6 Honokohau Water System Improvements
Agricultural Lands of Importance to the State of Hawaii (ALISH) Map

MUNEKIYO, ARAKAWA & HIRAGA, INC.

Prepared for: County of Maui, Dept. of Water Supply

or very poorly suited for agricultural production. The Land Study Bureau identifies the land within the project site as "C", "D" and "E".

4. ***Flood and Tsunami Hazard***

The proposed project is located in Zone C, areas of minimal flooding according to the Flood Insurance Rate Map. It is noted that there will be no work performed below the high water mark within any drainageway or gulch since the proposed waterline will be suspended over drainageways.

5. ***Flora and Fauna***

A biological resources survey was conducted for the subject project by David Paul and Erik Fredericksen. Field work was conducted on October 19 and 20, 1998, and May 24, 1999. Portions of the proposed corridor had been previously inspected by Erik Fredericksen on October 6, 1998. See Appendix A.

The survey was conducted by traversing the entire length of the proposed project corridor and recording every vascular plant, avian and mammalian species encountered in the area. There are four (4) biological communities identified in the project area: Lowland Dry Forest, Lowland Mesic Grassland, Lowland Mesic Shrubland, and Lowland Mesic Forest.

Lowland Dry Forest is dominated by lama (Diospyros sandwicensis) with 'akia (Wikstroemia oahuensis), 'akoko (Chamaesyce multiformis), alahe'e (Canthium odoratum), 'ala'ala wai nui (Peperomia leptostacya), 'ala'ala wai nui pua ki (Plectranthus parviflorus), and 'ilima (Sida fallax) commonly found

in the understory. A single vine of maile (Alyxia oliviformis) was observed. 'Ohia (Metrosideros polymorpha) is an occasional canopy tree. This community is the least extensive community found in the project area, and is located along the outer slopes and ridges of Honolua and Papua Gulches.

Lowland Mesic Grassland is found in two (2) types in the project area. The most extensive is dominated by pastures of Hilo grass (Paspalum conjugatum), violet crabgrass (Digitaria violescens), Glenwood grass (Sacciolepis indica), yellow foxtail (Setaria gracilis), and broomsedge (Andropogon virginicus). These grasslands are located on tablelands above and between Honokahua, Mokupea, and Honolua Gulches. Within this community, cattle (Bos taurus), horses (Equus caballus caballus) and feral pigs (sus scrofa scrofa) were observed grazing.

The other grassland is found along access trails, roadways and shoulders of water ditch systems in the project corridor, and is dominated by molasses grass (Melinus minutifolia). The grassland communities in the project area are highly impacted and lacking in native (indigenous and endemic) vegetation. Evidence of feral cats (Felis catus) was found in both grassland communities. The Pacific golden plover or kolea (Pluviatis dominica pacifica), a migratory bird was encountered in both communities in October.

Lowland Mesic Shrubland is dominated by 'a'ali'i (Dodonaea viscosa), 'akia (Wikstroemia oahuensis), alahe'e (Canthium odoratum) and uluhe (Dicranopteris linearis). 'Ohia (Metrosideros polymorpha), lama (Diospyros sandwicensis), 'akoko (Chamaesyce multiformis), 'ama'u (Sadleria cyatheoides), and Hawaiian cliff

uluesedge (Carex wahuensis) are common associates of this community. 'Akia papa (Wikstroemia uva-ursi) is occasional on the ridges of Honolua Gulch. Neneleau (Rhus sandwicensis) and 'iliahi (Santalum ellipticum) are uncommon on the ridges of Honokohau Gulch. The Lowland Mesic Shrubland community is extensive on exposed ridges and slopes from Mokupea Gulch to Pohakupule Gulch.

Lowland Mesic Forest is represented in the project area by two (2) general types. At Mokupea Gulch, koa (Acacia koa) is the dominant tree at the inner reaches of the project area on tablelands in a forest highly impacted by Christmasberry (Schinus terebinthifolius), Formosan koa (Acacia confusa), and Moreton Bay fig (Ficus macrophylla). Alahe'e (Canthium odoratum) and uluhe (Dicranopteris linearis) are dominant in the understory, with olopua (Nestegis sandwicensis) and ni'ani'au (Neprolepis exaltata) being common associates. An occasional patch of palapalai (Microlepia strigosa) was found, and a single tree of hao (Rauvolfia sandwicensis) were located at the top of the southern slope of the gulch near the proposed 20,000 gallon water tank.

In Pohakupule Gulch and the upper portion of Honokohau Valley, the mesic forest community is dominated by lama (Diospyros sandwicensis), and 'ohia (Metrosideros polymorpha). 'Akia (Wikstroemia oahuensis), alahe'e (Canthium odoratum), uluhe (Dicrancpteris linearis), and 'a'ali'i (Dodonaea viscosa) are commonly found, with alahe'e and 'a'ali'i becoming arborescent in many locations. Several trees of ho'awa (Pittosporum glabrum) were observed in Papua Gulch, just past the mauka end of the first tunnel which the project corridor runs through. Several trees of

maua (Xylosma hawaiiense) were located at the end of the project area in Honokohau Valley, just past the mauka end of the second tunnel. A small stand of mature hala (Pandanus tectorius) was noted to the north of Honolua Ditch. Hala was not observed elsewhere in the corridor. The presence of these hala trees in the valley area suggests that they may be associated with an indigenous habitation area in the general vicinity of the project corridor.

Within the lesser sloping areas of the mesic forest, several plants have been cultivated in the past, and are naturalized. These include 'ulu (Artocarpus altilis), ki (Cordyline fruticosa), 'ohi'a 'ai (Syzygium malaccense), mango (Mangifera indica), coffee (Coffee arabica), and cinnamon (Cinnamomum verum).

The mesic forest community is the most extensive and diverse habitat in the project area. It contains the greatest number of indigenous, endemic, and Polynesian plants, but also contains the most invasive alien species.

Rats (Rattus sp.) were seen in this community, as well as evidence of their feeding on kukui (Aleurites moluccana) nuts.

Most of the animal species encountered were located in pastures of the mesic grassland community, although alien avian species, such as mynahs (Acridotheres tritis), Northern cardinals (Cardinalis cardinalis), spotted doves (Strptopelia chinensis), zebra doves (Geopelia striata), Japanese white-eyes (Zosterops japonicus), and house finches (Carpodacus mexicanus) were found throughout the project area, but none were found in any sizable numbers.

6. *Archaeological Resources*

An archaeological reconnaissance survey was conducted over much of the project corridor (Fredericksen, November 10, 1998). The entire long project area was traversed during the fall of 1998, and the summer of 1999. This approximately 10-meter wide corridor which extends from the two (2) existing Kapalua wells near Honokohua Gulch to Honokohau Valley was inspected by Erik Fredericksen and David Paul. In addition, Erik Fredericksen revisited portions of the study area to reassess cultural resources in the summer of 1999.

The archaeological inventory survey consisted of a 100 percent pedestrian walk-over of the project corridor. In addition, sites were recorded and evaluated in the field. When possible, an approximately 5-meter spacing was maintained during the surface inspection of the corridor. See Appendix B.

Two (2) previously unrecorded archaeological sites were found during the inventory survey of the study area. These sites consist of a surface scatter of waterworn coral, and a post-contact retaining wall. Both were assigned SHIP numbers. The waterworn coral scatter (Site 50-50-01-4782) lies just outside the proposed surface pipeline corridor and can be avoided. The post-contact retaining wall (Site 50-50-01-4783) is associated with an early pineapple plantation era road, and lies within the proposed pipeline corridor. In addition, portions of the Honokohau and Honolua water delivery systems were noted in parts of the project area. Both of these systems are part of the large Honokahau District (Site 50-50-01-1591). A discussion of the field findings follows.

Site 50-50-01-4782

This site is located on a ridge of land that separates Pohakupule and Papua Gulches. It lies at approximately 930 feet above mean sea level in a pasture. Vegetation observed in the general vicinity included alien species such as guava trees, ironwood trees, various annual weeds, and kikuyu or pasture grass.

Site 4782 consists of a surface scatter of waterworn coral that appears to have been partially displaced and/or exposed by cattle or previous pasture maintenance activities. Several cobbles ranging from approximately 8 to 12 centimeters in diameter were noted in an approximately 6 to 8 square meter area. A few of the pieces of coral were partially exposed and two (2) were on the surface. No other material culture remains were noted in the area.

While the function of this site remains unclear, the lack of any other cultural materials associated with the exposed pieces of coral suggests that the area was probably not used for habitation. No subsurface testing was conducted because the site lies outside the project corridor. Site 4782 is tentatively interpreted as a probable indigenous site.

Site 50-50-01-4783

This second site is located in Mokupea Gulch at about the 800-foot level of elevation. Observed vegetation in the area consisted primarily of alien species, such as guava and Java plum trees, coffee plants, various grasses and annual weeds, and ferns.

Finally, several kukui nut trees were growing in the immediate vicinity of the wall.

Site 4783 is interpreted as a post-contact retaining wall, associated with an old pineapple plantation-era road. This road is very deteriorated from disuse and lack of maintenance. It was a maximum of 6 meters wide, and the corridor follows it for approximately 300 meters. The retaining wall is 20 meters long and up to 3.7 meters in height. It is constructed with subangular basalt cobbles and boulders that range from 20 to 70 centimeters in diameter. The wall ranges from 8 to 18 rock-courses in height. Overall construction technique is generally good, and site condition ranges from poor to good.

An old concrete and rock culvert was noted at the base of the wall. This culvert was approximately 35 centimeters in diameter. No other material cultural remains were noted. The abandoned road was up to 6 meters wide in this portion of the project area.

Site 50-50-01-1591

The Honokahua District is a large historic district which encompasses Kapalua as well as much of the project area. Both the Honokohau and the Honolua Ditch systems are considered to be a part of this district.

The Honokohau Ditch system was begun in 1901 as part of a water agreement between Honolua Ranch and Pioneer Mill. The latter's success depended on water delivered from the watershed controlled by Honolua Ranch (later known as Baldwin Packers,

then Maui Pineapple Company, and finally Maui Land and Pineapple Company in 1969). Construction of Honokohau Ditch began in 1902 and was completed in 1904. The ditch and flumes ran along soft hillsides where landslides frequently filled it with dirt and damaged the flumes.

By 1912, it was leaking badly and was in very poor condition. David T. Fleming, manager of Honolua Ranch, determined that an entirely new system should be built. This was called the Honolua Ditch to avoid confusion with the earlier water system. Work began on the new system, incorporating two (2) features to minimize seepage. It was totally lined with cement, and wooden flumes were eliminated--relying on tunnels instead.

Portions of this ditch system and two (2) associated tunnels lie within the project corridor. The first of these tunnels is approximately 100 meters long (Tunnel 1), while the second one is approximately 300 meters long. Both tunnels range from approximately 1.5 to 2.2 meters in height and are approximately 2.5 to 3 meters wide. The shorter tunnel is in generally poor condition and is considered to be somewhat dangerous. The longer tunnel is in generally fair condition and appears to be relatively stable. These tunnels were hand excavated by laborers through two (2) ridges. The longer one accesses the upper portion of Honokahau Valley.

Inspected segments of the Honokohau Ditch in the project corridor ranged from poor to fair condition. Construction technique tended to range from fair to good. In general, the rock-lined ditch sections did not contain large amounts of mortar. The bulk of the water

system present in the project area consists of the Honokohau Ditch, which is no longer in use.

The Honolua water system constructed later between 1912 and 1914 tended to be in better condition. Concrete and mortar were more extensively utilized in the Honolua water delivery system, than in the older one.

Discussion

The proposed pipeline route will parallel portions of the Honokohau and Honolua Ditch systems. Sections of both ditches will likely lie within 5 meters of the proposed surface waterline. It is estimated that approximately 500 to 600 meters of the water ditch system will be paralleled by the waterline. In addition, the pipeline will also traverse two (2) existing tunnels associated with the water system.

7. *Air Quality*

There are no adverse air quality conditions along the proposed waterline alignment, as there are no significant sources of pollution between the summit of the West Maui Mountains and the ocean. In addition, the island's exposure to winds typically results in the rapid dispersion of pollutants (e.g., automobile pollutants).

8. *Noise Characteristics*

Surrounding noise levels in the area of the project are characteristic of its conservation and agricultural nature. Background noise levels are primarily limited to weather conditions (e.g., wind, rain) or occasional vehicular noise. Equipment noise related to pineapple cultivation and harvesting at lower elevations

may also contribute to background noise levels on an occasional basis.

9. *Visual Resources*

Spanning approximately 6.25 miles, the proposed project is located on the uplands of the West Maui Mountains. Lands which slope up to the summit are located to the south. The project traverses several pastures. Lower elevation lands are cultivated in pineapple. Gulch areas are generally undeveloped containing a mix of native and alien vegetation. The Pacific Ocean is visible to the north and west from portions of the project. Developed areas of Kapalua and Napili are visible to the west close to the shoreline.

B. *SOCIO-ECONOMIC ENVIRONMENT*

1. *Population*

The resident population of the West Maui Community Plan region has demonstrated a substantial increase over the last two decades. Population gains were especially evident in the 1970's as the rapidly developing visitor industry attracted many new residents. The current population of the Lahaina District is estimated at 14,574 (Community Resources, Inc., 1994). A projection of the resident population for the years 2000 and 2010 are 18,555 and 22,633, respectively.

Growth at the County level exhibits a similar pattern. The County's 1980 resident population of 71,000 has since grown to just over 100,000. The estimated County population in 2010 is 145,872 (Community Resources, Inc., 1994).

2. ***Economy***

The economy of Maui is heavily dependent upon the visitor industry. The dependency on the visitor industry is especially evident in West Maui, which is one of the State's major resort destination areas. In addition to Kapalua, the Kaanapali Resort, located approximately five (5) miles to the south of the project site, hosts a number of hotels, including the Maui Marriott Resort (720 rooms), Hyatt Regency Maui (816 rooms), and the Westin Maui (761 rooms).

West Maui's visitor orientation is reflected in the character of Lahaina Town, which serves as a center for visitor-related retail outlets, as well as visitor-related activities.

In addition to the visitor industry, agriculture is established as a vital component of the West Maui economy. Sugar operations in West Maui are managed by the Pioneer Mill Co., Ltd. (PMCo). Currently, PMCo. utilizes approximately 6,700 acres for agricultural cultivation. However, with the announced closure of its sugar cultivating operations in February 1999, PMCo. is considering other commercial crops in addition to its approximately 500 acres of coffee. Additionally, Maui Land and Pineapple Company's pineapple fields play an important component of the region's agricultural base.

3. ***Solid Waste Disposal***

Single-family residential solid waste collection service is provided by the County of Maui on a once-a-week basis. Residential solid waste collected by County crews is disposed at the County's 55-acre Central Maui Landfill, located four miles southeast of the

Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies.

4. ***Medical Facilities***

The only major medical facility on the Island is Maui Memorial Hospital, located approximately twenty (20) miles from Lahaina, midway between Wailuku and Kahului. The approximately 200-bed facility provides general, acute, and emergency care services.

In Kapalua, Doctors on Call provides private physician services. In addition, regular hours are offered by private practices in Lahaina, which include the Maui Medical Group, Lahaina Physicians, West Maui Healthcare Center, and Kaiser Permanente Lahaina Clinic.

5. ***Police and Fire Protection***

The County of Maui's Police Department is headquartered at its Wailuku Station. The project site is within the Lahaina Police Station service area, which services all of the Lahaina district.

Fire prevention, suppression and protection services are offered by the County's Department of Fire Control. The project vicinity is serviced by the Napili Station and the Lahaina Fire Station.

6. ***Educational Facilities***

The West Maui area is served by four public schools operated by the State of Hawaii, Department of Education: Lahainaluna High School; Lahaina Intermediate School; King Kamehameha Elementary School; and Princess Nahienaena Elementary School.

The region is also served by privately operated pre-elementary and elementary schools.

7. *Recreational Facilities*

West Maui is served by numerous recreational facilities offering diverse opportunities for the region's residents. There are seventeen (17) County parks and three (3) State beach parks in West Maui. Approximately one-third of the County parks are situated along the shoreline and are excellent swimming, diving, and snorkeling areas.

In addition, Kaanapali and Kapalua Resorts operate world-class golf courses which are available for public use.

C. *INFRASTRUCTURE*

1. *Roadways*

Honoapiilani Highway (State Highway 30) is the main roadway serving the West Maui region. This highway is the only link between West Maui and the rest of the island (although a non-standard segment of highway extends around the north coast of the island to Waihee, providing limited access). The highway has a typical two-lane configuration except for a segment from Kaanapali Parkway to Lahainaluna Road where four (4) travel lanes are provided.

Access points to the project site are by pineapple field roads and other private unimproved roads extending from Honoapiilani Highway. Since the roads traverse private property, there are existing gates which restrict access.

2. ***Water System***

Water for the existing users in Honokohau Valley were previously derived from the Honokohau Tunnel. Currently, water is being trucked to Honokohau Valley by the Department of Water Supply. There are approximately 13 water meters in the Valley with an average consumption of less than 2,000 gallons per day (Wilson Okamoto & Associates, Inc., September 1992).

The existing Kapalua Well Nos. 1 and 2 are part of the privately operated Kapalua Water Company's (KWC's) water system which services Kapalua Resort. The KWC provides potable, fire protection and irrigation water for the resort.

3. ***Wastewater Systems***

The County's wastewater collection and transmission system and the Lahaina Wastewater Reclamation Facility (LWRF) accommodate the region's wastewater needs. The LWRF, located along Honoapiilani Highway just north of Kaanapali Resort, has been recently upgraded and expanded to a design capacity of 9.0 million gallons per day. The collection system extends from Lahaina Town to Kapalua. Other areas, such as Honokohau Valley, are served by cesspools or septic tanks.

4. ***Drainage***

There are no existing drainage improvements in the vicinity of the proposed project. Surface runoff flows downhill in a generally makai or northern direction. Runoff flows into natural drainageways, such as Honokahua Gulch, Mokupea Gulch, Honolua Gulch, Papua Gulch, Pohakupule Gulch, an unnamed tributary to Honokohau Stream, and Honokohau Stream.

5. ***Electrical***

Electrical power requirements associated with the proposed project will be supplied by Maui Electric Company, Ltd., which currently provides power at the site of Kapalua Well Nos. 1 and 2.

Chapter III

Potential Impacts and Mitigation Measures

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. PHYSICAL ENVIRONMENT

1. Surrounding Environment

The project site is located in the midst of an open space setting which traverses gulches and pastures interspersed with roads, trails, and access tunnels. Portions of the waterline are proposed to be laid on the existing ground surface to minimize impact to existing conditions. Other portions of the waterline are proposed to be placed underground within existing access roadways. The proposed project is not anticipated to have any adverse effects on surrounding land uses.

2. Topography/Landform

The proposed project will involve excavation for the waterline in areas where there are existing access roads. Clearing and grubbing will be required for the site of the storage tank and pressure break tank. Finished contours will follow existing grades and maintain existing drainage patterns. Other portions of the waterline will be placed on the ground surface and should not affect topography or landform.

3. Flora and Fauna

The biological resources survey did not find any species of vascular plant which has protection under Federal or State law.

Although legally protected plants were not found in the study area, they have the potential of establishing in all of the unique biological communities in the project area, with the exception of the Lowland Mesic Grassland habitats, due to ongoing disturbances.

The only animal species encountered in the project area that has legal protection was the Pacific golden plover or kolea (Pluvialis dominica pacifica). The Pacific golden plover is a migratory bird species which is seasonal in Hawaii and is not endangered. It inhabits areas close to humans, and quickly repositions itself when humans or other animals approach it. Therefore, the impacts to this animal, from the actions of this project, should be minimal.

There are no biological resources found in the project corridor that require consideration for planning, as long as impacts to the proposed corridor be kept to a minimum.

Stream habitats found in the project area were intermittent and did not have any standing bodies of water at the time of the survey. The proposed suspension of the waterline over the streams will mitigate negative impacts to the stream habitats.

The U.S. Fish and Wildlife Service commented that the endangered dark-rumped petrel (Pterodroma phaeopygia sandwichensis) flies between the uplands of West Maui and marine foraging areas. However, it is noted that the proposed project will not erect any obstructions such as suspended cables or poles which could result in seabird collision and fallout. Thus, the project will not result in an additional hazard to seabirds and other night-flying birds should they pass through the area.

The entire proposed corridor for the project runs across previously disturbed areas consisting of access trails, roadways, cattle pastures, shoulders of water ditch systems, and through two (2)

tunnels. Therefore, impacts to biological resources resulting from the actions of the proposed project should be minimal.

4. ***Archaeological Resources***

Two (2) previously unrecorded sites and portions of the water system associated with Honokahau District (Site 1591) were located during the inventory survey of the project area. See Appendix B. Site 4782 is tentatively interpreted as a precontact site with an unknown function. This site is located in a pasture and consist of an eroding scatter of waterworn coral cobbles. It lies just outside of the proposed waterline corridor. Site 4783 is interpreted as an old retaining wall associated with an abandoned, unimproved pineapple road. This feature was found in Mokupea Gulch and lies within the proposed pipeline corridor.

Portions of Site 1591 were also present in the project area. Sections of the older Honokahua Ditch network and the newer Honolua water system were noted within the corridor. While the above sites were found during the survey, the proposed surface location of the waterline should provide sufficient flexibility to avoid negative impact to these cultural resources.

Site Significance Evaluations

Sites 4782 and 4783, and the portions of the water delivery system associated with Honokahua District (Site 1591) in the project corridor qualify for significance under Criterion "D" of the Federal and State historic preservation guidelines. In addition, the Honokahau and Honolua Ditch systems (Site 1591) also would be considered significant under Criterion "C".

Mitigation Recommendations

No subsurface evaluation was conducted on the Site 4782 surface scatter because it lies just outside the proposed corridor in a pasture. This site is still considered to be significant under Criterion "D". Data recovery is the recommended mitigation treatment if the proposed pipeline alignment changes and the site is to be impacted. In the event that the corridor remains unchanged, no further work is deemed necessary for the site at this point in time.

Site 4783, the retaining wall in Mokupea Gulch is no longer considered to be significant for its information content. Consequently, no further work is required for this post-contact structure. In any event, placement of the pipeline should not impact this site.

The proposed surface waterline will parallel portions of the Honokohau and Honolua water ditch systems, and go through two (2) existing tunnels in the Honokohau system. The sections of the Site 1591 water delivery system that are in the project corridor are still considered significant under both Criteria "C" and "D" of the guidelines. In order to prevent adverse impacts on this historically significant water delivery system, the proposed pipe installation methodology for areas along the various ditches shall be submitted to State Historic Preservation Division (SHPD) for review.

Large and medium-growth trees (i.e. guava, Java plum, kukui nut) were noted in close proximity to portions of the ditch system in the project corridor. Mechanical installation of the pipeline could negatively impact the nearby mortar and rock ditch sections.

Consequently, it may be necessary to monitor sections of the corridor if mechanical pipeline placement is proposed.

5. ***Air Quality***

Air quality impacts attributed to the project will include dust generated by short-term construction activities. Where trenching is proposed within existing dirt roads, earthwork operations via plowing will result in fugitive dust and exhaust emissions from equipment being generated. Trenched areas shall be immediately backfilled after placement of the waterline.

When mechanical equipment is utilized to unwind and lay the waterline on the ground surface, this may also result in minor and temporary generation of particulate matter.

On a long-term basis, the project will not generate adverse air quality conditions.

6. ***Noise Quality***

Noise will be generated from construction equipment such as materials-carrying trucks and mechanical equipment. All construction activities are anticipated to be limited to daylight hours only.

There are no adverse long-term noise conditions arising out of the proposed action.

7. ***Visual Resources***

The project would consist of a number of minor above ground improvements. Near the existing Kapalua Wells and existing

equipment storage structure, a pump control panel and other accessory improvements are proposed. The pump control panel is approximately 6 feet in height, approximately 5 feet in width, and approximately 2 feet in depth. The booster pump may reach approximately 6 feet above grade and would be placed on a concrete pad.

The proposed storage tank located near the edge of Mokupea Gulch would occupy an area of approximately 15 feet in diameter and approximately 12 feet in height. An additional 10 feet around the tank is proposed to be cleared. The proposed break tank near Honokohau is likely to be cube-shaped with dimensions of 5 feet on each side.

The proposed project should not have an adverse effect upon the visual character of the surrounding area.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population and Local Economy

The project should have no effect upon population parameters.

On a short-term basis, the project will support construction-related services. It is anticipated that Maui Land and Pineapple Company would construct and install the waterline for the Department of Water Supply. Maui Land and Pineapple Company owns the land over which the improvements are proposed. There are existing potable and non-potable water system improvements in the area maintained by Maui Land and Pineapple Company.

On a long-term basis, the project does upgrade the quality of water for domestic usage for residents of Honokohau Valley. Although not a direct economic benefit, the proposed improvements will maintain the economic viability as well as the health and safety of the area.

2. ***Agriculture***

Portions of the waterline would be placed within existing pasture lands. The waterline is proposed to be placed on the ground surface and is not expected to adversely impact agricultural concerns.

3. ***Public Services***

The proposed use of the property is not expected to increase the resident or visitor population. As such, the proposed project is not anticipated to affect the service area limits or requirements for emergency services, such as police, fire and medical services. Furthermore, the project will not affect recreational facilities and public schools.

4. ***Solid Waste***

Minor clearing would be required for small portions of the project, such as the area of the storage tank and pressure break tank. Green waste from the cleared areas will be utilized on lands owned by Maui Land and Pineapple Company.

C. *INFRASTRUCTURE*

1. ***Roadways***

Access to the project site is via pineapple field roads extending from Honoapiilani Highway. Existing dirt roads mauka of the

pineapple fields provide vehicular access to pasture lands. There will be no new roadways constructed to move equipment into and along the proposed corridor.

In the short term, there may be inconveniences for users of the existing dirt roads. However, access is controlled by Maui Land and Pineapple Company. Access arrangements during construction work periods will be coordinated with affected parties. Access during non-work periods (i.e., nighttime, weekends, holidays) is not anticipated to be affected.

In the long term, the project should have no effect upon area roadways.

2. ***Wastewater***

The project will not generate any wastewater and will have no impacts upon wastewater disposal parameters or the County's wastewater system.

3. ***Drainage***

During construction of the underground waterlines, trenching is expected to be covered immediately. Finish grades will match existing grades. Portions of the project, such as the storage tank and pressure break tank, will add a relatively small amount of impermeable surface to the project. Other portions of the project are not expected to significantly alter the existing surface. The quality and quantity of runoff in the area is not anticipated to be affected to any significant degree due to the project.

Chapter IV

Relationships to Governmental Plans, Policies and Controls

IV. RELATIONSHIPS TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICTS

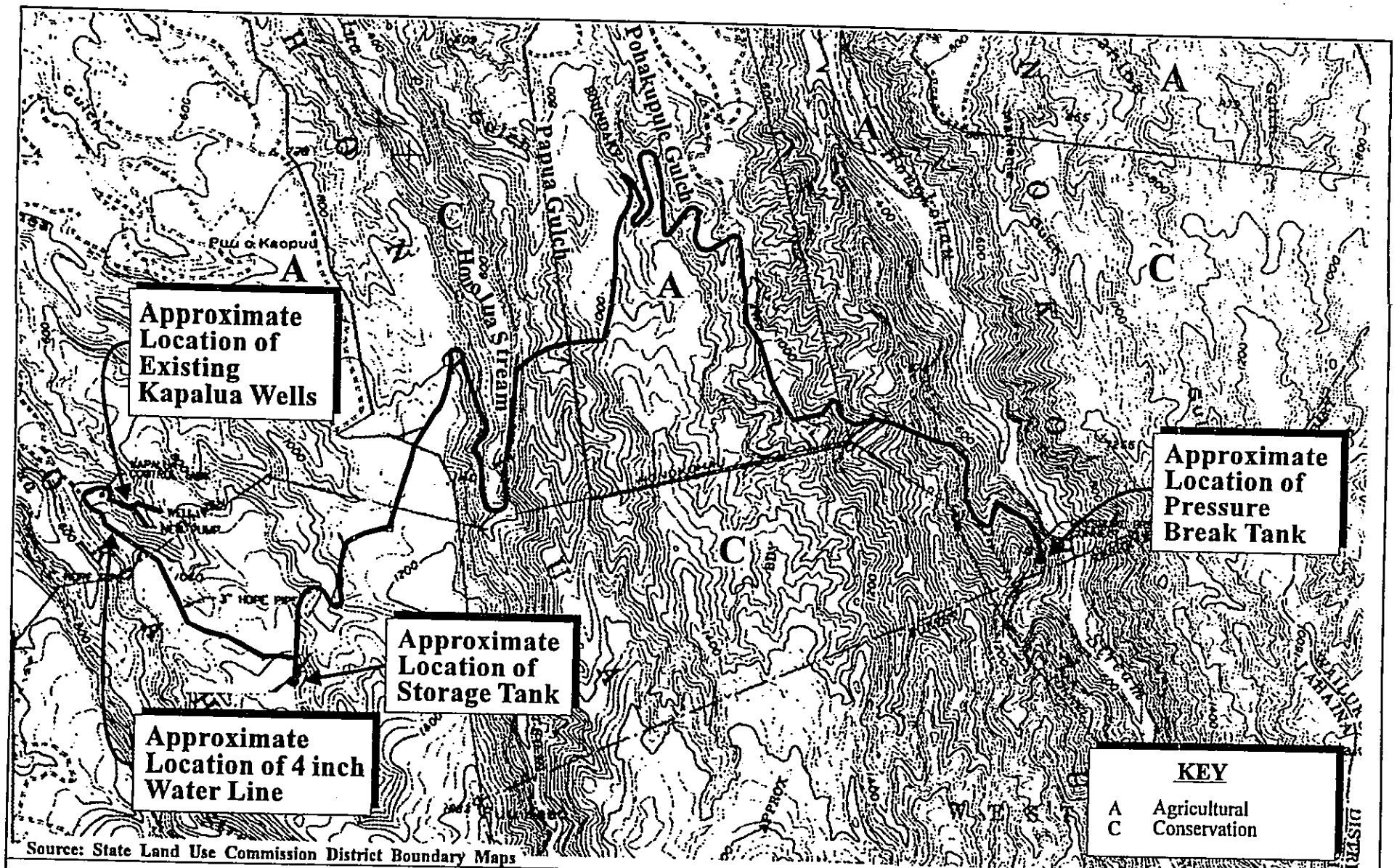
Chapter 205, Hawaii Revised Statutes, relating to the State Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural", and "Conservation".

From the existing Kapalua Wells to the storage tank to the Honolua District, approximately 9,500 lineal feet of waterline is within the Agricultural District. Within the Honolua District, approximately 8,000 lineal feet is located within the Conservation District. Within the Papua and Pohakupule areas, approximately 11,000 lineal feet of waterline traverses the Agricultural District. From Pohakupule to the pressure break tank, approximately 4,500 lineal feet of waterline is within the Conservation District. See Figure 7.

