EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

September 21, 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Based on the recommendation of the Office of Environmental Quality Control, I am pleased to accept the environmental impact statement for the Keanae Water System Improvements on Maui as a satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

This environmental impact statement will be a useful tool in deciding whether this project should be allowed to proceed. My acceptance of the statement is an affirmation of its adequacy under applicable laws and does not constitute an endorsement of the proposal.

When the decision is made regarding this action, I expect the proposing agency to carefully weigh the societal benefits against the environmental impact which will likely occur. This impact is adequately described in the statement and, together with the comments made by reviewers, provides a useful analysis of alternatives to the proposed action.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi

cc: Mr. William S. Haines, Director
Department of Water Supply, County of Maui

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

KEANAE WATER SYSTEM IMPROVEMENTS

Keanae, Island of Maui, Hawaii

Proposing Agency
Department of Water Supply
County of Maui
Wailuku, Maui, Hawaii

Prepared by
Sam O. Hirota, Inc.
864 South Beretania Street
Honolulu, Hawaii

AUGUST 1984

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AUGUST 1984

COUNTY OF MAUI
DEPARTMENT OF WATER SUPPLY

ENVIRONMENTAL IMPACT STATEMENT FOR THE KEANAE WATER SYSTEM IMPROVEMENTS KEANAE, MAUI, HAWAII

PROPOSING AGENCY AND OFFICIAL CONTACT

Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui, Hawaii 96793

PREPARED BY

Sam O. Hirota, Inc.
864 South Beretania Street
Honolulu, Hawaii 96813

AUGUST 1984

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CORRECTION

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

LIST OF TABLES

List of Tables (Continued)

I. SUMMARY

AGENCY ACTION

Department of Water Supply, County of Maui

PROJECT OBJECTIVES

The objective of the proposed project is to provide the communities of Keanae and Wailua with potable water complying with the State and Federal Drinking Water Standards. The present drinking water in the Keanae Water System does not comply with the maximum contaminant levels allowed for turbidity and bacteriological levels of the State's primary drinking water standards and the Federal interim drinking water regulations. The present water source is the Wailuanui Stream.

PROPOSED ACTION

In January 1984, the State Department of Land and Natural Resources drilled an exploratory well in the Keanae area and has agreed to allow the County to develop the well into a production well which will supply drinking water that conforms to the drinking water standards. The proposed action includes installing a well pump, motor and controls, disinfection equipment, installing a 50,000 gallon storage tank and installing approximately 4,600 lineal feet of 6-inch pipe line. This action includes the replacement of

about 600 lineal feet of existing 2-1/2 inch waterline to provide adequate service pressures and fire protection to the Keanae School and customers in the immediate area of the new pipeline. The site of the well is on State land which have been set aside to the County by Executive Order 235. This parcel is identified by Tax Map Key 1-1-04:43. The location of the tank site is identified by Tax Map Key 1-1-08:10 which is owned by several owners with undivided interests in the property. The owner with the largest interest is East Maui Irrigation Company. Approximately 2,000 lineal feet of the new pipeline will be located in the Wailua Road and Hana Highway right of way which are owned by the County and the State, respectively. The remaining pipeline will be located in the private property on which the new tank will be located.

THE AFFECTED ENVIRONMENT

Keanae is located in the northeast portion of Maui. The population of this small agriculture oriented community is presently estimated to be 241. The population lives on farms in single-family homes which are relatively far apart. Because of the rural, isolated nature of the community, no significant changes in land use and population due to this project are foreseen. It is projected that by the year 2000, the population will be 374. The primary land use designations in Keanae are agriculture and conservation.

The Keanae-Wailua area is one of the few major taro cultivation areas in the State.

An archaeological reconnaissance survey was made by Mr. Charles Keaau from Maui County's Planning Department in July 1984 of the proposed tank site and the well site (Reference 33). He reported that no archaeological sites were found within the tank site or the 6 inch waterline area and that no artifacts were found on the ground surface. Approximately 250 pace (750 feet) west of the tank site is a low circular wall enclosure. A review of the available records by Ms. Muffy Mitchell, also from the Planning Department, indicated this enclosure may be an unrecorded site. However, construction of the tank will not affect this structure. No prehistoric structure or artifacts were found on the ground surface at the well site also. See Appendix D.

EXISTING WATER SYSTEM

The Keanae public water system serves the community of Keanae and residents of the Wailua Homesteads. Wailuanui Stream is the present source of water for the water system. The present maximum daily demand is approximately 28,000 gallons/day and the projected maximum daily demand for the year 2000 is estimated to be 45,000 gallons/day.

There are two (2) storage tanks in the system. A 20,000-gallon redwood tank along Hana Highway at the 360-foot elevation serves the Wailua Homestead area and homes along the Hana Highway, while a 10,000-gallon redwood tank at elevation 150 feet serves the residents of the Keanae Homestead area. These tanks are fed directly from the Wailuanui Stream intake. At Keanae School, the State of Hawaii has a 10,000 gallon storage tank which serves only the school. An existing multimedia pressure filter unit and an ultraviolet light (UV) purifier located at the junction of Hana Highway and the road to Wailua Homestead area are the present methods of treatment for reducing turbidity and disinfecting the water respectively. However, these treatment systems have not been able to meet the State and Federal drinking water standards at all times. The distribution system contains 4.6 miles of pipe ranging in size from 1 to 4 inches in diameter. The water system was constructed in the early 1940's. The Keanae water distribution transmission lines lie entirely in agricultural zoned land and have no portion in special use areas.

PROBABLE IMPACTS

The total area or land that will be affected by this proposed project will be about 10,000 SF (0.23 Ac) for the 50,000 gallon tank (TMK 1-1-08:10, 104.50 Ac) and 6,649 SF (0.15 Ac) at the well site (TMK 1-1-04:43, 1.01 Ac). In

addition, a 15 foot wide easement for access and utility purposes and a 15 ft wide easement for drainage purposes will be required on lot TMK 1-1-08:10 which will involve approximate 38,969 SF and 802 SF respectively. The access road to the proposed tank site will follow the existing dirt road which goes through the property from Hana Highway. The County of Maui has started the acquisition process to obtain the 10,000 SF lot from the privately owned parcel. The eminant domain proceedings may affect the 19 owners (listed in the Tax Map of parcel 1-1-08:10) by reducing their interests by 0.00 to 0.138 acres. Since East Maui Irrigation, Ltd. has the largest interest in the parcel, the County is negotiating with EMI to purchase the tank site out of their interest in the land. Thus, the smaller landowners would not be affected. Approximately 2,000 lineal feet of the water lines will be located in Hana Highway and Wailua Road rights-of-way which are owned by the State and the County, respectively.

The rural agricultural nature of the surrounding area for the tank and the lack of nearby homes will result in minimal construction and site clearing impacts on the human environment. Access to the proposed tank and well sites are off the main highway. These alternative locations were selected because of their accessibility, elevation, ease of construction or County or State ownership of the land. Once completed, the well pumps and control building will be

screened by planting hedges around its perimeter. The small size of the land area affected, use, and common flora and fauna make impact on these aspects negligible. Furthermore, the impact of having additional water supplies available to the community is not believed to be a primary catalyst for population growth. The additional capacity is to satisfy population growth based on its present agricultural use. Keanae will likely remain a small, rural community because of the rural nature of the community, the land use zoning restrictions,and the distance from major employment areas accessible only by the winding and narrow Hana Highway.

Overflow from the 50,000 gallon tank will discharge chlorinated water to the Waiokamilo Stream. However, since the chlorine concentration will be relatively small and the active nature of the chlorine compounds formed with water, the chlorine is expected to react with organic materials on the ground, be aerated in the stream and will thus dissipate quickly. Also upon reaching the stream waters, the concentration of the chlorine will be further diluted and should have no significant impact on stream life or taro.

ALTERNATIVES TO THE PROPOSED ACTION

Alternative treatment methods and sites for treatment facilities for the surface water source (including the replacement of the surface water source with a groundwater source) were investigated and evaluated by a preliminary engineering study. At this time, the groundwater alternative would be the most expediant method of providing the consumers on the Keanae Water System with quality water which meets the present drinking water standards.

A no-action alternative cannot be considered an acceptable option, because compliance with the State of Hawaii and Federal primary drinking water standards is mandatory by law. Should non-compliance occur, the State and Federal authorities could bring a civil suit against the water supplier to force compliance and impose a fine on the water supplier. Should this action occur, the tax payers of the County of Maui will ultimately be paying for the fine and improvements necessary to comply with the drinking water standards.

II. PROJECT DESCRIPTION

A. STATEMENT OF OBJECTIVES

The objective of the proposed action is to upgrade the quality of Keanae's drinking water to comply with the State and Federal Drinking Water Quality Regulations as set forth by Chapter 20, Potable Water, State Department of Health Regulations (Reference 1); the U.S. Environmental Protection Agency's (EPA) National Interim Primary Drinking Water Regulations (Reference 2,3,4,5,6); and the National Secondary Drinking Water Regulations (Reference 7).

The Safe Drinking Water Act (P.L. 93-523) was signed into law on December 16, 1974 (Reference 8). The Act set up a cooperative program among local, state and federal agencies. The Act directed the Environmental Protection Agency to produce the National Interim Primary Drinking Water Regulations and the Secondary Drinking Water Regulations for the protection of public health, and welfare. The primary drinking water regulations are designed to protect public health and the State's primary drinking water regulations must be at least as stringent, but may be more stringent than the federal regulations. The primary drinking water regulations are mandatory requirements for public water systems. The secondary drinking water regulations are designed to improve aesthetic water quality which deals with taste, odor and appearance of drinking water. The secondary

maximum contaminant levels (MCL) are of an advisory nature and are not mandatory requirements for public water systems. The State and County governments are responsible for enforcement, monitoring and record keeping of the primary drinking water regulations.

In August 1977, the State Department of Health issued Chapter 49 of the Public Health Regulations, which was the State's Primary Drinking Water Regulation (Reference 9). Chapter 49 adopted the National Interim contaminants and their maximum contaminant levels including those for radionuclides. Chapter 49 also included procedures for testing, reporting and record keeping. In issuing these regulations, the State took primacy for administration and enforcement of the Safe Drinking Water Act.

On December 26, 1981, Chapter 49 was repealed and Chapter 20, Potable Water Systems was adopted to replace Chapter 49. The new regulations were based substantially on Chapter 49 and included the trihalomethane requirements along with specific requirements for monitoring sodium and corrosivity.

The State of Hawaii has not adopted Secondary Contaminant Levels.

B. THE AFFECTED AREA

The Keanae area is located on the northeast coast of Maui, approximately 36 miles from Kahului and 18 miles from Hana, (see Fig. 1). The Hana Highway provides the only access to the area. The flatlands on Keanae peninsula and around Wailua are used for agriculture, mainly wet taro cultivation, while lands at the higher elevations are in forest reserve zoned as conservation. The area has high rainfall averaging 180 inches per year (Reference 10). Depending on the elevation on Mount Haleakala, the range of median annual rainfall is from 50 inches per year at the crater summit (elevation 10,023 feet) to a maximum 360inches per year at elevation 2760 feet (Station 351, Kuhiwa Gulch).

The geological composition of the land is massive basaltic andesite, andesitic basalt, and picritic basalt derived from lava flows. The ground is fairly permeable, and perched water may be found at the base of lava-filled valleys (Reference 11).

Land in the Keanae area is zoned for agricultural and conservation uses (Reference 12). The service area is within the agricultural zones lands.There are no areas designated for urban use in Keanae. In addition to the agricultural and conservation districts (see Fig. 2), the County has designated areas as special management areas (SMA) on the downhill side of Hana Highway and as flood (tsunami) zones along the shoreline (see Fig. 3).