The proposed project is permissible within the Agricultural District as a "public utility line".

Chapter 2, of Title 13, Hawaii Administrative Rules, requires that a Conservation District Use Permit (CDUP) be issued by the State Board of Land and Natural Resources (BLNR) to conduct work within the Conservation District.

Title 13 establishes subzones within the Conservation District. These subzones are designated "Protective" (P), "Limited" (L), "Resource" (R), "General" (G), and "Special" (S). The portions of the waterline within the Conservation District are within the "Resource" subzone. The objective of the "Resource" subzone is to develop, with proper management, areas



Source: State Land Use Commission District Boundary Maps

Figure 7

Honokohau Water System Improvements

State Land Use Classification

Prepared for: County of Maui, Dept. of Water Supply

MUNEKIYO, ARAKAWA & HIRAGA, INC.

to ensure sustained use of the natural resources of those areas.

According to the Department of Land and Natural Resources Conservation District rules, the proposed project may be considered an "identified use" as a public purpose use (D-2). A description of the public purpose use (D-2) is as follows:

> Transportation systems, transmission facilities for public utilities, water systems, energy generation facilities utilizing the renewable resources of the area (e.g., hydroelectric or wind farms) and communications systems and other such land uses which are undertaken by non-governmental entities which benefit the public and are consistent with the purpose of the conservation district.

Accordingly, an application for a Conservation District Use Permit for the proposed project will be prepared and processed in accordance with Title 13.

Thus, with regard to the proposed action's consistency with the purpose of the Conservation District, the following criteria are discussed:

1. ***The proposed land use is consistent with the purpose of the Conservation District:***

   The proposed project is a permissible use within the Conservation District and is not contrary to the purpose of conserving, protecting and preserving important natural resources of the State.

2. ***The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur:***

   The proposed project is consistent with the objective of the Resource subzone. The project is not contrary to ensuring the sustained use of natural resources of this area.

3. ***The proposed land use complies with provisions and guidelines contained in Chapter 205A, HRS, entitled "Coastal Zone Management," where applicable:***

The discussion of compliance with Chapter 205A, HRS is as follows:

(1) ***Recreational Resources***

Objective:

Provide coastal recreational opportunities accessible to the public.

Policies:

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;

(ii) Requiring replacement of coastal resources having significant recreational value, including but not limited to surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the state for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational

value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and non-point sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, county planning commissions; and crediting such dedication against the requirements of Section 46-6, HRS.

Response: The proposed project will not affect coastal zone recreational opportunities. Accessibility to shoreline areas will not be impacted by the proposed action.

(2) ***Historic Resources***

Objective:

Protect, preserve and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies:

(A) Identify and analyze significant archeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Response: An archaeological inventory survey was conducted for the project. Two (2) previously unrecorded

sites and portions of the water system associated with the Honokohau District were discussed in the survey. The applicant will work with the SHPD in implementing applicable mitigation measures.

(3) ***Scenic and Open Space Resources***

Objectives:

Protect, preserve and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments which are not coastal dependent to locate in inland areas.

Response: The proposed project will not adversely impact scenic or open space resources. The project involves only minor water supply appurtenances which will not change the topographic character of the area.

(4) ***Coastal Ecosystems***

Objective:

Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

(A) Improve the technical basis for natural resource management;

(B) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(C) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(D) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate state water quality standards.

Response: The proposed project will not disrupt or impact coastal ecosystems.

(5) ***Economic Uses***

Objectives:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent

development outside of presently designated areas when:

(i) Use of presently designated locations is not feasible;
(ii) Adverse environmental effects are minimized; and
(iii) The development is important to the State's economy.

Response: The proposed project is not contrary to provision of public or private facilities and improvements in suitable locations.

(6) ***Coastal Hazards***

Objectives:

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program;
(D) Prevent coastal flooding from inland projects; and
(E) Develop a coastal point and nonpoint source pollution control program.

Response: The proposed action is governed by controls on development through the administration of Conservation District provisions. The proposed action is not anticipated to adversely impact downstream or adjacent properties, and is not located within flood-prone areas.

(7) ***Managing Development***

Objectives:

Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Policies:

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;
(B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: Input was solicited during the early consultation phase of the Environmental Assessment (EA). Public comments will also be afforded during the draft and final EA review as well as the Conservation District Use Permit process.

(8) ***Public Participation***

Objectives:

Stimulate public awareness, education, and participation in coastal management.

Policies:

(A) Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;
(B) Disseminate information on coastal management issues by means of educational materials, published

reports, staff contact, and public workshops for persons and organizations concerned with coastal-related issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific medications to respond to coastal issues and conflicts.

Response: The proposed project is subject to the EA and the Conservation District Use Permit process. The project is not contrary to the objective of public awareness, education, and participation in coastal management.

(9) Beach Protection

Objectives:

Protect beaches for public use and recreation.

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Response: The closest point of the proposed project to the shoreline is still approximately 9,000 feet away and is not anticipated to impact shoreline activities.

(10) Marine Resources

Objectives:

Implement the State's ocean resources management plan.

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;
(B) Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;
(C) Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;
(D) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;
(E) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and
(F) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed project is a significant distance away from the marine environment. There are no discharges into streams and gullies which could affect the marine environment. Accordingly, the proposed project has no significant effect upon this environmental parameter.

4. ***The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area:***

The proposed project involves the implementation of small scale water supply improvements which would benefit approximately 13 water meters in Honokohau. No adverse impact to existing natural resources within the surrounding area are anticipated.

5. ***The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to physical conditions and capabilities of the specific parcel or parcels:***

The structures which are proposed as part of the project are all modestly sized. In this regard, there will be no significant visible changes to the environment as a result of the project.

6. ***The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable:***

Upon completion of the project, the existing land uses along the waterline corridor are anticipated to remain as either open space, access roadway, trails, tunnel or pasture. The project will result in minimal effect upon the existing landscape. The intent is to preserve the natural beauty and open space characteristics of the area.

7. ***Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district:***

The proposed action does not involve the subdivision of land to increase land use intensity.

8. ***The proposed land use will not be materially detrimental to the public health, safety and welfare:***

The proposed project enhances the public's health, safety and welfare by upgrading the domestic water system.

B. ***GENERAL PLAN OF THE COUNTY OF MAUI***

The General Plan of the County of Maui (1990) update provides long-term goals, objectives and policies directed toward the betterment of living

conditions in the County. Addressed are social, environmental, and economic issues which influence both the quantity and quality of growth in Maui County. The following General Plan objectives and policies are addressed by the proposed project:

Objective:

To provide an adequate supply of potable and irrigation water to meet the needs of Maui County's residents.

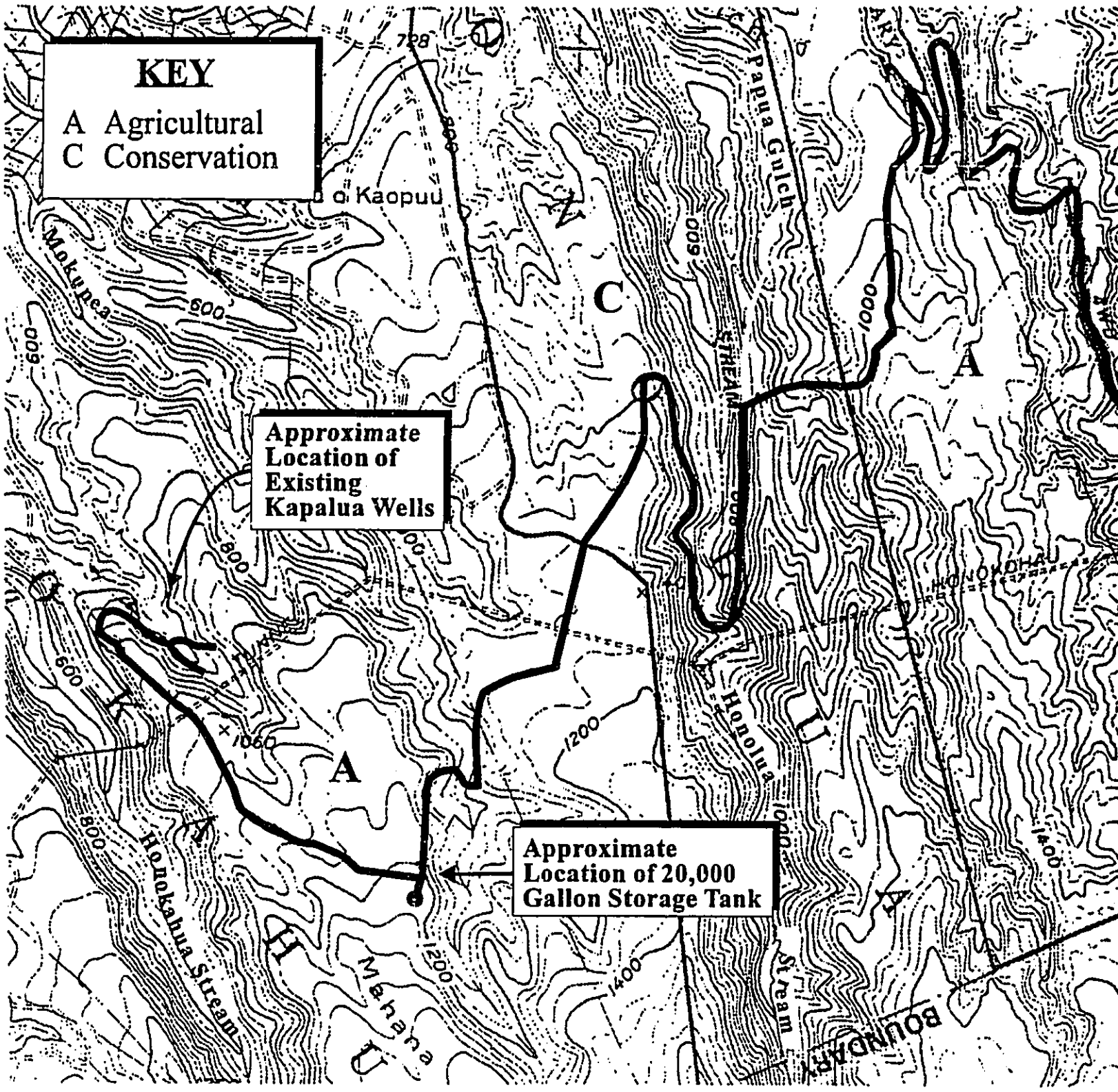
Policy:

Meet or exceed Federal quality standards for the potable water supply.

C. *WEST MAUI COMMUNITY PLAN*

The proposed project is located in the West Maui Community Plan region which is one (1) of nine (9) Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designed to implement the Maui County General Plan. Each Community Plan contains recommendations and standards which guide the sequencing, patterns and characteristics of future development in the region.

Land use guidelines are set forth by the West Maui Community Plan Land Use Map. The community plan land use designations for the project alignment are generally the same as the State land use classifications. See Figure 8. From the existing Kapalua Wells to the storage tank to the Honolua District, approximately 9,500 lineal feet of waterline are within the Agricultural District. Within the Honolua District, approximately 8,000 lineal feet are located within the Conservation District. Within the Papua and Pohakupule areas, approximately 11,000 lineal feet of waterline traverse the Agricultural District. From Pohakupule to the pressure break

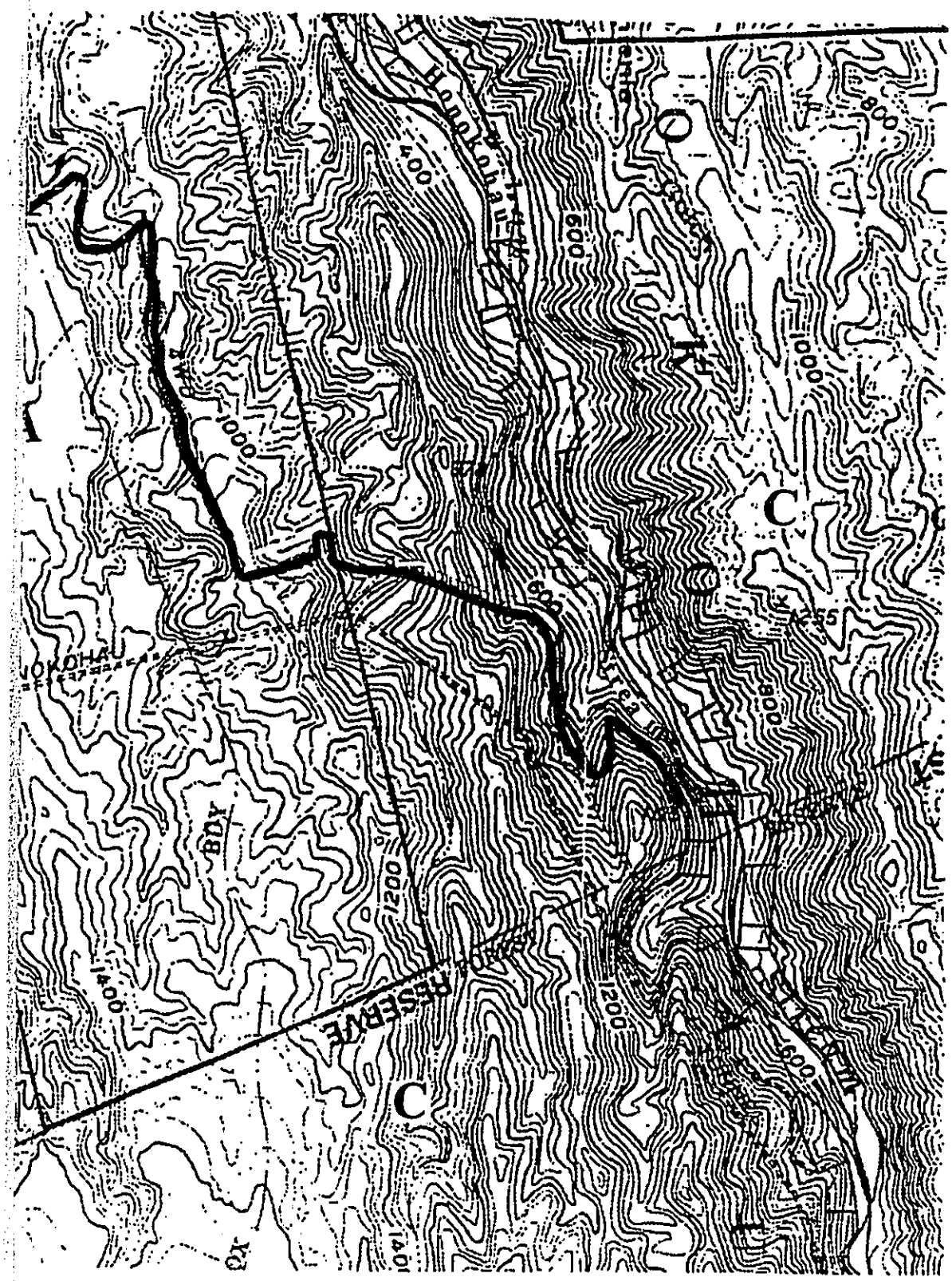


Source: County of Maui, Department of Planning

Figure 8

Honokohau Water System Improv
West Maui Community Plan

Prepared for: County of Maui, Dept. of Water Supply



m Improvements
unity Plan

NOT TO SCALE

MUNEKIYO, ARAKAWA & HIRAGA, INC.

tank, approximately 4,500 lineal feet of waterline are within the Conservation District.

The following objectives and policies also pertain to the subject application:

Environment

Integrate stream channels, gulches and other areas deemed unsuitable for development into the region's open space system for the purposes of safety, open space relief, greenways for public use and visual separation. Existing development of these stream channels, gulches and other areas shall be maintained and shall not be expanded. Drainage channels and siltation basins should not be considered for building sites, but used, rather, for open space.

The following major streams and gulches, as named on the United States Geologic Survey topographic maps (Lahaina and Honolua, Hawaii, 7.5 minute series, 1:24,000 scale), are to be kept as open space:

a. Kahoma Stream
b. Wahikuli/Hahakea Gulch
c. Honokowai Stream
d. Mahinahina Stream
e. Kahana Stream
f. Kaopala Gulch
g. Honokeana Stream
h. Napili Stream (2-3)
i. Napili Stream (4-5)
j. Honokahua Stream
k. Mokupea Gulch
l. Honolua Stream
m. Papua Gulch

n. Kauaula Stream

For other natural drainageways that discharge to the ocean during part of the year, their natural filter functions shall be preserved. The preservation of these natural filter functions may be accomplished by the use of structural controls or solutions in accord with accepted engineering standards or rules as may be adopted by the Department of Public Works and Waste Management, and includes the use of best management practices such as desilting basins, moderation of flow velocity, subsurface infiltration systems, and baffles.

Water

Improve the quality of domestic water.

It is noted that the proposed project is not contrary to the land use designations in the Community Plan. The project complies with the objectives and policies of the Community Plan by maintaining the open space function of streams, gulches and drainageways as well as improving the quality of domestic water to residents of Honokohau Valley.

D. *OTHER REGULATORY CONSIDERATIONS*

The waterline alignment traverses five (5) streams or gulches. Mokupea Gulch, Honolua Gulch, Papua Gulch, Pohakupule Gulch, and an unnamed tributary to Honokohau Stream are all delineated as streams in the United States Geological Survey Map (Napili Quadrangle).

The waterline is proposed to be suspended over the stream bed. On each side of the stream, a concrete footing outside of the high water mark is proposed in order to anchor the waterline in place. Since no fill is being

proposed within stream waters, regulatory requirements such as the Department of the Army Permit, Stream Channel Alteration Permit, Section 401 Water Quality Certification, and the Hawaii Coastal Zone Management Program Consistency Assessment are not applicable.

No discharges to State waters are proposed. Thus, no National Pollutant Discharge Elimination System (NPDES) permit would be required.

Chapter V

Summary of Adverse Environmental Effects Which Cannot be Avoided

V. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed project development will result in some construction-related impacts as described in Chapter III, Potential Impacts and Mitigation Measures.

Potential effects include noise-generated impacts occurring from construction activities. In addition, there may be temporary air quality impacts associated with dust generated from construction activities, and exhaust emissions discharged by construction equipment.

Accordingly, the proposed project is not anticipated to create any long-term adverse environmental effects.

Chapter VI

Alternatives to the Proposed Action

VI. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION ALTERNATIVE

The no action alternative would leave the existing water distribution system in its present state. The existing surface source system is not in compliance with Safe Drinking Water Standards. As an interim measure, the DWS trucks potable water to Honokohau Valley for domestic use generally on a daily basis. The no action alternative would require further use of DWS time and manpower to continue this task. From an operational standpoint, this represents an inefficient use of Department resources.

Should the trucking of potable water be discontinued, the use of the surface source system without adequate treatment would not be in conformance with Safe Drinking Water Standards. Non-compliance could lead to fines and sanctions by the State Department of Health and Environmental Protection Agency. The use of a surface water source would also leave the residents of Honokohau Valley with domestic water which does not meet applicable standards.

B. TREATMENT OF SURFACE WATER

An alternative of treatment of surface water was also considered. Microfiltration units may be utilized to upgrade the quality of the surface water.

The general cost to construct a treatment plant would be approximately $1.7 million. Honokohau Valley currently does not have any electrical power which would be needed to run the plant. Thus, power lines would need to be installed from the Kapalua Wells, a distance of slightly more than 2 miles.

This alternative would provide a long-term solution to the issue of compliance with applicable standards. However, the cost which DWS would be required to expend per consumer in Honokohau Valley would be very high.

C. ***CONSTRUCT AND EQUIP WELL IN HONOKOHAU***

Another possible alternative involves drilling a well in Honokohau. With a groundwater source and use of the existing chlorination system, this could meet Clean Drinking Water Standards.

Overhead electrical power also must be extended from the Kapalua Wells to the well site. A general estimate of the total construction cost is approximately $400,000.00.

This alternative could be considered as a long term solution to the provision of potable water in the Honokohau area. However, cost per consumer is still high and it involves extension of electrical power to the well.

D. ***PROPOSED ACTION***

The proposed action of extending a waterline from the existing Kapalua Wells to Honokohau would involve a reasonably moderate construction cost of $175,000.00. The waterline would also be placed on lands that are in pasture use or are being used by Maui Land and Pineapple Company or its lessees for access. The proposed action represents a relatively efficient, low cost and expeditious alternative to achieve compliance with Safe Drinking Water Standards. It also does not

adversely affect use of the land and results in minimal impact to the existing landscape.

Chapter VII

Irreversible and Irretrievable Commitments of Resources

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project would involve the commitment of fuel, labor, funding and material resources.

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project would involve the commitment of fuel, labor, funding and material resources.

Chapter VIII

Findings and Conclusions

VIII. FINDINGS AND CONCLUSIONS

The proposed project involves the construction of waterline improvements and other related appurtenances from Honokahua to Honokohau, Maui, Hawaii.

Every phase of the proposed action, expected consequences, both primary and secondary, and the cumulative as well as the short-term and long-term effects of the action have been evaluated in accordance with the Significance Criteria of Section 11-200-12 of Hawaii Administrative Rules. Based on the analysis, the proposed project will not result in any significant impacts. Discussion of project conformance to the criteria is noted as follows:

1. ***No irrevocable commitment to loss or destruction of any natural or cultural resource would occur as a result of the proposed project***

   The project will not significantly affect slope and land use characteristics of the surrounding area.

   Portions of the waterline are located within existing dirt roads which have been previously disturbed. The applicant will work with the SHPD in implementing applicable mitigation measures. Should any cultural materials be discovered during construction, applicable procedures to ensure compliance with Chapter 6E, HRS, will be followed.

2. ***The proposed action would not curtail the range of beneficial uses of the environment***

   The proposed waterline and appurtenant improvements are appropriate uses within the Conservation and Agricultural District. The proposed project would not curtail the range of beneficial uses of the environment.

3. ***The proposed action does not conflict with the State's long-term environmental policies or goals or guidelines as expressed in Chapter 344, Hawaii Revised Statutes***

The State Environmental Policy and Guidelines are set forth in Chapter 344, Hawaii Revised Statutes (HRS) and were reviewed in connection with the proposed project. The proposed action is in consonance with the State's long-term environmental policies and goals of Chapter 344, HRS.

4. ***The economic or social welfare of the community or State would not be substantially affected***

The proposed project upgrades the water system for Honokohau Valley. There are no direct effects upon the economic or social welfare of the community as a result of the upgrades.

5. ***The proposed action does not affect public health***

The project will result in conformance with applicable safe drinking water standards which is beneficial from the standpoint of public health.

6. ***No substantial secondary impacts, such as population changes or effects on public facilities, are anticipated***

No significant secondary impacts are anticipated from the project.

Population parameters are not expected to be affected by the project. There should be virtually no effect upon the area's roadways. There is no connection to the County's sewer system. Drainage patterns will remain unchanged. The project is not expected to impact public services, such as police, fire and medical services. Impacts upon recreational, educational and solid waste parameters are also negligible.

7. ***No substantial degradation of environmental quality is anticipated***

During the construction phase of the project, there will be short-term air quality and noise impacts. However, in the long term, there should be no effect upon air quality and noise parameters. The project should not have a significant effect upon the open space and scenic character of the area.

No degradation of environmental quality resulting from the project is anticipated.

8. ***The proposed action does not involve a commitment to larger actions, nor would cumulative impacts result in considerable effects on the environment***

The proposed project does not involve a commitment to larger actions.

9. ***No rare, threatened or endangered species or their habitats would be adversely affected by the proposed action***

There are no biological resources found in the project corridor that require consideration for planning, as long as impacts to the corridor are kept to a minimum.

10. ***Air quality, water quality or ambient noise levels would not be detrimentally affected by the proposed project***

Construction activities will result in short-term air quality and noise impacts primarily in areas involving trenching within dirt roads. These areas will be backfilled immediately after the waterline is placed within the trench. Construction will also be limited to daylight hours.

In the long term, the project is not anticipated to have a significant impact on air quality or noise parameters.

No work is being proposed within gulches or streams. Thus, the project

should have no adverse effect upon water or stream quality.

11. ***The proposed project would not affect environmentally sensitive areas, such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters***

The project would not affect environmentally sensitive areas. The project site is not located in areas prone to flooding or tsunami inundation. The proposed waterline will be placed on top of the existing ground surface except for portions of the alignment within dirt roads. Thus, the project should not significantly affect soils of the project area. There are no geologically hazardous lands, estuaries, or coastal waters affected by the project. Fresh waters and streams would not be affected since the proposed waterline would be suspended above the stream bed.

12. ***The proposed action would not substantially affect scenic vistas and viewplanes identified in County or State plans or studies***

The proposed action will not affect scenic vistas and viewplanes.

13. ***The proposed action would not require substantial energy consumption***

The project will not adversely affect energy consumption patterns.

Based on the foregoing findings, it is concluded that the proposed action will not result in any significant impacts.

Chapter IX

Agencies/Organizations Consulted in the Preparation of the Environmental Assessment and Responses Received

IX. AGENCIES/ORGANIZATIONS CONSULTED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT AND RESPONSES RECEIVED

1. Neal Fujiwara, Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawaii 96793-2100

2. Lolly Silva
Department of the Army
U.S. Army Engineer District, Hnl.
Attn: Operations Division
Bldg. T-1, Room 105
Fort Shafter, Hawaii 96858-5440

3. Brooks Harper
U. S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96850

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

5. Herbert Matsubayashi
District Environmental Health Program Chief
State of Hawaii
Department of Health
54 High Street
Wailuku, Hawaii 96793

6. Michael Wilson, Director
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

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

8. Ronald Davis, Chief
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732

9. Lisa Nuyen, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawaii 96793

10. Charles Jencks, Director
County of Maui
Department of Public Works and Waste Management
200 South High Street
Wailuku, Hawaii 96793

11. Greg Kauhi
Maui Electric Company, Ltd.
P. O. Box 398
Kahului, Hawaii 96732

12. West Maui Taxpayers Association
P.O. Box 10358
Lahaina, Hawaii 96761

Chapter X

Comments Received During the Public Comment Period and Applicable Responses

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

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

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

Tel.: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-7766

October 26, 1998

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa, & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

Subject: Honokohau Water System Improvements

We appreciate your notification of the Environmental Assessment (EA) for the Honokohau Water System Improvements project. We understand that the project will install water system improvements to upgrade water services to users in Honokohau Valley, Maui.

To further assist the County of Maui's review of the EA, an assessment of the proposed project's compliance with the objectives and policies of Chapter 205A, Hawaii Revised Statutes, should be conducted. In addition, the EA should describe mitigation measures to control soil erosion and other polluted runoff during and after the project.

If there are any questions, please contact Steve Olive of our Coastal Zone Management Program at 587-2877.

Sincerely,

Bradley J. Mossman
Director
Office of Planning

cc: Planning Department, County of Maui

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

210 Imi Kala St.
Suite 209
Wailuku, HI
96793-2100

Our People...Our Islands...In Harmony

October 30, 1998

Mr. Milton Arakawa, Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High St., Suite 104
Wailuku, HI 96793-2100

Dear Mr. Arakawa,

Subject: Honokohau Water System Improvements
Kulamalu Water Tank

I have no comments to offer on either subject at this time.

Thank you for the opportunity to comment.

Sincerely,

Neal S. Fujiwara
District Conservationist

NOV 0 6 1998

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

November 2, 1998

Operations Branch

Mr. Milton Arakawa
Munekiyo, Arakawa and Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

This is in response to your letter dated October 20, 1998, regarding the proposal to upgrade water services to users in Honokohau Valley, Maui. The project involves installation of a booster pump station, construction of a 20,000 gallon storage tank, and installation of 5,100 linear feet of ductile iron pipe and 28,500 linear feet of water line that traverses several gulches and an unnamed tributary to Honokohau Stream.

Due to the preliminary nature of the information provided, it is not possible to reach a conclusive determination regarding Department of the Army (DA) permit requirements at this time. For your reference, the proposed work will not require a DA permit provided: (a) the waterline crossings at streams and gulches will be suspended above the ordinary high water mark; (b) footings used to support the waterline at the stream crossings are spaced at sufficient intervals so they do not have the effect of a discharged fill material (i.e. impede or change the direction of flow within the stream); and (c) the project does not involve any other work which will result in the discharge of dredge or fill material into jurisdictional waters of the U.S., including wetlands. A final determination regarding DA permit requirements for this project will be made after our office has had the opportunity to review the Environmental Assessment (EA).

Thank you for the opportunity to review the preliminary project scope. Please provide our office a copy of the draft EA when it is available. File Number 990000034 is assigned to this project. Please refer to this number in any future correspondence with our office. Should you need additional information, please feel free to contact Ms. Lolly Silva of my staff at (808) 438-9258, extension 17.

Sincerely,

George P. Young, P.E.
Chief, Operations Branch

LINDA LINGLE
Mayor

LISA M. NUYEN
Director

DONALD A. SCHNEIDER, II
Deputy Director

NOV 0 6 1998

CLAYTON I. YOSHIDA
Planning Division

AARON H. SHINMOTO
Zoning Administration and
Enforcement Division

COUNTY OF MAUI
DEPARTMENT OF PLANNING

November 4, 1998

Mr. Milton Arakawa, Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

RE: Preparation for Environmental Assessment (EA) - Honokohau Water System Improvements at TMK: 4-2-01:Portion 01 and Portion 09, Honokohau Valley, Island of Maui, Hawaii

The Maui Planning Department (Department) has received your letter of October 20, 1998 regarding early consultation for the above-referenced subject matter. The land use and zoning classifications are as follows:

State:	Agriculture and Conservation
Community Plan:	Agriculture and Conservation
Zoning:	Interim on Agricultural lands and no zoning on Conservation lands

The Department of Land and Natural Resources, State Historic Preservation Division; Department of the Army, Corps of Engineers; State Water Commission, Department of Agriculture, Natural Resources Conservation Service; and the State Department of Health are some of the agencies the Department recommends that you contact regarding any issues relating to cultural resources, effects and permits relating to the streams, erosion control and water-quality issues.

At this time, the Department has no additional comments. Should you have any questions, please call this office at 243-7814.

Sincerely,

for LISA M. NUYEN
Director of Planning

LMN:JH:osy
Enclosures
c: Clayton Yoshida, AICP, Planning Program Administrator
Julie Higa, Staff Planner (w/Enclosures)
Project File
General File
(S:\ALL\JULIE\ENVIRONM\HONOKOHA.DWS)

NOV 1 2 1998

BENJAMIN J. CAYETANO
GOVERNOR

LAWRENCE MIIKE
DIRECTOR OF HEALTH

ALFRED M. ARENSDORF, M.D.
District Health Officer

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

November 10, 1998

Milton Arakawa
Project Manager
Munekiyo, Arakawa &
Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

Subject: Honokohau Water System Improvements
TMK: (2) 4-2-1: por. 1 & 9

Thank you for the opportunity to provide input prior to the Environmental Assessment. We have the following comments to offer:

1. NPDES coverage will be required for discharges into state waters.

2. Any work involved in the crossing of streams may require the approval of the Army Corps of Engineers (COE). The applicant should contact the COE to identify whether a federal permit is required. A Section 401, Water Quality Certification is required when a federal permit is required.