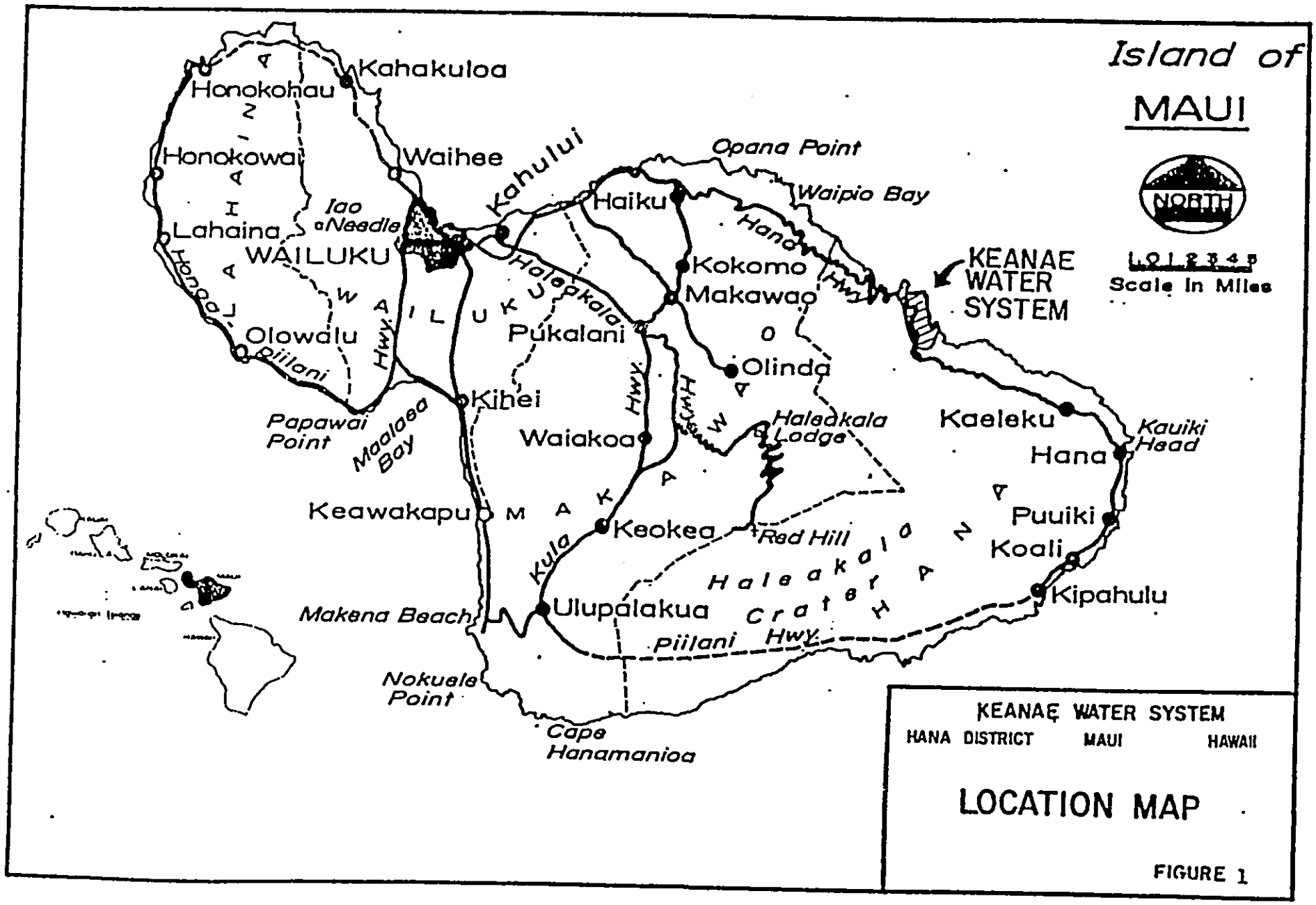
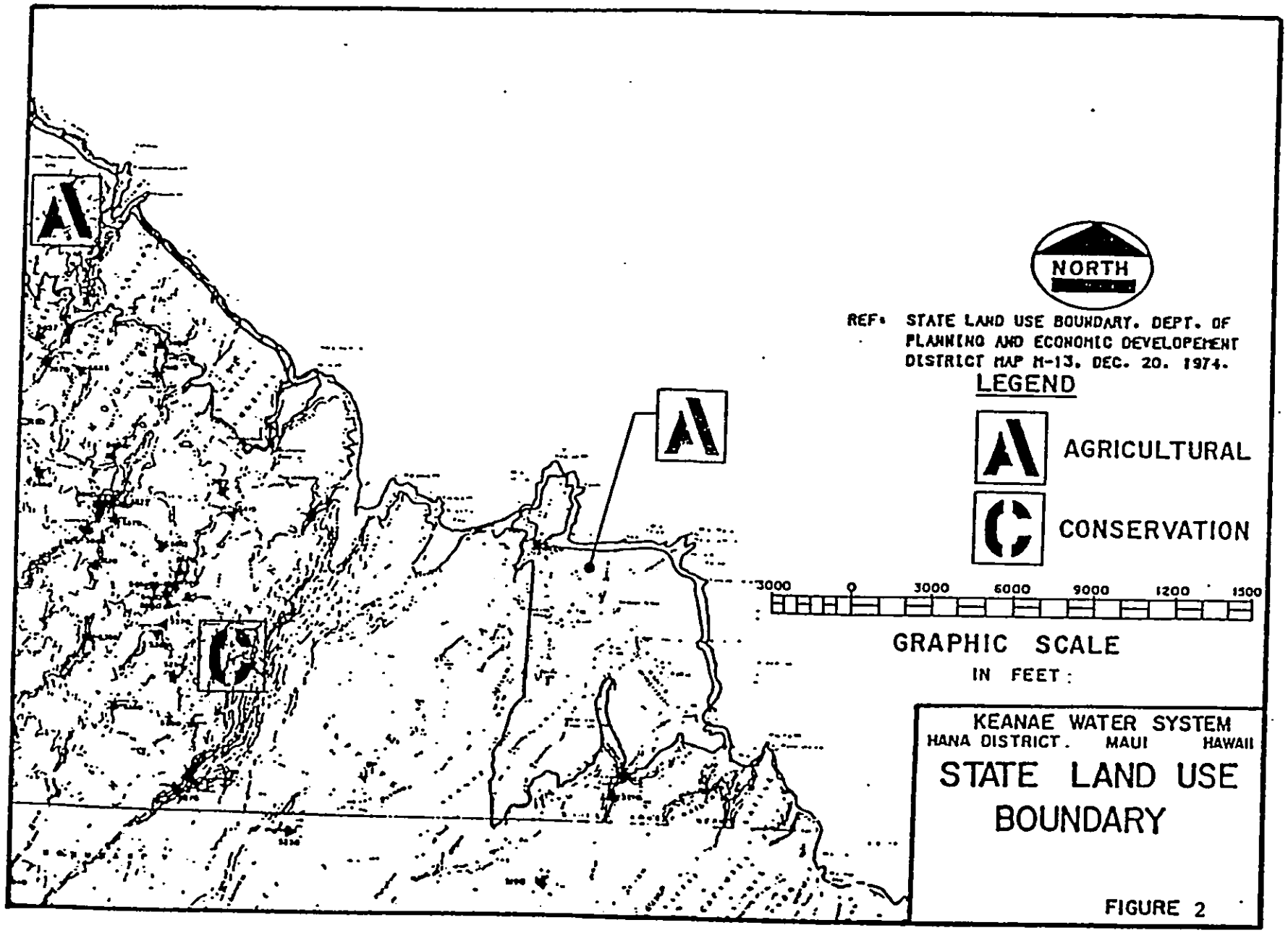
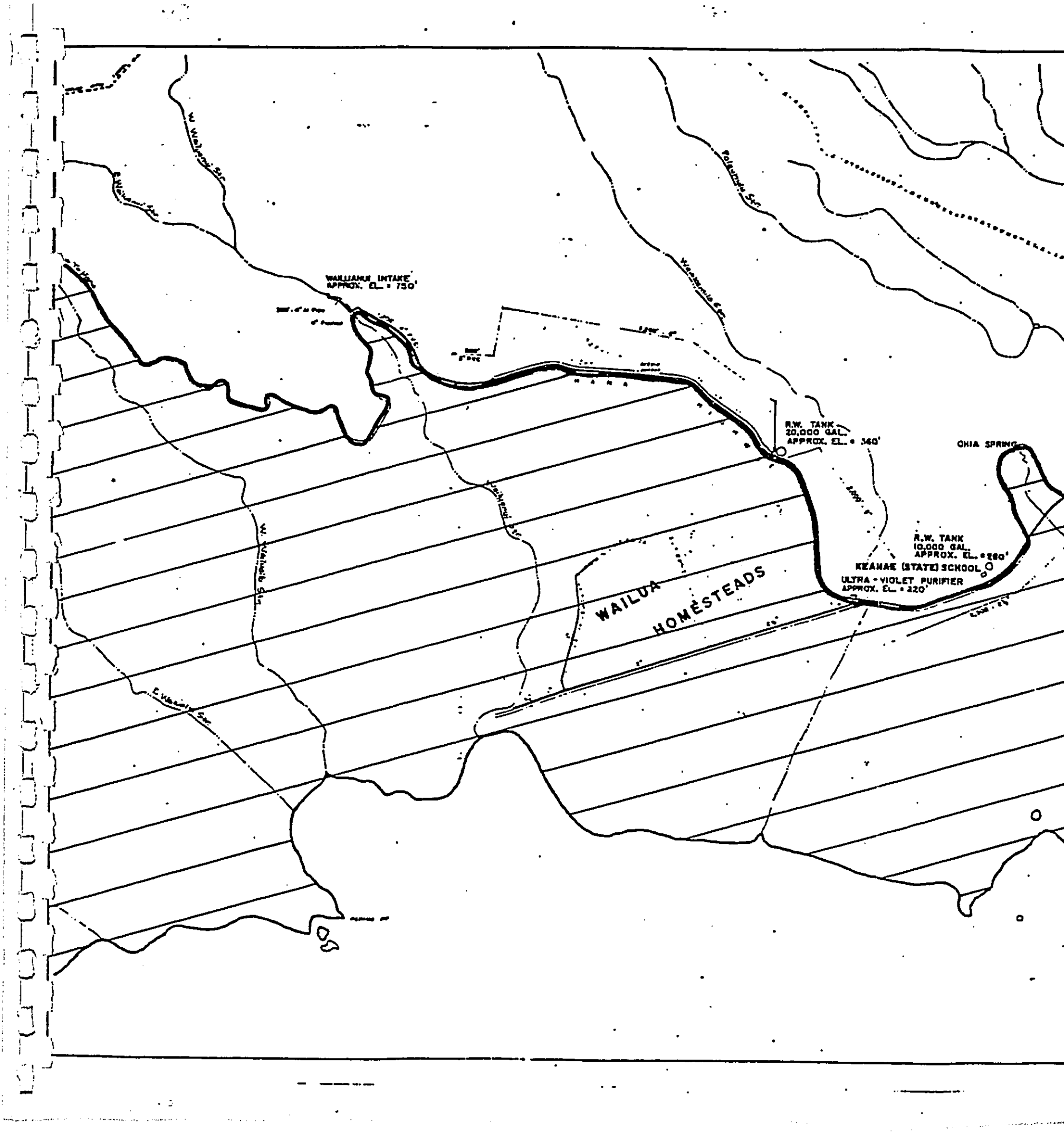
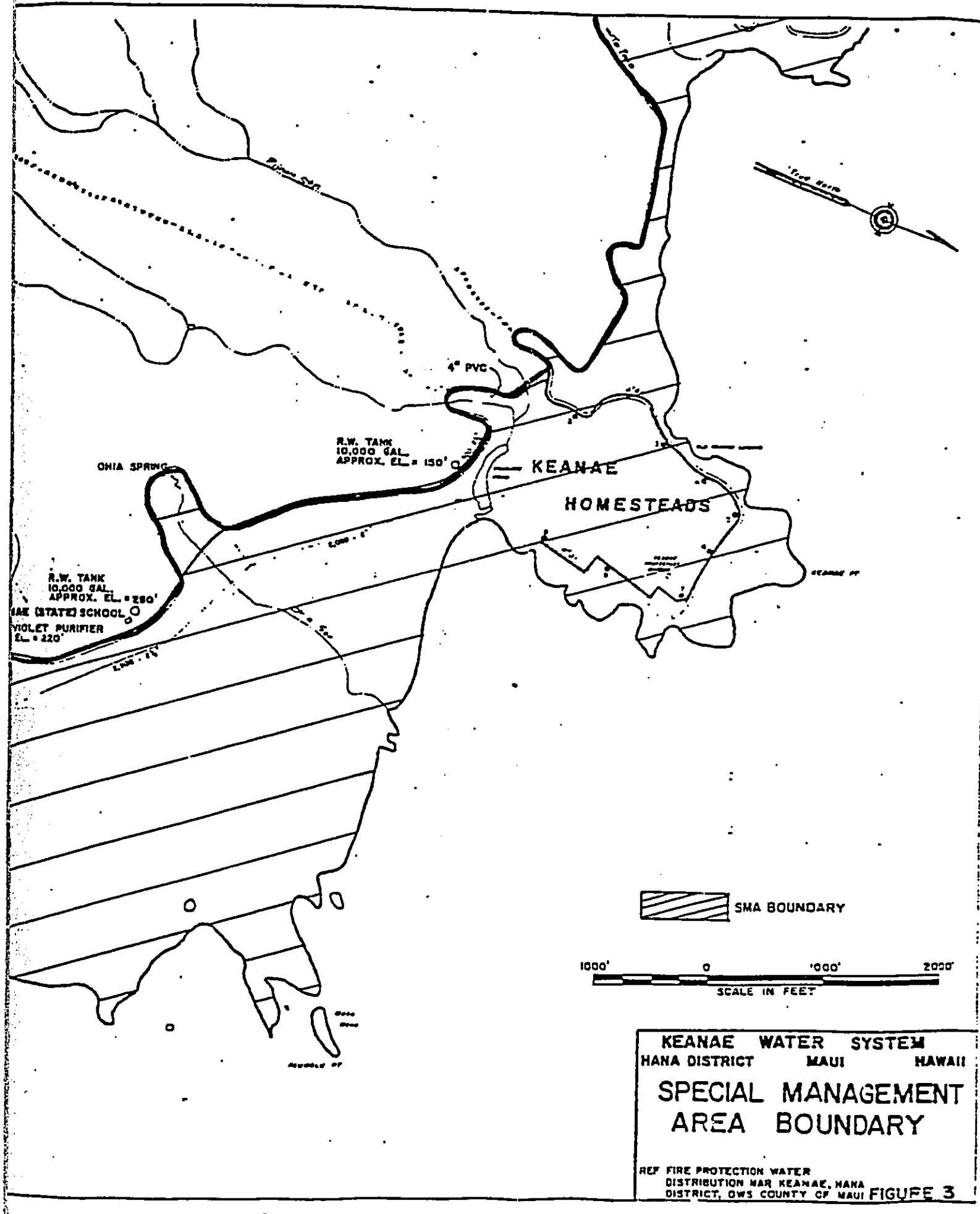

Island of
MAUI
NORTH
0 1 2 3 4 5
Scale In Miles
Kahakuloa
Honokohau
Honokowai
Waihee
Kahului
Opana Point
Waipio Bay
Haiku
Iao Needle
Lahaina
WAILUKU
Honoapiilani Hwy.
Hana Hwy.
KEANAE WATER SYSTEM
Kokomo
Makawao
Olowalu
Pukalani
Olinda
Kihei
Papawai Point
Maalaea Bay
Waiakoa
Haleakala Highway
Haleakala Lodge
Kaeleku
Kauiki Head
Hana
Keawakapu
Keokea
Red Hill
Puuiki
Koali
Kula
Haleakala Crater
Kipahulu
Makena Beach
Ulupalakua
Piilani Hwy.
Nokuele Point
Cape Hanamanioa
KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII
LOCATION MAP

FIGURE 1


NORTH
REF: STATE LAND USE BOUNDARY. DEPT. OF PLANNING AND ECONOMIC DEVELOPEMENT DISTRICT MAP H-13. DEC. 20. 1974.
LEGEND
AGRICULTURAL
CONSERVATION
3000 0 3000 6000 9000 1200 1500
GRAPHIC SCALE
IN FEET:
KEANAE WATER SYSTEM
HANA DISTRICT. MAUI HAWAII
STATE LAND USE BOUNDARY
FIGURE 2


WAILUA INTAKE
APPROX. EL. = 730'
R.W. TANK
20,000 GAL.
APPROX. EL. = 360'
OHIA SPRING
R.W. TANK
10,000 GAL.
APPROX. EL. = 280'
KEANAE (STATE) SCHOOL
ULTRA - VIOLET PURIFIER
APPROX. EL. = 220'
WAILUA
HOMESTEADS



KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

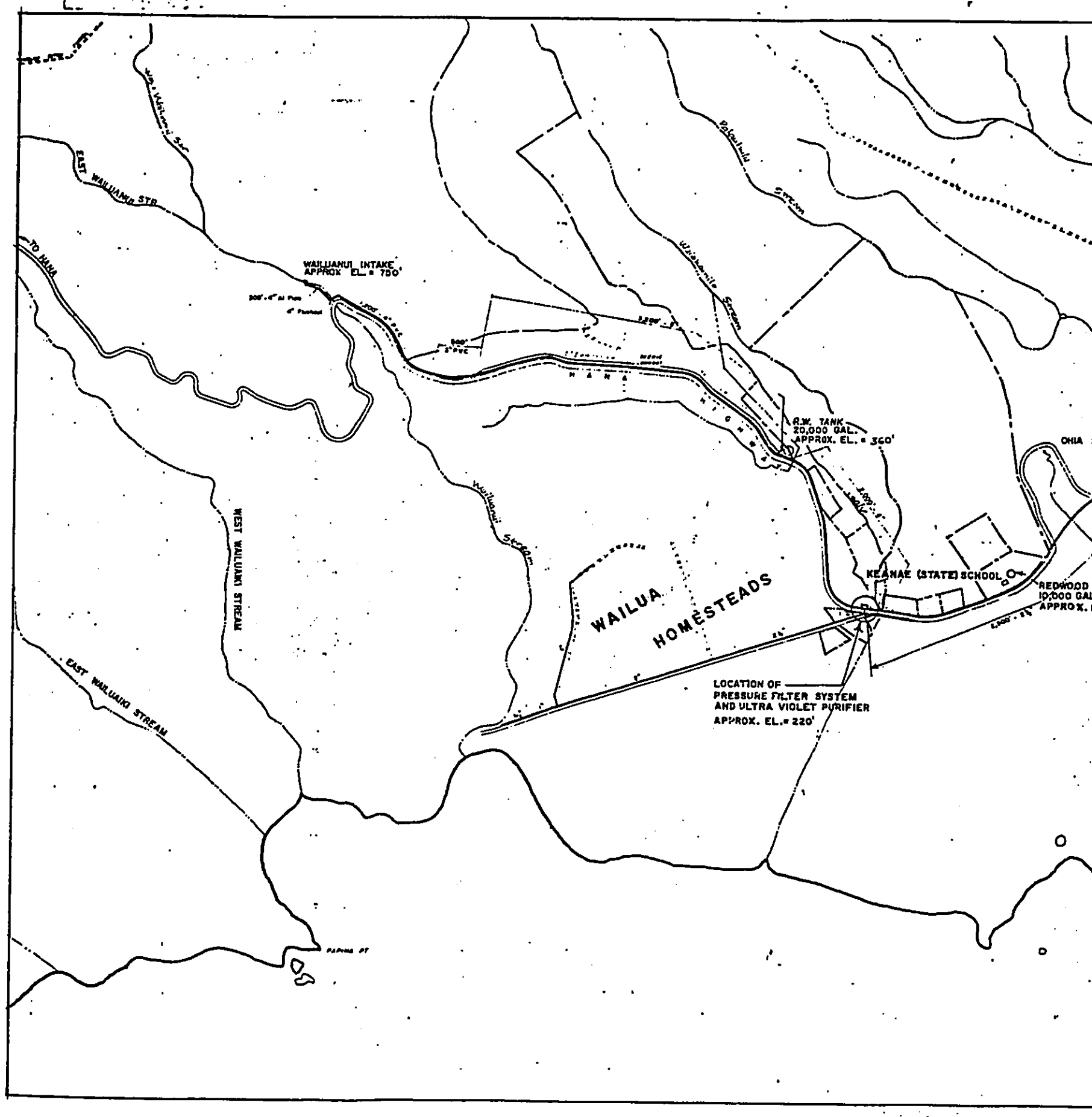
SPECIAL MANAGEMENT AREA BOUNDARY

REF FIRE PROTECTION WATER DISTRIBUTION MAP KEANAE, HANA DISTRICT, DWS COUNTY OF MAUI FIGURE 3

C. THE EXISTING KEANAE WATER SYSTEM

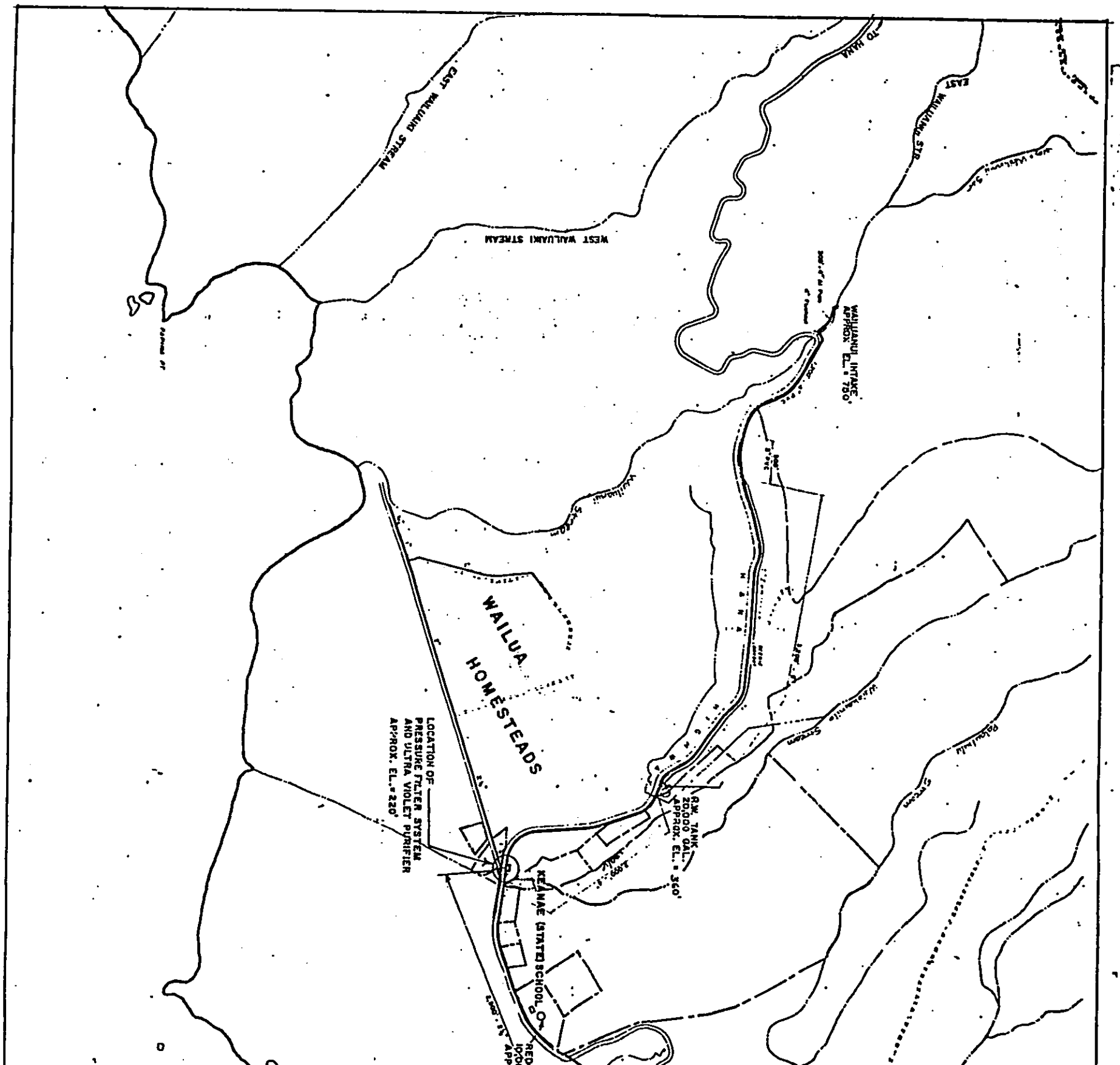
The Keanae public water system serves the communities of Keanae and Wailua. The system is supplied by an intake on the Wailuanui Stream. The present daily demand is 28,000 gallons/day for 241 people and the projected maximum daily demand for the year 2000 is estimated to be 45,000 gallons/day (GPD) for 374 people (see Appendix A for population projections, Table A-5).