3. The approval of the Safe Drinking Water Branch (SDWB) of the Department of Health is required. It is recommended that the Department of Water Supply contact the SDWB if it has not already done so.

Should you have any questions, please call me at 984-8230.

Sincerely,

HERBERT S. MATSUBAYASHI
District Environmental Health Program Chief

NOV 1 2 1998

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

In reply, please refer to:
EMD/CWB

November 6, 1998

P1106KP

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, Hawaii 96793

Dear Mr. Arakawa:

Subject: **County of Maui/Department of Water Supply**
Honokohau Water System Improvements
Honokohau Valley, Maui

In response to your letter dated October 27, 1998, the Department of Health, Clean Water Branch, has the following comments:

1. The U.S. Army Corps of Engineers (COE) should be contacted to identify whether a Federal permit (including a Department of the Army (DA) permit) is required for this project. A Section 401 Water Quality Certification (WQC) is required for "Any applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...", pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act (CWA)").

2. If the project involves any of the following discharges into State waters, including dry gulches, a National Pollutant Discharge Elimination System (NPDES) general permit is required for each activity:

   a. Storm water runoff associated with construction activities (including clearing, grading, and excavation), that result in the disturbance of equal to or greater than five (5) acres of total land area;

   b. Construction dewatering effluent;

   c. Hydrotesting effluent;

   d. Noncontact cooling water; and

e. Treated contaminated groundwater from underground storage tank remedial activity.

3. An NPDES individual permit is required if the operation of the proposed facility involves any discharge into State waters.

Should you have any questions, please contact Ms. Kris Poentis, Engineering Section of the Clean Water Branch, at (808)586-4309.

Sincerely,

DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP/rg

... Electric Company, Ltd. • 2'' West Kamehameha Avenue • PO Box 398 • K'' ilui, Maui, HI 96733-6898 • (808) 871-8461

NOV 1 2 1998

November 5, 1998

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High St., Suite 104
Wailuku, HI 96793

Dear Mr. Arakawa:

Subject: Honokohau Water System Improvements

Thank you for allowing us to comment on the subject project.

In reviewing the information transmitted and our records, we have no objection to the subject project. We have existing overhead lines which services Kapalua Well No. 1. We encourage the developer's electrical consultant to meet with us as soon as practical to verify the project's electrical requirements so that service can be provided on a timely basis.

If you have any questions or concerns, please call Dan Takahata at 871-2385.

Sincerely,

Edward L. Reinhardt
Manager, Engineering

ELR/dt:lkh

NOV 1 6 1998

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3122
Box 50088
Honolulu, Hawaii 96850

NOV 1 3 1998

In Reply Refer To: DH

Milton Arakawa
Munekiyo, Arakawa & Hiraga, Inc.
305 High St, Suite 104
Wailuku, HI 96793

Re: Honokohau Water System Improvements, Maui, Hawaii

Dear Mr. Arakawa;

The U.S. Fish and Wildlife Service (Service) has reviewed your letter indicating that you will be preparing a Draft Environmental Assessment and a Conservation District Use Application (DEA) for the Honokohau Water System Improvements project and requesting our early input. The project sponsor is the County of Maui Department of Water Supply (DWS). The proposed project is to convey municipal water from existing wells at Kapalua to the Honokohau Water Service System utilizing a booster pump and a series of two- to four-inch water pipes. The Service offers the following comments for your consideration.

In general, the DEA should describe the proposed project and alternatives and identify the significant fish and wildlife species and habitats at the proposed project site. Anticipated project-related impacts to fish and wildlife resources, particularly to any endangered or threatened species, should be assessed. The DEA should describe how unnecessary impacts will be avoided and how unavoidable impacts will be minimized and should propose compensation for any significant impacts to fish and wildlife resources.

The project summary provided by your office does not clearly describe where construction of the new pipeline will impact areas not previously disturbed (*e.g.*, those without previous pipelines or roads). The DEA should clearly indicate where the proposed pipeline will cross undisturbed areas versus those sections of the pipeline that will cross previously disturbed areas. The DEA should also adequately address other construction activities such as clearing of vegetation and should provide potential mitigation measures for those activities.

Honokohau Water System Improvements
Maui, Hawaii

The Service encourages the early review of proposed projects and we appreciate the opportunity to provide early input on this proposal. We hope this information is of use to you in the completion of the DEA and look forward to receiving a copy of it when it is completed. If you have questions regarding our comments, please contact Fish and Wildlife Biologist David Hopper by phone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,

Barbara A. Maxfield, acting

for Robert P. Smith
Pacific Islands Manager

cc: DOFAW, Maui
DWS, Maui

MUNEKIYO, ARAKAWA & HIRAGA, INC.

August 11, 1999

Robert P. Smith
Pacific Islands Manager
United States Department of the Interior
Fish and Wildlife Service
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3122
Box 50088
Honolulu, Hawaii 96850

SUBJECT: Honokohau Water System Improvements, Maui, Hawaii

Dear Mr. Smith:

Thank you for your letter dated November 13, 1998 pertaining to the subject project.

We have formulated the Draft Environmental Assessment (EA) for the subject project. A biological resources survey has been done for the project and will be included as part of the EA. Since a Conservation District Use Permit will be required, we will coordinate with the Department of Land and Natural Resources to circulate a copy of the application for your review.

If you have any questions, please feel free to call me. Thank you for your interest in the project.

Very truly yours,

Milton Arakawa

Milton Arakawa, A.I.C.P.
Project Manager

MA:tav
com\dwa\kohau\smith.ltr

environment

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • email: mahinc@aloha.net

NOV 1 9 1998

LINDA LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 243-7845
Fax: (808) 243-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

November 17, 1998

Mr. Milton Arakawa
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

SUBJECT: EARLY CONSULTATION
HONOKOHAU WATER SYSTEM IMPROVEMENTS
TMK (2) 4-2-001:001 & 009

We reviewed the subject submittal and have the following comment.

1. All grading work and pipe placement shall comply with all applicable laws to protect watershed areas from erosion and water pollution.

If you have any questions, please call David Goode at 243-7845.

Sincerely,

FOR CHARLES JENCKS
Director of Public Works
and Waste Management

DG:co/mt
S:\LUCA\CZM\HONOKOHA.WPD

NOV 2 0 1998

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

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P.O. BOX 621
HONOLULU, HAWAII 96809

NOV 1 9 1998

Mr. Milton Arakawa
Project Manager
Munekiyo Arakawa & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Maui, HI 96793

Dear Mr. Arakawa:
Subject: Honokohau Water System Improvements

Thank you for the opportunity to review the prepared material related to the development of a Draft Environmental Assessment on the subject matter. We have no comments to offer at this time.

Should you have any questions, or require further assistance please contact staff planner Ed Henry at (808) 587-0380.

Aloha,

for Michael D. Wilson,
Chairperson

NOV 2 3 1998

LINDA CROCKETT LINGLE
MAYOR

RONALD P. DAVIS
CHIEF

HENRY A. LINDO, SR.
DEPUTY CHIEF

COUNTY OF MAUI
DEPARTMENT OF FIRE CONTROL

200 DAIRY ROAD
KAHULUI, MAUI, HAWAII 96732
(808) 243-7561

October 28, 1998

Mr. Milton Arakawa, Project Manager
Munekiyo, Arakawa & Hiraga, Inc.
305 High Street
Wailuku, HI 96793

RE: Honokohau Water System Improvements

Dear Mr. Arakawa,

Thank you for the opportunity to comment on the Honokohau Water System Improvements Environmental Assessment.

The Department of Fire Control has reviewed the summary provided, and comments as follows:

Paragraph No. 3 states that the water is to transported through a 2-inch pipe from the 20,000 gallon storage tank to the proposed pressure break tank, then through an existing 4-inch water line for distribution to the service users. No mention is made as to fire protection hydrants or standpipes for fire department use.

If you have any questions, direct them in writing to the Fire Prevention Bureau, 21 Kinipopo Street, Wailuku, HI 96793.

Sincerely,

LEONARD F NIEMCZYK
Captain, Fire Prevention Bureau

MFD-Honokohau Water (11.98)

MUNEKIYO, ARAKAWA & HIRAGA, INC.

August 11, 1999

Leonard Niemczyk
Captain
Fire Prevention Bureau
County of Maui
Department of Fire Control
200 Dairy Road
Kahului, Hawaii 96732

SUBJECT: Honokohau Water System Improvements

Dear Mr. Niemczyk:

Thank you for your letter of October 28, 1998 pertaining to the subject project. In response to your comments, we would like to note that the project traverses pasture and gulch lands which are largely undeveloped and uninhabited as well as inaccessible except by permission from the landowner, Maui Land and Pineapple Company, Inc. Accordingly, there are no fire hydrants or standpipes which are included in the scope of this project.

If you have any questions, please call me.

Very truly yours,

Milton Arakawa

Milton Arakawa, Project Manager

MA:tav
com\dwahkoha\mfd.ltr

environment

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • email: mahinc@alohu.net

REC'D DEC - 3 1998

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIIKE
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / SDWB

December 1, 1998

Mr. Milton Arakawa
Project Manager
Munekiyo, Arakawa, & Hiraga, Inc.
305 High Street Suite 104
Wailuku, Hawaii 96793

Dear Mr. Arakawa:

SUBJECT: HONOKOHAU WATER SYSTEM IMPROVEMENTS

The Department of Health (DOH) acknowledges your request for advanced comments regarding the Environmental Assessment to be completed for the Honokohau Water System Improvements Project. We have reviewed the submitted document and have the following comments:

1. The proposed pipeline is approximately 28,500 lineal feet consisting of 2-inch and 4-inch high density polyethylene pipe. Is the waterline adequately sized? Why is the pipe going to be laid on the ground surface through pastures, trails, etc.? What Department of Water Supply standards will be followed when using polyethylene pipe? What is the expected life of the polyethylene pipe when installed above ground?

2. Is the connection from the Kapalua Well No. 1 to the booster pump before or after the chlorine injection point? How and where is the proposed Honokohau system going to disinfect.

3. The ownership and maintenance of the proposed pipeline needs to be addressed including its effect on the Kapalua water system.

4. A contingency plan should be included which discusses alternative drinking water sources for Honokohau should the transmission system from Kapalua be out of service.

If you should have any questions, please contact Mr. Mark Yonamine of the Safe Drinking Water Branch, Engineering Section, in Honolulu at 586-4258, or dial direct from Maui on our toll free number 984-2400, ext. 64258.

Sincerely,

William Wong

WILLIAM WONG, P.E., Chief
Safe Drinking Water Branch
Environmental Management Division

MY:la

c: Gordon Muraoka, SDWB Sanitarian, Maui
David Craddick, MDWS
Barry Pollock, EPA San Francisco

MUNEKIYO, ARAKAWA & HIRAGA, INC.

August 11, 1999

William Wong, P.E.
Chief
Safe Drinking Water Branch
Environmental Management Division
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

SUBJECT: Honokohau Water System Improvements

Dear Mr. Wong:

Thank you for your letter of December 1, 1998 pertaining to the subject project. We would like to provide the following response to your comments.

1. The service area of the proposed project is Honokohau Valley which consists of approximately 13 water meters. The 2-inch and 4-inch pipe should be adequately sized to service this need. The waterline is proposed to be placed on the ground surface for portions of the project because of the temporary emergency nature of the project. Moreover, it is an expeditious method of construction, does not adversely affect use of the land and results in minimal impact to the existing landscape. The use of polyethylene has been reviewed and approved by the Department of Water Supply (DWS). Regarding expected life of the pipe, carbon black will be included as an additive to enhance weathering characteristics.

2. The booster pump connection at the Kapalua Wells is located before the chlorine injection point. It is noted that the chlorine disinfection system is an existing hypochlorite feed system which is located at the existing tank in Honokohau.

3. The proposed improvements will be owned and maintained by the DWS. An easement encompassing the project area through Maui Land and Pineapple Company, Inc. lands will be prepared.

4. Water is presently being trucked to an existing pump line near Honoapiilani Highway where it is pumped to the existing tank in Honokohau Valley. Should the proposed transmission system be out of service, water can then be trucked to the

305 High Street, Suite 104 • Wailuku, Hawaii 96793 • ph: (808)244-2015 • fax: (808)244-8729 • email: mahinc@aloha.net

site as a contingency measure. Also, plans to develop an exploratory well to determine the feasibility of a ground water source in Honokohau Valley to meet the domestic demands of the system are being considered.

If you have any questions, please feel free to call me. Since a Conservation District Use Permit will be required, we will coordinate with the Department of Land and Natural Resources to circulate a copy of the application for your review.

Very truly yours,

Milton Arakawa, A.I.C.P.
Project Manager

MA:tav
com\dwshkoha\wong.001

DLNR-LAND DIVISON
ENGINEERING BRANCH

REF:PB:LT

COMMENTS

Our current projects and programs are not affected by the proposed project.

We confirm that the project site, according to FEMA Community Panel Number 150003 0139 B is located in Zone C. This is an area of minimal flooding (No shading).

GOVERNOR

Land Division

DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

Oct 25 11 :a 44 '99

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

STP 8.9305

October 15, 1999

TO: THE HONORABLE TIMOTHY E. JOHNS, CHAIR
BOARD OF LAND AND NATURAL RESOURCES
DEPARTMENT OF LAND AND NATURAL RESOURCES

FROM: KAZU HAYASHIDA
DIRECTOR OF TRANSPORTATION

SUBJECT: HONOKOHAU WATER SYSTEM IMPROVEMENTS
CONSERVATION DISTRICT USE PERMIT (CDUP) APPLICATION
TMK: 4-1-01: POR. 09 AND 4-1-02: POR. 01, HONOKOHAU VALLEY, MAUI

Thank you for your transmittal requesting our review of the subject application.

The subject proposal will not impact our State transportation facilities.

We appreciate the opportunity to provide comments.

Land
cc: Liuml - PKF

Oct 25 3 35 PM '99

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

99 OCT 26 A8:12

October 18, 1999

(PA #309)

Mr. Timothy E. Johns
Chairperson
Department of Land and Natural Resources
P.O. Box 621
Honolulu, HI 96809

Re: Conservation District Use Permit (CDUP) Application
and Draft Environmental Assessment (Draft EA)
for the proposed Honokohau Water System Improvements;
TMK: 4-1-01: por. 09 and 4-1-02 por. 01
Honokohau Valley, Maui

Dear Mr. Johns,

Thank you for the opportunity to comment on the CDUP Application and Draft EA for the above referenced project. The County of Maui, Department of Water Supply (DWS) proposes to construct water system improvements to upgrade service to users in Honokohau Valley, Maui, Hawai'i.

According to the Draft EA, the proposed project involves the installation of approximately 33,000 lineal feet of waterline extending from the existing Kapalua Wells located between Honokohau Stream and Mokupea Gulch to a proposed pressure break tank located near an unnamed tributary to Honokohau Stream.

The Office of Hawaiian Affairs (OHA) has some concerns regarding the proposed project. According to Section 174C-101, Hawai'i Revised Statutes (HRS), persons of Hawaiian ancestry have preferential rights to water pursuant to the Hawaiian Homes Commission Act, 1920, as amended and pursuant to traditional and customary rights. The traditional rights include gathering rights to 'opae, hihiwai and 'o'opu, which require streams with sufficient water to allow them to thrive, and the appurtenant water rights guarantee water sufficient to produce taro and provide for other traditional kuleana uses. Every effort should be made to ensure that the proposed project will have no adverse impacts to these rights.

In addition, OHA is opposed to any potential damage to (prehistoric) archaeological sites, native plant species, and natural resources that the construction of the proposed project may cause. According to OHA's Master Plan, OHA is mandated, "To assist and encourage the conservation and culturally responsive management of historic and culturally significant Hawaiian sites and natural resources to prevent further destruction."

Moreover, we suggest that you require the preparation of a cultural impact statement for the proposed project area. We further suggest that the cultural expert chosen to work on the statement be someone recognized within the Hawaiian community for his/her cultural expertise. The concerns of the community will not be addressed if the cultural impact statement contains information and analysis provided solely by a person whose knowledge of Hawaiian culture is limited to a study of archaeology or anthropology.

If you have any questions, please contact Mark A. Mararagan, Policy Analyst at 594-1945. Please refer to the document number noted at the top of this letter in any future correspondence.

Sincerely,

Colin Kippen
Deputy Administrator

cc: OHA Board of Trustees
Maui CRS

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21, 1999

Mr. Colin Kippen
Deputy Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813

Re: Honokohau Water System Improvements (PA #309)

Dear Mr. Kippen:

We have received a copy of your October 18, 1999 letter to Timothy Johns of the Department of Land and Natural Resources pertaining to the subject project. We would like to provide the following response.

We do not believe that the project would have adverse effects upon any water rights asserted pursuant to the Hawaiian Homes Commission Act through Section 174C-101, Hawaii Revised Statutes. The project provides potable water in compliance with applicable Federal and State standards to approximately thirteen (13) residential water meters in Honokohau Valley. The average daily usage for the meters is less than 2000 gallons/day. The proposed source of water would be an existing Kapalua Land Company, Ltd. well located at approximately the 765-foot elevation between Honokahua Stream and Mokupea Gulch. The former source of potable water for the residential water meters was from an unnamed tributary to Honokohau Stream. Although a new source of water is proposed, the extent of water usage is relatively low and should not affect stream flow as well as applicable water rights.

The project would involve no adverse effects upon archaeological sites, native plant species, and other natural resources. An archaeological inventory survey was conducted for the subject project. Two (2) previously unrecorded sites (4782 and 4783) were found and portions of the water system associated with the Honokohau District (Site 1591) were located during the inventory survey of the project area. Site 4782 is tentatively interpreted as a precontact site with an unknown function. However, it is

located outside of the project corridor and will not be affected by the project. Site 4783 is interpreted as an old retaining wall associated with an abandoned, unimproved pineapple road. Site 4783 is no longer considered significant for its information content. Regarding Site 1591, the proposed waterline would parallel portions of existing ditch systems and tunnels. The applicant will be working with the State Historic Preservation Division on applicable mitigation such as detailing of the pipe installation methodology and possible monitoring during construction.

Regarding native plant species, a biological resources survey was conducted but did not find any species of vascular plant which has protection under Federal or State law.

It is noted that the proposed waterline would be placed underground within existing dirt roads. For other portions of the waterline alignment through pastures, trails, gulches and tunnels, the waterline is proposed to be laid on the ground surface. Waterline crossings at streams and gulches are proposed to be suspended above the stream bed. Thus, the construction methodology minimizes any possible adverse effects upon archaeological, botanical and other natural resource parameters.

With regard to cultural impact, we do not believe that the proposed project results in any adverse effect upon cultural resources. As noted above, the impact on the existing environment is minimized to the greatest extent practicable. Thus, we do not believe that a cultural impact statement would be warranted.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dwshkoha\oha.ltr

Mayor
JOHN E. MIN
Director
CLAYTON I. YOSHIDA
Deputy Director

Oct 20 9 58 AM '99

COUNTY OF MAUI
DEPARTMENT OF PLANNING

October 18, 1999

99 OCT 20 A8:38

Mr. Timothy Johns, Director
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Attention: Lauren Tanaka

Dear Mr. Johns:

RE: Conservation District Use Application for the Honokohau Water System Improvements, TMK: 4-2-001:Por. 1 and 4-1-001:Por. 9, Honokohau, Maui

The Maui Planning Department has reviewed the above-referenced application and has the following comments:

1. The portions of the project located within the State Agricultural District are also zoned County Agricultural District. Pursuant to Chapter 19.30A Agricultural District, Section 19.30A.050(6) "*Minor utility facilities* as defined in Section 19.04.040, Maui County Code" (MCC), is identified as a permitted use. Pursuant to Section 19.04.040, MCC, minor utility facilities are defined as "transmission lines used directly in the distribution of utility services that have minor impact on adjacent land uses which include, but which are not limited to, twenty-three kilovolt transmission substations, vaults, *water wells, tanks and distribution equipment*, sewage pump stations, and *other similar type uses*." The installation of the tanks, distribution equipment and four-inch transmission lines qualifies as minor utility facilities and is a permitted use in the County Agricultural District.

2. The subject properties are located outside the boundaries of the Special Management Area for Maui Island and are not subject to the Special Management Area Rules of the Maui Planning Commission.

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

Thank you for your cooperation. If additional clarification is required, please contact Ms. Colleen Suyama, Staff Planner, of this office at 270-7735.

Very truly yours,

JOHN E. MIN
Planning Director

JEM:CMS:cmb
c: Clayton Yoshida, AICP, Deputy Planning Director
Colleen Suyama, Staff Planner
Milton Arakawa, Munekiyo, Arakawa & Hiraga, Inc.
Project File
General File
(S:\\CMS\Honoka1)

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

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

October 21, 1999

Dean Uchida, Administrator
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Attention: Lauren Tanaka

Dear Mr. Uchida:

Subject: Draft Environmental Assessment (EA) for Honokohau Water System Improvements, Honokohau, Maui

We find this document to be thorough and complete, and will use it as an example of a well-written draft EA.

We have only one suggestion. In order to reduce bulk and conserve paper, we recommend printing on both sides of the pages in the final document.

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

Sincerely,

GENEVIEVE SALMONSON
Director

c: Milton Arakawa
David Craddick, Dept. of Water Supply

Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director

COUNTY OF MAUI
DEPARTMENT OF PLANNING

October 22, 1999

Mr. Timothy E. Johns, Chair
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

RE: Conservation District Use Permit (CDUP) Application for the Proposed Honokohau Water System Improvements, TMK: 4-1-01: Portion 09 and 4-1-02:Portion 01, Honokohau Valley, Island of Maui, Hawaii

The Maui Planning Department has reviewed the application and has the following comments to offer:

1. The proposed project is outside of the Special Management Area (SMA), pursuant to Chapter 205A, Hawaii Revised Statutes, therefore, it does not require an SMA Use Permit; and

2. The portions of the project that traverse State Land Use Agricultural lands are Community Planned Agriculture and zoned Agriculture District. The proposed use is permitted in the Agriculture District Zone.

Should you have any questions, please contact Ms. Robyn Loudermilk, Staff Planner, of this office at 270-7735.

Very truly yours,

JOHN E. MIN
Planning Director

250 SOUTH HIGH STREET, WAILUKU, MAUI, HAWAII 96793
PLANNING DIVISION (808) 270-7735; ZONING DIVISION (808) 270-7253; FACSIMILE (808) 270-7634

JEM:RLL:osy
c: Clayton I. Yoshida, AICP, Deputy Planning Director
Robyn L. Loudermilk, Staff Planner
Project File
General File
S:\ALL\ROBYN\CDUPS\MA-2952.LTR

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS
CHAIRPERSON

BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

October 22, 1999

OCT 25 3 37 PM '99

TO: Mr. Dean Uchida, Administrator
Land Division

FROM: Linnel T. Nishioka, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Honokohau Water System Improvements CDUA

FILE NO.: MA-2952

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas which are important for the maintenance of streams and the replenishment of aquifers.

[x] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows which may require an instream flow standard amendment.

[X] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[X] OTHER:

We had made similar comments earlier, which did not make it into the DLNR comment on the EIS (see attached).

If there are any questions, please contact Charley Ice at 587-0251.

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21,1999

Ms. Linnel T. Nishioka
Deputy Director
Commission on Water Resource Management
P.O. Box 621
Honolulu, Hawaii 96809

Re: Honokohau Water System Improvements

Dear Ms. Nishioka:

We have received a copy of your October 22, 1999 memorandum to Dean Uchida pertaining to the subject project. We would like to provide the following response.

It is noted that the proposed waterline would be placed underground within existing dirt roads. For other portions of the waterline alignment through pastures, trails, gulches and tunnels, the waterline is proposed to be laid on the ground surface. Waterline crossings at streams and gulches are proposed to be suspended above the stream bed. Thus, the proposed project minimizes any impact upon streams and gulches as well as adjacent slopes.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dvshkoha\cvrm.ltr

od States
artment of
culture

ural
ources
servation
vice

). Box 50004
nolulu, HI
150

Our People...Our Islands...In Harmony

October 29, 1999

Ms. Lauren Tanaka
DLNR - Land Division, Planning Branch
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Tanaka:

Subject: File No. MA-2952 - Conservation District Use Permit (CDUP) Application fro the Proposed Honokohau Water System Improvements, Honokohau Valley, Maui

We have reviewed the above mentioned document and have no comments to offer at this time.

Thank you for the opportunity to review this document.

Sincerely,

KENNETH M. KANESHIRO
State Conservationist

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII

RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOHN M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P.O. BOX 1879
HONOLULU, HAWAII 96805

November 1, 1999

To: The Honorable Timothy E. Johns, Chairperson
Board of Land and Natural Resources

From: Raynard C. Soon, Chairman
Hawaiian Homes Commission

Subject: Conservation District Use Permit Application for the Proposed Honokohau Water System Improvements; Tax Map Key 4-1-01: por. 09 and 4-1-02: por. 01, Honokohau Valley, Maui

The Department of Hawaiian Home Lands has reviewed the subject application regarding the County of Maui, Department of Water Supply's proposal to construct water system improvements to upgrade service to users in Honokohau Valley, Maui. We have no comments to offer at this time.

If you have any questions, call me at 586-3801 or have your staff call Rebecca Alakai of our Planning Office at 587-6423.

November 4, 1999

VIRGINIA KAAI
277 WILI KO PLACE #40
LAHAINA, HAWAII 96761

RECEIVED
1999 NOV -8 PM 3:17
DEPT. OF WATER SUPPLY
COUNTY OF MAUI

MR DAVID CRADDICK
DEPARTMENT OF WATER SUPPLY
P.O. BOX 1109
WAILUKU, HAWAII 96793

Dear Mr. Craddick -

I read the recent article in the Lahaina News regarding the proposed adjustment in selling pure water to the residents at Honokōhau Valley. As a resident of the Valley for the past twenty-five years I do have an interest in this matter - and an opinion.

You mentioned cost as the primary factor in seeking alternative water sources. I am well aware of the challenges of getting potable water to Honokōhau Valley residents which has been an ongoing concern for many years. In truth the water which was supplied to us lives not fit to drink.

Trucking water to the Valley is viewed as a temporary measure; now the proposed line from Mokapea Gulch has many drawbacks and also seems unreasonable.

I have a solution which is practical, inexpensive, easily maintained, available and has been proven for many years. The enclosed brochure will describe to you a simple, effective means of purifying water where it is consumed - in the home. I encourage you to peruse this information; I am willing to answer all questions you may have.

A new Water Treatment System from Kenway costs less than $500.00 including the filter (this price also includes the auxiliary faucet for under the counter installation).

The filters require changing once or twice a year with the new filter price being under $125.00. Maui County Department of Water could supply a Water Treatment System to each household in Honokohau Valley and provide new filters as needed with minimal expense and maintenance costs.

The original water system could be re-established. This method of resolving the water problems at Honokohau Valley is so basic, affordable, efficient and easily maintained can there be any reason not to implement it immediately? (As you may have guessed, our household has been using this reliable system trouble free for many years.)

I shall await your reply.

Aloha-

VIRGINIA KA'AI

P.S. If necessary you could require signs at each external faucet stating "non-potable water."

Amway
WATER
TREATMENT
System

Distributed by:

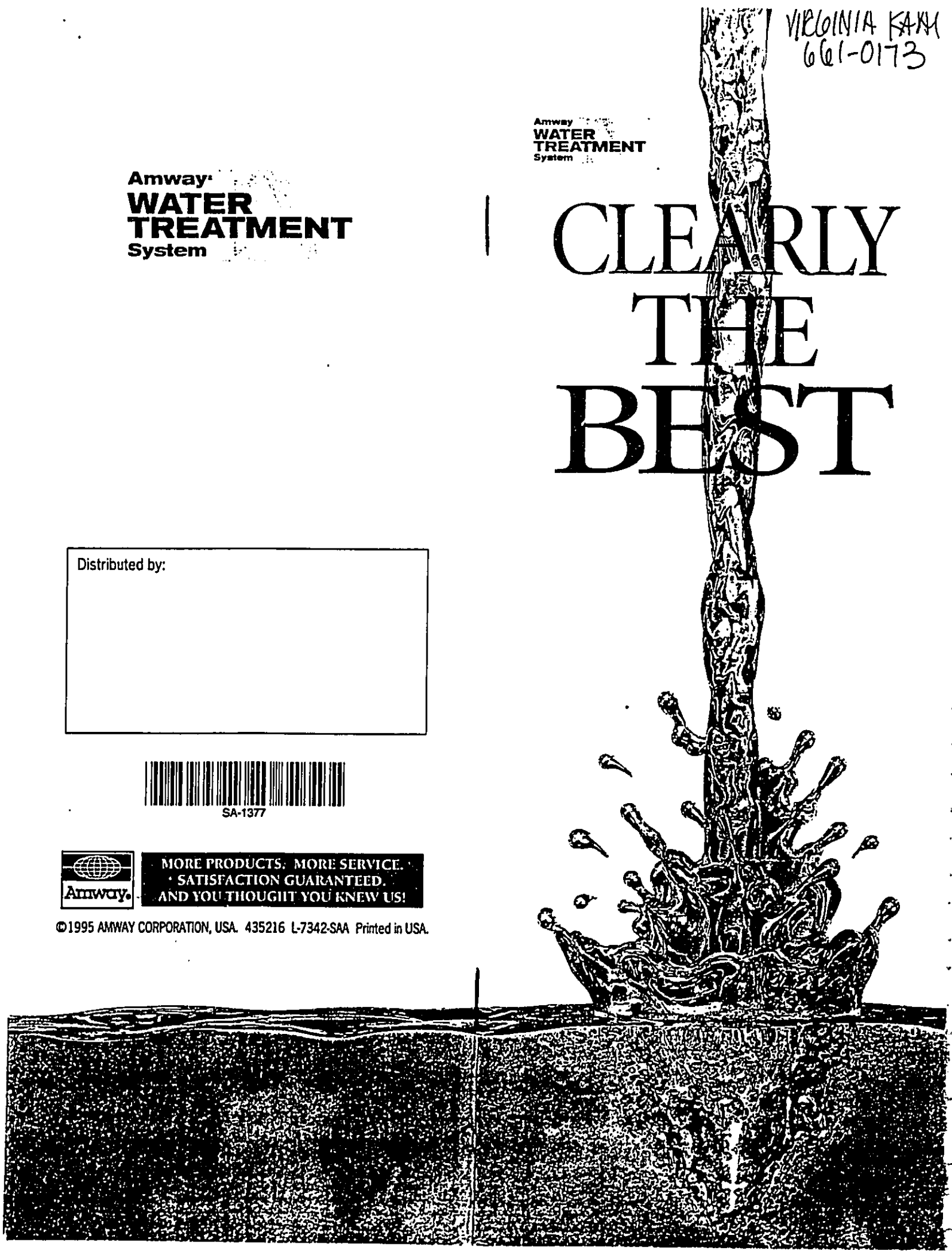
SA-1377

MORE PRODUCTS. MORE SERVICE.
SATISFACTION GUARANTEED.
AND YOU THOUGHT YOU KNEW US!

VIRGINIA KAM
661-0173

Amway
WATER
TREATMENT
System

CLEARLY THE BEST



WATER IS GOOD FOR YOU, IF IT'S GOOD WATER

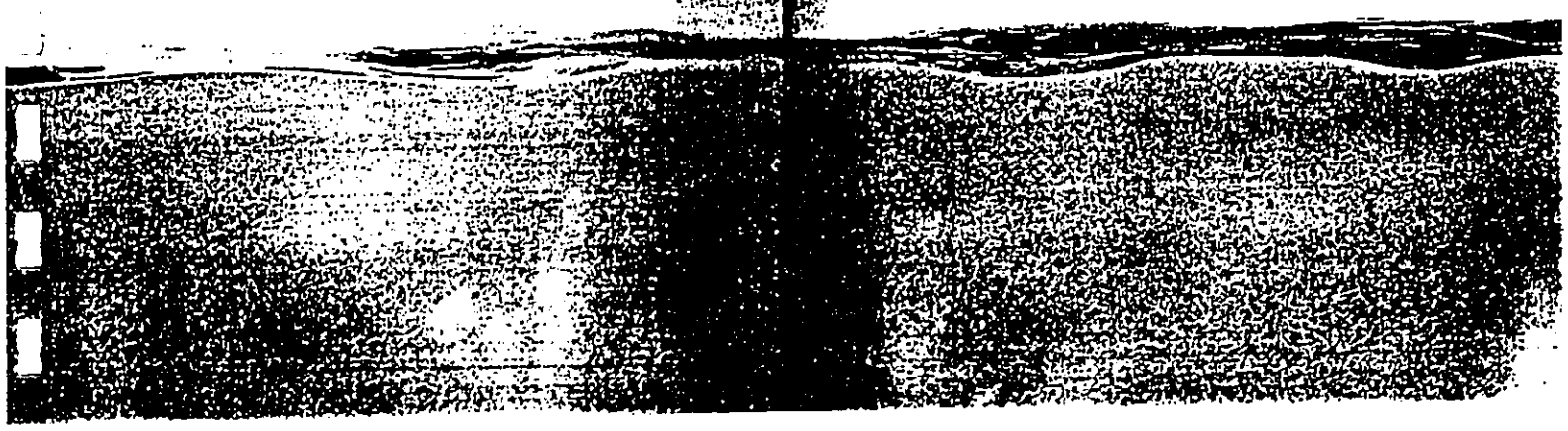
When you think of your health, what comes to mind? The air you breathe? The food you eat? How about the water you drink every day?

Every day of our lives, without a second thought, we turn on our water taps to drink, bathe, wash dishes, cook, or clean clothes. We tell ourselves that in the United States, water is basically safe to drink. We reassure ourselves that contaminated drinking water is only in emerging countries or perhaps a few isolated spots in North America.

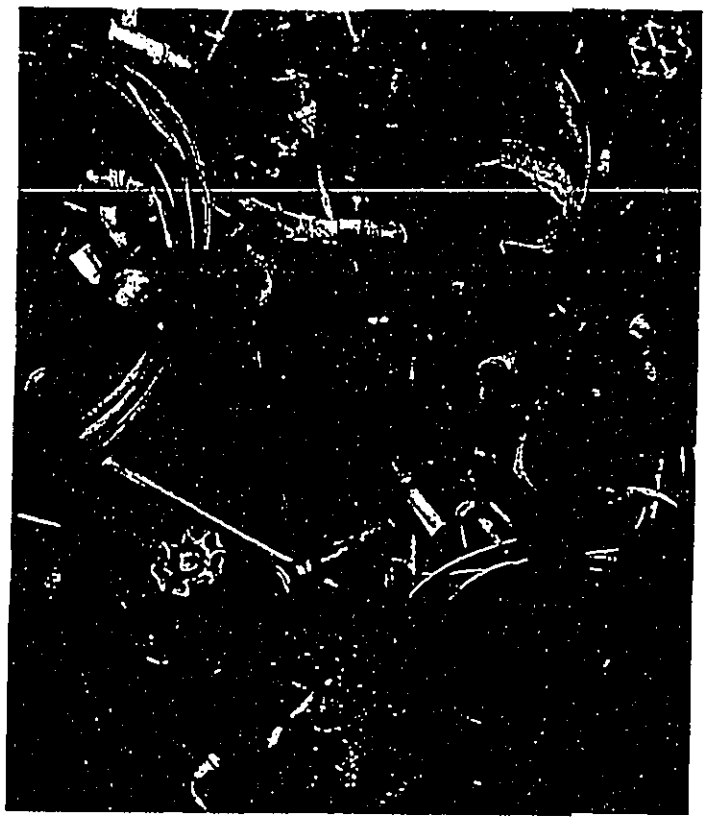
Without water, arms couldn't flex, eyes couldn't see, and the heart couldn't beat. Water is an element so fundamental in our lives that it comprises 60% of our body weight. Most people can't live without water for more than a week. Water is indeed an elixir of life we frequently take for granted.

But across North America, reports about contaminated drinking water occur frequently. Incidents that make news, however, are only a part of the problem. North Americans can be ingesting any number of different contaminants without even knowing it.

Concern about the quality of drinking water is growing. Many residents believe their tap water quality is poor or only fair at best. Have you thought about the quality of your tap water?



LEAD



Across the continent, millions of people are drinking lead-polluted water. In fact, drinking water supplied to 30 million people in 819 cities contains unacceptable levels of lead, according to a recent survey by the U.S. Environmental Protection Agency (EPA).

You cannot smell, taste, or see lead in drinking water. But once lead enters the body, it's there to stay, building up in the body over many years. Those most at risk for lead exposure are pregnant women and children, because amounts of lead that won't hurt adults can slow down normal mental and physical development of young growing bodies.

EFFECTS OF LEAD POISONING IN CHILDREN:

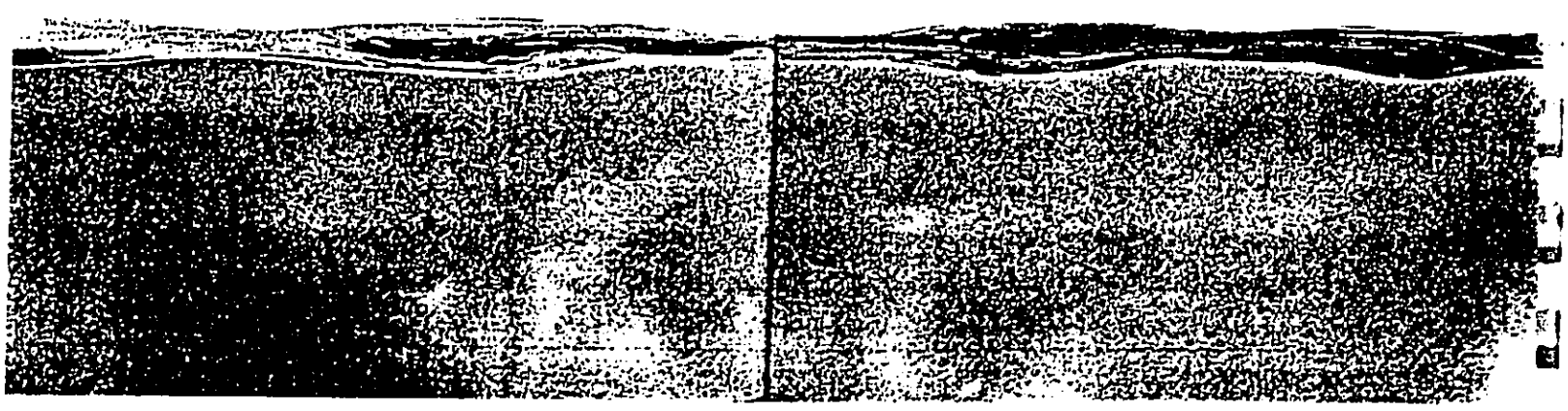
- Interferes with red blood cell formation which can cause anemia
- May reduce newborn birth weight
- May cause premature birth
- May delay mental/physical development
- May impair mental abilities and can permanently lower I.Q.

Most of the lead found in tap water is leached from plumbing materials such as lead pipes, lead service connections, and lead solder – which is banned in new construction.

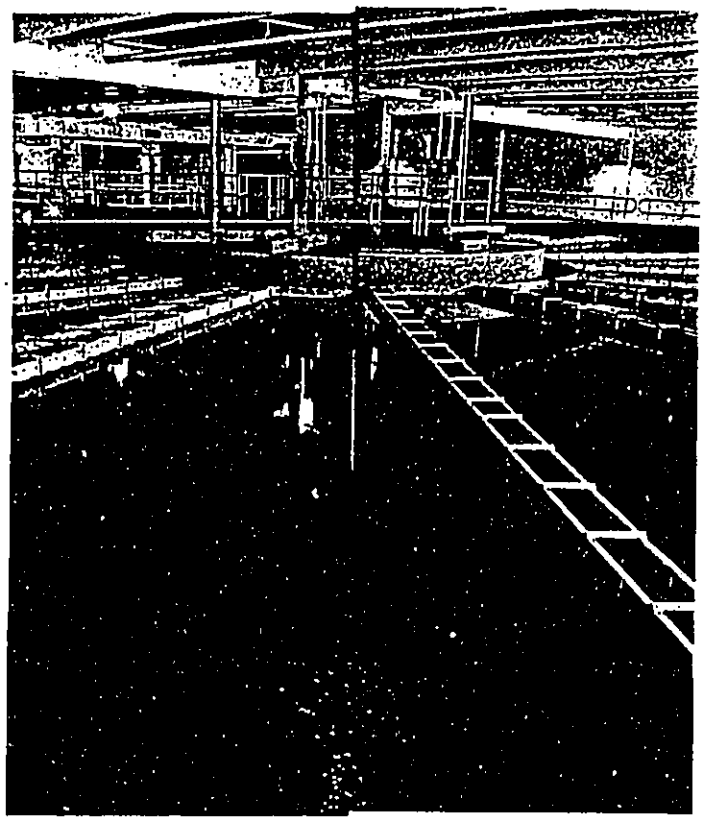
To avoid high lead levels in your water, the EPA and water suppliers suggest you flush water pipes before drinking, usually one or two gallons of water. They also advise that you never cook with or drink hot tap water, because hot water leaches lead more quickly than cold water. If the level of lead in your water is still above the recommended maximum of 15 parts per billion, the EPA suggests considering a home water treatment system that reduces lead from your drinking water.

EFFECTS OF LEAD POISONING IN ADULTS:

- May raise blood pressure
- May interfere with hearing
- Can cause anemia, kidney damage, and brain inflammation



CHLORINE

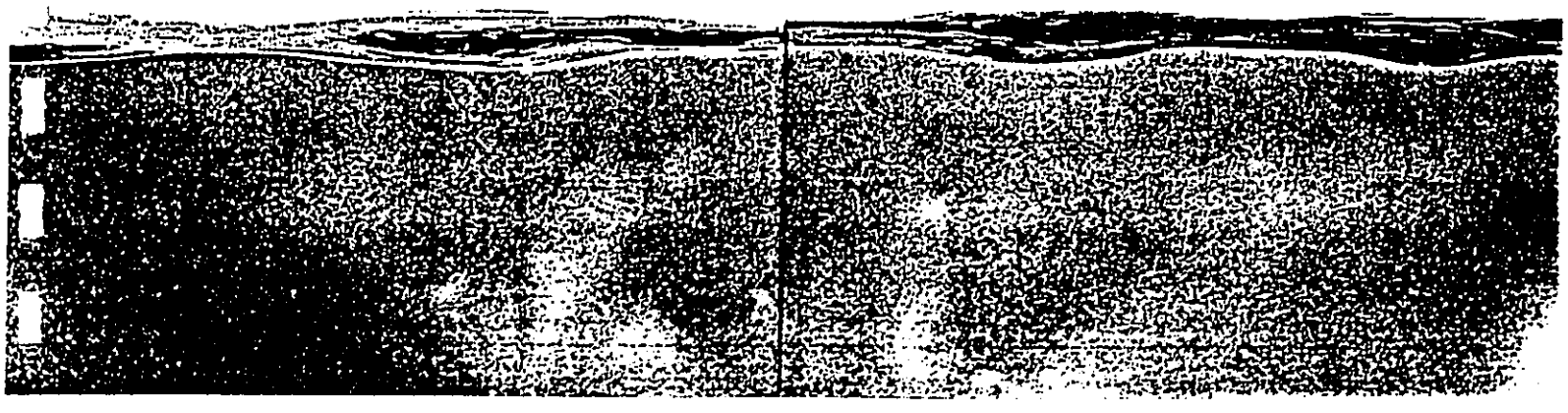


When municipalities began chlorinating their water supplies in the early 1900s as a disinfectant for cholera, typhoid fever, and other diseases, it was hailed as one of the most effective public health measures of the century.

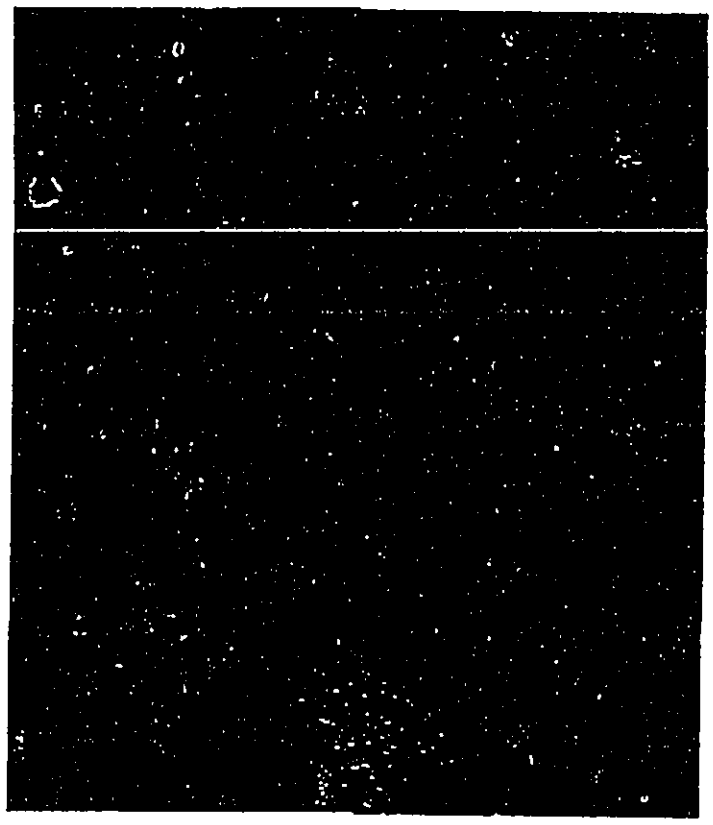
The addition of chlorine saved untold lives. Years later, however, scientists discovered that chlorine can react with organic material in water–such as decaying leaves–to produce chemical compounds called trihalomethanes (THMs). One of these THMs–chloroform–is associated with an increased risk of cancer.

During the summer, when more chlorine is added to water supplies, levels of these disinfection byproducts can jump above recommended levels. But technically, cities are rarely out of compliance because their utilities are allowed to average test results over the entire year.

Chlorine is widely used across the country. In fact, 75% of households drink chlorinated water. Chlorine is also one of the most prevalent reasons why water can taste and smell bad. Taste and smell are the leading reasons why people choose alternatives to tap water.



PARA SITES



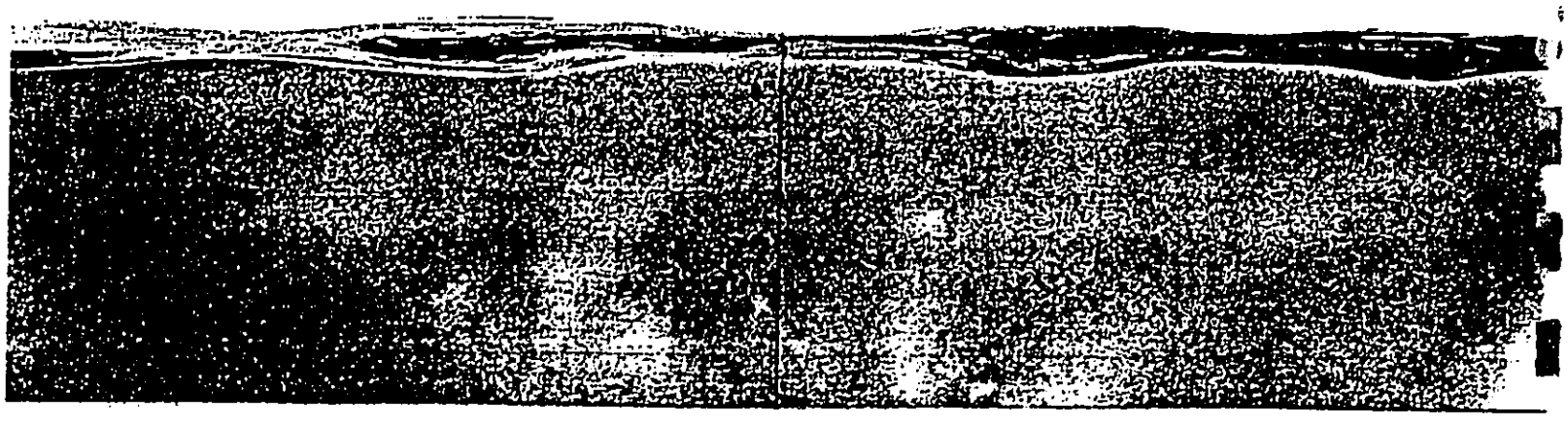
Unfortunately, common disinfection practices by municipal water suppliers are not necessarily sufficient to kill the parasites that have been found in water, such as Cryptosporidium oocysts and Giardia lamblia cysts. Cryptosporidium is so resistant that studies show a cyst can survive and spread infection even after 18 to 24 hours in a concentrated solution of bleach!

Ingesting either of these waterborne microbes can cause vomiting, diarrhea, and other flu-like symptoms which can be particularly hazardous for the elderly, children and individuals with underlying diseases.

THOUSANDS SICKENED

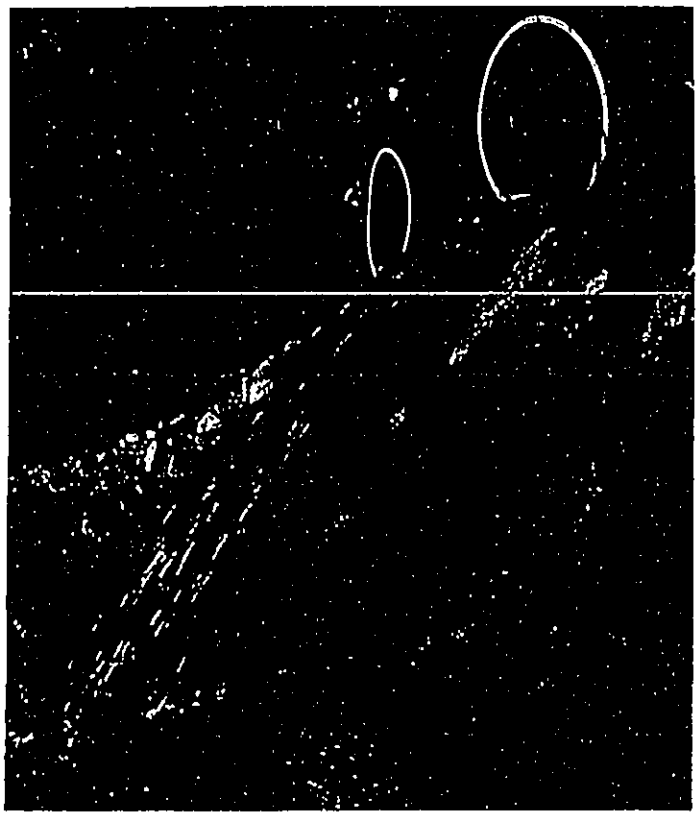
In 1993, the nation's worst outbreak of a waterborne illness struck Milwaukee. Cryptosporidium got through the municipal water treatment system, sickening more than 400,000.

It took several days before the cause of the problem was linked to the drinking water. The parasite entered the system from barnyard runoff flowing into Lake Michigan near the city water intakes during heavy rains. Residents had no forewarning, because, like many drinking water contaminants, the microscopic parasite is odorless and tasteless.



OTHER CONTAMINANTS

In addition to lead, chlorine, and parasites, many other contaminants have been identified in drinking water.



RADON

Virtually everyone has some level of radon in their water and almost no one knows it. It's a tasteless, odorless, and colorless radioactive gas that's produced by the natural breakdown of uranium found in many soils and rocks. There is accumulating evidence of a relationship between the ingestion of radon in drinking water and the increased risk of stomach cancer.

FERTILIZERS AND PESTICIDES

Agricultural pesticides and fertilizers have been detected in drinking water from Connecticut to California. This contamination is not limited to agricultural areas, since spraying of parks, trees, golf courses, and along roadsides is common. Many people also apply these products to their lawns and home gardens.

A 1994 study by the Environmental Working Group revealed that 14.1 million Americans routinely consume pesticides in their drinking water.

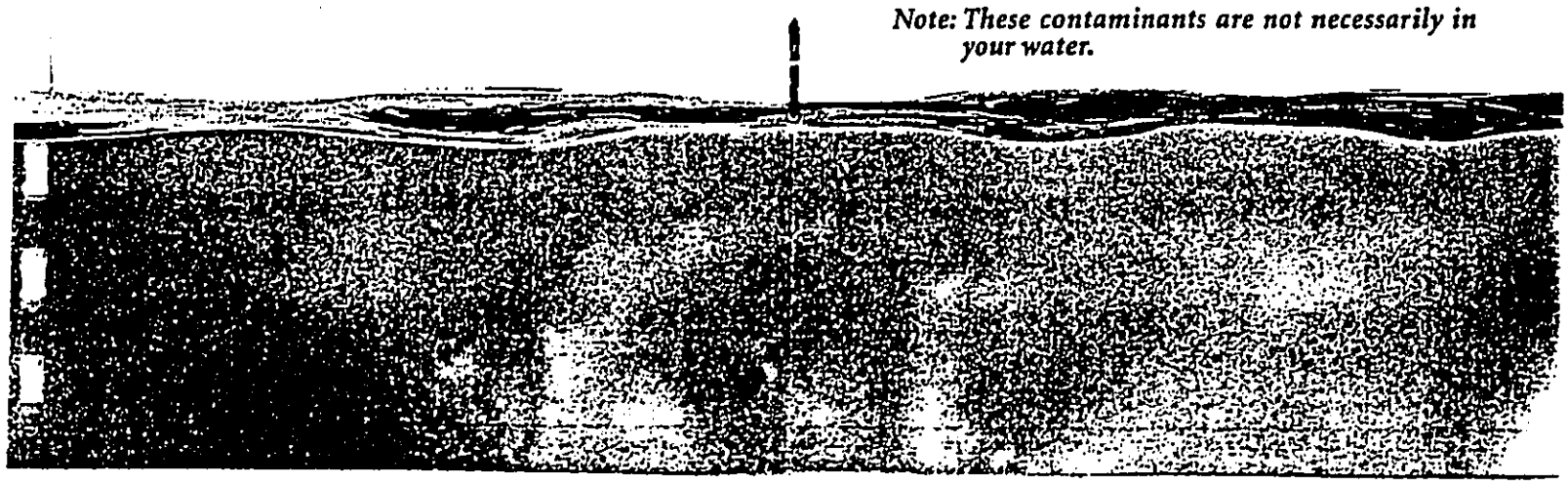
VOLATILE ORGANIC CHEMICALS

Volatile organic chemicals (VOCs) are chemicals that vaporize readily in open air. They are commonly used in industrial products, such as solvents, degreasers, fumigants, and dry cleaning chemicals. These chemicals can pose health risks if they seep into the ground water.

They get into ground water from improper storage and disposal, accidental spills, leaks, and industrial discharges and runoff. Once there, they percolate relatively quickly into wells and aquifers and don't break down easily. Adding to the dilemma is improper disposal of household wastes, especially motor oil and cleaning fluids.

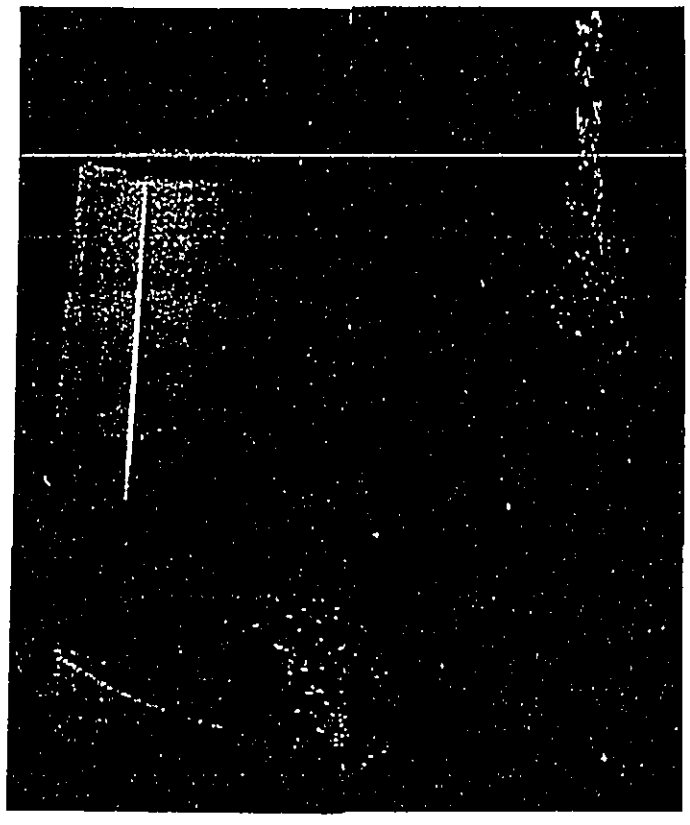
Studies have linked exposure to VOCs to a variety of health problems.

Note: These contaminants are not necessarily in your water.



THE AMWAY SOLUTION

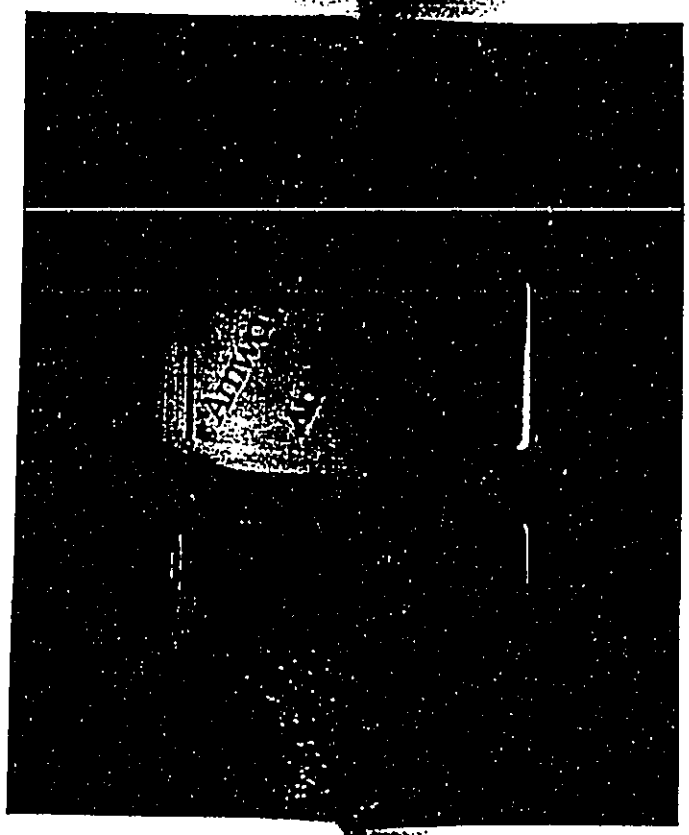
For more than a decade, families have counted on the AMWAY Water Treatment System to ensure the quality of their drinking water. With the latest product improvements, the AMWAY Water Treatment System IV is better than ever – and clearly the best!



- Patented four-stage solid carbon-block technology filters more than 125 contaminants which may be found in drinking water.
- Filters 1,250 gallons of water (or for one year, whichever comes first).
- Has a replaceable filter cartridge.
- Filter Change Indicator tells you when to change the filter.
- Improves water taste, odor, and clarity.
- Reduces a wide variety of contaminants which may be found in drinking water.
- Can be hooked to existing faucet and placed on a countertop or can be installed with a separate water faucet and placed below the sink.
- *Designed for use on cold,* potable, water.
- Certified by the National Sanitation Foundation (NSF) International.

NSF International is an independent, third-party organization in Ann Arbor, Michigan that tests and certifies industry products per established standards. It is widely known and respected in the industry. Consumers are commonly encouraged to consult NSF listings before purchasing a home water treatment system.

COMPARE TO OTHER CARBON SYSTEMS



The best way to objectively compare the AMWAY Water Treatment System IV is to analyze the National Sanitation Foundation (NSF) International listings.

NSF certifies carbon-based water treatment systems by testing under two performance standards:

Standard 42 – This standard rates a system's ability to reduce chlorine, particulates, and other contaminants affecting water's taste, odor, and clarity. Many products on the market are certified only under Standard 42 because it is relatively easy to achieve.