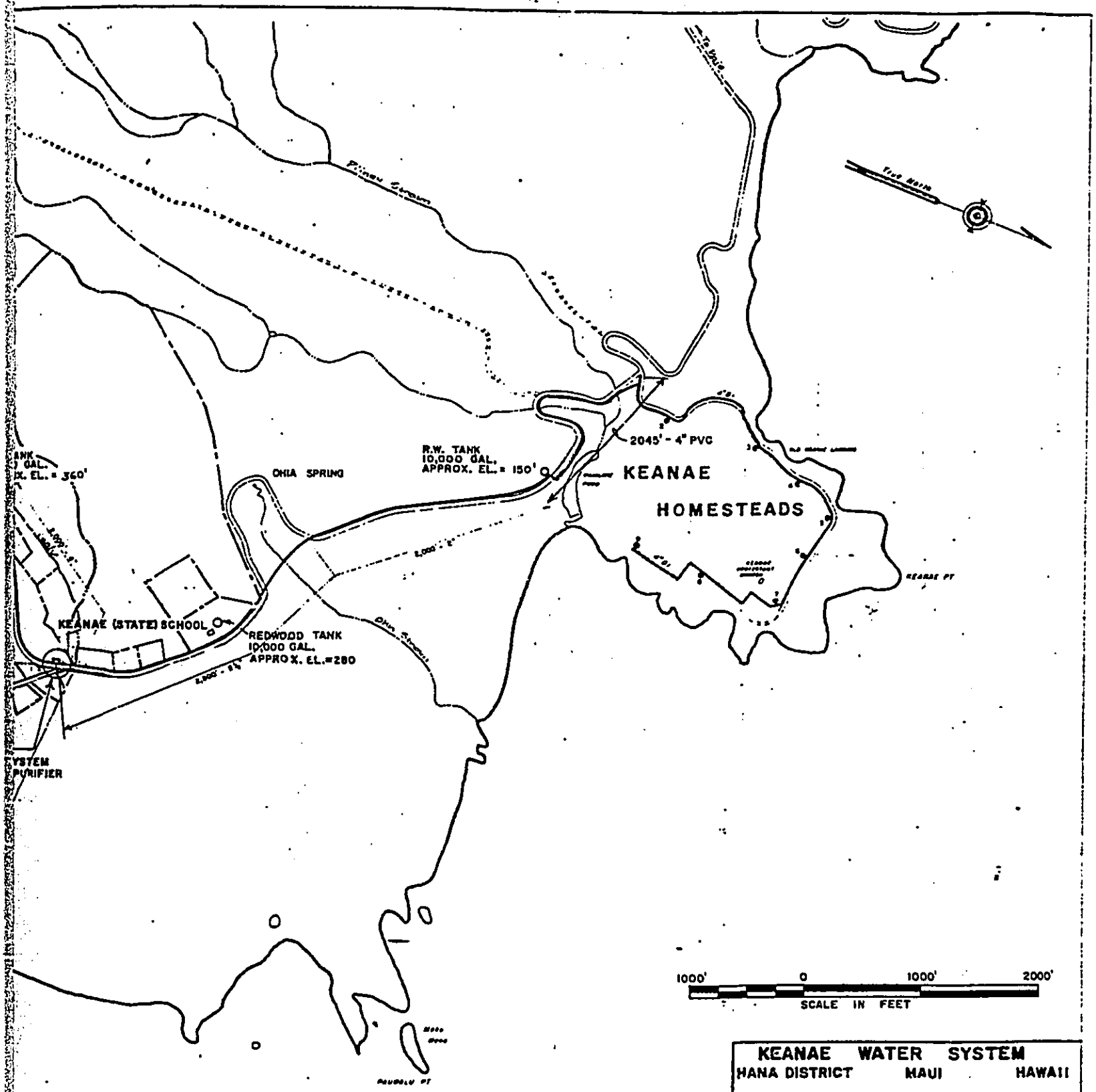
There are two (2) storage tanks in the water system. A 20,000-gallon redwood tank along Hana Highway at the 360-foot elevation serves the Wailua Homestead area, and a 10,000-gallon redwood tank along Hana Highway at elevation 150 feet serves the residents of the Keanae Homestead area. These tanks are fed directly from the Wailuanui Stream intake. There is a 10,000 gallon storage tank at Keanae School but is used only for the school and the tank is not part of the Keanae Water System. A pressure filter unit and an ultraviolet light (UV) purifier located at the junction of Hana Highway and the road to Wailua Homestead area filters and disinfects, respectively, the water before distribution to Wailua and Keanae residents. The distribution system contains 4.6 miles of pipe ranging in size from 1 to 4 inches in diameter (see Figure 4). The system lies entirely in land zoned for agricultural use and


EAST WAILUANUI STR
TO HANA
WAILUANUI INTAKE
APPROX EL. = 750'
Waiakamilo Stream
H A N A
R.W. TANK
20,000 GAL.
APPROX. EL. = 360'
OHIA
KEANAE (STATE) SCHOOL
WAILUA
HOMESTEADS
WEST WAILUAIKI STREAM
Wailuanui Stream
EAST WAILUAIKI STREAM
LOCATION OF
PRESSURE FILTER SYSTEM
AND ULTRA VIOLET PURIFIER
APPROX. EL.= 220'

CORRECTION

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


EAST WAILUAHI STREAM
WEST WAILUAHI STREAM
TO HANA
EAST WAILUAHI STR.
WAILUANUI INTAKE
APPROX. EL. 750'
WAILUA
HOMESTEADS
LOCATION OF
PRESSURE FILTER SYSTEM
AND ULTRA VIOLET PURIFIER
APPROX. EL. = 220'
R.W. TANK
20,000 GAL.
APPROX. EL. = 360'
KEANAE (STATE) SCHOOL



KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

EXISTING DISTRIBUTION SYSTEM

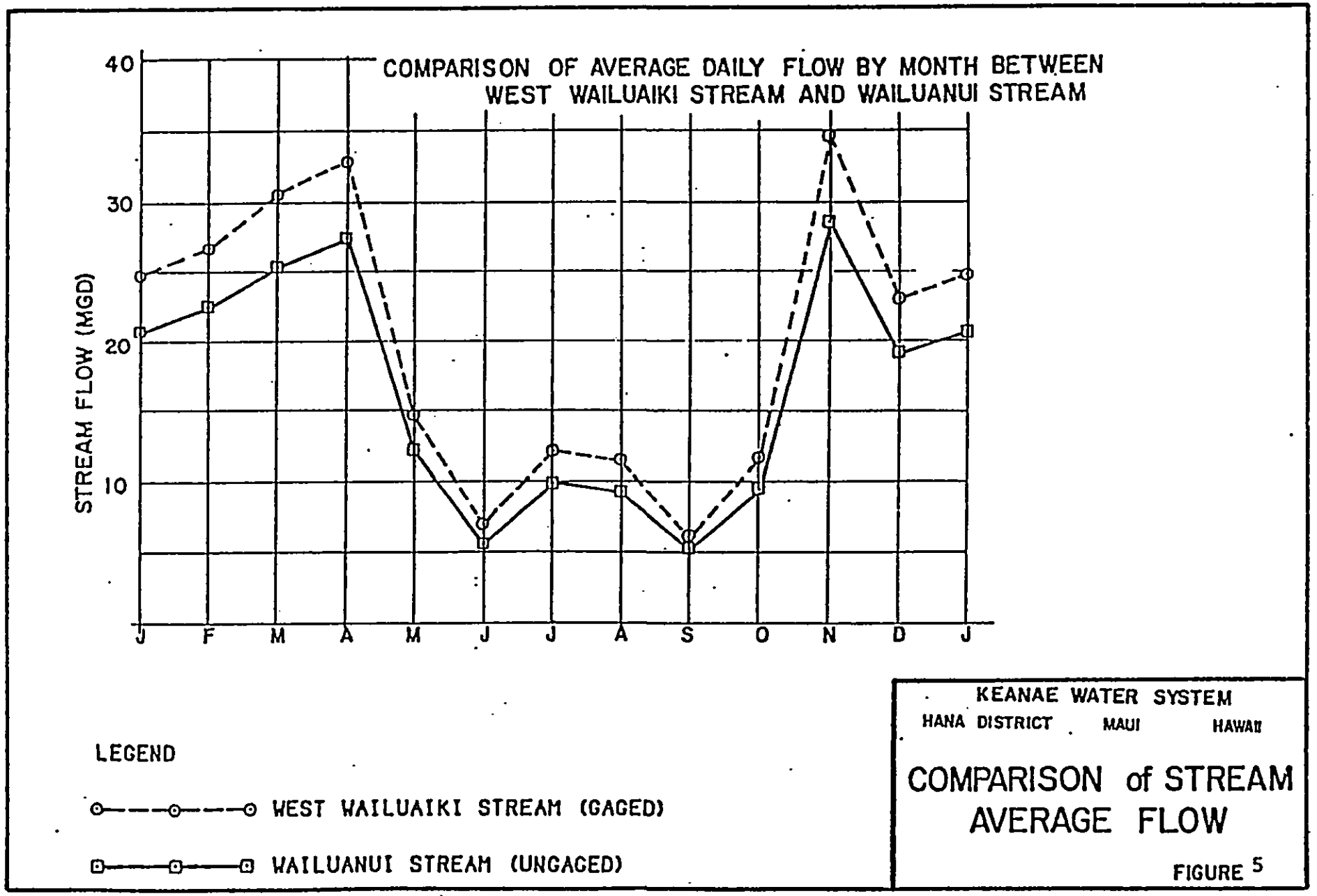
REF FIRE PROTECTION WATER DISTRIBUTION MAP KEANAE, HANA DISTRICT, DWS COUNTY OF MAUI

FIGURE 4

has no portion in areas zoned conservation. Flood zone area B slightly affects the area at the UV purifier (Reference 13). Flood zone area B is described by the Federal Flood Insurance Agency, as the flooded area between the 100 and 500 year flood events and flood depth of 1-foot or less. The occurrence of this type of flooding is not a major concern, because of the infrequency of occurrence (one to one-half percent probability) and the minimal degree of flooding.

Since there are no streamflow data for Wailuanui Stream, a comparative method was used to estimate the flow in the stream. The adjacent watersheds of Wailuanui Stream and Wailuaiki Stream are similar in size, land type, and rainfall. To estimate the flow in Wailuanui Stream, five years of monthly mean flow rates of the West Wailuaiki Stream were compiled and the flow rates for the watershed area of West Wailuaiki Stream were compared to the area above the intake of the Wailuanui watershed (Reference 14). The average monthly flows and lowest flow for the month are shown in Fig. 5.

Although it appears that the stream could easily sustain the year 2000 demand of 45,000 GPD, there is concern from the farmers in the Keanae-Wailuanui Community Association regarding additional domestic water withdrawn from the stream.


COMPARISON OF AVERAGE DAILY FLOW BY MONTH BETWEEN
WEST WAILUAIKI STREAM AND WAILUANUI STREAM
STREAM FLOW (MGD)
40
30
20
10
J F M A M J J A S O N D J
LEGEND
WEST WAILUAIKI STREAM (GAGED)
WAILUANUI STREAM (UNGAGED)
KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII
COMPARISON of STREAM AVERAGE FLOW
FIGURE 5

D. CONTAMINANTS AND CONTAMINANT LEVELS

Identification of contaminants and contaminant levels found in the earlier Keanae water system were made from available water quality records on sampling and testing performed by the State Department of Health and the Department of Water Supply. In addition, water samples were collected in 1981 from the water system to verify prior test results and to obtain data which were not available from the records (Reference 15). A sample of water from Ohia Spring was also obtained to provide data on the probable quality of perched groundwater in the area (see Appendix B for those test results).

The primary contaminants which exceeded the maximum contaminant levels during sampling and testing were turbidity, microbiology, cadmium, and corrosivity. The only secondary contaminant which exceeded the Environmental Protection Agency's recommended maximum contaminant level was odor. Table 1 shows a summary of contaminants exceeding the maximum contaminant levels.

Turbidity samples were taken at the ultraviolet light purifier during a 40 month test period from July 1977 to November 1980. Daily turbidity readings ranged from 0.2 to 39+ nephelometric turbidity units (NTU). The monthly averages of the daily readings exceeded the maximum contaminant level of 1.0 nephelometric turbidity unit in

TABLE 1
CONTAMINANTS EXCEEDING MAXIMUM CONTAMINANT LEVELS

A. Primary Contaminant

	Station Number	Sampling Location	Maximum Contaminant Level	Highest Recorded Value	Sample Date
Cadmium	2	U.V. Purifier	0.010mg/l	0.015mg/l	7/08/81
Corrosivity	1	Wailuanui Stream		-2.54	2/13/81
	2	U.V. Purifier		-2.31	11/12/81
Turbidity	2	U.V. Purifier	1 NTU or 5 NTU -2 day ave	(a)	(a)
Microbiology	2	U.V. Purifier	(c)	(b)	(b)

(a) See Table V-5 Sampling Results for Turbidity
(b) See Table V-6 & V-7 Sampling Results for Microbiology
(c) See Chapter V, Paragraph D.2 Microbiology maximum contaminant levels

B. Secondary Contaminants

Odor	1	Wailuanui Stream	3 TON	45.3TON	2/13/81

each month. Also the requirement of the two day average of 5.0 nephelometric turbidity units was exceeded in all except three of the 40 months. A frequency analysis of the daily turbidity readings showed that the Wailuanui Stream surface water source supplied water with 1.0 or less nephelometric turbidity unit, 27.95 percent of the time, 5.0 or less nephelometric turbidity units 83.13 percent of the time and 10 or less nephelometric turbidity units 96.32 percent of the time.

Microbiology samples were taken at the ultraviolet light purifier facility. During the period from August 1977 to September 1979 the membrane filter method was used to assess microbial levels and from October 1979 to June 1980, the fermentation tube method (10 millimeter standard portions) was used. The maximum contaminant level for microbes using the membrane filter method was exceeded in 10 of the 26 months or 38.5 percent of the time. In the nine month period that the fermentation tube technique was used, the maximum contaminant level was exceeded in seven of the nine months or 77.8 percent of the time. The multimedia pressure filter system was installed in late 1983 to reduce turbidity and aid in disinfection, however at times, the reduction have not been below the 1 NTU or the 2 day average of 5.0 NTU standard. The Department of Water is continuing to monitor and study the performance of the filteration system.

Water samples were tested for cadmium in collections from the Wailuanui intake, Keanae School, and the ultraviolet light purifier facility. A total of eight samples were tested for cadmium but only one sample at the ultraviolet light purifier facility exceeded the maximum contaminant level (see Table 1). Cadmium levels prior to and after the high cadmium reading were below the maximum contaminant level, indicating that the high cadmium concentration could have been a by-product of corrosion from a section of old galvanized iron pipe located above the ultraviolet light purifier. Another possibility of the high cadmium reading could have been laboratory error.

The surface water source had negative Langelier Indices indicating slightly corrosive waters. However, the calcium and alkalinity concentrations were very low so that the Langelier Index may not be applicable to the Wailuanui Stream surface water. The State Department of Health is currently monitoring Hawaii water systems on a statewide basis to determine the applicability of the Langelier Index to Hawaii's waters. When the State Department of Health completes its study of the corrosiveness of Hawaii's potable water, a corrosion control plan could then be developed for the Keanae Water System.

One sample at the Wailuanui Stream intake recorded an odor threshold number of 45.3, which exceeds the recommended maximum contaminant level for the Federal Secondary Drinking Water Regulations. Department of Water Supply personnel indicated that there have been no complaints of odors from the consumers. One possible reason could be that the 20,000 gallon storage tank acts as a sedimentation basin where algae, debris, and other odor producing substances could settle out before entering the distribution system.

In March 1984, after the drilling of the well, the U.S. Geological Survey made a chemical analysis of the pumped water and although the test did not cover all the required testing in the drinking water standards, the potability of the water appears to be excellent (Reference 16). Comparing the water sample results from Ohia Spring with the standards also indicate that groundwater in the area is of excellent quality (see Appendix B). The two contaminants listed on the primary drinking water standards and tested for were within the limits of the standards. A secondary drinking water contaminant, iron, appears to be very high at 12 mg/l as compared to the recommended standard of 0.3 mg/l. The high iron reading may have been from rust particles from the well casing. (See Table 2).