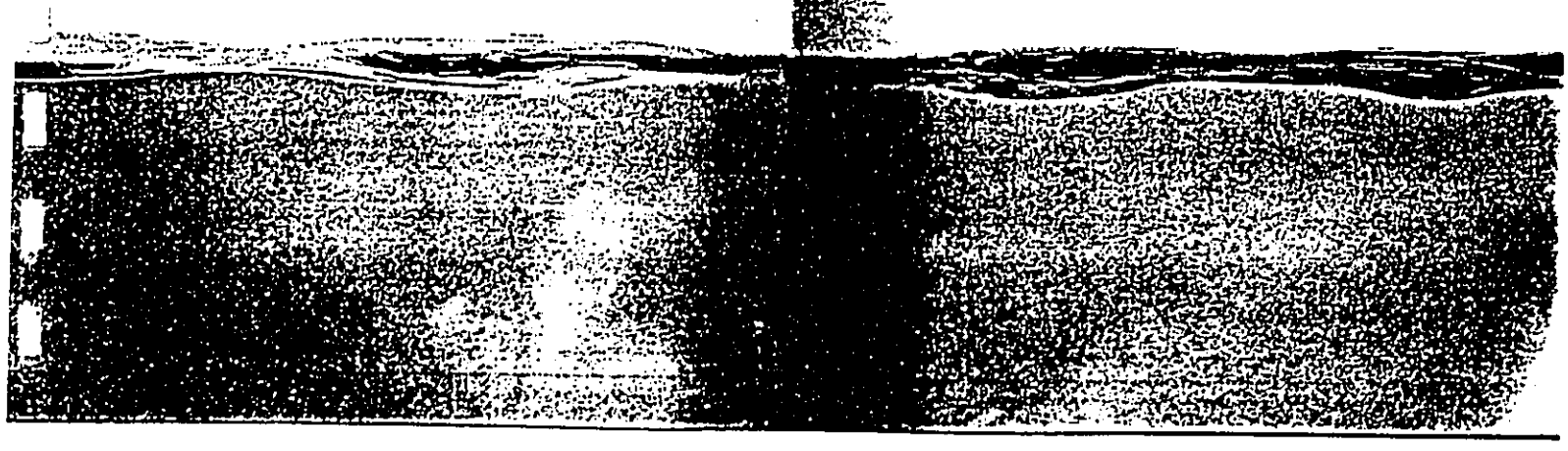
Standard 53 – This standard is much more difficult to achieve. It rates a system's effectiveness for reducing contaminants with potential health effects, such as chloroform and lead, which are more difficult to reduce than chlorine. Under this standard, the ***AMWAY Water Treatment System is certified for the reduction of more contaminants than any other certified carbon-based system on the market!***

CLEARLY THE BEST

The AMWAY Water Treatment System's superiority can be demonstrated in many other ways.

- At 1,250 gallons, it has the ***highest*** rated filter life of any NSF International Standard 53 certified system with a minimum of one gallon per minute flow rate.
- It is the ***first*** carbon-based system certified by NSF International with a Filter Change Indicator that monitors time and gallons.
- It is the ***first*** carbon-based system certified by NSF International for lead reduction.
- Is the ***first*** and one of the few carbon-based system with documented radon reduction.
- It is backed by ***more*** extensive testing and substantiation of reduction claims than any other carbon system certified under Standard 53 by NSF International.

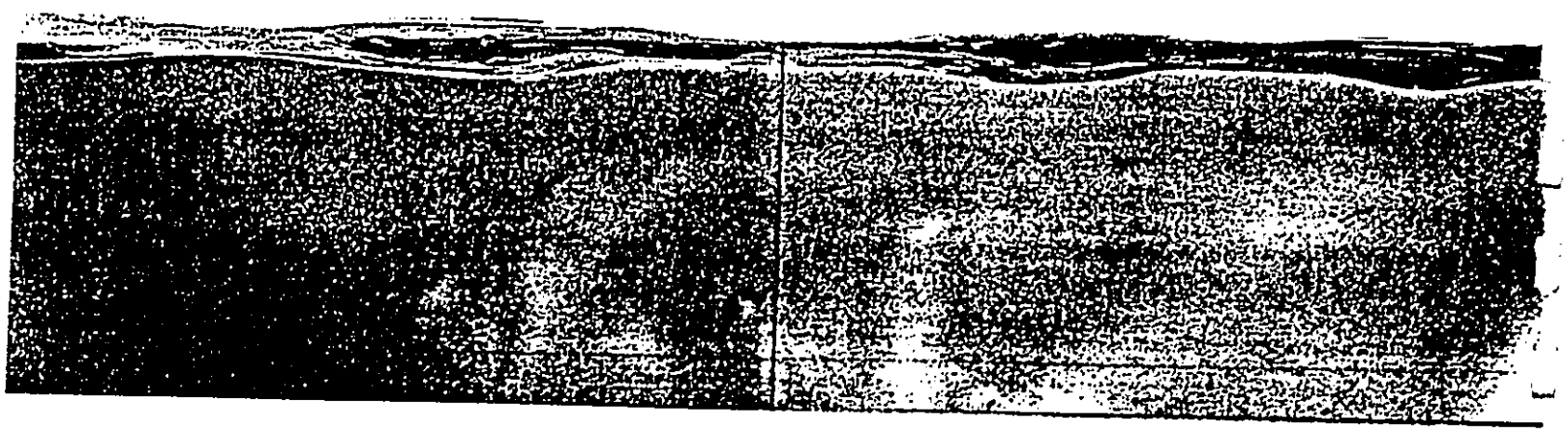
Note: These contaminants are not necessarily in your water.



COMPARE TO BOTTLED WATER

Buying bottled water may seem like an easy and simple solution to ensure quality drinking water for your family. But think again. Compared to bottled water, the AMWAY Water Treatment System:

- Provides more consistent quality water. Regulations for bottled water are no more stringent than for tap water and they also are loosely enforced. While three-fourths of the bottled water comes from springs and wells, an estimated one-fourth is sourced from municipal water systems. As a result, the quality of bottled water varies widely and may be no better than untreated tap water.
- Can be less expensive over the long run, at roughly 30¢ a gallon for the first year and 8¢ a gallon after that. A national supermarket survey in November 1994 shows the average cost for bottled water is 88¢ a gallon.
- There are no empty bottles to end up in cluttered landfills, so a water treatment system is, environmentally, a better choice.
- Is more convenient. Just turn on your tap and filtered water is at your fingertips. It's much easier than transporting, storing and discarding heavy bottles.



THE AMWAY SYSTEM REDUCES THESE CONTAMINANTS

The AMWAY System is listed by NSF International to reduce these contaminants

- Alachlor
- Asbestos
- Atrazine
- Chlordane
- Chlorine taste and odor
- Class I listing for particulate contaminants, including rust, sediment, dirt, and scale down to 0.5 microns in size
- Ethylene dibromide
- Dibromochloropropane
- Heptachlorepoxide
- Lead
- Lindane
- Mercury
- Methoxychlor
- PCBs
- Toxaphene
- Trihalomethanes (THMs)
- Turbidity (cloudiness)
- Volatile Organic Chemicals (VOCs)* – as chloroform
- Xylenes
- Waterborne parasites (cysts), including cryptosporidium, one of the smallest waterborne parasites known to be infectious to humans
- 2,4-D
- 2,4,5-TP

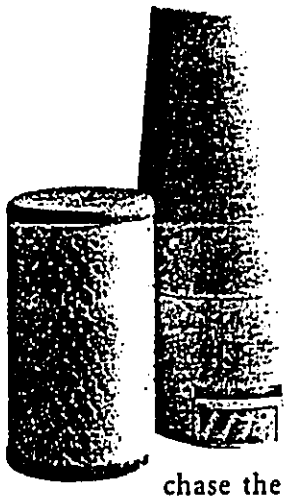
Other contaminants that the Water Treatment System IV reduces:

- More than 100 pollutants listed as "priority" by the U.S. Environmental Protection Agency (EPA)
- Hydrocarbons commonly found in gasoline, kerosene, and diesel fuel
- Particles as small as 1/300 the diameter of a human hair (0.2 microns)
- Dioxin
- Radon and radon-decay products
- Other industrial chemicals, such as PBB

**VOCs include alachlor, atrazine, benzene, carbofuran, carbon tetrachloride, chlorobenzene, dibromochloropropane, 1,2-dichlorobenzene, p-dichlorobenzene, 1, 1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethene, 1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,2-dichloropropane, cis-1,3-dichloropropene, dinoseb, endrin, ethylbenzene, ethylene dibromide, heptachlor, heptachlorepoxide, hexachlorobutadiene, hexachlorocyclopentadiene, lindane, methoxychlor, pentachlorophenol, simazine, styrene, 1,1,2,2-tetrachloroethane, tetrachloroethylene, toluene, 1,2,4-trichlorobenzene, 1,1,1,-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, trihalomethanes (including chloroform as a surrogate chemical), m-xylene, ortho-xylene, p-xylene, 2,4-D, and 2,4,5-TP (silvex)*

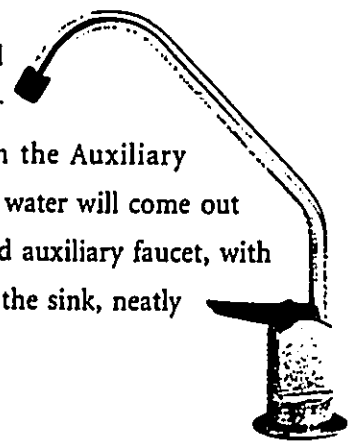
Note: These contaminants are not necessarily in your water.

INSTALLATION OPTIONS



When you purchase the AMWAY Water Treatment System, you'll need to determine whether you want the unit above or below the kitchen countertop. Depending upon your answer, you'll also purchase the Auxiliary Faucet Kit or the Existing Faucet Kit – to properly hook up the system.

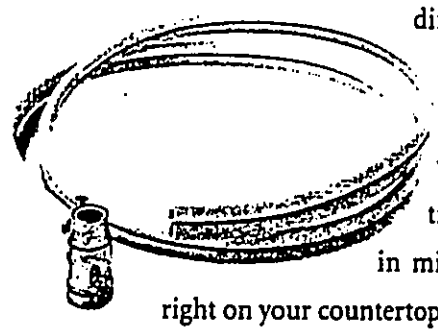
AUXILIARY FAUCET



For a more finished look, hook up the Water Treatment System with the Auxiliary Faucet Kit. Your treated water will come out of a sleek, chrome-plated auxiliary faucet, with all tubing tucked under the sink, neatly out of sight.

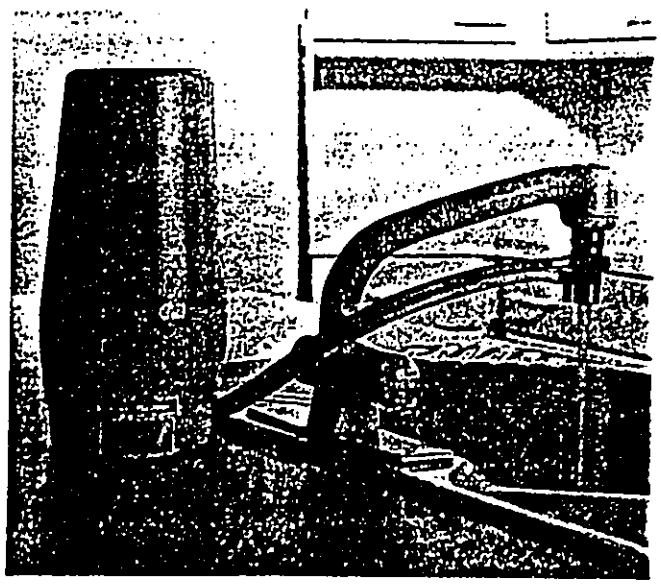
Install the Auxiliary Faucet in a newly drilled opening or in the opening designed for your hand-held sprayer. The Water Treatment System sits under the sink and is plumbed into the cold water line with a self-piercing saddle valve.

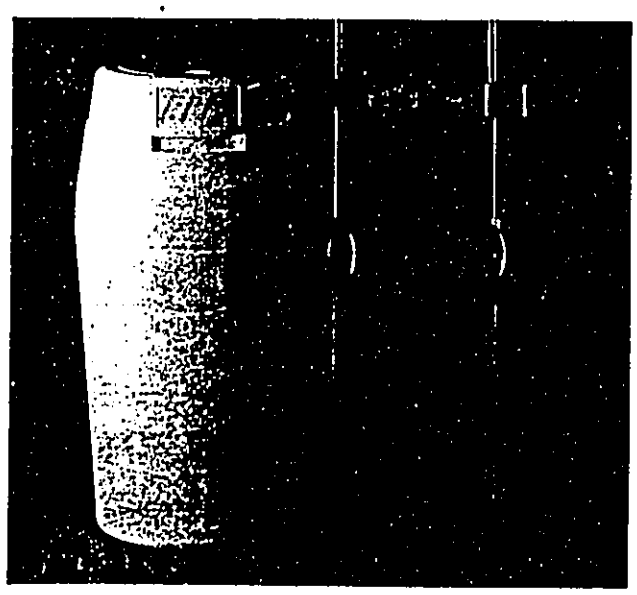
EXISTING FAUCET



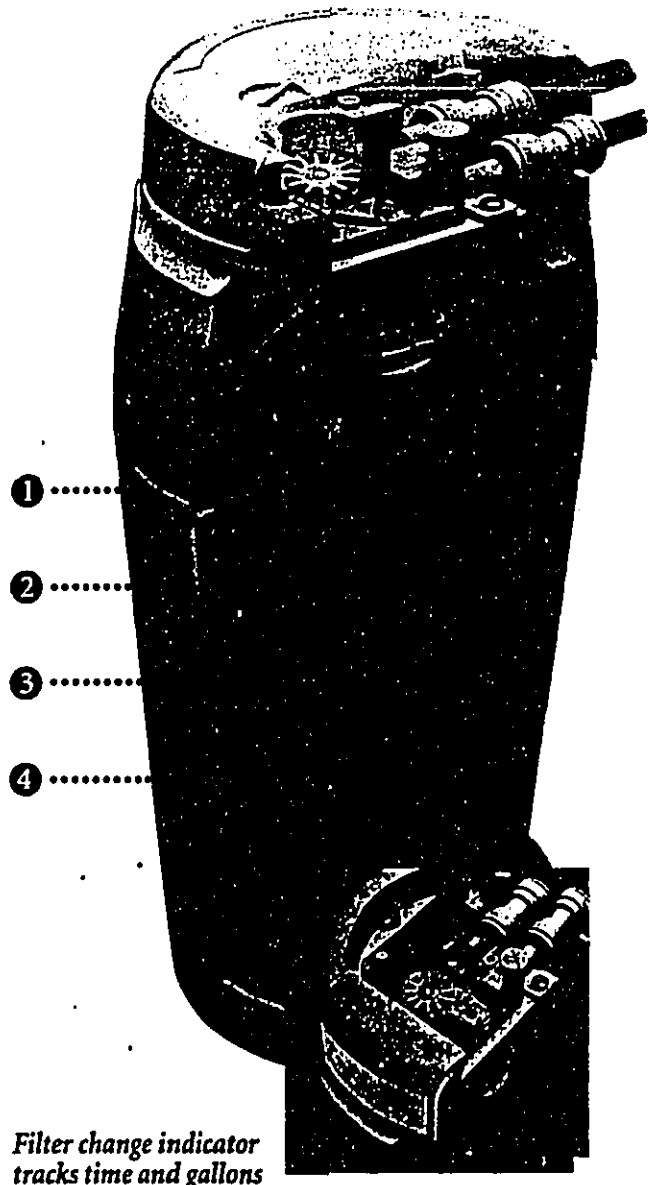
For a simpler and faster way to hook up your new AMWAY Water Treatment System, connect it directly to your faucet with the Existing Faucet Kit. This is a very simple connection that can be done in minutes. The unit sits right on your countertop.

Whichever way you choose, you'll enjoy quality drinking water right at your tap from what is clearly the best – the AMWAY Water Treatment System IV!





HIGH-EFFICIENCY, PATENTED CARBON-BLOCK FILTER SYSTEM WORKS IN FOUR STAGES



Filter change indicator tracks time and gallons to let you know when your filter needs replacing.

1. First, large particulates are reduced by outer non-woven pre-filter.
2. Smaller particulates, such as sediment and clay, are then filtered by inner non-woven pre-filter.
3. Solid carbon-block filter effectively reduces very fine particulates, parasites, lead, and organic chemical contaminants such as THMs, pesticides, VOCs, and industrial wastes.
4. Porous polymer filter core provides structure for the carbon-block and a channel for the treated water to exit the filter.

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 22, 1999

Ms. Virginia Kaai
277 Wili Ko Place #40
Lahaina, Hawaii 96761

Re: Honokohau Water System Improvements

Dear Ms. Kaai:

We have received a copy of your November 4, 1999 letter relating to the subject project. You have raised the question as to whether water treatment systems such as an Amway system placed in an individual's home could be feasible for Honokohau residents, in conjunction with a surface source. We would like to provide the following response.

As you know, surface water traditionally provided the source for Honokohau residents. The water was also chlorinated before distribution to consumers. However, surface water with chlorination does not meet applicable Federal and State clean drinking water standards for the number of consumers in Honokohau Valley. Thus, the Department of Water Supply (DWS) is proposing utilization of a groundwater source with chlorination which would meet applicable standards.

We have reviewed the specific literature on the Amway home treatment system which you submitted. While we believe that the system may be useful as a supplemental treatment, no claims were made by the manufacturer that the raw water, after treatment with the Amway home treatment system, would comply with applicable Federal and State health requirements. Moreover, the literature clearly states that the home treatment system is intended for use on cold potable water.

In the State of Hawaii, we understand that there are no home treatment systems for placement in individual homes which have been tested and approved by the State Department of Health. To be in compliance with applicable Federal and State standards, water is required to undergo a 28-day laboratory test so that it does not exceed maximum allowable concentrations of inorganic and organic chemicals, parasites, turbidity, and other contaminants. Thus, any home treatment system would be required to meet this test.

Moreover, each service will be required to be monitored for compliance with State Department of Health requirements. The Department will not be able to provide this kind of monitoring requirements with the personnel having to perform the collection of samples and testing on a daily basis. The Department does not have the manpower to provide this kind of service.

While we appreciate your suggestions, we believe that the proposed project represents the most feasible alternative to provide potable water to the residents of Honokohau Valley. If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dwshkoha\kaai.ltr

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Pacific Islands Ecoregion
300 Ala Moana Blvd., Room 3-122
P.O. Box 50088
Honolulu, Hawaii 96850

In reply refer to: DH

NOV - 8 1999

Please Give
Applicant Address
Thank You
ASAP Sam

Mr. Timothy Johns, Chairperson
Hawaii Dept. Land and Natural Resource
P.O. Box 621
Honolulu, HI 96809

Re: Conservation District Use Permit Application for Proposed Honokohau Water Systems Improvements, Honokohau, Maui

Dear Mr. Johns:

The U.S. Fish and Wildlife Service (Service) has reviewed the Conservation District Use Permit Application and Draft Environmental Assessment for Proposed Honokohau Water Systems Improvements (DEA). The project sponsor is the State of Hawaii Department of Land and Natural Resources (DLNR). The proposed project includes the construction of a 33,000 foot waterline, booster pump, and other improvements between Kapalua Wells and Honokohau Gulch and the installation of a 20,000 gallon storage tank on Mahana Ridge. The Service offers the following comments for your consideration.

The Service feels that the DEA does not adequately describe all of the biological resources that may occur within the area or the potential impacts that this project might have on endangered, threatened, or other sensitive species. Although there are no endangered or threatened plants that lie along the proposed pipeline route, recent studies of the endangered Dark-rumped Petrel (*Pterodroma phaeopygia sandwichensis*) have shown this species to fly between the uplands of west Maui and marine foraging areas.

On the island of Kauai, a threatened seabird, the Newell's Shearwater (*Puffinus auricularia newelli*), exhibits a similar nocturnal foraging behavior. Appurtenances such as telephone lines and cables, that are placed along the flight corridors of these birds (stream drainages and gulches) often result in seabird collision and fallout. Our recent communications with the consultants who conducted the biological and archaeological surveys and prepared the DEA for this project, Xamaneek Researchers, indicated that there had been no nocturnal surveys conducted to determine if seabirds passed through the project area. The DEA states that portions of the waterline that pass over streams and gulches will be suspended above them, but it does not provide enough detail for Service reviewers to determine if the suspended pipes will have impacts on the area's avifauna such as the Dark-rumped Petrel noted above. Pipes are typically

suspended over gulches with cable systems. Such cables can present an additional hazard to seabirds and other night-flying birds as they pass through the area. Therefore, these structures need to be made highly visible (e.g., threading the cables through white PVC pipe) in order to allow birds to detect and avoid them.

The Service recommends that the final environmental assessment address the above concerns by determining if seabirds use the project area, by better describing at what height above and by what methods the waterline will be suspended above the stream beds or gulches to be crossed, and by providing mitigation for this portion of the project if it is determined that there is a potential for the project to impact any endangered or threatened species.

The Service encourages the early review of proposed projects and we appreciate the opportunity to provide early input on this proposal. We hope our comments will assist you in the completion of the Final Environmental Assessment and look forward to receiving a copy when it is completed. If you have questions regarding our comments, please contact Fish and Wildlife Biologist David Hopper by phone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,

Robert P. Smith
Pacific Islands Manager

cc: DOFAW, Hawaii

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21, 1999

Mr. Robert P. Smith, Pacific Islands Manager
United States Department of the Interior
Fish and Wildlife Service, Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
P.O. Box 50088
Honolulu, Hawaii 96850

Re: Honokohau Water System Improvements

Dear Mr. Smith:

We have received a copy of your letter dated November 8, 1999 to Timothy Johns pertaining to the subject project. We would like to provide the following response.

Your letter expressed a concern that there may be obstructions resulting from the project which may interfere with the flight paths of the endangered Dark-rumped petrel. We would like to clarify that a portion of the proposed waterline would be placed underground within existing dirt roads. Other segments of the waterline are routed through pastures, trails, gulches and tunnels. These portions of the waterline would be laid on the ground surface. Waterline crossings at streams are proposed to be suspended above the stream bed. Concrete footings above the high water mark would anchor the waterline. There are no plans to erect telephone poles or cables suspended over the gulches. We would like to emphasize that no portion of the waterline is proposed to be erected above the existing vegetation canopy. Thus, we do not believe that the waterline will impose a hazard to seabirds and other night-flying birds should they pass through the area.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director
DC:tav
com\dwshkoha\fws.ltr

97139

LD

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply please refer to
File:

November 15, 1999

99-219/epo

NOV 19 1 38 PM '99

TO: The Honorable Timothy E. Johns, Chairperson
Department of Land and Natural Resources

FROM: Bruce S. Anderson, Ph.D., M.P.H.
Director of Health

SUBJECT: CONSERVATION DISTRICT USE APPLICATION

Applicant: Department of Water Supply, County of Maui
File No.: MA-2952
Request: Honokohau Water System Improvements
Location: Honokohau Valley, Maui
TMK: 4-1-1: por. of 9 and 4-2-1: por. of 1

Thank you for allowing us to review and comment on the subject application. We have the following comments to offer:

Safe Drinking Water Branch

1. The proposed improvements to the Honokohau system does not change its status, and it would still be regulated as a public water system, because the connection point to the existing Kapalua wells, according to figure 2, is before any treatment by the Kapalua water system.

2. Is the installation of high density polyethylene pipe pursuant to Maui County's standard design? Are there any design standards for the placement of polyethylene pipe next to non-potable irrigation waterlines?

3. The existing distribution system in Honokohau valley is identified in the text on page 6 as a 4-inch line after the pressure break tank. In figure 3, the existing pipe is identified as 6-inch pipe.

If you have any questions concerning these comments, please contact Mr. Mark Yonamine of the Safe Drinking Water Branch at 586-4258.

Polluted Runoff Control

Proper planning, design and use of erosion control measures and management practices will substantially reduce the total volume of runoff and limit the potential impact to the coastal waters from polluted runoff. Please refer to the *Hawaii's Coastal Nonpoint Source Control Plan*, pages III-117 to III-119 for guidance on these management measures and practices for specific project activities. To inquire about receiving a copy of this plan, please call the Coastal Zone Management Program in the Planning Office of the Department of Business and Economic Development and Tourism at 587-2877.

The following practices are suggested to remove solids and associated pollutants in runoff during and after heavy rains:

1. Sediment basins.

2. Sediment traps.

3. Fabric filter fences.

4. Straw bale barriers.

5. Vegetative filter strips.

Any questions regarding these matters should be directed to the Polluted Runoff Control Program in the Clean Water Branch at 586-4309.

c: SDWB
CWB

1949 - 1999: Celebrating 50 Years of Service
DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-6109
TELEPHONE (808) 270-7816 • FAX (808) 270-7833

December 21, 1999

Bruce S. Anderson, Ph.D., M.P.H.
Director
State of Hawaii
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Re: Honokohau Water System Improvements

Dear Dr. Anderson:

We have received a copy of your November 15, 1999 memorandum to Timothy Johns of the Department of Land and Natural Resources pertaining to the subject project. We would like to provide the following response.

Safe Drinking Water Branch

1. We acknowledge that the proposed project would be regulated as a public water system.

2. When determined applicable, the Department has used high density polyethylene (HDPE) pipe for installations related to the Department's projects. Applicable use of (HDPE) pipe is made on a case by case basis.

3. There is an existing 6-inch line after the pressure break tank in Honokohau Valley. Figure 3 hs been revised accordingly in the Final EA.

Polluted Runoff Control

It is noted that excavation associated with the project is anticipated to be minimal. Waterline segments which are proposed to be placed underground are limited to those portions within existing dirt roads. Other waterline segments through pastures, trails, gulches and tunnels will be placed on the ground surface. We do not believe that the quality and quantity of runoff in the area will be affected to any significant degree due to the project.

If you have any questions, please feel free to call me.

Sincerely,

David Craddick
Director

DC:tav
com\dwshkoha\doh.ltr

31731

JAMES "KIMO" APANA
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955

COUNTY OF MAUI
DEPARTMENT OF PUBLIC WORKS AND WASTE MANAGEMENT
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

RON H. RISKA, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

ANDREW M. HIROSE
Solid Waste Division

November 15, 1999

Mr. Timothy E. Johns
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

SUBJECT: CONSERVATION DISTRICT USE PERMIT APPLICATION
HONOKOHAU WATER SYSTEM IMPROVEMENTS
TMK: (2) 4-1-001:009 (PORTION) & 4-2-001:001 (PORTION)
CDUP MA-2952

We reviewed the subject application and have no comment.

If you have any questions, please call David Goode at 270-7845.

Sincerely,

for CHARLES JENCKS
Director of Public Works
and Waste Management

DG:msc/mt
S:\LUCA\CZM\HONOKO.WPD

References

References

Community Resources, Inc., Maui County Community Plan Update Program Socio-Economic Forecast Report, January 1994.

County of Maui, The General Plan of the County of Maui, 1990 Update.

County of Maui, Wailuku-Kahului Community Plan, 1987.

Scott, Michael J., et al., Forest Bird Communities of the Hawaiian Islands: Their Dynamics, Ecology and Conservation, Studies in Avian Biology No. 9, 1986.

State of Hawaii, Department of Land and Natural Resources, Division of Water and Land Development, Kahakuloa Water Study, Report Number: R54, December 1977.

University of Hawaii, Department of Geography, Atlas of Hawaii, Second Edition, 1983.

U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai and Lanai, State of Hawaii, 1972.

Wilson Okamoto & Associates, Inc., Maui Community Plan Update Infrastructure Assessment, September 1992.

Appendices

Appendix A

Botanical Resources Survey

BIOLOGICAL RESOURCES SURVEY FOR THE PROPOSED HONOKOHAU WATER SYSTEM IMPROVEMENTS PROJECT WEST MAUI, HAWAI'I

Prepared for:

Department of Water Supply
County of Maui
Wailuku, Maui

Prepared by

David Paul
Xamanek Researches
Pukalani, Maui

June 1998

BIOLOGICAL RESOURCES SURVEY

SUMMARY:

No vascular plant species was found in the project area that has protection under Federal or State Law. With the exception of the Pacific golden plover (a migratory bird), no avian or mammalian animal species were found in the project area that have protection under Federal or State Law. Therefore there are no biological resources found in the proposed corridor for the project that require consideration for planning, as long as impacts from the actions of the project are kept to a minimum. The County of Maui plans to place plastic waterline (mostly 2 inches in diameter) on the surface of the proposed corridor. It is recommended that this pipeline cross streambeds aerially in order to minimize potential impacts to the environment.

INTRODUCTION:

On October 19 & 20, 1998, and May 24, 1999, a Biological Resources Survey of the area proposed for the Honokohau Waterline Project in West Maui, Hawai'i, was conducted by David Paul and Erik Fredericksen of Xamanek Researches. Portions of the proposed corridor had been previously inspected by Erik Fredericksen on 6 October 1998. The proposed corridor for the waterline project begins near Honokahua Gulch, crosses Mokupea Gulch, Honolua Gulch, Papua Gulch and Pohakupule Gulch and ends at an existing waterline that goes into Honokohau Valley (see Map 2). The entire length of the proposed corridor for the project crosses previously disturbed areas including roadways, cattle pastures, access trails, shoulders of water ditch systems, and through two tunnels.

The survey provided information necessary to describe the vegetation and macrofauna in the area and determine if any species of vascular plant or animal found there is protected under Federal or State Law, and would require consideration for planning in the project.

METHODS:

The survey was conducted by traversing the entire length of the proposed project corridor and recording every vascular plant, avian, and mammalian species encountered in the area. The species of plants occurring there were placed into Unique Biological Communities. Identifying unique communities helps to locate areas that support rare (legally protected) species.

The survey also worked to identify any stream or wetland habitats in the project area.

Each plant species was identified by using keys and descriptions from *In Gardens of Hawai'i* (Neal, M.C., 1965), *PTERIDOPHYTES OF HAWAI'I: Identification Key* (Wagner, W.H., & Wagner, F.S., 1992), *Manual of the Flowering Plants of Hawai'i* (Wagner, W.L., et al, 1990), and *Ferns of Hawai'i* (Valier, K. 1995).

Each avian species was identified by using descriptions from *A Field Guide To The Birds of Hawaii and the Tropical Pacific.* (Pratt, H.D., 1987).

Each mammalian species was identified by using descriptions from *Mammals in Hawai'i.* (Tomich, P.Q., 1986).

Unique Biological Communities were identified using descriptions from *Vegetation* (Gagne & Cuddihy, 1990).

Plants which are given legal protection were reviewed *from Listed and Candidate Species, as Designated Under the U.S. Endangered Species Act: Hawaiian Islands Plants – Updated January 9, 1998* (USFWS, 1998).

Known locations of legally protected species were inquired about through The Nature Conservancy's *Hawaiian Islands Natural Heritage Program* (Gon, S., Personal Communication, Oct. 19, 1998), and the *Draft Recovery Plan for the Multi-Island Plants* (USFWS, 1998).

RESULTS:

The species of vascular plants which were encountered during the Biological Resources Survey (Oct. 19 & 20, 1998, and May 24, 1999) are members of Unique Biological Communities. Those communities may contain rare species that have protection under Federal or State Law. Therefore, each species of vascular plant, avian, and mammal encountered during the Biological Resources Survey was placed into a *List of Vascular Plants* (Table 1.), *List of Avians* (Table 2.), and *List of Mammals* (Table 3.) to represent each distinct form of life and show if any legally protected species occurs in the project area which requires consideration for planning. The following sections describe the vegetation and macrofauna of the project area in detail.

Unique Biological Communities:

Four communities were identified in the project area; Lowland Dry Forest, Lowland Mesic Grassland, Lowland Mesic Shrubland, and Lowland Mesic Forest.