Table 2 CHEMICAL ANALYSES OF WATER

Keanae Well 5108-01, Maui

Sample Taken: 10:00 a.m., February 17, 1984
Analysis By: U.S. Geological Survey, March 30, 1984

Lab pH ***	7.8	
Nitrogen ($NO_2 + NO_3$)*	0.12	mg/l
Calcium (Ca)	11	"
Magnesium (Mg)	8.9	"
Sodium (Na)**	20	"
Potassium (K)	3.9	"
Chloride (Cl)***	11	"
Sulfate (SO_4)***	4.9	"
Fluoride (F)*	0.20	"
Silica (SiO_2)	43	"
Iron (Fe)***	12	"
Manganese (Mn)***	1	"
Lab specific conductance	214	"
Alkalinty (as $CaCO_3$)	96	"

* SDWA Primary Contaminants
** SDWA Primary Contaminents (Monitor only)
*** SDWA Secondary Contaminents

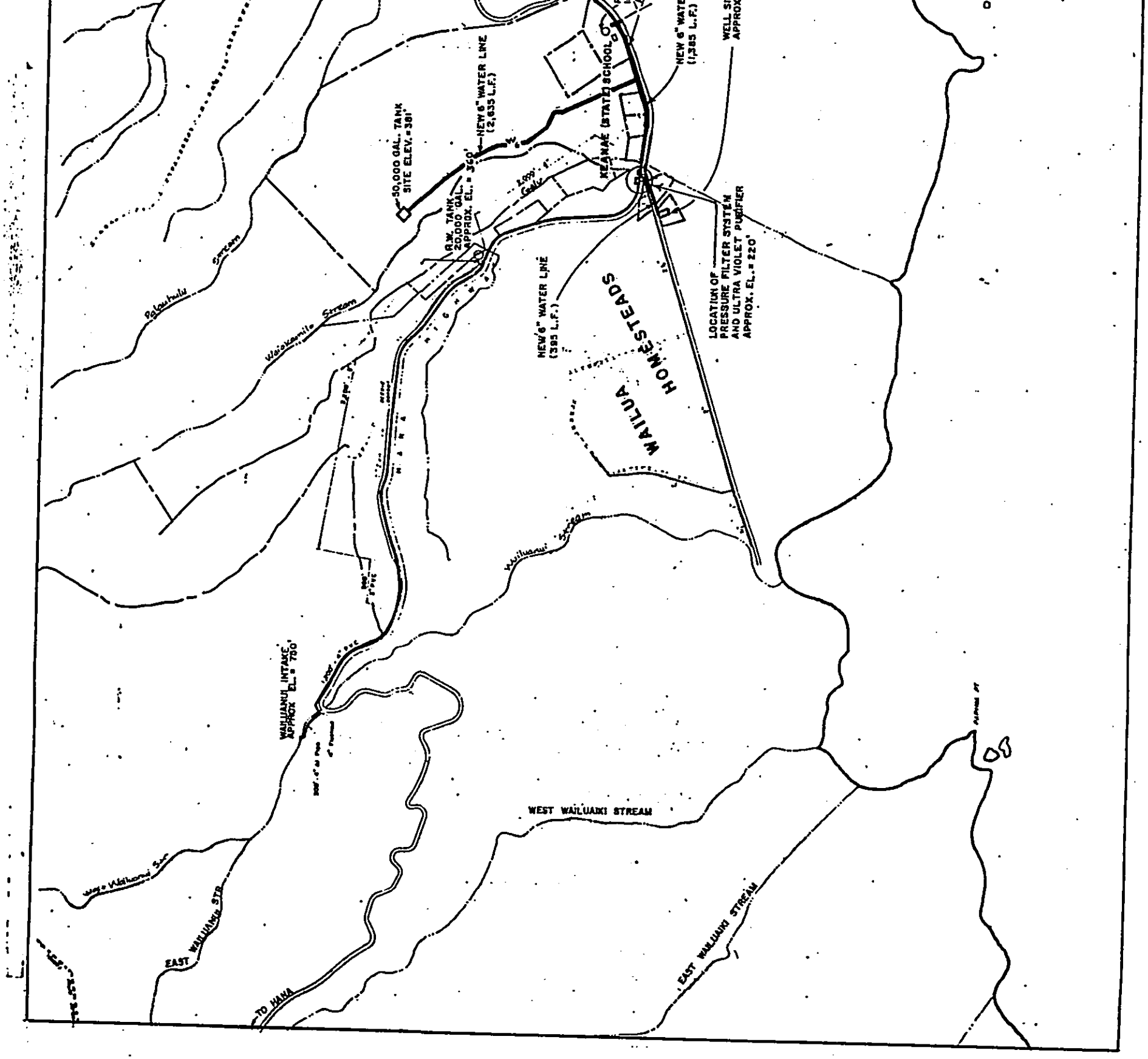
Ref: Groundwater Exploration at Keanae Well 5108-1, Maui, Circular 95 (Draft), DLNR, State of Hawaii, May 1984

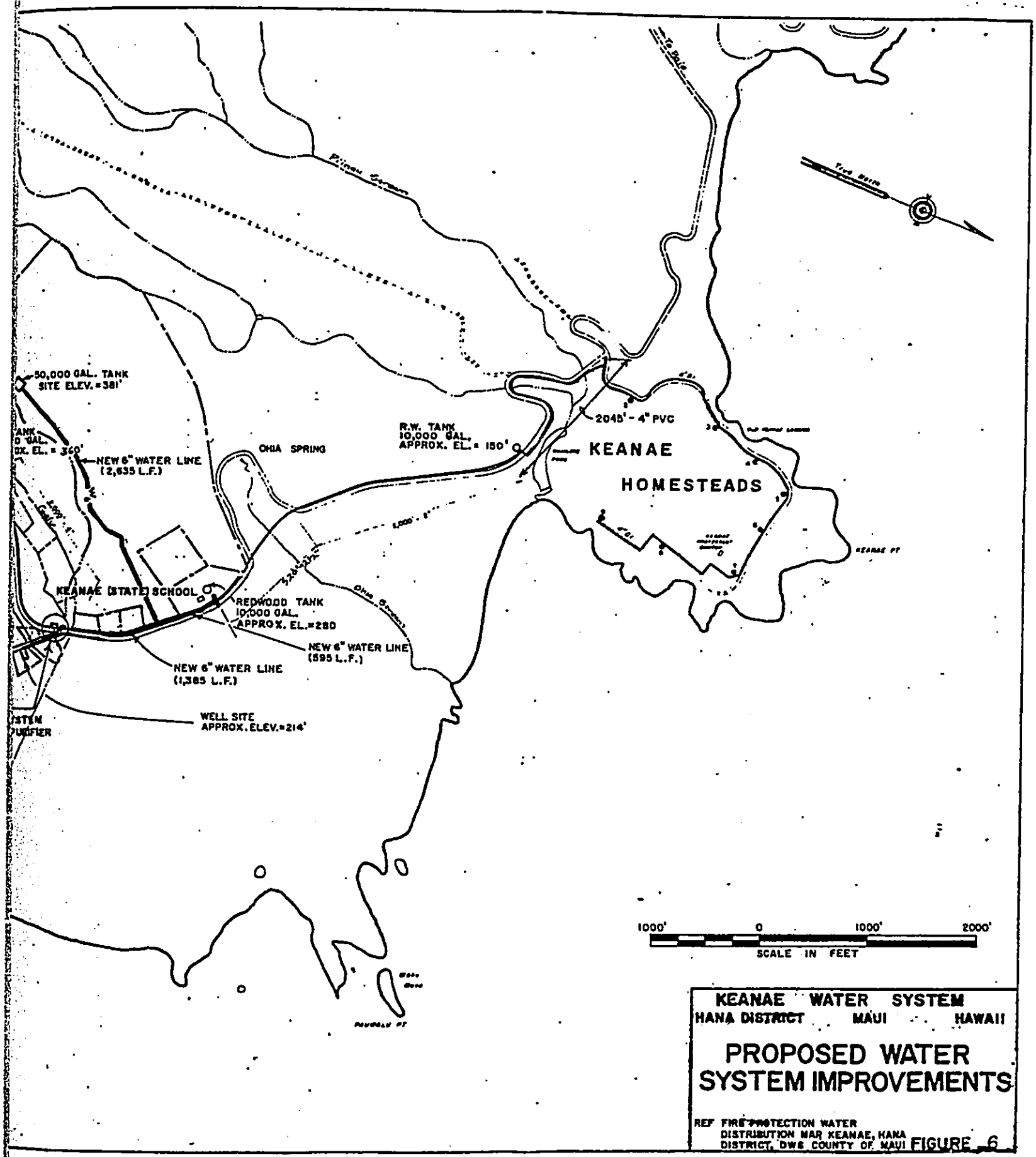
E. DESCRIPTION OF THE PROPOSED ACTION

The proposed action consists of developing an 8" diameter well which was drilled by the Department of Land and Natural Resources, installing a new 50,000 gallon storage tank and installing approximately 4,600 lineal feet of 6 inch pipeline between the well and 50,000 gallon tank. Also approximately 600 lineal feet of 6 inch line will replace a segment of the existing 2-1/2 inch line to the Keanae School. The increase in pipe size will assure that the school will receive adequate pressure and flows for fire protection. The proposed water system improvements are shown in Figure 6.

Well Development

The well site is on State land which has been turned over to the County by Executive Order. The property is described by Tax Map Key 1-1-04:43 and is situated on Wailua Road just makai of the UV purifier. The total area of the property is 1.01 acres, but the well development will use only 0.15 acres. Development of the well include the installation of the well pump, motors, controls, a 10,000 gallon control tank, a control building, disinfection equipment, paving and fencing. The estimated construction cost of the well is $320,000.


30,000 GAL. TANK
SITE ELEV. = 381'
NEW 6" WATER LINE
(2,635 L.F.)
R.W. TANK
20,000 GAL.
APPROX. EL. = 360'
KEANAE (STATE) SCHOOL
NEW 6" WATER LINE
(1,385 L.F.)
WELL SITE
APPROX. EL. = 220'
Palauhulu Stream
Waiokamilo Stream
NEW 6" WATER LINE
(395 L.F.)
HOMESTEADS
WAILUA
LOCATION OF
PRESSURE FILTER SYSTEM
AND ULTRA VIOLET PURIFIER
APPROX. EL. = 220'
Wailuanui Stream
WAILUANUI INTAKE
APPROX EL. = 750'
WEST WAILUAIKI STREAM
EAST WAILUAIKI STREAM
EAST WAILUAIKI STR.
TO HANA


50,000 GAL. TANK
SITE ELEV. = 381'
NEW 6" WATER LINE
(2,635 L.F.)
OHIA SPRING
R.W. TANK
10,000 GAL.
APPROX. EL. = 150'
2045' - 4" PVC
KEANAE
HOMESTEADS
KEANAE (STATE) SCHOOL
REDWOOD TANK
10,000 GAL.
APPROX. EL. = 280
NEW 6" WATER LINE
(595 L.F.)
NEW 6" WATER LINE
(1,385 L.F.)
WELL SITE
APPROX. ELEV. = 214'
1000' 0 1000' 2000'
SCALE IN FEET
KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII
PROPOSED WATER
SYSTEM IMPROVEMENTS
REF FIRE PROTECTION WATER
DISTRIBUTION MAP KEANAE, HANA
DISTRICT, DWS COUNTY OF MAUI
FIGURE 6

The well was drilled by the State Department of Land and Natural Resources in early 1984 (Reference 16). The well depth is approximately 330 feet deep and the top 221 feet has a solid casing to prevent ground water from entering the well. The top 120 feet is also cement grouted. The source of the water is the basal water lens and therefore pumping will not affect any springs in the area of the well. The elevation of the basal lens was measured at elevation 6.1 feet (msl). Testing of the well indicated that the well could easily supply 100 gpm and will provide good quality potable water.

The pumped water will be disinfected by use of chlorine gas injected into the pumped water before it enters the 10,000 gallon control tank. The control tank will also provide the necessary contact time to fully disinfect the water. It is estimated that 10 minutes of contact time will be required for disinfection of the clean, clear, well water.

The Keanae Community Association has expressed some concern that should there be an overflow of the control tank, the chlorinated water may have harmful effects on stream life and the taro. The concentration of chlorine injected in the water will be small, approximately 1.5 mg/l(parts per million). Chlorine will combine with water to form hypochlorous acid and hydrochloric acid. The nature of the these compounds are very active and will readily react with

organic and inorganic materials that are found in the water. A chlorine residual level to be maintained in the drinking water system will be about 0.2 mg/l. Chlorine is affected by sunlight and aeration in the stream which will aid the dissipation of the chlorine compounds should an overflow occur (Reference 17). However to assure that no chlorinated water reach the ditches or Waiokamilo Stream, the overflow of the 10,000 gallon control tank has been connected to the well casing. Thus, any overflow water will go back into the well.

50,000 Gallon Storage Tank

The 50,000 gallon storage tank will be located on private property where owners have an undivided interest in the land. The largest land owner is East Maui Irrigation Corp. The property is described by TMK 1-1-8:10 and has approximately 104.05 acres. The tank site will take about 10,000 SF or 0.23 acres. A 15 foot wide easement for an access and the water line will need to be obtained by the Department of Water Supply. The Department will purchase the 10,000 SF lot from the owners thru acquistion for public use. Presently, a resolution authorizing proceedings for acquisition of the land has been approved by the Maui Council.

The new tank site improvements will include the 50,000 gallon tank, controls, asphalt concrete pavement around the tank, chain link fencing and a sump for the overflow discharge line. The tank will be located approximately 50 feet from the top bank of Waiokamilo Stream. The location for the new storage tank is hydraulically located central to the service area and will provide better service to the consumers. Also should there be a large demand, such as for fire protection, the water system will be able to respond better hydraulically to the demand because of the larger, newer pipes. The estimated construction cost for the new tank site is $150,000

The elevation of the tank site will be 380 feet and will aid in providing adequate pressure to the Keanae School and consumers which sits on the highest point on Hana Highway. The elevation of the present 20,000 tank is approximately 360 feet.

To reduce the possibility of an overflow of chlorinated water into Waiokamilo Stream, an altitude valve has been installed at the tank site such that if the regular pump-off switch does not turn off the booster pumps, the altitude valve will activate a pressure switch which will turn off the booster pump motors. In addition, if there is an overflow, the chlorinated water will flow into a sump which when it overflows will enter a grass lined swale before

flowing over the top of the stream bank. The stream bank is densely overgrown with ferns and other shrubs. Thus the chlorine in the overflow water will react with the organic materials on the ground and will also be dissipated by sunlight and aeration of the overland flow. In addition, the chlorine concentration will be further diluted in the stream.

Studies have shown that when chlorine reacts with organic materials, such as humic and fulvic acids, trihalomethanes may be formed (Reference 18). Toxicology studies on trihalomethanes have shown that three compounds can be carcinogenic in animals (Reference 19). Although the overflow water will flow over organic material, the time of contact with the ground will be short because the outlet structure is located approximately 10 feet from the top of the stream bank, then 20 feet down the steep stream bank to the water. The reaction of chlorine with organic materials to form trihalomethanes need time to complete (Reference 20). Aeration within the stream will also help to dissipate trihalomethanes since aeration is one of the treatment methods for this contaminant (Reference 21).

At the storage tank, the residual chlorine is expected to be maintained at 0.2 mg/l. Although there are no studies available of the effects of chlorine on Hawaiian stream life, toxic studies of chlorine concentrations on other

stream life listed below can be used as a guide:

Mosquito Fish (Ref. 22)	0.5-1.0	mg/l	concentration tolerated
(Gambusia affinis)	2.0	mg/l	some killed 2nd day
Aholehole (Ref. 23)	1.0	mg/l	slight irritant response
(Kuhlia sandvicensis)	10.0	mg/l	violent irritant response
Algae (Ref. 24)	1.0	mg/l	no physical cell damages, 24 hours
(Cladophaera)	10.0	mg/l	Complete kills in 2 hrs.
Tadpoles (Ref. 25)	5.0	mg/l	Survived 10 min. exposure
(Rana catesblena)	6.0	mg/l	Survived 30 min. exposure but died in 24 hours.
Crayfish (Ref. 25)	1.0-1.0	mg/l	Survived 30 min. exposure natural water
(Cambarus sp)			

Since the concentration of the chlorine is expected to be less than 0.2 mg/l when the overflow water enters the stream, the effects on stream life may occur at the immediate vicinity of this tank and should have no effects further downstream.

The nearest taro patch from the proposed 50,000 gallon tank site is approximately 0.5 mile downstream, just below Hana Highway. With the steep stream gradients and the rocky stream bottom, it is expected that most of the chlorine will be dissipated by aeration or will react with the organic

materials in the stream.

In a telephone interview (Reference 26) with a University of Hawaii agricultural researcher at the Wailua Agricultrual Experiment Station, domestic water containing approximately 0.1 to 0.2 mg/l chlorine residual, was used to grow taro (Reference 27). There was no effects from the chlorine noted on the taro. Thus, no effects on the taro is anticipated from the overflow of chlorinated water from the tank.

New 6" Water Line

The new 6" water line will be installed in Wailua Road, Hana Highway and in an easement through private property. Approximately 395 lineal feet will be installed in Wailua Road which is owned by the county. Approximately 1,000 lineal feet will be installed in Hana Highway and 2,635 lineal feet will be installed along the dirt road on private property from Hana Highway to the new tank. The estimated construction cost for the pipeline installation is $230,000. Traffic routing will be required for the pipeline installation crossing the Hana Highway and Wailua Roads.

F. ALTERNATIVE ACTIONS CONSIDERED

An engineering study considered alternatives that were grouped by the source of the water supply, i.e. providing the entire demand by surface waters only, groundwater only or a combination of surface water and groundwater (Reference 15). Using only surface water or only groundwater did not provide the flexibility in the system as the combined source schemes. The surface water source would need to be treated for turbidity and microbiology to meet the drinking water standards and the well would need only disinfection to meet the drinking water standards.

Alternative Surface Water Treatments

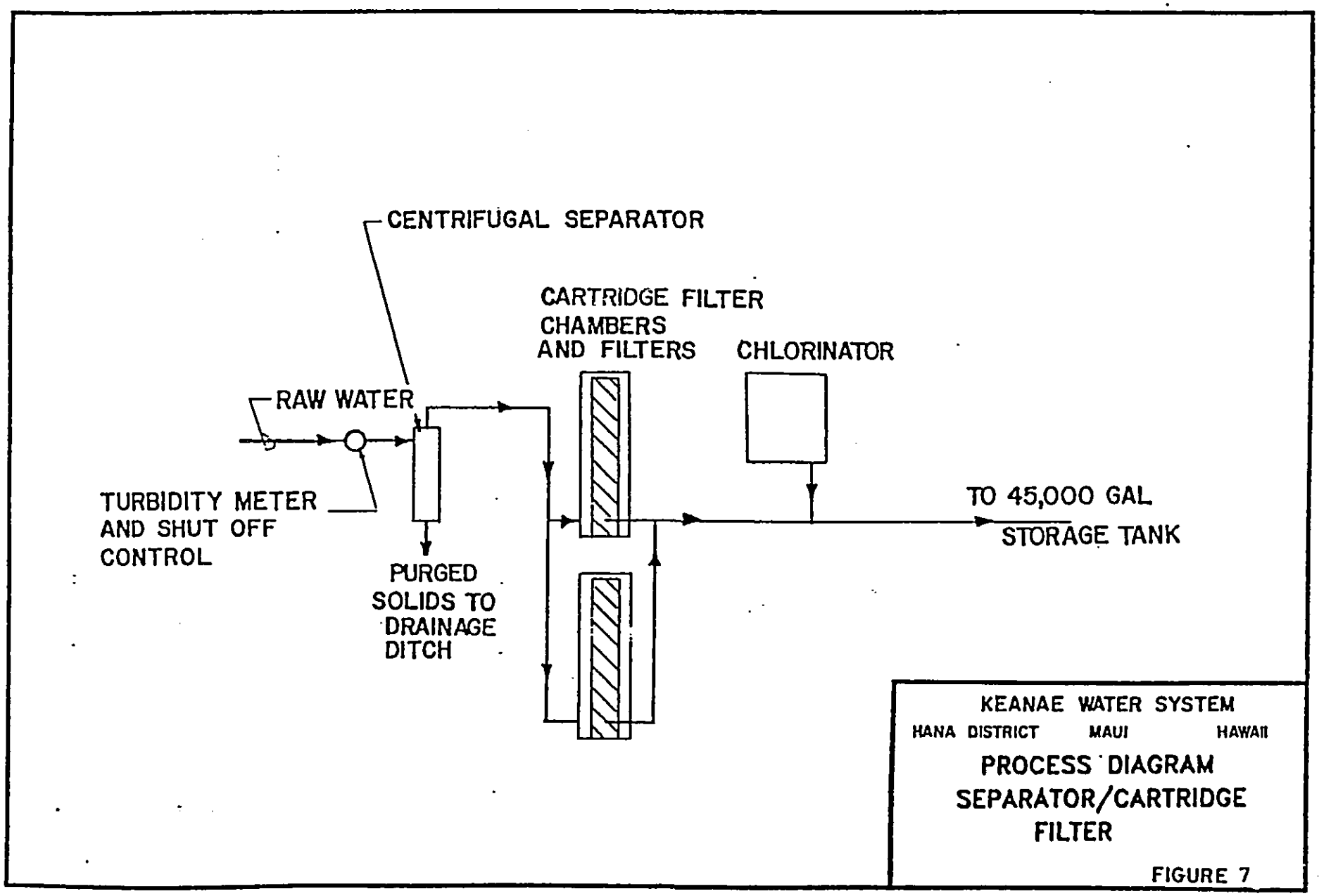
Alternative treatment methods considered for turbidity reduction were centrifugal separators/cartridge filters, packaged water treatment plant, and slow sand filters (Reference 15).

The terms used in identifying water treatment are very specific, and in many cases, the layman may not have an understanding of these terms. Therefore, Appendix C of this report defines the more commonly used water treatment terms.

Centrifugal Separators/Cartridge Filters

The centrifugal separator uses the principal of centrifugal force to separate heavier particles from the water. There are no moving parts and except for periodic purging, there are no other maintenance requirements. The cartridge filter units consist of a filter chamber and the cartridge filters. The filters are changed when they collect enough particles either on or within the filter to create a large headloss through the filters. Figure 7 shows a diagram of the filtration process with both types of filters in line.

The Water Department has installed a pair of multimedia pressure filters just upstream of the UV purifiers and they have monitored turbidity at the pressure filters. At times during high turbidity in the surface water source, the filters have not been able to reduce the turbidity within the limits of drinking water standards. Therefore the multimedia filters are acting as roughening filters and a polishing filter will need to be installed to further reduce turbidity to meet the drinking water standards. Once the suitable polishing filters are installed the surface water source could act as a back up system to the well source, especially during power outages or maintenance of the well pumps.


CENTRIFUGAL SEPARATOR
CARTRIDGE FILTER CHAMBERS AND FILTERS
CHLORINATOR
RAW WATER
TURBIDITY METER AND SHUT OFF CONTROL
PURGED SOLIDS TO DRAINAGE DITCH
TO 45,000 GAL STORAGE TANK
KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII
PROCESS DIAGRAM SEPARATOR/CARTRIDGE FILTER
FIGURE 7

Package Water Treatment Plant

The U.S. Environmental Protection Agency, Office of Water Supply, publication entitled, "State of the Art Small Water Treatment Systems", August 1977 (Reference 28), provides the following information on packaged water treatment plants:

> "A package water treatment plant is a complete treatment system composed of two or more integral unit processes for the removal of one or more contaminants. Package plants are factory assembled and generally skid mounted so that installation at the site consists of connecting raw and finished water lines along with the electrical service. In moderate to cold climates the package plant should be enclosed in a building with adequate ventilation and heat. Factory construction of package plants make them economically attractive when compared to plants constructed at the site. Even though package plants are designed for automatic operation they still need periodic attention to monitor the process, maintain chemical solutions, and perform required maintenance. Too often in the past package plants have been installed and expected to operate completely unattended resulting in unsatisfactory performance. Properly selected, operated, and maintained package plants can perform as well as plants constructed on site."

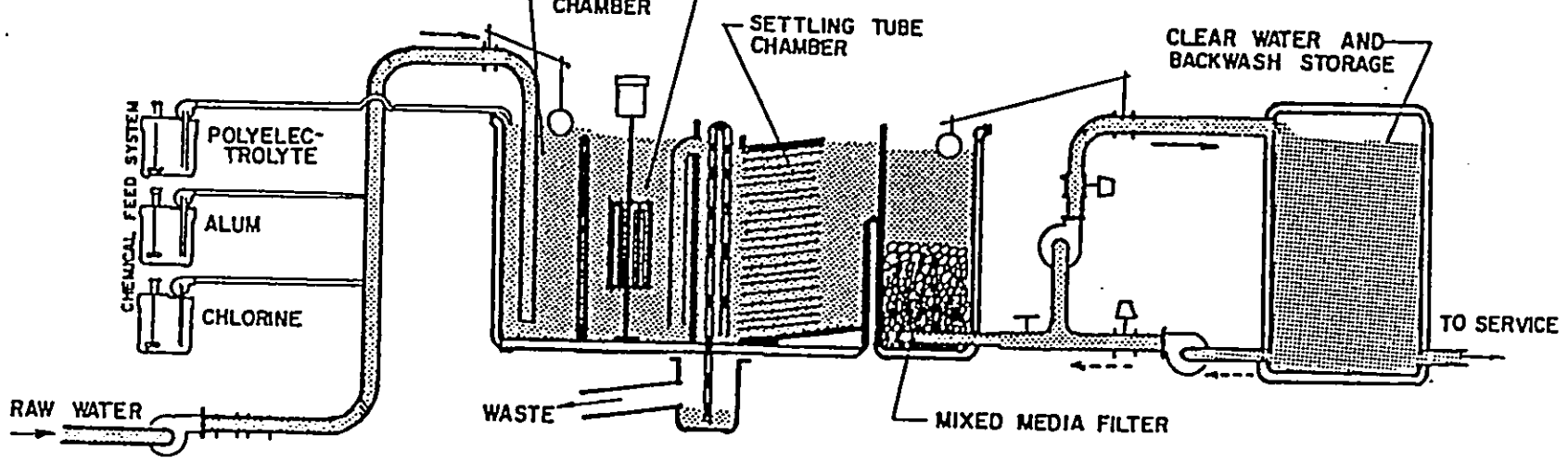
A schematic of a package water treatment plant process is provided in Figure 8.

Surface water from the source would be transmitted to the water treatment plant. After treatment, the water would be disinfected and transmitted to the storage tanks. From there, the transmission system would disperse water throughout the community.

Sludge lagooning would dry out the waste from the treatment process. The waste would include the coagulants (chemicals used to aid in flocculation) and would normally be trucked to landfills. However, there are no landfills nearby and the County Department of Public Works will not allow dumping of water treatment sludge in its landfills. Because of this reason and the overall cost of constructing and operating the packaged water treatment plant, this alternative was eliminated.

Slow Sand Filters

A slow sand filter (SSF) system typically consists of two concrete boxes about nine feet in depth. Inside, a sand layer, about two feet deep, would be supported by a gravel layer containing underdrains. A basin would be placed between the slow sand filters to collect the sand which is scraped off during the maintenance process. This discarded sand may be washed in this basin for reuse. The underdrains



REF: NEPTUNE MICROFLOC, CORVALLIS OREGON, WATERBOY MODEL

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

PROCESS DIAGRAM
PACKAGE WATER
TREATMENT PLANT

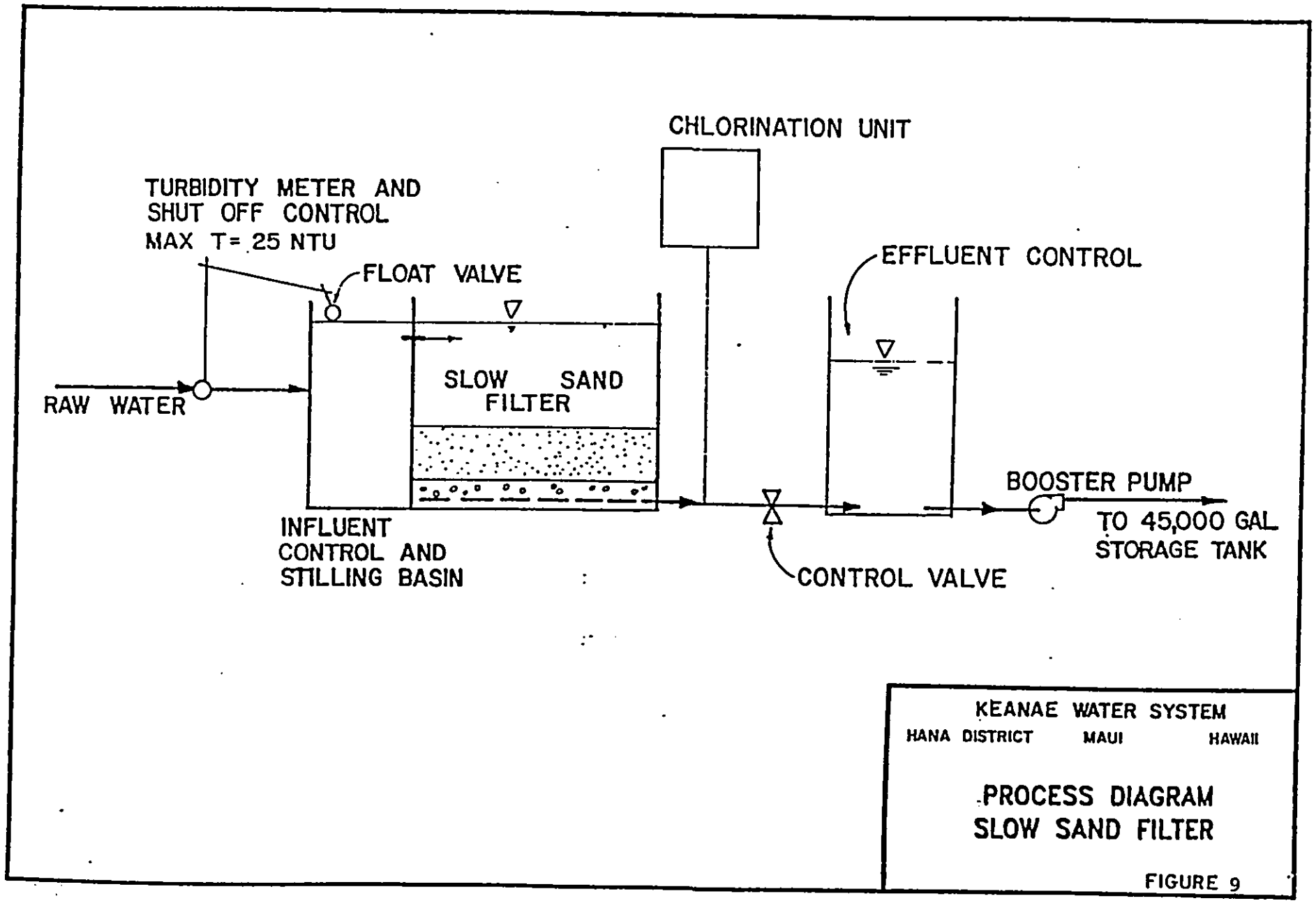
FIGURE 8

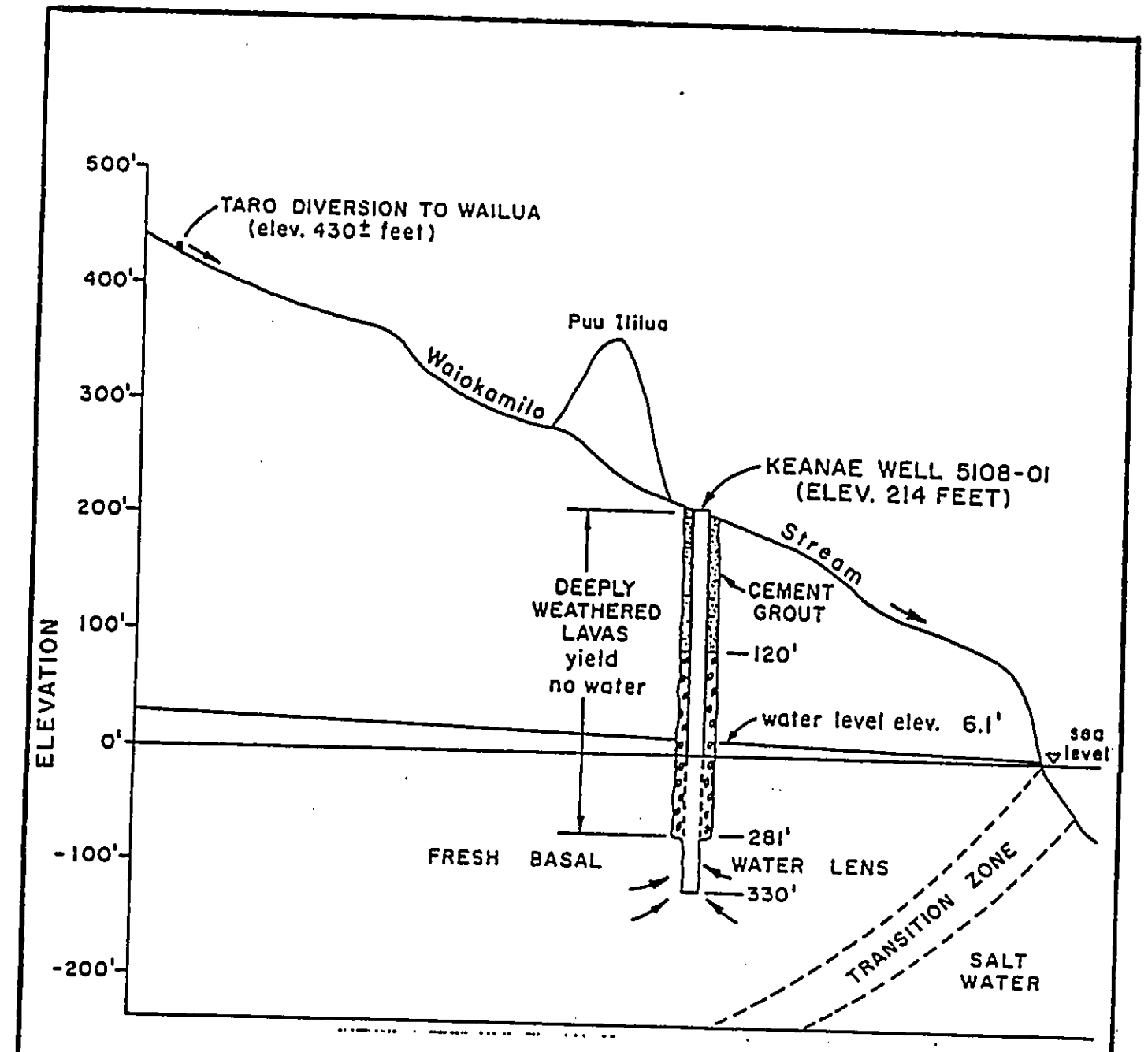
collect the filtered water and transmit it to the storage tank. The filtered water would then be disinfected by chlorination before being distributed to the consumers through the existing transmission lines. See Figure 9 for the slow sand filter process.

The slow sand filter, although lower in cost, cannot handle turbidity higher than 30 NTU and would need to be shut down whenever this level is exceeded.

Groundwater Well

As described previously, the State Department of Land and Natural Resources drilled a well in the Keanae area and tests indicated that it could be productive as well as supply good quality potable water (Reference 16). Figure 10 shows a sketch of the well. With the development of this well, Keanae water system will have an excellent source of water. The surface water source could be maintained as a back-up system when power failures occur or when the pumps are inoperable due to maintenance. An uninteruperable power source (ups) will be installed at the UV purifiers to keep the UV system working during power failures.


CHLORINATION UNIT
TURBIDITY METER AND
SHUT OFF CONTROL
MAX T= 25 NTU
FLOAT VALVE
EFFLUENT CONTROL
SLOW SAND
FILTER
RAW WATER
BOOSTER PUMP
TO 45,000 GAL
STORAGE TANK
INFLUENT
CONTROL AND
STILLING BASIN
CONTROL VALVE
KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII
PROCESS DIAGRAM
SLOW SAND FILTER
FIGURE 9



REF. "Keanae Exploratory Well,Keanae Well 5108-01,Maui", Circular C95, Department of Land and National Resources Division of Land and Water Development, State of Hawaii May 1984.

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

WATER SYSTEM IMPROVEMENTS
GROUNDWATER WELL

FIGURE 10

G. ALTERNATIVE SITES

Sites for the location of the surface water treatment facilities included the following areas:

1. The Keanae Valley Lookout parking lot area.
2. The vicinity of the existing ultraviolet light purifier site.
3. The future County park property above Keanae School.

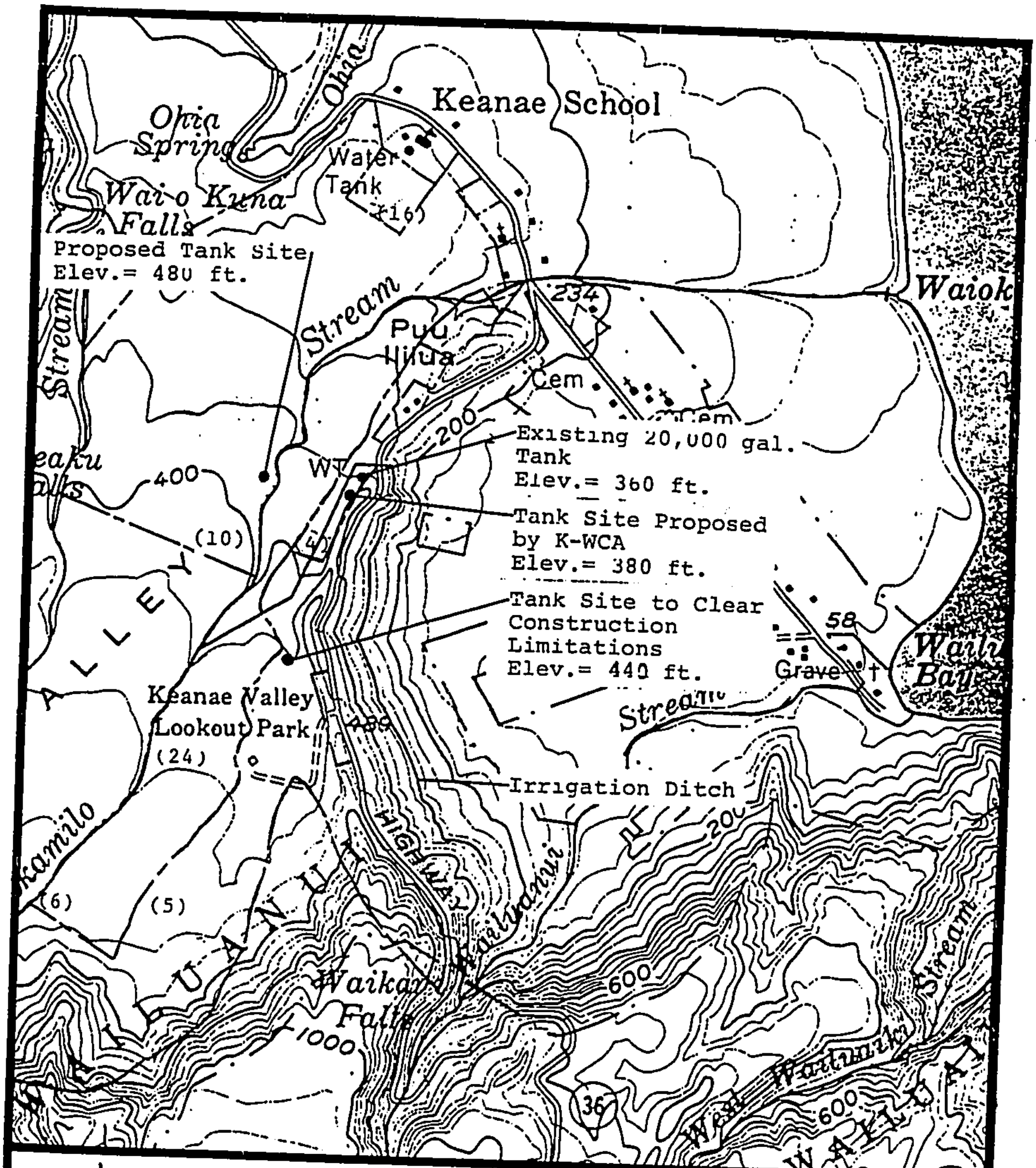
Sites for the location of the well included the future County park property above Keanae School and the vicinity of the existing ultraviolet light purifier site.