Lowland Dry Forest is dominated by *lama* (Diospyros sandwicensis) with *'akia* (Wikstroemia oahuensis), *'akoko* (Chamaesyce multiformis), *alahe'e* (Canthium odoratum), *'ala'ala wai nui* (Peperomia leptostacya), *'ala'ala wai nui pua ki* (Plectranthus parviflorus), and *'ilima* (Sida fallax) commonly found in the understory. A single vine of *maile* (Alyxia oliviformis) was observed; and *'ohi'a* (Metrosideros polymorpha) is an occasional canopy tree. This community is the least extensive

community found in the project area, and is located along the outer slopes and ridges of Honolua and Papua Gulches.

Lowland Mesic Grassland is found in two types in the project area, both of which are disturbance communities. The most extensive being dominated by pastures of Hilo grass (Paspalum conjugatum), violet crabgrass (Digitaria violescens), Glenwood grass, (Sacciolepis indica), yellow foxtail (Setaria gracilis), and broomsedge (Andropogon virginicus); and is located on tablelands above and between Honokahua, Mokupea, and Honolua Gulches. Within this community cattle (Bos taurus), horses (Equus caballus caballus), and feral pigs (Sus scrofa scrofa) were observed grazing. Evidence (feces) of feral cats (Felis catus) was found Lowland Mesic Grassland is found in two types in the project area, both of which in the pastures, and the Pacific golden plover or *kolea* (Pluvialis dominica pacifica), a migratory bird was encountered in the pastures in October.

The other grassland is found along access trails, roadways, and shoulders of water ditch systems in the proposed project corridor, and is dominated by molasses grass (Melinus minutifolia). The grassland communities in the project area are highly impacted and lacking in native (indigenous & endemic) vegetation.

Lowland Mesic Shrubland is dominated by *'a'ali'i* (Dodonaea viscosa), *'akia* (Wikstroemia oahuensis), *alahe'e* (Canthium odoratum), and *uluhe* (Dicranopteris linearis). *'Ohi'a* (Metrosideros polymorpha), *lama* (Diospyros sandwicensis), *'akoko* (Chamaesyce multiformis), *'ama'u* (Sadleria cyatheoides), and Hawaiian cliff sedge (Carex wahuensis) are common associates of this community. *'Akia papa* (Wikstroemia uva-ursi) is occasional on ridges of Honolua Gulch; *neneleau* (Rhus sandwicensis) and *'iliahi* (Santalum ellipticum) are uncommon on ridges of Honokohau Valley. This community is extensive on exposed ridges and slopes from Mokupea Gulch to Pohakupule Gulch.

Lowland Mesic Forest is represented in the project area by two general types. At Mokupea Gulch, *koa* (Acacia koa) is the dominant tree at the inner reaches of the project area on table lands in a forest highly impacted by Christmasberry (Schinus terebinthifolius), Formosan *koa* (Acacia confusa), and Moreton Bay fig (Ficus macrophylla). *Alahe'e* (Canthium odoratum) and *uluhe* (Dicranopteris linearis) are dominant in the understory, with *olopua* (Nestegis sandwicensis) and *ni'ani'au* (Neprolepis exaltata) being common associates. An occasional patch of *palapalai* (Microlepia strigosa) was found, and a single tree of *hao* (Rauvolfia sandwicensis) was located at the top of the southern slope of the gulch near the end of the defined project corridor which has the site of the proposed water tank.

In Pohakupule Gulch and the upper portion of Honokohau Valley, the mesic forest community is dominated by *lama* (Diospyros sandwicensis) and *'ohi'a* (Metrosideros polymorpha). *'Akia* (Wikstroemia oahuensis), *alahe'e* (Canthium odoratum), *uluhe* (Dicranopteris linearis),

and *'a'ali'i* (Dodonaea viscosa) are commonly found, with *alahe'e* and *'a'ali'i* becoming arborescent in many locations. Several trees of *ho'awa* (Pittosporum glabrum) were observed in Papua Gulch, just past the *mauka* end of the first tunnel which the project corridor runs through. Several trees of *maua* (Xylosma hawaiiense) were located at the end of the project area in Honokohau Valley, just past the *mauka* end of the second tunnel. A small stand of mature *hala* (Pandanus tectorius) was noted to the north of Honolua Ditch, part of Honokahua District (SIHP 50-50-01-1591). *Hala* was not observed elsewhere in the corridor. The presence of these *hala* trees in the valley area suggests that they may be associated with an indigenous habitation area in the general vicinity of the project corridor.

Within the lesser sloping areas of the mesic forest, several plants have been cultivated in the past and are naturalized; including *'ulu* (Artocarpus altilis), *ki* (Cordyline fruticosa), *'ohi'a 'ai* (Syzygium malaccense), mango (Mangifera indica), coffee (Coffea arabica), and cinnamon (Cinnamomum verum).

The mesic forest community is the most extensive and diverse habitat in the project area. It contains the greatest number of indigenous, endemic, and Polynesian plants, but it also contains the most invasive alien species.

Rats (Rattus sp.) were seen in this community, as well as evidence of their feeding on *kukui* (Aleurites moluccana) nuts.

Most of the animal species encountered were located in pastures of the mesic grassland community, although alien avian species, such as mynahs (Acridotheres tritis), Northern cardinals (Cardinalis cardinalis), spotted doves (Streptopelia chinensis), zebra doves (Geopelia striata), Japanese white-eyes (Zosterops japonicus), and house finches (Carpodacus mexicanus) were found thoughout the project area, but none were found in any sizeable numbers.

Rare Plants:

For the purpose of this report, Rare Plants are those plants which have protection under Federal or State Law and are Listed as Endangered or Threatened by the U.S Fish & Wildlife Service. These plants require consideration for planning in development projects.

No species of vascular plant was found in the project area that has protection under Federal or State Law. Therefore, there are no Botanical Resources found in the proposed project corridor that require consideration for planning, as long as the impacts from the actions of the project are kept to a minimum.

Historical locations of Rare Plants in the vicinity of the project corridor are unknown (Gon, S., Personal Communication, Oct. 19, 1998), although three Listed Endangered plant species have been found above and below the project area.

Haha (Cyanea grimesiana ssp. grimesiana) a rare rainforest lobeliad was previously found above 2,000 ft. elevation in Honokohau Gulch, approximately five miles mauka of the project area (Rock, J.F., 1919, & USFWS, 1998). This species is no longer known to exist there.

'Awiwi (Centaurium sebaeoides) is a rare coastal herb previously found at Honolua Bay, well makai of the project area (USFWS, 1998). It is no longer known to exist there.

'Ohai (Sesbania tomentosa) is a rare coastal and lowland shrub currently found at Nakalele Point, a few miles makai and North from the project area (USFWS, 1998). This species is known to occur in arid lowland habitats. This plant species was not found in the survey area.

Rare Animals:

The only historical location of Listed Endangered animals is one account of a rare tree snail known as *kahuli* (Achatinella sp.) which was found above 3,000 ft. elevation in Honokohau Valley, more than five miles mauka of the project area (Gon, S., Personal Communication, 1998). This species is not known to exist there currently.

The only animal species encountered in the project area that has legal protection is the Pacific golden plover or *kolea* (Pluvialis dominica pacifica). The Pacific golden plover is a migratory bird species that inhabits low-lying grasslands, roadsides, sandy beaches, and mudflats (Pratt, H.D., et al, 1987). It is found in Hawai'i during Spring and Fall as a stop-over on it's way to Alaska and New Zealand. It was encountered in the project area in October, 1998 on pasturelands.

The Pacific golden plover commonly inhabits areas close to humans, and quickly repositions itself when approached by humans or other animals. It is not Endangered.

Stream and Wetland Habitats:

Several intermittent streams were crossed where the proposed project corridor passes through gulches. Intermittent streams are flowing only after periods of substantial rainfall. These streambeds were lined with cobble-stones, and there were no pools of water found within the streams, in or adjacent to the project area.

Downhill from the project area the stream habitats are bordered by pineapple (Ananas comosus) fields at the tops of the gulches.

There were no wetland habitats found anywhere in the project area, or adjacent to it.

Lists of Plants and Animals:

The List of Vascular Plants found during the Biological Resources Survey (Oct. 19 & 20, 1998, and May 24, 1999) is displayed in Table 1., at the end of this report.

The List of Avians encountered during the survey is displayed in Table 2., and the List of Mammals is displayed in Table 3.

The distribution of species found in the project area is Endemic, Indigenous, Polynesian, or Alien; and cult. means the plant is actively being cultivated.

RECOMMENDATIONS:

No species of vascular plant was found in the project area that has protection under Federal or State Law.

Although legally protected plants were not found in the study area, they have the potential of establishing in all of the Unique Biological Communities in the project area, with the exception of the Lowland Mesic Grassland habitats, due to ongoing disturbances.

The only animal species encountered in the project area that has legal protection was the Pacific golden plover or *kolea* (Pluvialis dominica pacifica). The Pacific golden plover is a migratory bird species which is seasonal in Hawai'i and is not Endangered. It inhabits areas close to humans, and quickly repositions itself when humans or other animals approach it. Therefore the impacts to this animal, from the actions of the project, should be minimal.

There are no biological resources found in the project corridor that require consideration for planning, as long as impacts to the proposed corridor be kept to a minimum.

The stream habitats found in the project area were intermittent and did not have any standing bodies of water at the time of the survey. However, to avoid impacts to the stream during periods of substantial rainfall, the proposed 2-inch waterline should be suspended aerially where the corridor for the project crosses the intermittent streams. This installation methodology will mitigate potential negative impacts to the stream habitats.

The entire proposed corridor for the project runs across previously disturbed areas consisting of access trails, roadways, cattle pastures, shoulders of water ditch systems, and through two tunnels. Therefore, impacts to the environment from the proposed actions of the project should be minimal.

REFERENCES:

Gagne, W.C. & Cuddihy, L.W. 1990. *Vegetation* in Wagner, W.L., et al, Eds. 1990. *Manual of the Flowering Plants of Hawai'i.* University of Hawai'i Press. Honolulu, HI. Vol. 1 pp. 45-114.

Gon, Sam. Oct. 19, 1998. "The Nature Conservancy: Hawaiian Islands Natural Heritage Program." Personal Communication.

Neal, Marie C. 1965. *In Gardens of Hawai'i.* BMSP No. 50. Bishop Museum Press. Honolulu, HI. 924p.

Pratt, H.D., Bruner, P.L., & Berrett, D.G. 1987. *A Field Guide To The Birds of Hawaii and the Tropical Pacific.* Princeton University Press. Princeton, NJ. 409p.

Rock, J.F. 1919. *A Monographic Study of the Hawaiian Species of the Tribe Lobelioideae, Family Campanulaceae.* BMSP 7. Bishop Museum Press. Honolulu, HI. 395p.

Tomich, P.Q. 1986. *Mammals in Hawai'i.* BMSP 76. Bishop Museum Press. Honoluiu, HI. 375p.

USFWS. 1998. *Listed and Candidate Species, as Designated Under the U.S. Endangered Species Act.: Hawaiian Islands Plants- Updated January 9, 1998.* USFWS, Pacific Islands Office. Honolulu, HI. 18p.

USFWS. 1998. *Draft Recovery Plan for the Multi-Island Plants.* USFWS. Portland, OR. 200p.

Wagner, W.H.,& Wagner, F.S. 1992. *PTERIDOPHYTES OF HAWAI'I: Identification Key.* Privately Published. Ann Arbor, Michigan. 41p.

Wagner, W.L., Herbst, D.R., & Sohmer, S.H. 1990. *Manual of the Flowering Plants of Hawai'i.* University of Hawai'i Press. Honolulu, HI. 2 vol. 1853p.

Valier, Kathy. 1995. *Ferns of Hawai'i.* University of Hawai'i Press. Honolulu, HI. 88p.

TABLE 1

List of Vascular Plants

PTERIDOPHYTES

FAMILY Genus/species	Common Name	Distribution
ADIANTACEAE	Maidenhair Fern Family	
Adiantum hispidulum Sw.	five finger maidenhair	A
Adiantum raddianum	*'iwa'iwa*	A
Cheilanthes decipiens	*'iwa'iwa*	E
Pityrogramma austroamericana	gold fern	A
ASPLENIACEAE	Spleenwort Fern Family	
Asplenium nidus L	*hoe a Maui*	I
BLECHNACEAE	Blechnum Fern Family	
Blechnum occidentale L.	blechnum	A
Sadleria cyatheoides Kaulf.	*'ama'u*	E
DENNSTAEDTIACEAE	Hay-scented Fern Family	
Microlepia strigosa (Thunb.)Presl	*palapalai*	I
Pteridium decompositum (Gaud.)Tryon	*kilau*	E
GLEICHENIACEAE	Wing Fern Family	
Dicranopteris linearis (Burm.)Underw.	*uluhe*	I
LINDSAEACEAE	Lace Fern Family	
Odontosoria chinensis (L.)J.Sm.	*pala'a*	I
LYCOPODIACEAE	Club Moss Family	
Palhinhaea cernua (L.)Fran.& Carv. Vasc.	*wawae'iole*	I
NEPHROLEPIDACEAE	Sword Fern Family	
Nephrolepis exaltata (L.)Schott. var. hawaiiensis	*ni'ani'au*	E
Nephrolepis multiflora	sword fern	A
OPHIOGLOSSACEAE	Adder's Tongue Fern Family	
Ophioderma pendula	*puapuamoa*	I
POLYPODIACEAE	Common Fern Family	
Lepisorus thunbergianus	*pakahakaha*	I
Phlebodium aureum (L.)J.Sm.	*laua'e haole*	A
Phymatosorus scolopendrium	*laua'e*	A

PSILOTACEAE		Wisk Fern Family	
	Psilotum nudum (L.)Beauv.	*moa*	I
THELYPTERIDACEAE		Maiden Fern Family	
	Thelypteris dentata	oak fern	A

GYMNOSPERMS

ARAUCARIACEAE		Island Pine Family	
	Araucaria columnaris (Forst.)Hook.	Cook Island pine	A
	Araucaria cunninghamii Ait.ex Lamb.	hoop pine	A
	Araucaria heterophylla (Salisb.)Franco	Norfolk Island pine	A
CUPRESSACEAE		Cypress Family	
	Cupressus arizonica	Arizona Cypress	A

MONOCOTYLEDONS

AGAVACEAE		Agave Family	
	Cordyline fruticosa (L.)Chev.	*ki*	P
ARACEAE		Arum Family	
	Cyrtosperma chamissonis (Schott)Merr.	swamp taro	A
ARECACEAE		Palm Family	
	Cocos nucifera L.	coconut	P cult.
CANNACEAE		Canna Family	
	Canna indica L.	*ali'ipoe*	A
COMMELINACEAE		Spiderwort Family	
	Commelina diffusa Burm.	*honohono*	A
CYPERACEAE		Sedge Family	
	Carex wahuensis ssp. wahuensis Mey.	Hawaiian cliff sedge	E
	Cyperus papyrus L.	papyrus	A
	Fimbristylis dichotoma (L.)Vahl.	*mau'u 'aki'aki*	I
	Kyllinga brevifolia Rottb.	*kili'o'opu*	A
	Macherina mariscoides (Gaud.)Kern	*'uki*	I
	Pycreus polystacyos ssp. polystacyos (Rottb.)Beauv.	nutsedge	I
DIOSCOREACEAE		Yam Family	
	Dioscorea bulbifera L.	*hoi*	P

MUSACEAE	Banana Family	
Musa paradisiaca ssp. normalis (L.)Ktze.	plantain	A cult.
ORCHIDACEAE	Orchid Family	
Spathoglottis plicata Blume	Philippine ground orchid	A
PANDANACEAE	Screwpine Family	
Freycinetia arborea Gaud.	*'ie'ie*	I
Pandanus tectorius Park.ex Z	*hala*	I
POACEAE	Grass Family	
Andropogon virginicus L.	broomsedge	A
Chloris radiata (L.)Sw.	radiate fingergrass	A
Chloris virgata Sw.	feather fingergrass	A
Coix lachryma-jobi L.	*pu'ohe'ohe*	A
Cynodon dactylon (L.)Pers.	*manienie*	A
Digitaria insularis (L.)Mek.ex Ek.	sourgrass	A
Digitaria violascens Link	violet crabgrass	A
Melinus minutiflora Beauv.	molasses grass	A
Oplismenus hirtellus (L.)Beauv.	*honohono*	A
Panicum maximum Jacq.	Guinea grass	A
Paspalum notatum flugge	Bahia grass	A
Paspalum conjugatum Berg.	Hilo grass	A
Paspalum scrobiculatum L.	*mau'u laiki*	I
Pennisetum purpureum Schum.	elephant grass	A
Rhynchelytrum repens (Willd.)Hubb.	Natal redtop	A
Saccharum officinarum L.	white Tanna sugarcane	A
Sacciolepis indica (L.) Chase	Glenwood grass	A
Setaria gracilis Kunth	yellow foxtail	A
Sporobolus indicus (L.)R.Br.	smutgrass	A
ZINGIBERACEAE	Ginger Family	
Hedychium coronarium Konig	white ginger	A
Zingiber zerumbet (L.)Sm.	*'awapuhi*	P

DICOTYLEDONS

ACANTHACEAE	Acanthus Family	
Thunbergia fragrans Roxb.	white thunbergia	A
ANACARDIACEAE	Mango Family	
Mangifera indica L.	mango	A
Rhus sandwicensis A.Gray	*neneleau*	E
Schinus terebinthifolius Raddi	Christmasberry	A

APIACEAE	Parsley Family	
Centella asiatica (L.)Urb.	Asian pennywort	A
Ciclospermum leptophyllum (Pers.)Sprg.	fir-leaved celery	A
APOCYNACEAE	Dogbane Family	
Alyxia oliviformis Gaud.	*maile*	E
Rauvolfia sandwicensis A.DC	*hao*	E
ARAILIACEAE	Ginseng Family	
Schefflera actinophylla (Endl.)Harms	octopus tree	A
ASTERACEAE	Sunflower Family	
Acanthospermum australe (Loef.)Ktze.	spiny-bur	A
Adenostemma laevina (L.)Ktze.	*kamanamana*	I
Ageratina adenophora (Sprg.)King & Robs.	*pamakani*	A
Ageratina riparia (Rgl.)King & Robs.	*pamakani*	A
Ageratum houstonianum Mill.	*maile hohono*	A
Bidens pilosa L.	*ki nehe*	A
Conyza bonariensis (L.)Cronq.	hairy horseweed	A
Conyza canadensis (L.)Cronq.	horseweed	A
Crassocephalum crepidioides (Benth.)Mr.	*pualele*	A
Emilia sonchifolia (L.)DC	Flora's paintbrush	A
Erectites valerianifolia (L.)DC	*pualele*	A
Gnaphalium japonicum Thunb.	cudweed	A
Hypochoeris radicata L.	cat's ear	A
Pluchea symphytifolia (Mill.)Gillis	sourbush	A
Synedrella nodiflora (L.)Gaertn.	nodeweed	A
Vernonia cineria (L.)Less.	little ironweed	A
Youngia japonica (L.)DC	Asian hawksbeard	A
BUDDLEIACEAE	Buttefly-bush Family	
Buddleia asiatica Lour.	dogtail	A
CARICACEAE	Papaya Family	
Carica papaya L.	papaya	A
CARYOPHYLLACEAE	Pink Family	
Drymaria cordata (L.)Willd.ex Rm.& Schlt.	*pipili*	A
CASUARINACEAE	She-oak Family	
Casuarina equisetifolia L.	ironwood	A
CONVULVULACEAE	Morning Glory Family	
Ipomoea indica (Burm.)Merr.	*koali*	I
Ipomoea violacea L.	moon flower	A

CRASSULACEAE	Orpine Family	
Kalanchoe pinnata (Lam.)Pers.	air plant	A
EBENACEAE	Persimmon Family	
Diospyros sandwicensis (A.DC)Fosb.	*lama*	E
EPACRIDACEAE	Epacris Family	
Styphelia tameiameiae (Cham.& Schlech.)F.v.Muell.	*pukiawe*	I
EUPHORBIACEAE	Poinsettia Family	
Aleurites moluccana (L.)Willd.	*kukui*	P
Chamaesyce hypericifolia (L.)Millsp.	graceful spurge	A
Chamaesyce multiformis (Hook.& Arn.)Croi.& Deg.	*'akoko*	E
Phyllanthus debilis Klein ex Willd.	niruri	A
Ricinus communis L.	*koli*	A
FABACEAE	Bean Family	
Acacia confusa Merr.	Formosan *koa*	A
Acacia koa A.Gray	*koa*	E
Chamaecrista nictitans (L.)Moench	partridge pea	A
Crotalaria pallida Aiton	smooth rattlepod	A
Desmanthus virgatus (L.)Willd.	slender mimosa	A
Desmodium tortuosum (Sw.)DC	Florida beggarweed	A
Desmodium triflorum (L.)DC	tick clover	A
Desmodium uncinatum (Jacq.)DC	begger's tick	A
Glycine wightii (Wht.& Arn.)Verdc.	beggarweed	A
Indigofera spicata Forssk.	creeping indigo	A
Indigofera suffruticosa Mill.	indigo	A
Leucaena leucocephala (Lam.)de Wit	*koa haole*	A
Macroptilium lathyroides (L.)Urb.	cow pea	A
Mimosa pudica L.	sleepy grass	A
Paraserianthes falcataria (L.)Niel.	albizia	A
Senna septemtrionalis (Viv.)Irw.& Barn.	*kolomona*	A
FLACOURTIACEAE	Flacourtia Family	
Xylosma hawaiiense Seem.	*maua / a'e*	E
LAMIACEAE	Mint Family	
Plectranthus parviflorus Willd.	*'ala'ala wai nui pua ki*	I
LAURACEAE	Laurel Family	
Cassytha filiformis L.	*kauna'oa*	I
Cinnamomum verum Presl	cinnamon	A
Persea americana Mill.	avocado	A

LYTHRACEAE	Loosestrife Family	
Cuphea carthagenensis (Jacq.)Macbr.	tarweed	A
MALVACEAE	Hibiscus Family	
Abutilon grandifolium (Willd.)Sweet	false *'ilima*	A
Malvaviscus penduliflorus DC	Turk's cap	A
Sida fallax Walp.	*'ilima*	I
Sida rhombifolia L.	false *'ilima*	A
MELASTOMATACEAE	Melastoma Family	
Tibochina herbacea (DC)Cogn.	glorybush	A
MENISPERMACEAE	Moonseed Family	
Cocculus trilobus (Thunb.)DC	*huehue*	I
MORACEAE	Fig Family	
Ficus macrophylla Desf.	Moreton Bay fig	A
Artocarpus altilis (Parkins.)Fosb.	*'ulu*	A
MYRSINACEAE	Myrsine Family	
Ardisia elliptica Thunb.	shoebutton tree	A
MYRTACEAE	Myrtle Family	
Eucalyptus globulus Labill.	blue gum	A
Eucalyptus robusta Sm.	swamp mahogany	A
Eucalyptus saligna Sm.	Sydney blue gum	A
Eucalyptus sideroxylon Cunn.ex Woolls	red ironbark	A
Melaleuca quinquenervia (Cav.)Blake	paperbark	A
Metrosideros polymorpha Gaud.	*'ohi'a*	E
var. glaberrima		
var. incana		
var. macrophylla		
var. polymorpha		
Psidium cattleianum Sabine	*waiawi*	A
Psidium guajava L.	guava	A
Syzygium cumini (L.)Skeels	Java plum	A
Syzygium jambos (L.)Alston	rose apple	A
Syzygium malaccense (L.)Merr.& Perry	*'ohi'a 'ai*	P
OLEACEAE	Olive Family	
Fraxinus uhdei (Wenzig)Lingelsh.	tropical ash	A
Nestegis sandwicensis	*olopua*	E
(A.Gray)Deg., Deg.,& Johnson		
ONAGRACEAE	Evening Primrose Family	
Ludwigia octovalis (Jacq.)Raven	*kamole*	P

OXALIDACEAE	Wood Sorrel Family	
Oxalis corniculata L.	*'ihi*	P
PASSIFLORACEAE	Passion Flower Family	
Passiflora laurifolia L.	yellow granadilla	A
Passiflora suberosa L.	*huehue haole*	A
PIPERACEAE	Black Pepper Family	
Peperomia leptostacya Hook.& Arn.	*'ala 'ala wai nui*	I
PITTOSPORACEAE	Pittosporum Family	
Pittosporum glabrum Hook.& Arn.	*ho 'awa*	E
PLANTAGINACEAE	Plantain Family	
Plantago major L.	*laukahi*	A
POLYGALACEAE	Milkwort Family	
Polygala paniculata L.	milkwort	A
PROTEACEAE	Protea Family	
Greyvillea robusta Cunn.ex R.Br.	silver oak	A
ROSACEAE	Rose family	
Osteomeles anthyllidifolia (Sm.)Lindl.	*'ulei*	I
Rubus rosifolius Sm.	thimbleberry	A
RUBIACEAE	Coffee Family	
Canthium odoratum (Forst.)Seem.	*alahe'e*	I
Coffea arabica L.	coffee	A
Morinda citrifolia L.	*noni*	P
SANTALACEAE	Sandalwood Family	
Santalum ellipticum Gaud.	*'iliahi*	E
SAPINDACEAE	Soapberry Family	
Dodonaea viscosa Jacq.	*'a'ali'i*	I
SOLANACEAE	Nightshade Family	
Physalis peruviana L.	*poha*	A
Solanum capsicoides All.	*kikania*	A
STERCULIACEAE	Chocolate Family	
Waltheria indica L.	*'uhaloa*	I

THYMELAEACEAE	*'Akia* Family	
Wikstroemia oahuensis var. oahuensis (A.Gray)Rock	*'akia*	E
Wikstroemia uva-ursi A.Gray	*'akia papa*	E
TILIACEAE	Linden Family	
Triumfetta semitriloba Jacq.	bur bush	A
URTICACEAE	Nettle Family	
Pipturus albidus (Hook.& Arn.)A.Gray	*mamaki*	E
VERBENACEAE	Verbena Family	
Lantana camara L.	lantana	A
Stachytarpheta jamaicensis (L.)Vahl	Jamaican vervain	A
Stachytarpheta urticifolia (Salisb.)Sims	nettle leaved vervain	A
Verbena litoralis Kunth	*ha'uoi*	A

TABLE 2

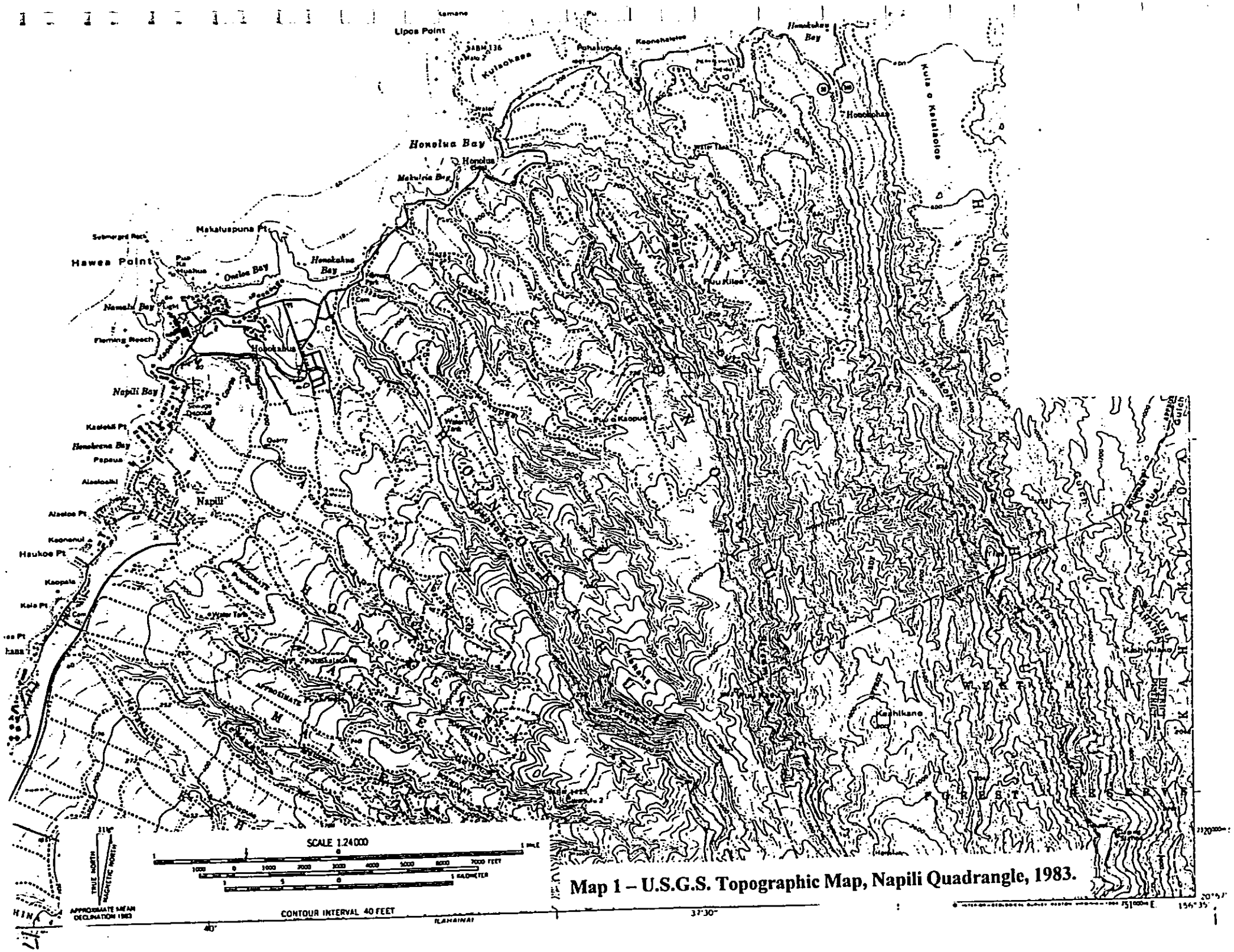
List of Avians

Acridotheres tritis	mynah	A
Cardinalis cardinalis	Northern cardinal	A
Carpodacus mexicanus	house finch	A
Geopelia striata	zebra dove	A
Pluvialis dominica pacifica	Pacific golden plover	I
Streptopelia chinensis	spotted dove	A
Zosterops japonicus	Japanese white-eye	A

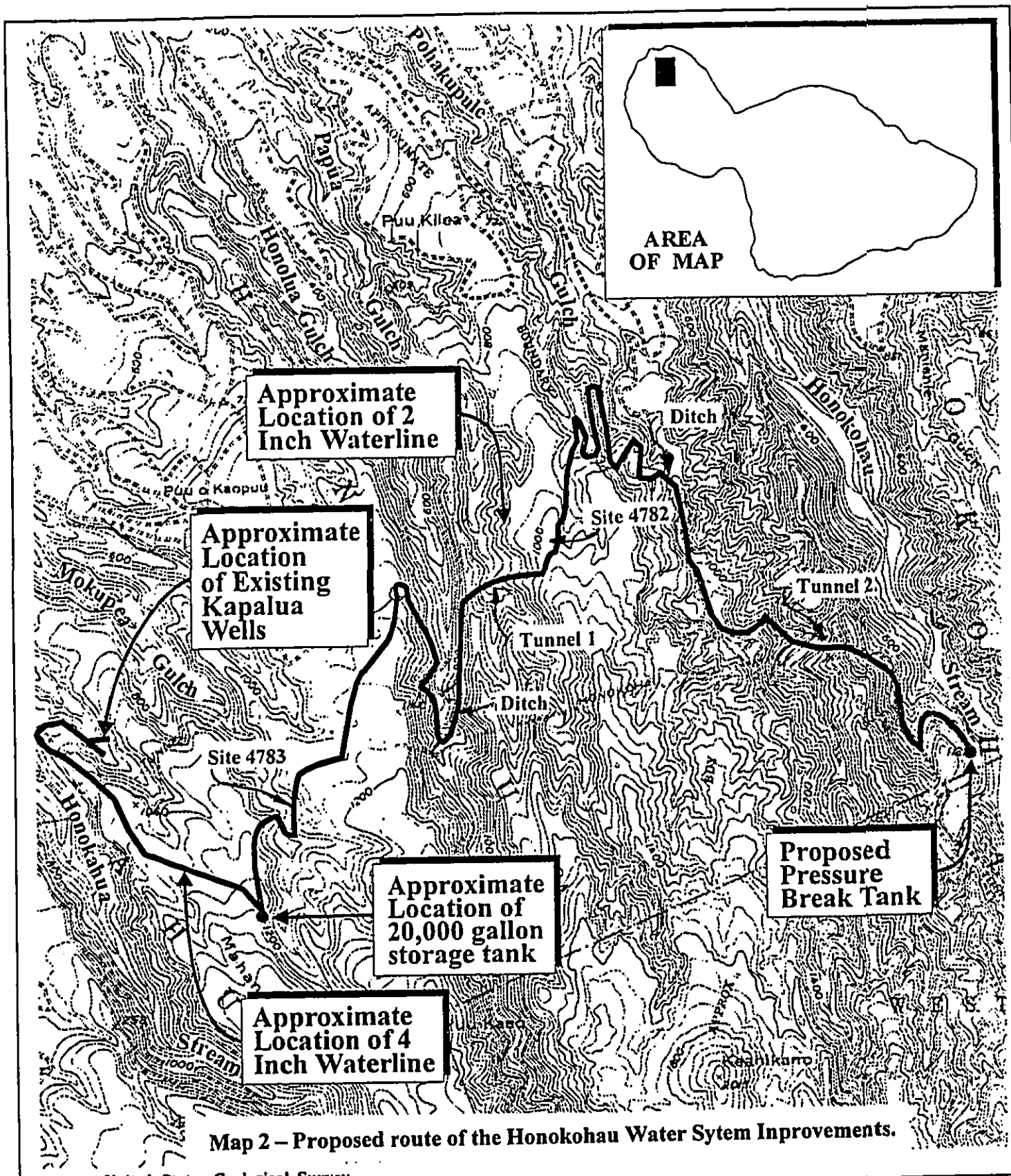
TABLE 3.