In the engineering study the site for the 45,000 gallon storage tank was at the site of the existing 20,000 gallon tank. However subsequent study of the area indicates that the new proposed 50,000 gallon tank would be better situated in the property above the school and future park site.

The environmental impacts of the well and tank sites are identified and evaluated in Section V of the EIS.

H. USE OF PUBLIC FUNDS OR LANDS

The cost of the proposed actions will be funded by the State and the County.



Keanae School
Ohia Springs
Water Tank
Wai-o Kuna Falls
Proposed Tank Site
Elev.= 480 ft.
Stream
Puu Hilua
234
Cem
Waiok
Existing 20,000 gal.
Tank
Elev.= 360 ft.
WT
400
(10)
Tank Site Proposed
by K-WCA
Elev.= 380 ft.
VALLEY
Tank Site to Clear
Construction
Limitations
Elev.= 440 ft.
58
Wailua Bay
Grave
Keanae Valley
Lookout Park
(24)
Stream
Irrigation Ditch
200
HIGHWAY
(6)
(5)
Waikani Falls
600
1000
36
West Wailuaiki Stream
WAILUANUI
WAILUAIKI
NORTH

Ref. U.S.G.S. MAP, Keanae Quandrangle

0 1000 2000

Scale: 1 inch = 1000 ft.

Keanae Water System

ALTERNATIVE TANK SITES

FIGURE 11

The estimated construction cost of this project is $700,000.

Public land will be used at the well site. The well site is owned by the State but was set aside to the County. The well site will use approximately 6,650 square feet (0.15 Ac) of the 1.01 acre lot. The 6 inch pipe lines will be installed within the Hana Highway rights-of-way which is owned by the State and the Wailua Road which is owned by the County.

I. PHASING AND TIMING

The proposed action will take approximately one year to complete. The construction of this project is expected to start in September 1985. The installation of the 6 inch pipeline in Hana Highway will have to be phased in certain areas where the pipeline crosses the highway.

III. DESCRIPTION OF THE ENVIRONMENTAL SETTING

Keanae is located in the northeast portion of Maui. (See Figure 1, Location Map, Island of Maui). The population of this small agriculture oriented community is presently estimated to be 241. Single-family homes on farms are relatively far apart. Because of the rural, isolated nature of the community, no significant land use and population changes are foreseen. It is projected that by the year 2000, the population will be 374. These figures were calculated based on Section 208 (see Appendix A).

The primary land uses in Keanae are agriculture and forest reserve open space; the Keanae-Wailua area is one of the few major taro cultivation areas in the State. Agricultural products include truck crops, taro, and livestock.

Additional information on the specific project site's environment is provided in Section V.

IV. THE RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

The County's General Plan for the Keanae area shows that the existing uses are likely to continue for many years (Reference 29). That is, Keanae will remain primarily a rural agricultural community with no significant increases in population.

The proposed water system improvements will:

1. improve the quality of potable water;
2. improve the fire protection capability of the system along Hana Highway where the 6 inch water line is installed; and
3. increase the amount of domestic water which will be available to the Keanae community.

Because of Keanae's isolated location and the restrictions established by State and County land use designations and zonings, it is anticipated that these proposed benefits will not act as a catalyst for urban development and/or significant population growth in Keanae.

V. THE PROBABLE IMPACTS OF THE PROPOSED ACTION ON THE ENVIRONMENT

A. INTRODUCTION

The proposed action is to develop a new 8 inch water well, install a new 50,000 gallon storage tank and install approximately 4,600 lineal feet of 6 inch water line. The well site is located on Wailua Road on State land (TMK 1-1-04: 43) in the vicinity of UV purifier facility on the makai side of Hana Highway. The 50,000 gallon storage tank is located on a privately owned lot described by Tax Map Key 1-1-08:10. The elevation of the tank is 380 feet, which will provide adequate pressures to the Keanae School. The 6 inch water lines will be located in Wailua Road, Hana Highway and the private property on which the storage tank is sited.

B. IDENTIFICATION OF PROPOSED ACTION AND SITES

1. Well Site

Tax Map Key: 1-1-4:43 (State of Hawaii)

Owner: State of Hawaii

General Description:

(1) This is located off the Hana Highway at the intersection with the Wailua Homestead Road.

(2) The area is densely vegetated with various plants, (guava), shrubs, and groundcover.

(3) The slope of the land is moderate.

(4) The approximate elevation is 214 feet above mean sea level.

(5) Power and telephone lines are located nearby.

(6) The site is located next to a taro patch

Proposed Action:

The proposed action at this site is to develop the 8-inch well drilled by the Division of Land and Water Development (DOWALD) from the State Department of Land and Natural Resources (DLNR).

The site is adjacent to the Wailua road, at the junction of Hana Highway and the road to Wailua Homesteads. The land is moderately sloping and overgrown with California grass. The development will include well pumps and motors, control building and controls, 10,000 gallon control tank, chlorination system, booster pumps, paving, fencing and other sitework.

Potential Impacts:

Land Modification. Site clearing and grading is necessary. However, the small area affected should have minimal impact on the area's geology, topography, and climate.

Soil Erosion. The general soil association on the site is Hana-Makaalae-Kailua Association (Reference 30). The SCS soil classification for the well site is Tropagnepts (TR) which is described as "poorly drained soils that are periodically flooded by irrigation in order to grow crops that thrive in water (taro, rice and watercress). Soil erosion will increase for a short-term period during clearing and construction, until the vegetation grows back. During construction, the rain runoff from the site will follow the natural slope of the ground flowing along Wailua Road and away from the adjacent taro patch and Waiokamilo Stream.

Impact on Water. No impact on other surface waters or ocean water is foreseen. The source of the water is the basal lens and will not affect any spring streams.

Based on the opinion of the consulting hydrogeologist, no impact on recharging of groundwater is anticipated.

Drinking water quality in terms of turbidity will improve with use of groundwater.

Based on the preliminary evaluation of the consulting hydrologist, the well is not expected to adversely affect the groundwater aquifer. 72 hour pump tests conducted by the DLNR indicated that the well is capable of pumping 300 gpm without significant drawdown and rapid recovery of the

water level indicating a large supply of basal water.

Impact on Air Quality. Dust for a short-term period will occur (due to site clearing and construction). This would cause a temporary nuisance to nearby residents. No long-term air pollution impact is foreseen.

Impact on Ambient Noise Levels. Again, short-term impacts related to site clearing and construction may be annoying to nearby residents. Operations from any of the three possible sites, will be minimal and should be undetected by nearby residents.

Impact on Flood Hazard. The project site is located in an area where Flood B flooding could occur. Flood B flooding areas are between the limits of the 100 year and 500 year floods or certain areas subject to 100 year flooding, with average flood depth less than one foot. This classification should not have any impact on the operations of the well.

Impact on Flora and Fauna. The site and surrounding area contains common plants and fauna. There are no known endangered plants or animals in the project site or the adjacent area. Impact on the flora and fauna is expected to be minimal because of the small area involved. The County will request the State Department of Land and Natural Resources, Division of Fish and Wildlife to conduct a survey of the areas affected before construction starts.

Impact on Land Use. The land is designated agricultural. The use of the site for a public facility is consistent with this designation. The site is presently unused land; no active agricultural uses will be affected if this site is selected for any of the alternatives.

Impact on Recreation. There is no existing or future recreational use associated with the project site.

Impact on Views and Aesthetics. The site will not be visible from the Hana Highway, since it is lower in elevation than the highway. The well site will be screened by a hedge to reduce the visual impact of the well piping and storage tank.

Impact on Archaeological or Historical Sites. A reconnaissance survey and records search of the well site recently conducted by the County's Planning Department indictated no prehistoric structures or artifacts were found on the ground surface of this area (Reference 33). No historical sites are listed at the well location.

Impact on County Expeditures. The estimated construction cost of this is estimated at $320,000. The State will fund the construction cost however the County will fund the construction inspection service and any contingency that may arise during construction.

Impact on Utilities. Power and telephone service is available next to the site.

Impact on other Socioeconomic Aspects: Because of the nature of this project, other socioeconomic aspects which normally are evaluated by an EIS are not relevant to this project. These aspects include: accessibility to commercial areas and medical facilities, transportation networks, cultural patterns, fire and police services (a e.g., response from the Maui County Police Department indicated that the project will not effect police services).

2. 50,000 Gallon Tank Site

Location: Above future County Park property, adjacent to Waiokamilo Stream.

Tax Map Key: 1-1-08:10

Owner: Various Private Owners w/undivided interest

General Description:

(1) The site is located approximately 2600 feet makua of Hana Highway.

(2) The site is just off the side of the existing dirt access road. The tank will be located in a clearing surrounded by heavily vegetated area comprised of hau, guava, mango and other common trees, shrubs and grass.

(3) The new storage tank will be located approximately 50 ft from the top of the stream bank.

(4) The elevation is approximately 380 feet above mean sea level.

(5) Power (electricity) and telephone utilities are available along the Hana Highway within 2,600 feet

from the project site.

(6) The site location is not visible from Hana Highway.

Proposed Action: The new 50,000 gallon water storage tank will be located at this site and will provide adequate storage for peak demand and fire protection. The location of the tank is centrally located hydraulically in the water system and will respond better to sudden high demands, such as time demand which may be 500 gpm for 2 hours.

Potential Impacts:

Land Modification. The land will be modified by site clearing and grading for the facilities. Because of the small size of the project site (10,000 square feet), the impact on the area's geology, topography, and climate is expected to be negligible.

Soil Erosion. The general soil association on the site is identified as Hana-Makaalae-Kailua association (Reference 30). This soil association is described by the Soil Conservation Service (SCS), U.S. Department of Agriculture as:

> "Moderately deep and deep, gently sloping to steep, well-drained soils that have a moderately fine textured or fine textured subsoil or underlying material; on intermediate uplands."

SCS soil classification for the site is Stoney Alluvial Land (rSM). Any ground clearing will make the site more susceptable to soil erosion. Such an impact will likely be of a short-term nature affecting only the specific project site until vegetation has grown back; long-term adverse impact on the area. During construction, soil erosion would be mitigated by the contractor using soil erosion control measures such as screens to reduce the amount of silt that may enter the stream during rainy periods.

Impact on Water. The proposed use of the site will be to provide storage of treated water for the peak and fire demands of the system. Because demands on the source will increase due to the population increase projected, more water will be required but with the new groundwater source, less water will be taken from Wailuanui Stream for domestic consumption only during the period the well is out of service.

Impact on Air Quality. During construction, some impacts relating to land clearing and hauling traffic will occur. The hauling of construction materials, use of unpaved access road to the site, land clearing, grading etc., will create dust. This will be a short-term adverse impact. The land clearing portion of the construction will likely be completed within four weeks.

Long-term impact on air quality is anticipated to be minimal. The dust created by cars going to and from the facility should not be significant. Also, the carbon monoxide produced by these vehicles would not be significant because of the temporary nature of the activities for the project in this community.

Impact on Ambient Noise Levels. Noise in this type of agricultural area is normally below 45 dB (decibels), compared to a normal suburban residential area, which has a typical dB range of 53 to 57, and an urban residential area which has a typical dB range of 58 to 62.

The construction of the reservoir will create higher noise levels (construction equipment such as tractors, backhoes, graders create noise levels of between 72 to 95 dBA at 50 feet). The site is approximately 0.5 miles from Hana Highway therefore, the construction noise will not bother any residents. The heavy vegetation surrounding the construction site will also absorb some of the noise. After completion of the project, there should be no significant extraneous noise levels due to project - derived sources that can be perceived by the adjacent residents.

Impact on Flood Hazard. This site is not located in an area of flood hazard.

Impact on Flora. This is located in an area that is classified as a closed guava forest with shrubs. The common vegetation includes guava (Psidium guajava L.), Hilo grass (Paspalum conjugatum), basket grass (Oplismenus hirtellus), kukui trees (Aleurites moluccana), Boston fern (Nephrolepis), hala (Pandanus odoratissimus), hau (Hibiscus tiliaceus) and false staghorn fern (Dicranopterius linearis). These are commonly found throughout this area. There are no known plants which are rare or endangered on the project site or in the vicinity. The proposed tank site is located in a clearing where the existing dirt road passes through. Thus, the clearing of the vegetation (mainly grass) for the 50,000 gallon water tank will not significantly or adversely impact the flora.

Impact on Fauna. Fauna in the area is likely to include mice, rats, mongoose and a variety of birds (see Table 3). These are commonly found in the area and their displacement or possible destruction will not significantly affect the environment. There are no known endangered species of fauna in the project site or surrounding areas. It is anticipated that once the project is completed and the vegetation grows back, the resident birds will once again return to the area.

Impact on Land Use. The land is designated agricultural. The use of this small area for this purpose is considered a valid public facility, and such use is not anticipated to

TABLE 3
AVIFAUNA IDENTIFIED IN THE KEANAE AREA

Common Name	Scientific Name
Cardinal	Cardinalis cardinalis
Barred Dove	Geopelia striata
I'iwi	Vestiaria coccinea
Mockingbird	Mimus polyglottos
Mynah	Acridotheres tristis tristis
Pueo	Asio flammeus sandwichensis
Ricebird	Lochura punctulata
House Sparrow	Passer domesticus
White Eye	Zosterops j. japonicus
Spotted Dove	Streptopelia chinensis

Source: Atlas of Hawaii, University of Hawaii at Manoa, Department of Geography, 1973.

Other Sources: Hawaiian Birdlife, Andrew J. Berger, 1972. Literature Review and Synthesis of Information of Pacific Island Ecosystems, U.S. Department of the Interior, Fish and Wild Life Service, 1979.

create a catalyst for rapid population growth or expansion in the surrounding area or community. The development of this water supply project is for the existing population and projected population growth over a twenty year period.

Impact on Agricultural Lands. The project will not have an impact on lands that are presently cultivated. The present area is not under cultivation. The tank site will eliminate cultivation of 0.23 acres of potentially productive agricultural land.

Impact on Recreation. There is no present or planned use of the site for recreational purposes.

Impact on Views and Aesthetics. The site is not visible from the Hana Highway and will be screened by the existing forest impact on view and aesthetics will be small.

Impact on Archaeological or Historical Sites. A recent reconnaissance survey and records search conducted by the County's Planning Department indicated no archaeological sites within the area of the proposed tank site and the 6-inch water line alignment (Reference 29). An unrecorded structure was located approximately 250 paces (about 750 feet) west of the tank site. Construction activities of the tank site will not disturb this structure. No historical sites are listed near the proposed tank site.

Impact on State-County Expenditures. Installation of the new water tank will cost approximately $150,000. The state will provide the construction money while the County will acquire the land, fund construction inspection services, and fund contingencies which may arise during construction.

Cost to the Maui County Water Users. The proposed action may result in an increase in water charge to the overall water users of the County. The County must pay for a portion of these improvements; to cover this cost, the County may charge the users of the total County water system. The need for improving water quality is mandated; thus the increased water charge seems unavoidable.

Impact on Utilities. Telephone wire service will be needed for the operation of the control and recording systems. Telephone service must be provided by extending the telephone line to service the site.

Impact on Other Socioeconomic Aspects. The proposed tank site requires 0.23 acres of land area and is located on private property (TMK 1-1-08: 10) with a total of 104.05 acres. The tax map indicates that 100.445 acres are owned by 19 known owners and 3.625 acres are owned by unknown owners. The County of Maui will have a title search made to identify all the registered owners of the land before proceeding with the eminant domain action. The interests of the owners range from 0.076 acres to 62.43 acres, with East

Maui Irrigation, Ltd. (EMI) having the largest share. In May 1984, the County Council passed a resolution to approve the acquisition of a portion of the property by eminant domain. During the hearings, the County indicated that it will negotiate with EMI to have the reduction in land taken from their interest in the property without affecting the interests of the smaller landholders and that the County will not begin the eminant domain proceedings until the EIS was accepted. In the event that the County cannot acquire the land from EMI's interest, the land reduction has to be apportioned among all the owners. Table 4 shows the amount of land reduction for each owner listed on the tax map. The reductions range from 0.000 acres for the smallest interest to 0.138 acres for the largest parcel.

The Keanae Wailua Community Association has expressed opposition to the taking of private property from the owners of their parcel. Their concern centers on the eminant domain proceedings where a lengthy quite title proceeding is expected and the owners will have to show proof of their title in this land. The association feels that since many of the titles are not clear because of "unprobated estates," some owners may have to expend a large sum of money to hire attorneys to prove their titles. Owners with the proper documentation will have no problems with their claims.