List of Mammals

Bos taurus	cattle	A
Equus caballus caballus	horse	A
Felis catus	feral cat	A
Rattus sp.	rat	A
Sus scrofa scrofa	feral pig	A



Map 1 – U.S.G.S. Topographic Map, Napili Quadrangle, 1983.



Map 2 – Proposed route of the Honokohau Water Sytem Inprovements.

Source: United States Geological Survey

Figure 1

Honokohau Water System Improvements

Regional Location Map

MUNEKIYO ARAKAWA & HIRAGA, INC.

18

Prepared for: County of Maui, Dept. of Water Supply

Appendix B

Archaeological Inventory Survey

ARCHAEOLOGICAL INVENTORY SURVEY FOR THE PROPOSED HONOKOHAU WATER SYSTEM IMPROVEMENT PROJECT, HONOKOHAU, HONOLUA, AND HONOKAHUA *AHUPUA`A*, KA`ANAPALI DISTRICT MAUI ISLAND (TMK 4-2-01: por. 1, por. 9)

Prepared for:

County of Maui
Department of Water Supply
Wailuku, Hawaii

DRAFT

Prepared by:

Xamanek Researches
Pukalani, Hawaii

Erik M. Fredericksen
Demaris L. Fredericksen

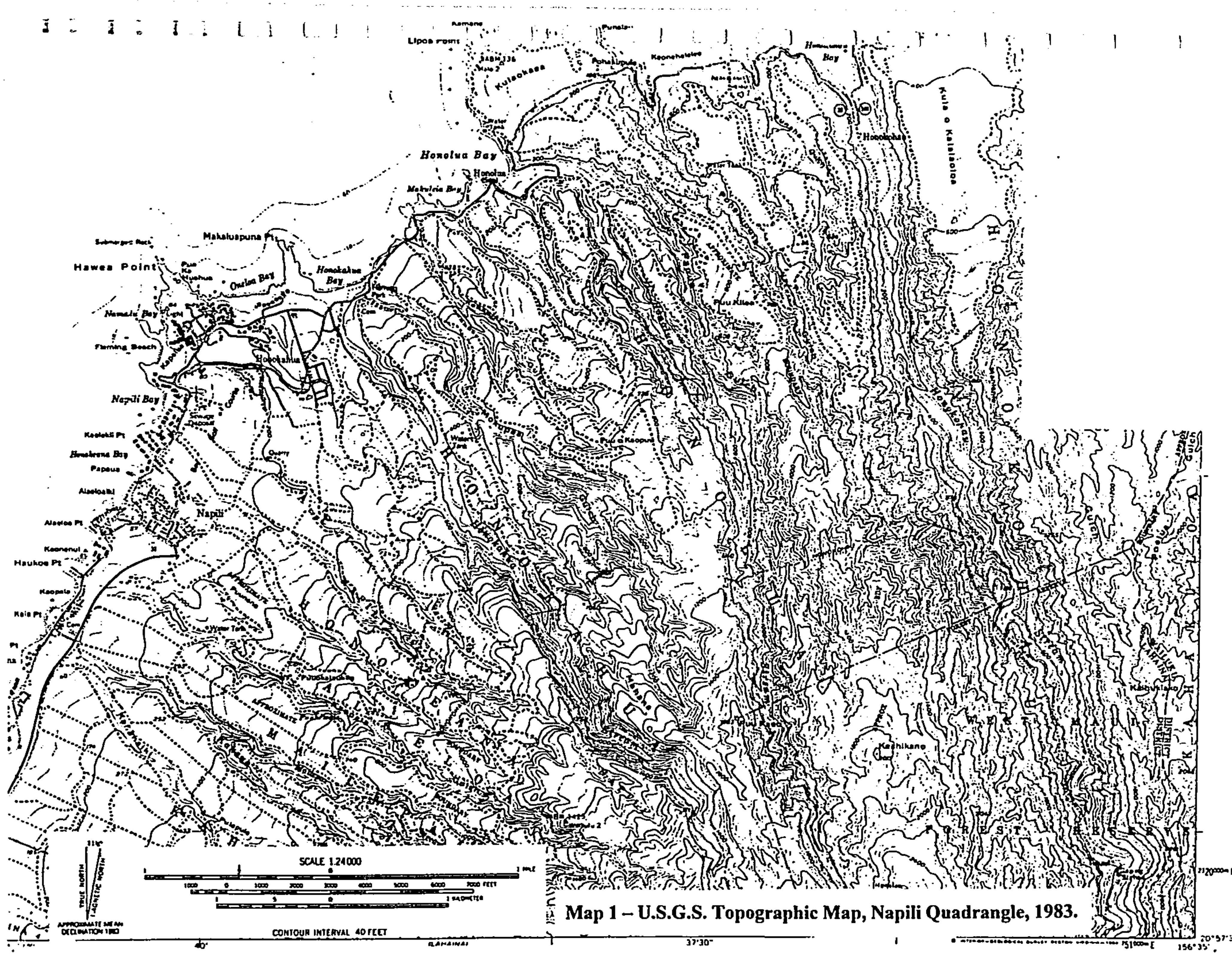
July 26, 1999

ABSTRACT

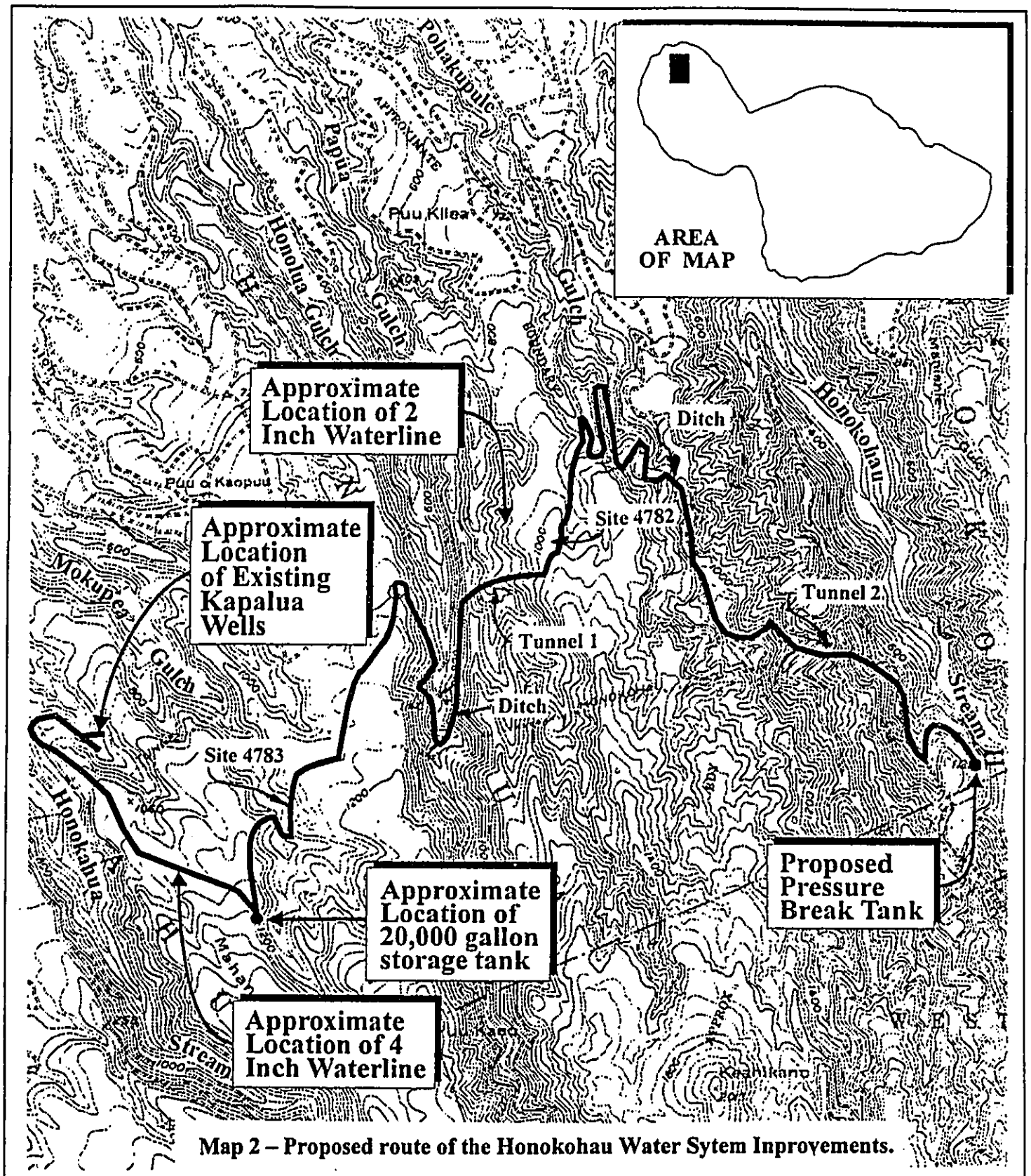
Xamanek Researches conducted archaeological inventory survey level work in a proposed c. 8.7 km. long by 10 m. wide corridor in late 1998 and mid-1999 in West Maui (TMK: 4-2-01: por 1, por. 9). The County of Maui Department of Water Supply proposes to install water system improvements to comply with environmental Protection Agency standards of the Safe Drinking Water Act. This upgraded system will serve water meter owners in Honokohau Valley, Maui.

Two previously unidentified archaeological sites and portions of the Honokohau and Honolua water systems (part of Honokahua District—Site 50-50-01-1591) were noted in the area. The new sites are Site 4782, an eroding surface scatter of waterworn coral cobbles, and Site 4783, an historic retaining wall. Both of these new sites qualify for significance under Criterion "D". Site 4782 lies just outside the surveyed corridor and remains significant under Criterion "D". Site 4783 is no longer considered significant for its information content. The Honokohau and Honolua water systems (part of Site 1591) remain significant under multiple criteria.

TABLE OF CONTENTS



Map 1 – U.S.G.S. Topographic Map, Napili Quadrangle, 1983.



Map 2 – Proposed route of the Honokohau Water Sytem Inprovements.

Source: United States Geological Survey

Figure 1

Honokohau Water System Improvements

Regional Location Map

MUNEKIYO ARAKAWA & HIRAGA, INC.

1000 0 2000 4000 Feet

Prepared for: County of Maui, Dept. of Water Supply

INTRODUCTION

The County of Maui Department of Water Supply proposes to install water system improvements to upgrade service to water meter owners in Honokohau Valley, Maui Island. The proposed waterline will begin at 2 existing Kapalua wells near Honokahua Gulch and cross a c. 8.7 km. (28,000 feet) long corridor that ends at Honokohau Valley (Map 2). In order to comply with Environmental Protection Agency standards set forth by the Safe Drinking Water Act, the Department of Water Supply plans to transport via the pipeline, groundwater from the existing Kapalua wells to Honokohau Valley water meter owners.

The 2 wells mentioned above are part of an in-place private water system that supplies water to customers in Kapalua. Three components of this proposed project are listed below (Project Summary, Munekiyo, Arakawa, and Hiraga, Inc., October 1998).

1. There are two existing Kapalua wells located at c. 765 feet AMSL between Honokahua Gulch and Mokupea Gulch. The planned project includes THE installation of a booster Pump to be installed near Kapalua Well No. 1.
2. Water will be pumped through a 4-inch diameter ductile iron pipe extending approximately 5,100 lineal feet (c. 1554 meters) from the booster pump to a planned 20,000 gallon storage tank to be located near the edge of Mokupea Gulch at c. 1200 feet AMSL.
3. Water is proposed to be transported from this water tank through a 2-inch high-density polyethylene pipe which will traverse Mokupea Gulch and cross an existing pasture. The waterline will then follow an existing dirt road that extends near the bottom of Honolua Gulch. The waterline is then proposed to be placed next to an existing 6-inch pipeline that follows an existing trail and a c. 100-meter long access tunnel.[1] The planned County of Maui waterline will then traverse Papua Gulch and cross a pasture before crossing Pohakupule Gulch. The waterline would then be placed along an existing dirt road which crosses an unnamed tributary of Honokahua Stream. The 2-inch waterline would then be installed within a existing c. 300-meter long access tunnel. The waterline would then exit the tunnel above the upper slope of

[1] The existing 6-inch waterline is utilized by Maui Land and Pineapple Company, Inc. for irrigation purposes.

Honokohau Valley and be placed along an existing trail to a proposed pressure break tank (5 x 5 x 5 feet). From this point, water will be transported through an existing 4-inch line which is part of the distribution system to service users in Honokohau Valley.

The majority of the waterline will cross Maui Land and Pineapple Company, Inc. land (agricultural zoning). However, c. 7,500 lineal feet (c. 2,300 meters) of the waterline in the Honolua District and c. 4,500 lineal feet (c. 1,370 meters) near the Honokohau District will pass through the State Conservation District. Xamanek Researches conducted archaeological and biological resource surveys in the project corridor.

STUDY AREA

The project is located on the southern flank of the West Maui Mountains. It begins at Kapalua Well No. 1 near Honokahua Gulch and extends c. 8.7 km. to an existing waterline that enters Honokohau Valley (Photos 1-3). A total of 4 gulches are crossed by the corridor—Mokupea, Honolua, Papua and Pohakupule (TMK: 4-2-01: por. 1, por. 9). Each of these drainage areas contains intermittent streams, all of which were dry when the archaeological and biological resources surveys were conducted. Orographic rainfall in this area is about 40 to 60 inches annually.

The soils in the project corridor are of the Waiakoa-Keahua-Molokai association. This means they are moderately deep and deep, nearly level to moderately steep, well-drained soils that have a moderately fine textured subsoil on the low uplands. Farther inland they become part of the Honolua-Olelo association—deep, gently sloping to moderately steep well-drained soils on intermediate uplands (Foote, et. al, 1972).

A total of 4 plant communities were identified during our biological resources survey (Paul, June 1999). These included Lowland Dry Forest, Lowland Mesic Grassland, Lowland Mesic Shrubland, and Lowland Mesic Forest. Indigenous and endemic plant species were present in all 4 communities. The Lowland Mesic Grasslands community contained the fewest native species, which the Lowland Mesic Forest yielded the greatest number of indigenous and endemic plants. The most common plant species in each of the communities are summarized below.

The **Lowland Dry Forest** is dominated by endemic *lama* (Diospyros sandwicensis) trees and also contains scattered *`ohi`a* (Metrosideros polymorpha) trees. Common native (indigenous) understory plants include *`akoko* (Chamaesyce multiformis), *alahe`e* (Canthium odoratum), *`ala`ala wai nui* (Peperomia leptostacya) and *`ilima* (Sida fallax). This community represents the least extensive one present in the project area and is located along the slopes and ridges of Honolua and Papua Gulches.

The **Lowland Mesic Grassland** community consists of pastureland, which is dominated by alien vegetation. Few native flora species were present in this community. The **Lowland Mesic Shrubland** is dominated by native species including *`a`ali`i*

(Dodonea viscosa), *`akia* (Wikstroemia Oahuensis), *alahe`e* (Cantheium odoratum) and *uluhe* (Dicranotpteris linearis). Less common native species include *`ohi`a* and *lama* trees, *`ama`u* (Sadlena cyatheoides) shrubs, and Hawaiian cliff sedge (Carex wahuensis). This community is present on exposed ridges and slopes from Mokupea Gulch to Pohakupule Gulch.

The fourth plant community, the **Lowland Mesic Forest**, is represented by two general types in the study area. *Koa* (Acacia koa) trees are dominant in the inner portions of Mokupea Gulch. The final pipeline corridor does not directly cross this community. In Pohakupule Gulch and the upper portion of Honokohau Valley, the Lowland Mesic Forest is dominated by *lama* and *`ohi`a* trees.

It is important to note that alien plants are present in all of the communities discussed above.

BACKGROUND HISTORICAL INFORMATION

Precontact

To the north of Lahaina are 5 valleys in the western portion of the West Maui Mountains. They are Honokawai, Kahana, Honokahua, Honolua, and Honokohau. Handy and Handy (1972, pg. 494) note:

"The first four all had extensive lo`i lands in their valley bottoms, where terraces rose tier on tier in symmetrical stone-faced lo`i. On this part of the coast there is no sloping kula land seaward of the valleys as there is back of Lahaina and southeastward. Honokohau in particular, which is watered by a large rivulet flowing from far back in the mountains, had the most extensive system of lo`i along this coast."

The 5 valley agricultural systems no doubt supplied much of the food required by a fair-sized population, which lived in clusters at the mouths of them. The traditional district or *moku* of Ka`anapali was the location of one of the encounters between chiefs of Maui and the Island of Hawaii, as they struggled for ascendancy. Samuel Kamakau (1992, p. 74) tells about the conflict that took place in 1738, after an entire year of preparation by the Big Island chief Alapa`i. He states:

"What was this war like? It employed the unusual method in warfare of drying up the streams of Kaua`ula, Kanaha, and Mahoma (which is the stream near Lahainaluna). The wet taro patches and the brooks were dried up so that there was no food for the forces of Ka-uhi or for the country people. Alapa`i's men kept close watch

over the brooks of Olowalu, Ukumehame, Wailuku and Honokawai. When Pele-io-holani[2] *heard that Alapa`i was at Lahaina he gathered all his forces at Honokahua and at Honolua. At Honokawai an engagement took ploace between the two armies and the forces of Alapa`i were slaughtered and fled to Keawawa. There Alapa`i heard that Pele-io-holani had landed at Honokahua and had an army stationed at Keawawa, and he disposed his forces, some on sea and some on land. Although Pele-io-holani had but 640 men against Alapa`i's 8,440 from the six districts of Hawaii, there were among them some famous warriors. ...Pele-oi-holani intended to unite his forces with those of Ka-uhi, but Alapa`i's men held Lahaina from Ukumehame to Mala on the north...Pele-oi-holani was surrounded on all sides, mauka and makai, by the forces of Alapa`i.... The two ruling chiefs met there again, face to face, to end the war and become friends again, so great had been the slaughter on both sides...."*

Post-contact

Post-contact land management in this par of Maui is fully discussed by Silva (1986) and is summarized here. In the late 18th or early 19th century, Kamehameha I gave the entire *ahupua`a* of Honokahua to Isaac Davis, in return for his help in Kamehameha's wars of conquest. Davis, along with another Englishman named John Young, had been "detained" by Kamehameha. Davis' ship, the Fair American, had been captured and all aboard except him had been killed. Young was kept ashore until his ship, the Eleanora departed without him. Both men were treated so well by Kamehameha that they were quite willing to remain with him, acting as his advisors while he consolidated his power within the islands.

Upon the sudden death of Isaac Davis in 1810, his land holdings in Honokahua were managed by John Young. When Young died in 1835, the land was divided among both Young's and Davis' heirs. During the Mahele in 1848, a formal 2,650 acre grant was awarded formally to Davis' daughter, Kale (Sally) Davis (LCA 8522-B, RP 2236), who was the wife of Alexander Adams, another favorite of Kamehameha I. The study parcel is located in this grant land. There were no *kuleana* awards granted in Honokahua.

The *ahupua`a* of Napili 1-3 (603 acres) was awarded to Laura Konia, a daughter of Kamehameha, and the wife Abenera Paki. Konia and Paki were the parents of Bernice Pauahi Bishop. No *kuleana* awards were awarded in Napili 1-3 either (Silva, 1986).

A census taken in 1831 estimated that the entire population of Ka`anapali totaled only 8.5% of the island total of 35,062—about 2,980 (Schmitt, 1973, p. 18). By 1836, it had dropped to about 5.5% of the island total—1,341 (Ibid., p. 38).

Post-1850s

The population of West Maui continued to decline in the second half of the 19th

[2] Pele-io-holani was chief of Oahu, and an ally of Ka-uhi, a son of Kekaulike. Another name for Ka-uhi is Ka`ihu-pu-mai-ka-hoaka—Ka-uhi-covered-by-the-shadow-of-the-cresent-moon (Kamakau, p. 73).

century following the collapse of the Pacific whaling industry in the 1860s, prompted by the discovery of oil in Pennsylvania a decade or so earlier. Those who had worked in the support occupations for supplying whaling ships since the 1840s had to look elsewhere for their livelihood.

In Lahaina, sugar production began to develop, while to the north in Ka`anapali district, other options such as ranching and different crops were tried, including coffee and pineapples. The lands of Kale Davis became part of the Campbell Estate in the later part of the 19th century. Honolua Ranch was established, and began cattle production in the area. In 1890, Henry Perrine Baldwin, the son of missionary Dwight Baldwin, acquired the Campbell lands, including Honolua Ranch, and continued ranching activities and initiated coffee production. The coffee venture proved unprofitable, and was terminated.

Following Baldwin's death in 1911, David T. Fleming became manager of Honolua Ranch. He had had experience with pineapple growing in Haiku, and gradually began shifting to pineapple production. In 1915, the Honolua Ranch/Baldwin Packers complex was moved from Honolua to Honokahua. A pineapple cannery was built, as were the Honolua Stables. By the 1920s, pineapple was being grown in West Maui on a large scale, becoming the dominant crop.

In reference to the system of irrigated terraces built for taro production in precontact times, which were located in the vicinity of the study area, Handy and Handy (1974, pg. 494) note that, during early part of the 20th century:

"Honokohau in particular, which is watered by a large rivulet flowing from far back in the mountains, had the most extensive system of lo`i along this coast. In 1931 a greater proportion of lo`i were still planted here than anywhere else on this side of Maui, but by 1934 commercial planting and exhaustion of the soil had brought in root-rot, and some of the large lo`i were abandoned, and some were planted in rice."

The small plantation communities of Honokahua and Napili developed around the Honolua Ranch/Baldwin Packers pineapple operations, and the population of Lahaina District increased in the first 4 decades of the 20th century. Honolua Stable is thought to have ceased operation in 1963, following the merger of Baldwin Packers with Maui Land and Pineapple Company, which had been formed in 1962. As early as 1964, Maui Land and Pineapple Co. began planning resort development, which has culminated in the Kapalua/Ritz-Carlton complex that exists today.

ARCHAEOLOGICAL BACKGROUND RESEARCH

Maui Land and Pineapple Company Development

The project area is within the Honokahua Historic District (Site 50-50-1591). This Historic District, as described in the 1973 State Inventory of Historic Places, includes the plantation village, the cannery facilities of Baldwin Packers, Honolua Ranch Stables, Honolua Ditch, the Maui Pineapple Office, the Honolua Store, plantation camp housing and two churches (Wright, 1974, short form data sheet).

In a 1973 survey for Maui Land and Pineapple Company, in connection with the Honolua Development, the Bishop Museum's Department of Anthropology did work at Fleming Beach (at Kapalua), to the northeast of the subject parcel (Kirch, 1973). Kirch also worked at Fleming Beach Park at Honokahua Bay, and at Hawea Point Oneloa Bay and Makaluapuna Point. A site-complex made up of 8 features (Site 1346) was identified at Hawea Point, and was interpreted as a temporary Hawaiian settlement for marine exploitation and dated from c. AD 1500. Another site (Site 1347) was a cave shelter on the cliff face of Hawea Point, while a third, Site 1348 was identified as a stone terrace platform, and was located on a promontory overlooking Oneloa Bay. During this survey the Honokahua Burial Site (Site 1342) was first identified. Several sites were located and described, including a house site, terrace, enclosure and midden deposits, along the south band of Honokahua Stream on the east side of Fleming Beach Park (Site 1345) [Kirch, 1973].

Numbers of archaeological projects have been undertaken and completed in the general Kapalua Resort complex in the intervening years. Archaeological research for Kapalua Hotel Development, Parcel 2-H was divided into three phases of investigation—reconnaissance survey, intensive survey and testing, and data recovery/mitigation excavations. In early 1986, initial clearing for access roads exposed disturbed human skeletal material. The pedestrian survey pinpointed 6 areas where human remains were present, expanding the boundaries of the Honokahua Burial area, and calling for a more detailed intensive survey to be conducted (Haun and Rosendahl, 1986).

This intensive survey was conducted, and included both surface and systematic soil coring and test excavations. A total of 8 sites were identified, including Honokahua Burial Site (site 1342). The probable boundaries for this burial site were defined, and areas of probability for burial recovery were formulated. Other prehistoric sites reported included segments of a prehistoric trail (Site 2015), and a subsurface cultural deposit (Site 2016). Three historic sites were associated with ranching—Honolua Ranch Stables, a concrete water trough and an enclosure (BPBM D12-15). Two other sites—a walled

shelter near a trail and a recent hearth, and a rubble pile, were of indeterminate age (Donham, 1986).

Beginning in March of 1987, the data recovery and mitigation excavations began and continued until December 1988, when fieldwork was halted, due to external pressures. The interim results of the fieldwork were presented in an informational report describing the Honokahua Burial area as a multi-component burial site with over 1000 prehistoric burials. The site could have been used from as early as AD 600, according to radiocarbon analysis (Donham, 1989). The final report on archaeological findings is still being prepared. Archaeological work associated with the development of the Kapalua/Ritz-Carlton Resort complex by PHRI resulted in over 24 reports between 1986 and 1992.

Archaeological monitoring strategy for the Ritz-Carlton Hotel site included additional research in areas contiguous to the Honokahua burial grounds. The project work was divided into 3 areas (Guerriero, et. al., April 1993, p. 31). Area I contained 5 sites (Sites 2869, 2870, 2971, 2874 and 2875). One site was identified in Area II—Site 2872; in Area III—three sites were located (Sites 1342A, 2873 and 2876).

Site 2869 consists of 2 historic subsurface cultural deposits, and one historic feature containing 694 historic artifacts primarily of Japanese origin. The other feature also contained historic materials, although considerably fewer in number. These deposits probably represent a refuse dump for the nearby Japanese Plantation Camp (Ibid., p. 34). Site 2870 is part of another refuse dump, including structural remnants related to Honolua School and its outbuildings. Site 2871 consists of features (dwellings, tennis court, grandstands, Quonset hut, potting area) associated with late-plantation-era mid-management personnel activity during the 1940s through the 1960s (Ibid., p. 36). Site 2872 consists of historic stone-faced terracing and retaining walls. Site 2872 is composed of 6 features, a communal outhouse, a stone pile placed on corrugated roofing, 2 pits containing non-indigenous material and shell midden, and 2 bowl-shaped fire pits (*imu*). All features are considered modern. Site 2875 is a concrete foundation floor, perhaps a relic of plantation life in the early to mid-20th century (Ibid., pp. 38-41).

In Area III, 3 sites were identified. Site 1342A consists of 10 prehistoric human burials peripheral to the central burial ground. Site 2873 consists of precontact cultural deposits and fire pits indicative of prehistoric habitation, and Site 2876, which is a prehistoric trail remnant (Ibid., pp. 41-49). In Site 1342A, BU-2 was located 1.7-1.8 m. below surface and produced two datable radiocarbon samples. One ranged from AD 1703-1918, and another, recovered from a deeper level yielded a date range from AD 1270-1650. A third radiocarbon date of AD 1670-1950 was recovered from BU-7 (Ibid.).

Although two dates could be within the post-contact period, the method of burial (flexed) is precontact in configuration. Site 2873 consists of a series of *imu.* Charcoal from 3 of these fire pits dated the utilization of the area between AD 1423-1680 (Ibid., pp. 58-60). Such features are ordinarily associated with habitation, but no clear

habitation sites were found in Area III.[3]

Site 2876 is a trail segment located among the burials and is probably a segment of the prehistoric trail mentioned earlier—Site 2015. It consists of 2 parallel alignments of large angular and subangular basalt bounders, stacked roughly in 2 courses. The interior is paved with angular basalt and small cobbles, with some scattered waterworn coral fragments present as well (Guerriero, et. al., p. 60).

In May of 1994, Xamanek Researches conducted an archaeological inventory survey on a 12.1-acre area referred to as the Kapalua Bay Hotel and The Bay Club grounds. A series of 28 subsurface backhoe tests were excavated. While no significant sites were located during our survey, an area of sand dune deposits was noted at the northern end of the project parcel. It was impossible to test the area at the times, because of underground sprinkler systems and electrical conduits. The recommendation was to survey this portion in the event that the area was to be developed in the future (Fredericksen, et. al., September 1994).

In May of 1996, Xamanek Researches returned to examine the previously untested dune areas, near the Kapalua Bay Hotel. As an addendum to the original inventory survey, the findings, which were negative, were reported in September 1996 (Fredericksen, et.al.). However, archaeological monitoring was recommended during any future earthmoving activities in the dune area (Zone B).

In June through July of 1997, Cultural Surveys Hawaii, Inc. undertook an inventory survey of c. 450 acres, identified as Project District 2, and located on the *mauka* side of Honoapiilani Highway, south of the present project area (Devereux, Folk and Hammatt, Draft February, 1998). Eight sites were identified—seven of which had been previously unrecorded. They consist of walls, boulder terraces and a boulder pavement, an overhang shelter cave, an historic reservoir, a road bridge, and a cemetery. The eighth is Site 1591, the Honokahua Historic District. None appeared to be precontact.

In November of 1997, Xamanek Researches conducted a reconnaissance survey for the proposed 11-acre Spa Resort Project at Kapalua. This parcel is bordered on the south by Honoapiilani Highway, on the west by the Pineapple Hill Subdivision, on the north by Simpson Way and on the east by Office Road (Fredericksen, November 17, 1997). The now-closed Pineapple Hill Restaurant is located in the center of the parcel. The building was built in 1915, and was the home of D. T. Fleming, manager of Honolua Plantation. The survey did not locate any significant material remains, except for the aforementioned building. Since the building has been severely damaged by termite activity, it was recommended that photo documentation of the structure be done, if the owner decided to demolish the building. While no other archaeological work was deemed necessary, on-call monitoring was recommended, in the event that any

[3] At Fleming Beach Park located west of the archaeological sites just discussed, where Honokahua Stream enters the ocean, Kirch found habitation indicators such as midden deposits (Kirch, 1973). Site 2873 may be associated with that complex.

significant material cultural remains are encountered during construction activities.

In 1998 Xamanek Researches carried out an archaeological inventory survey on a c. 35-acre parcel of land at Kapalua, where the proposed Golf Academy was to be constructed. Three historic sites were identified (Sites 4501, 4510 and 4513). These consisted of a wall, modified sections of an outcrop, and a garden area, associated with the former plantation camp referred to as Japanese Camp. The 3 sites were considered no longer significant for their information content, and no further work was recommended (Fredericksen and Fredericksen, June 15, 1998).

Fleming Beach Park

Fleming Beach Park lies to the northwest of the present project area, and is a popular recreation park, maintained by the County of Maui. In February and March of 1994, Xamanek Researches undertook subsurface testing in the areas of the park destined for renovation work (Fredericksen, et. al., May 1994). Renovation plans called for the construction of a restroom facility on a sand dune area, and a connecting walkway path from the existing parking A total of 10 manual 1.0 x 2.0 meter test units were excavated, and ranged in depth from 1.2 to 2.2 meters in depth. A further 109 auger tests were placed at 2 meter intervals over the area, and ranged from 0.3 to 1.2 meters in depth. The manual testing was required as part of an agreement between the County of Maui Recreation Department, the Maui/Lana'i Islands Burial Council, and the State Historic Preservation Division. The testing was designed to assure a "buffer" zone of at least 1 meter between surface construction and possible cultural material and/or human remains that might lie below that depth.

At sometime in the past, in an effort to stabilize the sand dune, a cap of reddish brown clay had been placed on the loose sand. It ranges in thickness from 0.4 to 1.0 meter in tested locations. It most likely was obtained from the stream bed to the south. No indigenous cultural material was found *in situ.* However, one test unit contained some indigenous artifacts and shell midden, mixed with modern materials. It appeared that this area of the park had been filled in the relatively recent past. It is not known from where the fill material originated. Finally, there were no human remains located in the tested areas (Fredericksen, et. al., May 1994).

On August 29, 1995, human remains were uncovered while workers were digging a sewer line. Xamanek Researches investigated and found the remains to be part of an *in situ* burial, contained within a basin-shaped pit. Given that the individual was buried in a flexed position, it was determined that the remains were that of a native Hawaiian, probably peripheral to the Site 1342A burial complex on the adjacent property (Fredericksen, et. al., February 1996, p. 4). Mitigation of this burial included sifting the disturbed sands to recover displaced skeletal remains, construction of a concrete enclosure and cement cap, and refilling the excavation.

Settlement Patterns and Expectation of Findings

The precontact settlement pattern in this region of Maui, includes permanent habitation sites, which are located along the coastal regions, and temporary habitation sites in the inland valleys, associated with the extensive *lo'i* systems. While the population of Honokahua in the 1830s was not estimated to be very large, the precontact population was likely to have been considerably larger. The extensive burial ground at Honokahua also suggests a sizable precontact population.

The kinds of sites that might be expected along the coast associated with habitation would be stone structures such as enclosures, midden deposits, and burial areas. In the valleys, sites such as stone walls, enclosures, pond fields and irrigation ditches associated with taro production and temporary might be expected. Temporary habitation sites could also take the form of rock shelters if such features were present in the valleys.

The inland, colluvial slopes between valleys of this region have been under pineapple cultivation and/or used for pasturage for decades. While these areas were no doubt utilized in precontact times for gathering of forest products, and perhaps some dryland cultivation, it would not be expected to find remaining evidence of this activity in post-contact agricultural areas.

ARCHAEOLOGICAL FIELD METHODS

This Xamanek Researches project was carried out after we conducted a reconnaissance survey of much of the project corridor (Fredericksen, November 10, 1998). The entire 8.7 km. long project area was traversed during the fall of 1998, and the summer of 1999. This c. 10-meter wide corridor which extends from the 2 existing Kapalua wells near Honokohua Gulch to Honokohau Valley was inspected by Erik Fredericksen and David Paul. In addition, Erik Fredericksen revisited portions of the study area to reassess cultural resources in the summer of 1999.

The inventory survey consisted of a 100% pedestrian walk-over of the project corridor. In addition, sites were recorded and evaluated in the field. When possible, a c.

5-meter spacing was maintained during our surface inspection of the corridor.[4] Information on sites was gathered with metric survey Tapes and hand-held compasses. Photographs were taken with color film.

No subsurface testing was conducted and no significant portable remains were noted or collected. Locations of 2 previously unrecorded sites were discussed with Ms. Wendy Taomoto, Engineering Division, Department of Water Supply, and these were plotted in on the existing project map.

ARCHEOLOGICAL FINDINGS

Two previously unrecorded archaeological sites were found during our inventory survey of the study area. These sites consist of a surface scatter of waterworn coral, and a post-contact retaining wall. Both were assigned SHIP numbers. The waterworn coral scatter (Site 50-50-01-4782) lies just outside the proposed surface pipeline corridor and can be avoided. The post-contact retaining wall (Site 50-50-01-4783) is associated with an early pineapple plantation era road, and lies within the proposed pipeline corridor. In addition, portions of the Honokohau and Honolua water delivery systems were noted in parts of the project area. Both of these systems are part of the large Honokahau District (Site 50-50-01-1591). A discussion of our field findings follows.

Site 50-50-01-4782

This site is located on a ridge of land that separates Pohakupule and Papua Gulches. It lies at c. 930 feet AMSL in a pasture. Vegetation observed in the general vicinity included alien species such as guava trees, ironwood trees, various annual weeds, and kikuyu or pasture grass.

Site 4782 consists of a surface scatter of waterworn coral that appears to have been partially displaced and/or exposed by cattle or previous pasture maintenance activities. Several cobbles ranging from c. 8 to 12 cm. in diameter were noted in a c. 6 to 8 square meter area. A few of the pieces of coral were partially exposed and 2 were on the surface. No other material culture remains were noted in the area.

While the function of this site remains unclear, the lack of any other cultural materials associated with the exposed pieces of coral suggests that the area was probably

[4] In steep areas, it was often necessary to stay on trails for safety reasons. It is important, however, to point out that the marked pipeline follows trails and/or unimproved roads in most instances except where pastures are traversed.

not used for habitation. No subsurface testing was conducted because the site lies outside the project corridor. Site 4782 is tentatively interpreted as a probable indigenous site.

Site 50-50-01-4783

This second site is located in Mokupea Gulch at about the 800-foot level of elevation. Observed vegetation in the area consisted primarily of alien species, such as guava and Java plumb trees, coffee plants, various grasses and annual weeds, and ferns. In addition, at least 1 indigenous fern species, *pakahakaha* (Lepisorus thunbergianus) was noted relatively nearby. Finally, several *kukui* nut trees were growing in the immediate vicinity of the wall.

Site 4783 is interpreted as a post-contact retaining wall, associated with an old pineapple plantation-era road. This road is very deteriorated from disuse and lack of maintenance. It was a maximum of 6 meters wide, and the corridor follows it for c. 300 meters. The retaining wall is 20 meters long and up to 3.7 meters in height. It is constructed with subangular basalt cobbles and boulders that range from 20 to 70 cm. in diameter. The wall ranges from 8 to 18 rock-courses in height. Overall construction technique is generally good, and site condition ranges from poor to good.[5]

An old concrete and rock culvert was noted at the base of the wall (Photo 4). This culvert was c. 35 cm. in diameter. No other material cultural remains were noted. The abandoned road was up to 6 meters wide in this portion of the project area.

Site 50-50-01-1591

The Honokahua District is a large historic district which encompasses Kapalua as well as much of the project area. Both the Honokohau and the Honolua Ditch systems are considered to be a part of this district.

The Honokohau Ditch system was begun in 1901 as part of a water agreement between Honolua Ranch and Pioneer Mill. The latter's success depended on water delivered from the watershed controlled by Honolua Ranch (later known as Baldwin Packers, then Maui Pineapple Company, and finally Maui Land and Pineapple Company in 1969). Construction of Honokohau Ditch began in 1902 and was completed in 1904. The ditch and flumes ran along soft hillsides where landslides frequently filled it with dirt and damages the flumes (Wilcox, 1996, p. 127).

By 1912, it was leaking badly and was in very poor condition, and David T. Fleming, manager of Honolua Ranch determined to build an entirely new system. This was called the Honolua Ditch to avoid confusion with the earlier water system. Work began on the new system, incorporating 2 features to minimize seepage. It was totally lined with cement, and wooden flumes were eliminated—relying on tunnels instead. The final plan called for 31 tunnels, which constituted 34,241 feet of the c. 12.5 mile system

[5] Several guava and *kukui* nut trees were noted growing out of the lower portions of the retaining wall.

(Ibid.). The increased water delivery system was successful, and the money from water sales to Pioneer Mill constituted over half of the annual revenues of Honolua Ranch in 1914 (Ibid., p. 130).

Portions of this ditch system and 2 associated tunnels lie within the project corridor.[6] The first of these tunnels is c. 100 meters long (Tunnel 1), while the second one is c. 300 meters long. Both tunnels range from c. 1.5 to 2.2 meters in height and are c. 2.5 to 3 meters wide (Tunnel 2; Photo 6). The shorter tunnel is in generally poor condition and is considered to be somewhat dangerous. The longer tunnel is in generally fair condition and appears to be relatively stable. These tunnels were hand excavated by laborers through 2 ridges. The longer one accesses the upper portion of Honokahau Valley.

Inspected segments of the Honokohau Ditch in the project corridor ranged from poor to fair condition (Photo 7). Construction technique tended to range from fair to good. In general, the rock-lined ditch sections did not contain large amounts of mortar. The bulk of the water system present in the project area consists of the Honokohau Ditch, which is not longer in use.

The Honolua water system—constructed later—between 1912 and 1914—tended to be in better condition. Concrete and mortar were more extensively utilized in the Honolua water delivery system, than in the older one.

Discussion

The proposed pipeline route will parallel portions of the Honokahau and Honolua Ditch systems. Sections of both ditches will likely lie within 5 meters of the proposed surface waterline. It is estimated that c. 500 to 600 meters of the water ditch system will be paralleled by the waterline. In addition, the pipeline will also traverse 2 existing tunnels associated with the water system.

SUMMARY AND CONCLUSIONS

Two previously unrecorded sites and portions of the water system associated with Honokahau District (Site 1591) were located during our inventory survey of the project area. Site 4782 is tentatively interpreted as a precontact site with an unknown function. This site is located in a pasture and consists of on eroding scatter of waterworn coral

[6] Another section of the Honokohau Ditch tunnel was located just outside the project corridor. An axle from one of the narrow gauge carts used in tunnel construction uas noted near the mouth of the abandoned tunnel (Photo 5).

cobbles. It lies just outside of the proposed waterline corridor. Site 4783 is interpreted as an old retaining wall associated with an abandoned, unimproved pineapple road. This feature was found in Mokupea Gulch and lies within the proposed pipeline corridor.

Portions of Site 1591 were also present in the project area. Sections of the older Honokahua Ditch network and the newer Honolua water system were noted within the corridor. While the above sites were found during our survey, the proposed surface location for the County of Maui Honokahua waterline should provide sufficient flexibility to avoid negative impact of these cultural resources.

Site Significance Evaluations

Sites 4782 and 4783, and the portions of the water delivery system associated with Honokahua District (Site 1591) in the project corridor qualify for significance under Criterion "D" of the Federal and State historic preservation guidelines. In addition, the Honokahau and Honolua Ditch systems (Site 1591) also would be considered significant under Criterion "C".

Mitigation Recommendations

No subsurface evaluation was conducted on the Site 4782 surface scatter because it lies just outside the proposed corridor in a pasture. This site is still considered to be significant under Criterion "D". Data recovery is the recommended mitigation treatment if the proposed pipeline alignment changes and the site is to be impacted. In the event that the corridor remains unchanged, no further work is deemed necessary for the site at this point in time.

Site 4783, the retaining wall in Mokupea Gulch is not longer considered to be significant for its information content. Consequently, no further work is required for this post-contact structure. In any event, placement of the pipeline should not impact this site.

The proposed surface waterline will parallel portions of the Honokahau and Honolua water ditch systems, and go through 2 existing tunnels in the Honokahau system. The sections of the Site 1591 water delivery system that are in the project corridor are still considered significant under both Criteria "C" and "D" of the guidelines. In order to prevent adverse impacts on this historically significant water delivery system, we recommend that the proposed pipe installation methodology for areas along the various ditches be submitted to SHPD for review.

Large and medium-growth trees (i.e. guava, Java plum, *kukui* nut) were noted in close proximity to portions of the ditch system in the project corridor. Mechanical installation of the pipeline could negatively impact the nearby mortar and rock ditch sections. Consequently, it may be necessary to monitor sections of the corridor if mechanical pipeline placement is proposed.

REFERENCES

Devereux, Tom, William H. Folk and H.H. Hammatt
February 1998 — *Archaeological Survey of Lands Comprising Project District 2 At Kapalua,* Prepared for PBR Hawaii, by Cultural Surveys Hawaii Inc. (DRAFT)

Donham, Theresa K.
1986 — *Archaeological Survey Test Excavations, Kapalua Hotel Development Site 2-H, Kapalua Bay Resort,* PHRI Report 224-052286. Prepared for *Kapalua Land Co., Ltd.*

1989 — *Addendum Report: Additional Subsurface Testing of Area III; Subsurface Archaeological Testing, Revised Ritz-Carlton Kapalua Hotel, Project Site Areas I, II, and III, Land of Honokahua, Lahaina District, Island of Maui,* Paul H. Rosendahl, Ph.D., Inc.

Fredericksen, Erik M.
November 17, 1997 — *Report on Archaeological Reconnaissance Surface Survey for the Spa Resort Project, Kapalua Maui, Hawaii (TMK: 4-2-04: por. 23),* Prepared for Mr. Robert McNatt, Kapalua Land Company, Ltd., by Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Erik M., Demaris L. and Walter M.

September 1994 — *An archaeological Inventory Survey of a 12.2 Acre Parcel, Honokahua and Napili 2-3 Ahupua`a, Lahaina District, Maui Island (TMK: 4-2-04: 26),* Prepared for Warren Suzuki, Kapalua Land Co., Ltd., by Xamanek Researches, Pukalani, Hi.

September 1996 — *Additional Archaeological Inventory Survey Subsurface Testing at Kapalua Bay Hotel (TMK: 4-2-04: 26), Honokahua and Napili 2-3 Lahaina District, Maui Island,* prepared for Robert McNatt, Kapalua Land Co., Ltd., Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Walter M., Demaris L. and Erik M.
May 1994 — *Archaeological Subsurface Survey of D.T. Fleming Beach Park, Honokahua Ahupua`a, Lahaina District, Maui Island (TMK: 4-2-04: 16),* Prepared for Leonard Costa, Maui County Parks Department, by Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Walter M. and Demaris L.
February 1996 — *Data Recovery and Preservation of a Burial Peripheral to the Honokahua Burial Site (Site 50-50-01-1342), Located at D.T. Fleming Beach Park,* prepared for Leonard Costa, Maui County Parks and Recreation Department, by Xamanek Researches, Pukalani, Hawaii.

Fredericksen, Erik M. and Demaris L.
June 1998 *Archaeological Inventory Survey for the Proposed Gold Academy Project, Kapalua, Maui, Hawaii (TNK: 4-2-04: por. 23),* prepared For Mr. Robert McNatt, VPDevelopment, Kapalua Land Company, Ltd., by Xamanek Researches, Pukalani, Hawaii.

Guerriero, Diane, A. Charvet-Pond, and S.T. Goodfellow
1993 *Archaeological Monitoring and Data Recovery, Kapalua Ritz-Carlton Hotel Site, Land of Honokahua, Lahaina District, Island of Maui (TMK: 4-2-01: 4, 5, por. 12, 13, por. 18, 34).* PHRI Report 942-030393.

Handy, E.S. Craighill and E. G. Handy
1972 *Native planters in Old Hawaii: Their Life, Lore, and Environment,* Bishop Museum Bulletin 233, Honolulu, Hawaii.

Haun, Alan E., and P.H. Rosendahl
1986 *Archaeological Field Inspection, Kapalua Hotel Development Site, Land of Honokahua, Lahaina, Island of Maui,* PHRI Report 221-021286.

Kamakau, Samuel M.
1992 *Ruling Chiefs of Hawaii,* The Kamehameha Schools Press, Honolulu.

Kirch, Patrick V.
1973 *Archaeological Survey of the Honolua Development Area, Maui (TMK: 4-2-01),* Department of Anthropology, B.P. Bishop Museum, Honolulu, Hawaii, prepared for Maui Land and Pineapple Co., Ltd.

Schmitt, Robert C.
1974 *The Missionary Censuses of Hawaii,* Bishop Museum, Honolulu.

Silva, C.L.
1986 Appendix A: Preliminary Historical Documentation Research, IN *Archaeological Survey Test Excavations, Kapalua Hotel Development Site 2-H, Kapalua Bay Resort, Land of Honokahua, Lahaina, Island of Maui,* PHRI Report 224-052286, prepared for Kapalua Land Co.

Wilcox, Carol
1996 *Sugar Water: Hawaii's Plantation Ditches,* University of Hawaii Press, Honolulu, HI.

Wright, J. C.
1975 Hawaii Register of Historic Places, Short Form, Site 50-01-1591.

Walker, Winslow
1931 *Archaeology of Maui,* manuscript at Maui Historical Society, Wailuku.

Photo 1 – General view of a portion of the project area—Moloka`i in background.

Photo 2 – View to wes across Mokupea Gulch—proposed 20,000 gallon tank site in center left.

Photo 3 – Steep section of trail—Pohakupule Gulch.

CORRECTION

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

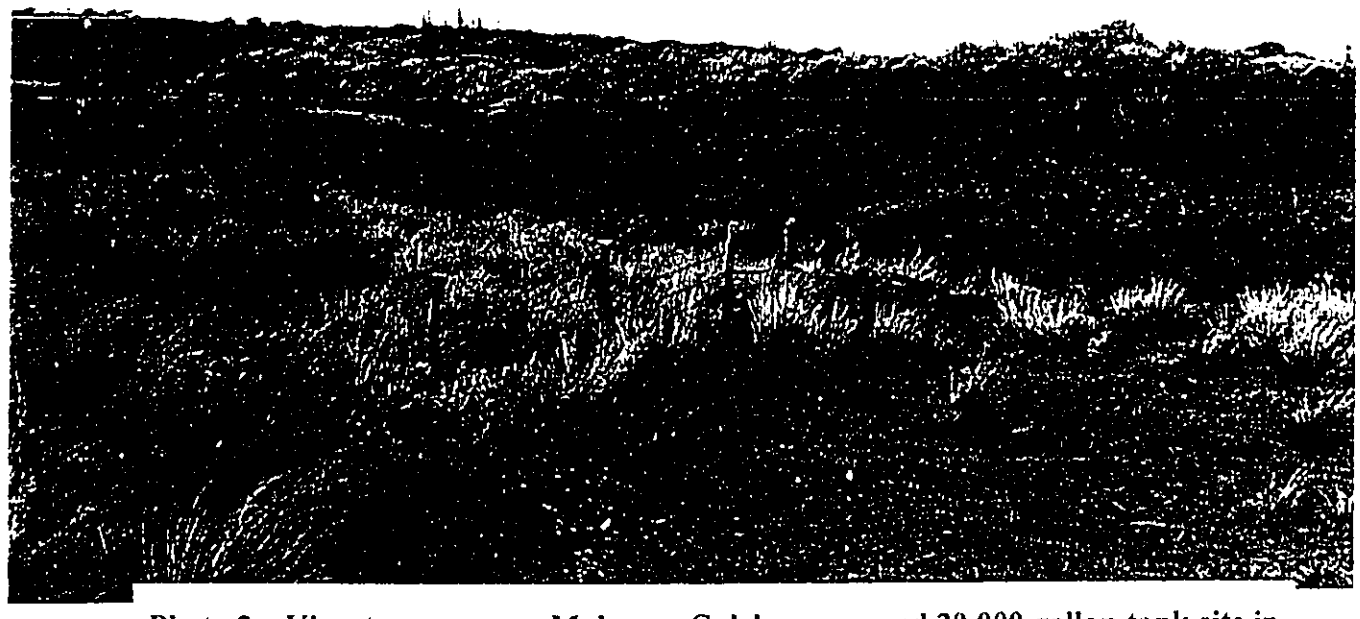


Photo 2 – View to wes across Mokupea Gulch—proposed 20,000 gallon tank site in center left.

Photo 3 – Steep section of trail—Pohakupule Gulch.

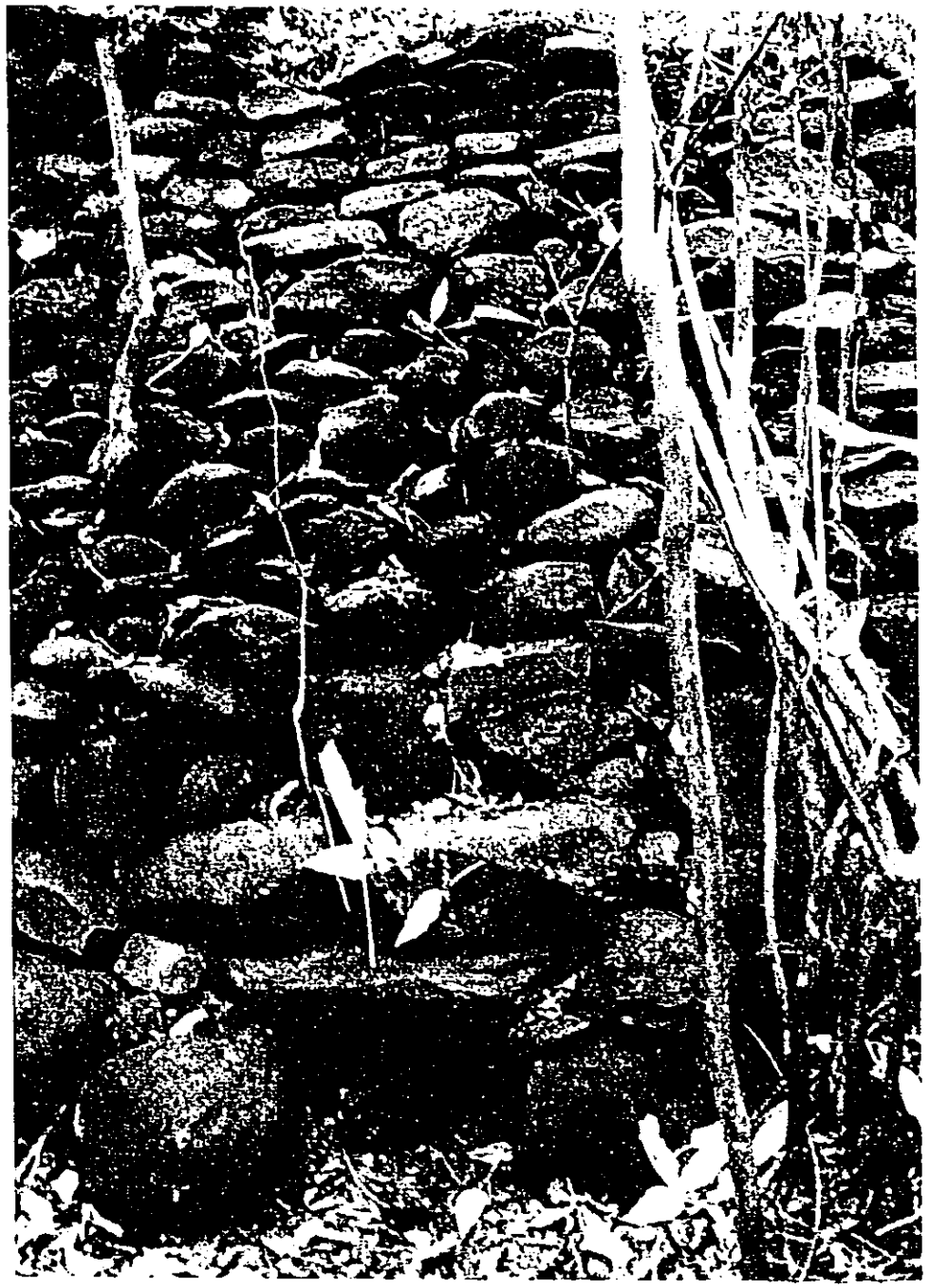


Photo 4 – Section of Site 4783 retaining wall—note rock capping culvert at bottom.

Photo 5 – Collapsed section of Honokohau tunnel—near project corridor—portion of Site 1561).

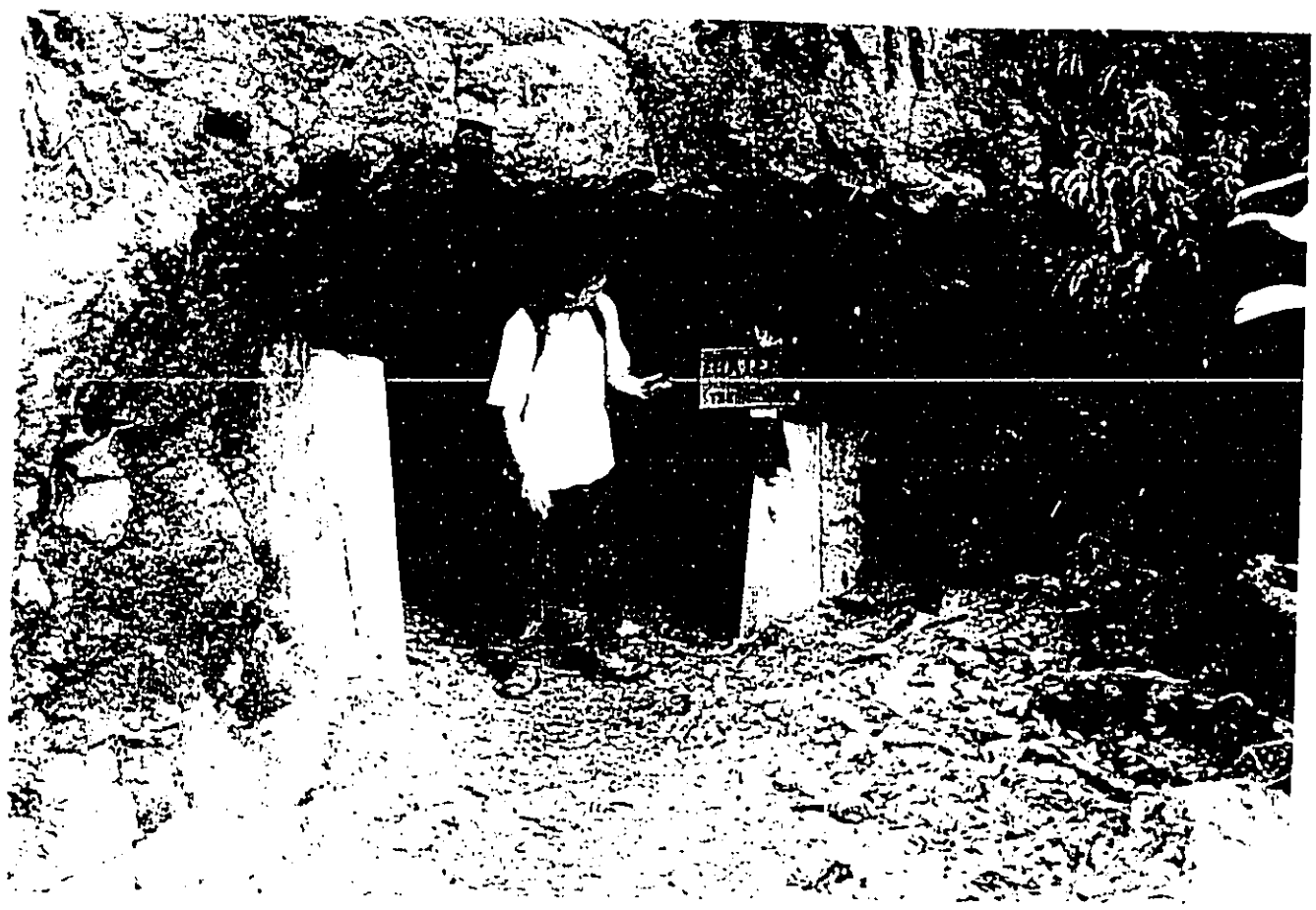


Photo 6 – Honokohau Steam side of Tunnel 2—portion of Site 1561.

Photo 7 – Section of Honokohau Ditch (portion of Site 1561).