TABLE 4

REDUCTION OF OWNER'S INTEREST IN PROPERTY (TMK 1-1-08: 10)

	OWNER		PERCENT INTEREST ACRES	% INTEREST	REDUCED ACREAGE	ADJUSTED ACREAGE
1.	EMI		62.430	60.000	0.138	62.292
2.	Mary Kaaihue & Henry Keola		2.000	1.922	0.004	1.996
3.	Henry B.A. Kahiamoe, dec'd		2.500	2.403	0.006	2.494
4.	Wananalua Church		7.840	7.535	0.017	7.823
5.	C. Aikae Manaole		2.614	2.512	0.006	2.608
6.	Frank Kaauamo & wife, Julia		3.000	2.883	0.007	2.993
7.	Magoon Estate, Ltd.		10.455	10.048	0.023	10.432
8.	Margaret S. Ching		1.000	0.961	0.002	0.998
9.	Mrs. Ella Ako Morton, Est.		0.076	0.073	0.000	0.076
10.	Kaimi Kaaihue		0.500	0.480	0.001	0.499
11.	Helen Q.S. Akiona		1.000	0.961	0.002	0.998
12.	James H. Flores		2.09	2.009	0.005	2.085
13.	Lyons Akina & Andrew Akina	1/3				
	Paul Young & Joe Young	1/3	2.09	2.009	0.005	2.085
	Victoria Kanoa & hsb., Isaac	1/3				
14.	Solomon Kaauamo, Jr. & wife		1.705	1.639	0.004	1.701
15.	Abraham Kahookela		0.500	0.480	0.001	0.499
16.	Unknown Owners		3.625	3.484	0.008	3.617
17.	Henry Higgins		0.625	0.601	0.001	0.624
			104.05	100.00	0.23	103.82

Impacts on the other socioeconomic aspects are the same as mentioned in the proposed well site.

C. ALTERNATIVE SITES CONSIDERED

1. Well Site

Location: Future County Park

Tax Map Key: 1-1-8:16

Owner: County of Maui

General Description:

(1) The well site is located about 670 feet from Hana Highway.

(2) The site would be located behind Keanae School's playground.

(3) The area is gently sloping and lies approximately 290 feet above mean sea level

(4) The site is in a forested area.

(5) Electrical power is available along Hana Highway.

This alternative site (TMK: 1-1-8: portion of 16) is a future County park, located above Keanae School and adjacent to the playground area. The well is expected to tap basal water although perched water may be in the area.

Potential Impact:

The impact would be about the same as described for the selected well site. Overall, this means that there would be short-term site clearing and construction impacts (dust and noise) which would affect the school and adjacent residents.

Long-term impacts would be minimal. The advantage in using this site for well development is its accessibility (through the school) and the owner is the County of Maui (requiring no purchase of the land or request to the State for use of the land).

2. Tank Site

Location: Vicinity of the existing 20,000 gallon redwood storage tank

Tax Map Key: 1-1-08:4 (Portion of) (Private)

Owner: Various Private Owners

General Description:

(1) The site is located on the mauka side of Hana Highway.

(2) Above the storage tank is a densely vegetated area comprised of hau, guava and other trees, and shrubs. Below the storage tank, banana trees and taro patches are being cultivated. An irrigation ditch, diverting water from Waiokamilo Stream runs nearby.

(3) The storage tank is at the base of a hill that as a slope of about 60 degrees; the ground at the foot of the hill is flat (this is the area of the banana trees and taro patches).

(4) The elevation is approximately 360 feet above mean sea level.

(5) Power (electricity) and telephone utilities are available along the existing paved road within 2500 feet from the project site.

(6) The site location is visible from the Hana Highway.

Potential Impacts:

Land Modification. The land will be modified by site clearing and grading for the facilities. Because of the small size of the project site (17,000 square feet), the impact on the area's geology, topography, and climate is expected to be negligible.

Soil Erosion. The general soil association on the site is identified as Hana-Makaalae-Kailua association (Reference 30). This soil association is described by the Soil Conservation Service (SCS), U.S. Department of Agriculture as:

> "Moderately deep and deep, gently sloping to steep, well-drained soils that have a moderately fine textured or fine textured subsoil or underlying material; on intermediate uplands."

SCS soil classification for the site is "Rough Mountaneous Land (rRt). Any ground clearing will make the site more susceptable to soil erosion. Such an impact will likely be of a short-term nature affecting only the specific project site until vegetation has grown back; long-term adverse impact on the area. During construction, soil erosion would be mitigated by the contractor using soil erosion control measures such as screens to reduce the amount of silt that enters the irrigation ditch or taro patch.

Impact on water, air quality, noise, flood hazard, flora and fauna, land use, recreation, and socioeconomic aspects are the same as the proposed well site.

Impact on Agricultural Lands. The present area is not under cultivation. However, the construction may adversely affect the taro patch located just below the existing 20,000 gallon tank and the irrigation ditch which diverts water from Waiokamilo Stream.

Impact on Views and Aesthetics. The site is visible from the Hana Highway and the heavy earthwork required to install the new storage tank will scar the existing ridge until natural and screen planting can grow.

Impact on State-County Expenditures. Because of the steep and restricted nature of the site, the estimated construction cost would be higher than the selected site. In addition a new access road approximately 0.5 miles will have to be constructed behind the ridge on which Keanae Valley Lookout Park is located. It was estimated the cost of the sitework will be approximately $50,000 more than the selected site.

Impact on Utilities. Telephone will be needed for the operation of the control and recording systems. Telephone service must be provided by extending the telephone line to service the site.

Impact of Socioeconomic Factors. In a preliminary boundary survey, it was found that the existing 20,000 gallon redwood tank lies entirely in the private property described by TMK 1-1-08: 4. Therefore, to construct the storage tank at this location would involve the acquisition of approximately 17,000 square feet of land for the tank site. Presently, the Department doesn't have a formal easement for the existing storage tank on the private property.

A suggestion by the Keanae Wailuanui Community Association to locate the land entirely on State land (TMK 1-1-08: 5) so that no private land would need to be acquired would not work for this general area because the area is enclosed by the knoll and the irrigation ditch diverting water from the Waiokamilo Stream. By locating the storage tank entirely on State land and clearing the limitations of the nearby sites, the elevation of the tank would be approximately 440 feet, which is too high for the present system. (See Figure 11).

Table 5 provides a numerical rating and summary of the potential impacts at the site in view of the above discussion.

D. DISINFECTION

Chlorination will be the means of disinfection used for the groundwater wells. It is commonly used in the disinfection process of water treatment and wastewater treatment plants

TABLE 5

SUMMARY OF ANTICIPATED IMPACTS
AT SITES FOR RECOMMENDED ALTERNATIVE

	A	B	C	D
IMPACTS				
Land Modification	-1	-1	-1	-1
Soil Erosion	-1	-1	-1	-2
Potable Water Quality	+3	+3	+3	+3
Groundwater Aquifer	0	0	0	0
Recharging	0	0	0	0
Air Quality	-1	-1	-1	-1
Noise Levels	-1	-1	-1	-1
Flood Hazard	-2	0	0	0
Flora	0	0	0	0
Fauna	0	0	0	0
Land Use	0	0	0	0
Agricultural Impact	0	0	0	-2
Recreational Lands	0	0	-3	0
View and Aesthetics	-1	0	-2	-3
Utilities (1)	+1	+1	+1	+1
Cost (2)	0	0	0	-1
Socioeconomic	0	-2	0	0
TOTAL POINTS	-2	-1	-5	-7
Historical/Archaeological Sites	NO	NO	NO	NO

Legend:
-3 = Short- and Long-term adverse, unmitigated impact expected.
-2 = Long-term adverse impacts foreseen, some mitigation measures possible.
-1 = Short-term (construction) adverse impacts.
0 = No change anticipated from present impact.
+1 = Short-term benefits anticipated.
+2 = Long-term benefits anticipated.
+3 = Significant short- and long-term benefits foreseen.

(1) Utilities were rated:

+1 = Power (within .5 mile) available
-1 = Power (within .5 mile) unavailable

(2) Cost were rated:

+1 = Lowest cost
0 = Median costs
-1 = Highest cost

A Proposed Well Site - Vicinity of UV purifier
B Proposed Tank Site - Private property near Waiokamilo Stream
C Alternate Well Site - Future County Park
D Alternate Tank Site - Existing 20,000 gallon tank

(Reference 31). A chlorine residual can be maintained to give the system a means of long-term disinfection and its effectiveness can be measured by measuring the level of the residual.

The form of chlorine used will be gas and it will be stored in steel cylinder containers. The hazards of chlorine are well known (Reference 32). The gas is primarily a respiratory irritant, and concentrations in air above 3 ppm by volume can usually be detected by most people. Chlorine causes irritation of the skin, mucus membranes and the respiratory system. Chlorine produces no known cummulative effects and complete recovery can be expected to occur shortly following mild, short term exposures. The Department of Water personnel are trained in the safe handling and storage of chlorine.

The chlorine gas will be injected into the well water as it is pumped from the well and before it enters the control tank. The chlorination equipment will control the rate of chlorine injection. The gas will be released in the water at a concentration of about 1.5 mg/l and only when the water is being pumped. The control tank will also provide the necessary contact time to disinfect the well water. A safe residual for complete destruction of bacteria after 10 minutes contact time would be about 0.2 mg/l (Reference 17).

VI. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed improvements at the well site and the proposed 50,000 gallon storage tank site will not have significant long-term environmental impacts. Temporary impacts such as fugitive dust, potential soil erosion, and noise will occur during the construction period. After construction and replanting vegetation, no further adverse impacts are anticipated. Although some land will be acquired by the County for the water tank, no families will have to be relocated. The amount of land involved in the acquisition will be 0.23 acre from a 104.05 acre parcel. In addition, the County will have to obtain easements for the access road and the pipeline and for the overflow line from the tank to the top of the stream bank.

VII. ALTERNATIVES TO THE PROPOSED ACTION

A Preliminary Engineering Report on the Keanae Water System Improvement studied various alternate solutions to provide potable water in conformance to the applicable drinking water standards (Reference 15). Alternatives were classified by the type of water supply source - surface water only, groundwater only and combination of surface and groundwater. The alternatives involving surface waters were further divided into treatment methods for turbidity using pressure filtration (centrifugal separator/cartridge filters), slow sand filters, or a package water treatment plant. All alternatives proposed to replace the existing 20,000 gallon redwood tank with a new 45,000 gallon tank to meet storage and fire protection requirements.

The package water treatment plant (PWTP) was eliminated early on as an option because of its cost and because sludge disposal was a problem for this area which has no nearby landfill. Also, the Department of Public Works would not permit the disposal of sludge from a PWTP in a public landfill. These alternative was included for cost comparison with the other treatment methods.

Having two separate sources of water for the Keanae Water System would make the system more flexible, so that during high turbidity periods if the filters become clogged or cannot handle the turbidity load, or in the times of low

flow, the groundwater well could be used which in turn will allow more surface water to remain in the stream for agricultural or other uses. Therefore, based on cost and added flexibility to the water system, the separator/cartridge pressure filtration and the well was recommended be located either at the vicinity of the UV purifier facility or the County park property. The final location depended on the drilling and testing of the exploratory well.

In late 1983, the County installed multimedia pressure filters upstream of the UV purifiers and have been monitoring the filter's performance in reducing turbidity. At time, the reduction of turbidity has not met the drinking water standards. In early 1984, the State DLNR had successfully drilled and tested an exploratory well on the State land near the UV purifier facility. The development of this well will provide the Keanae Wailua Communities with potable water in conformance to the drinking water standards. Then once the filtration of the surface water source is rectified, it can be used as a back up source to the groundwater.

VIII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed project will be beneficial to the public health and welfare of the people in the Keanae area. The groundwater well will provide good quality potable water, a consistent source of water, and the new 50,000 gallon storage tank will meet emergency fire flow storage requirements and pressures especially to the Keanae School. The area is isolated and rural and significant future growth (in population or economic activity) is not anticipated. Based on the review of the project objectives, the environmental and socioeconomic impacts, it was found that the proposed actions will enhance the short- and long-term uses of man's environment with little physical, socioeconomic, and land use impacts.

IX. MITIGATION MEASURES PROPOSED TO MINIMIZE ADVERSE IMPACTS

For the proposed action, only short-term construction related impacts are anticipated. Subsequently, the Contractor will be required to adhere to the County's grading regulations and good construction practices (e.g. no excessive gunning of equipment to avoid excessive noise or wetting down the area to control dust). Screen planting around the well site will reduce negative visual impacts. The storage tank site will not be visible from the Hana Highway.

During construction of the pipeline on the Hana Highway, traffic will be slowed by the rerouting of the traffic around the work areas. Heavy equipment required for the construction will be moved only during non-peak traffic hours. The public will be notified when construction on Hana Highway is to begin.

Chlorinated water will be stored in both the 10,000 gallon and 50,000 gallon tanks. These tanks may at times overflow should there be a malfunction of the pump shut-off switch. Residents of the Keanae-Wailua Community expressed concern on the effects chlorinated water may have on the stream life (Waiokamilo Stream) and the effects it may have on the taro. Since the well water is very clean and clear, the amount of chlorine will be small. For disinfection purposes within

the distribution a residual chlorine content of 0.2 mg/l shall be maintained at the proposed storage tanks. To mitigate this concern, the design of the overflows from the tanks were made such that the amount of chlorinated water that will be emptied into the stream will be minimal or none at all. At the well site, the tank overflow water will be piped back to the well. At the 50,000 gallon tank site, the controls for the pump shut off has a secondary switch. Normally, the booster pumps would be turned off by the high water float switch. In addition, an altitude valve has been added to control a pressure switch such that if the water level rise two feet above the high water float switch, the pressure switch will turn off the booster pump motor before the water level rises to the overflow pipe elevation. In the event the secondary switch fails, the overflow will be piped to a sump built in the outlet structure where some of the water can trickle into the ground. When the sump overflows and leaves the outlet structure, the water will flow in a grassed lined swale to the bank of the stream, then over the bank and into the stream. The residual free chlorine will be dissipated by aeration and reaction with organic materials on the ground.

To minimize the impact of the eminant domain action on the owners with small interests in parcel 10, the County has negotiated with EMI and EMI has agreed in principle to have the entire 0.23 acres required for the proposed tank site to be taken from their interest of 62.43 acres.

X. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED IN THE PROPOSED ACTIONS

The proposed action will result in the commitment of land, groundwater, and labor. The total land committed would be approximately 16,650 SF of which 6,650 SF at the vicinity of the ultraviolet light purifier and 10,000 SF at the new tank site. The 10,000 SF of land at the groundwater is a renewable resource. The DLNR testing of the well indicate the basal water source to be able to safely produce excellent quality water at a rate more than the required 100 gpm. Approximately 28,000 gallons per day (present maximum day demand) would be utilized; by the year 2000, about 44,000 gallons per day (maximum day demand) would be used. Based on the hydrogeologist report, the quality and quantity of groundwater in this area should satisfy the present and future demands for Keanae. Finally, labor by construction workers and periodic inspection by the County water personnel will be carried out. Personnel from the Department of Water Supply at Hana can be used for inspections, and all labor utilized will be compensated.

These resources will be committed and used for the proposed action. As consumption of resources are normal; no other significant or unique impacts are foreseen.

XI. AN INDICATION OF WHAT OTHER INTERESTS AND CONSIDERATIONS OF GOVERNMENTAL POLICIES ARE THOUGHT TO OFFSET THE ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

Water Quality. The Federal And State laws concerning the Safe Drinking Water Standards are requirements of water suppliers to provide their consumers with water that is beneficial to the public health and welfare. These standards include maximum contaminant levels (MCL) on primary contaminants which the supplier is mandate to meet. The Federal Standards on MCL for secondary contaminants are for the aesthetic quality of water (odor, taste, appearance) and are not mandatory as the MCL for primary contaminants. The State have not adopted standards for secondary contaminants.

Environmental Protection. The laws and regulations concerning the effects of the project on the environment are included in the State Environmental Impact Statement process covered in HRS Chapter 343 and other related Environmental Quality laws.

Land Use. The State Land Use regulations are used to control the type of projects constructed in an area so that it conforms to the planned land use. For small land areas, the County Planning Commission will approve the Special Use Permit for uses which do not conform to specified uses in a certain district. In this project, the water supply storage

tank for domestic water supply is a non conforming use.

Design and Construction. Rules and Regulations of Water Supply Standards, the Uniform Building Code, and the Grading Ordinance are to insure that a design and construction of the proposed facilities meet the construction standards of the County and the grading ordinance specifies that the Contractor controls erosion during construction.

Table 6 on the following page identifies the governmental laws and regulations which must be complied with prior to or during the implementation of the proposed action.

It is believed that should the proposed action take place, the impacts will be minimized by following these regulations.

TABLE 6

GOVERNMENTAL LAWS AND REGULATIONS AFFECTING THE PROPOSED ACTION

	FEDERAL	STATE	COUNTY
LAWS STATUTES ORDINANCES	PL 95-523: Safe Drinking Water Act	Chapter 340 E: HRS, Safe Drinking Water Act	None
REGULATIONS	The National Interim Primary Drinking Water Regulations (with Amendments)	Chapter 20, to Title 11, Department of Health Potable Water Systems	Rules and Regulations of the Department of Water Supply
STANDARDS	National Secondary Drinking Water Regulations		
REGULATIONS	The Clean Water Act; The Clean Air Act; The Noise Control Act; The Resource Conservation & Recovery Act; The Water Quality Management Act; The Water Pollution Control Act of 1972	Chapter 342: HRS Environmental Quality Chapter 343: HRS Environmental Quality Commission & EIS Chapter 344: (Sec 208) State Environmental	State Zoning Requirements Apply

TABLE 6 Continued

	Rules of Practice and Procedure and District Regulations	Special Use Permit (Agricultural District) County Planning Commission for uses other than Agricultural Purposes
STANDARDS		Grading Ord.
		Department of Water Supply System Standards
		Uniform Building Code

XII. ORGANIZATIONS AND PERSONS CONSULTED DURING THE EIS CONSULTATION PERIOD

Table 7 identifies the agencies and individuals receiving a copy of the Draft EIS Preparation Notice. A total of 40 government agencies and community groups were contacted. Additionally, three (3) agencies/individuals requested status as "consulting parties". Thirteen (13) responses were received on the Draft EIS Preparation Notice, of these six (6) had substantial comments) were responded to and copies are included in Section XIII.

TABLE 7

KEANAE WATER SYSTEM IMPROVEMENTS
ORGANIZATIONS AND PERSONS CONSULTED DURING EIS
CONSULTATION PERIOD

Agency	Date Notice Mailed	Date of Comment	Date of Response
City and County of Honolulu			
Department of Land Utilization	3/06/81	--	--
State of Hawaii			
Office of Environmental Quality Control, Department of Health	3/06/81	--	--
Department of Agriculture	3/06/81	3/24/81	4/10/81
Department of Accounting and General Services	3/06/81	3/19/81 **	--
Department of Land and Natural Resources	3/06/81	--	--
State Historic Preservation Officer, DLNR	3/06/81	--	--
Department of Health	3/06/81	--	--
Department of Planning and Economic Development	3/06/81	4/02/81 **	--
Department of Transportation	3/06/81	4/02/81	4/10/81
Environmental Center, UH at Manoa	3/06/81	--	--
Water Resources Research Center, UH at Manoa	3/06/81	--	--
Senator Gerald K. Machida	3/06/81	--	--
Senator Mamoru Yamasaki	3/06/81	--	--
State Representative William W. Monahan	3/06/81	--	--
State Representative Herbert J. Honda	3/06/81	--	--
State Representative Anthony T. Takitani	3/06/81	--	--
State Representative Mark J. Andrews	3/06/81	--	--

TABLE 7 (continued)

	Date Notice Mailed	Date of Comment	Date of Response
Federal			
U.S. Environmental Protection Agency	3/06/81	3/17/81	4/10/81
U.S. Army Corps of Engineers, DOA	3/06/81	3/31/81	4/10/81
Geological Survey, Water Resources Division	3/06/81	--	--
U.S. Department of Agriculture, Soil Conservation Service	3/06/81	--	--
Fish and Wildlife Service, Division of Ecological Services	3/06/81	--	--
County of Maui			
Hana Soil Conservation Service	3/06/81	--	--
U.S. Dept. of Interior, Haleakala National Park	3/06/81	3/17/81	4/10/81
Office of the Mayor	3/06/81	--	--
County Council	3/06/81	3/11/81 **	--
County Clerk	3/06/81	3/20/81 **	--
Department of Parks and Recreation	3/06/81	--	--
Department of Public Works	3/06/81	3/18/81 **	--
Office of Economic Development Agency	3/06/81	3/16/81 **	--
Planning Department	3/06/81	3/12/81 **	--
County Fire Department	3/06/81	--	--
Police Department	3/06/81	3/23/81	4/10/81
Utilities			
Maui Electric Company, Ltd.	3/06/81	--	--
Hawaiian Telephone Company-Maui	3/06/81	--	--
Other Organizations			
Keanae Community Association	3/06/81	--	--
Keanae Taro Growers Association	3/06/81	--	--
The Sierra Club *	3/18/81	--	--
Brock and Associates *	3/24/81	4/01/81	4/10/81
EDAW *	3/30/81	--	--

* Requested Consulting Party status.

** No Comment Response

XIII. REPRODUCTION OF COMMENTS AND RESPONSES MADE DURING THE CONSULTATION PROCESS

The written letters commenting on the EIS Preparation Notice and the written responses provided back to the reviewers (on substantial comments) are included in this section. These copies were reduced to half-size from the actual copies and are provided in chronological order as shown on Table 8.

TABLE 8
REPRODUCTION OF COMMENTS AND RESPONSES MADE
DURING THE CONSULTATION PROCESS

Pages 75 to 87 contain reduced size copies of the comments and responses to the comments during the EIS Consultation Period. Where a substantial comment was received, the written response immediately follows the letter. The comments/responses are provided in the following order:

TABLE 8 (Continued)

Agencies Having Comments and Receiving Written Responses:

COUNTY COUNCIL
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII

RECEIVED
Sam O. Hirota, Inc./Tox.
By

March 11, 1981

Mr. Dennis I. Hirota, Ph.D., P.E.
Vice President
Sam O. Hirota, Inc.
345 Queen Street - Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

Your notice regarding Environmental Assessment/EIS Preparation Notice for (1) Hana Water System Improvements; (2) Keanae Water System Improvements; (3) Kaupo Water System Improvements; has been received.

Your notice will be placed on the Council's March 20th Agenda, and referred to the appropriate committee for review and discussion.

Should you have any comments or questions, please let me know.

Yours sincerely,

BOB NAKASONE
COUNCIL CHAIRMAN

BN/lc

APR - 9 1981

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RECEIVED
Sam O. Hirota, Inc./Tox.
By

March 12, 1981

Mr. Dennis I. Hirota, Ph.D., P.E.
Vice President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

RE: ENVIRONMENTAL ASSESSMENT/EIS PREPARATION NOTICE FOR
(1) HANA WATER SYSTEM IMPROVEMENTS
(2) KEANAE WATER SYSTEM IMPROVEMENTS
(3) KAUPO WATER SYSTEM IMPROVEMENTS

This acknowledges receipt of your communication dated March 6, 1981, with attachments pertaining to the environmental assessment preparation notices for the various proposed projects as referenced.

Please be advised that we will reserve the right to comment on the final Environmental Impact Statement.

Please call my office should you have any questions.

Yours very truly,

TOSH ISHIKAWA
Planning Director

MAR 20 1981

HANNIBAL TAVARES
Mayor

FRED MATSUMOTO
Coordinator

COUNTY OF MAUI
DEPARTMENT OF ECONOMIC DEVELOPMENT
WAILUKU, MAUI, HAWAII 96793
TELEPHONE 244-7710

March 16, 1981

RECEIVED
1981
Sam O. Hirota, Inc./Tes.
By

Mr. Dennis I. Hirota, Ph.D., P.E.
Vice President
Sam O Horita, Incorporated
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

Subject: Environmental Assessment/EIS
Preparation Notice for the Hana, Keanae,
and Kaupo Water System Improvemtns.

The Department of Economic Development have reviewed the subject Environmental Assessment and Impact Statement and find that, in general it has adequately identified and assessed the major environmental impacts which can be anticipated to result from the proposed project.

We have no other comments to offer at this time, however, we thank you for the opportunity to review the Environmental Assessment/EIS Preparation Notice.

Sincerely,

FRED MATSUHOTO
Economic Development
Coordinator

cc: Mr. Bill Haines

APR - 9 1981

HANNIBAL TAVARES
Mayor
RALPH HAYASHI
Director of Public Works
SAMUEL MATSUO, Ph.D.
Deputy Director of Public Works

DIVISIONS
Engineering
Highway Construction and Maintenance
Land Use and Codes Enforcement
Waste Management

RECEIVED
COUNTY OF MAUI Sam O. Hirota, Inc./Tes.
DEPARTMENT OF PUBLIC WORKS
By
200 South High Street
Wailuku, Maui, Hawaii 96793

MM-470

March 18, 1981

Dr. Dennis I. Hirota
Vice President
Sam O. Hirota, Inc.
345 Queen St., Suite 500
Honolulu, HI 96813

Dear Dr. Hirota:

SUBJECT: ENVIRONMENTAL ASSESSMENT/EIS PREPARATION NOTICE FOR
1) Hana Water System Improvements
2) Keanae Water System Improvements
3) Kaupo Water System Improvements

Thank you for the opportunity to comment on the above subject matter.

We have reviewed your submittal and have no comments to offer.

Very truly yours,

Ralph Hayashi
Director of Public Works

DH:ym

MAR 24 1981

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
DIVISION OF PUBLIC WORKS
P. O. BOX 119, HONOLULU, HAWAII 96810

PRICE MURAKAMI
COMPTROLLER

MIKE M. TOKUNAGA
DEPUTY COMPTROLLER

IN REPLY REFER TO (P)1262.1

RECEIVED
MAR 23 1981
Sam O. Hirota, Inc. (Hawaii)
By_____

MAR 19 1981

Dr. Dennis I. Hirota
Sam O. Hirota, Inc.
Suite 500
345 Queen Street
Honolulu, Hawaii 96813

Dear Dr. Hirota:

Subject: Environmental Assessment/EIS
Preparation Notice for
(1) Hana Water System Improvements;
(2) Keanae Water System Improvements; and
(3) Kaupo Water System Improvements

We have reviewed the subject documents and do not have any comments on the subject improvements.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

MI:jm

MAR 24 1981

JAMES S. USHIJIMA
County Clerk

MANUEL N. ORTIZ
Deputy County Clerk

OFFICE OF
COUNTY CLERK
200 SOUTH HIGH STREET
WAILUKU, HAWAII 96793

RECEIVED
MAR 24 1981
Sam O. Hirota, Inc. (Hawaii)
By_____

March 20, 1981

Dr. Dennis I. Hirota
Vice President
Sam O. Hirota, Inc.
345 Queen Street - Suite 500
Honolulu, Hawaii 96813

Dear Dr. Hirota:

Your memorandum dated March 6, 1981, concerning the EIS preparation notice for the Hana, Keanae, and Kaupo water systems improvements, was presented to the Council of the County of Maui on March 20, 1981, and referred to its Planning Committee for attention..

Very truly yours,

JAMES S. USHIJIMA
County Clerk

/lye

MAR 24 1981

DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

April 2, 1981

Ref. No. 2944

RECEIVED
APR - 7 1981
Sam O. Hirota, Inc./Tes.
By_____

Dr. Dennis I. Hirota
Vice-President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Dr. Hirota:

SUBJECT: Environmental Assessment/EIS Preparation Notice for:
(1) Hana Water System Improvements
(2) Keanae Water System Improvements
(3) Kaupo Water System Improvements

We have reviewed the above documents and find that they have adequately assessed the major environmental impacts which can be anticipated from the implementation of these projects.

Thank you for the opportunity to review and comment on this matter.

Sincerely,

Hideto Kono

cc: Office of Environmental Quality Control
Department of Water Supply, County of Maui

APR - 9 1981

The Sierra Club
Maui Group, Hawaii Chapter
P. O. Box
Haiku, Maui, Hawaii 96708

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

Dear Mr. Morita:

Please list this organization as a consulted party in the preparation of environmental impact statements for the following projects:

Kaupo Water System Improvements
Keanae Water System Improvements
Wailua-Hana Water System Improvements, all County of Maui Department of Water Supply. Please send copies of Preparation Notices, subsequent Draft EIS's, and other relevant documents.

Sincerely yours,

John Bose, II
Maui Group Chairman

ENVIRONMENTAL COMMUNICATIONS INC.

March 18, 1981

Mr. John Bose, II
Chairman
The Sierra Club
Maui Group, Hawaii Chapter
P. O. Box 416
Haiku, Maui, Hawaii 96708

Dear Mr. Bose,

Subject: Environmental Assessment/EIS Preparation Notice for Hana, Kaupo, and Keanae Water System Improvements

We have received your letter of March 12, 1981, requesting copies of the Preparation Notices, Draft EIS's, and other relevant documents regarding the aforementioned subject.

Enclosed please find copies of the Environmental Assessment/EIS Preparation Notice for the Proposed Kaupo Water System Improvements, Keanae Water System Improvements, and Hana Water System Improvements. Your comments on the EIS Preparation Notices are requested on or before April 18, 1981. Comments should be sent to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

We appreciate your interest in these EIS Preparation Notices.

Very truly yours,

F. J. Rodriguez

cc: Sam O. Hirota, Inc. - Ralph Morita

Enclosures

FJR:CKT:pl

1132 BISHOP BUILDING, SUITE 500 • P O BOX 536 • HONOLULU HAWAII 96809 • TELEPHONE (808) 521-6201

BROCK AND ASSOCIATES
SURVEYORS - ENGINEERS - PLANNERS

FILE 7000
March 16, 1981

RECEIVED
MAR 24 1981
Sam O. Hirota, Inc./Tes.
By ____________

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite #500
Honolulu, Oahu, Hawaii 96813

Dear Mr. Morita:

According to the Environmental Quality Commission Bulletin of March 8, 1981, your firm will be preparing Environmental Impact Statements for the following projects:

<u>Kaupo Water System Improvements</u>, Kaupo, Maui

<u>Keanae Water System Improvements</u>, Keanae, Maui

<u>Kailua-Hana Water System Improvements</u>, Hana, Maui

We wish to be granted "consulted party" status during your preparation of the Environmental Impact Statements. Mr. Jim Brock, Senior Principal of our firm, is familiar with all three water systems and will comment on all drafts sent to us.

Thank you in advance for your cooperation.

Very truly yours,
BROCK AND ASSOCIATES

Julie R. Abramson
Julie R. Abramson
Planner

:gka

MAR 24 1981

ENVIRONMENTAL COMMUNICATIONS INC.

F. J. RODRIGUEZ
PRESIDENT

March 24, 1981

Ms. Julie R. Abramson, Planner
Brock and Associates
48 Market Street
Wailuku, Maui, Hawaii 96793

Dear Ms. Abramson,

Subject: <u>Environmental Assessment/EIS Preparation Notice for Hana, Kaupo, and Keanae Water System Improvements</u>

We have received your letter of March 16, 1981 on the abovementioned EIS Preparation Notices. In compliance with your request we are providing you with copies of the Notices for your review and comments. The <u>Environmental Impact Statement Regulations</u> provide a 30-day review period for consulting parties to submit written comments on the EIS Preparation Notice. Therefore, your written comments are due on or before April 24, 1981. Your comments should be sent to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Your prompt review and response will be most appreciated. Your company will be placed on the EIS mailing lists for these proposed projects.

Very truly yours,

F. J. Rodriguez
F. J. Rodriguez

Enclosures

cc: Sam O. Hirota, Inc.

ENVIRONMENTAL
COMMUNICATIONS
INC

March 30, 1981

Ms. Wendy Hee
EDAW
1136 Union Mall, Suite 201
Honolulu, Hawaii 96813

Dear Ms. Hee,

SUBJECT: EIS Preparation Notice for the Proposed Hana Water System Improvements, Keanae Water System Improvements, and Kaupo Water System Improvements

As requested, via your telephone conversation with Ralph Morita of Sam O. Hirota, Inc., we are providing you with copies of the abovementioned EIS Preparation Notices. It is our understanding that should your organization comment on the EIS Preparation Notices, the response will be provided on or before April 7, 1981. Your response should be sent to:

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Thank you for your concern in this matter. Your expeditious response would be most appreciated.

Very truly yours,

F. J. Rodriguez

Enclosures

cc: Department of Water Supply, County of Maui
Environmental Quality Commission
Sam O. Hirota, Inc.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

RECEIVED
APR 3 1981
Sam O. Hirota, Inc./Ie..
By_____

17 MAR 1981

Mr. Ralph Morita
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

Dear Mr. Morita:

The Environmental Protection Agency (EPA) Region IX office has received your letter requesting comments on proposed water treatment plants for Hana, Keanae and Kaupo. The Hawaii State Department of Health has primary enforcement responsibilities (primacy) of the Safe Drinking Water Act (SDWA) and the National Pollutant Discharge Elimination System (NPDES) Program. Thus, any questions or comments regarding water or wastewater treatment plants and their associated permits should be directed to the State Department of Health. By copy of this letter I have taken the liberty of forwarding your request to:

Thomas Arizumi, Chief
Drinking Water Program
Hawaii State Department of Health
P.O. Box 3378
Honolulu, HI 96801
Phone: (808) 548-4682

Sincerely yours,

William M. Thurston
Chief, Water Supply Section
Water Division

cc: Thomas Arizumi, Chief, Drinking Water Program, Hawaii State Department of Health

92

SAM O. HIROTA, INC.

April 10, 1981

Mr. William M. Thurston
Chief, Water Supply Section
Water Division
U.S. Environmental Protection Agency
Region IX Office
215 Fremont Street
San Francisco, California 94105

Dear Mr. Thurston:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your letter of March 17, 1981, informing us of the transfer of the EIS Preparation Notices to the Hawaii State Department of Health. Please note that we have sent copies of the EIS Preparation Notices to that same Department.

We appreciate your interest in this matter.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

APR - 9 1981

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9071

POLICE DEPARTMENT
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

OUR REFERENCE AC/yyc

YOUR REFERENCE

March 23, 1981

Address All Communications to
John S. San Diego, Sr.
Chief of Police
Joseph C. Correa, Jr.
County Chief of Police

Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Attention: Dennis I. Hirota
Vice President

Dear Mr. Hirota:

Please be informed there is no apparent adverse impact on police services relative to the proposed improvements to the Hana, Kaupo and Keanae water systems.

Very truly yours,

JOHN S. SAN DIEGO, SR.
Chief of Police

cc: Board of Water Supply
County of Maui

93

RECEIVED
MAR 2 8 1981
Sam O. Hirota, Inc./les.
By_____

SAM O. HIROTA, INC.

April 10, 1981

Chief John S. San Diego, Sr.
Chief of Police
Police Department
County of Maui
Wailuku, Maui, Hawaii 96793

Dear Chief San Diego:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your letter of March 23, 1981, on the abovementioned EIS Preparation Notices.

The information provided regarding police services will be included in the respective Environmental Impact Statements.

We appreciate your concern in this matter.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

APR - 9 1981

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9871

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

March 24, 1981

MEMORANDUM

To: Mr. Dennis I. Hirota, Vice Pres.
Sam O. Hirota, Inc.

Subject: Environmental Assessment/EIS Preparation Notice
(1) Hana Water System Improvements
(2) Keanae Water System Improvements
(3) Kaupo Water System Improvements

The Department of Agriculture has reviewed the subject assessments and offers the following comments.

We agree with the assessment that there is a need for additional information on potential agricultural uses of the sites in order to fully determine the impacts of the proposed projects. We believe that the treatment plants or sedimentation basins should then be located on sites with the least agricultural potential.

With the number of alternatives available for the Keanae Water System, we believe Site I should not be chosen due to its impact on taro. The 1979 taro harvest decreased 14 percent from 1978 and acreage in taro decreased from 450 acres to 405 acres. (Statistics of Hawaiian Agriculture, 1979) The acreage involved in the Keanae Site I may be small, but due to the nature of taro plots and the effort and expenses involved in relocating for the farmer, the impact may be greater than it would first appear.

Thank you for the opportunity to comment.

JOHN FARIAS, JR.
Chairman, Board of Agriculture

cc: Dept. of Water Supply, County of Maui

RECEIVED
MAR 26 1981
Sam O. Hirota, Inc./Inc.
By_____

APR - 9 1981

94

SAM O. HIROTA, INC.

April 10, 1981

Mr. John Farias, Jr.
Chairman, Board of Agriculture
Department of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814

Dear Mr. Farias:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your comments of March 24, 1981, regarding the abovementioned EIS Preparation Notices.

We note that the site alternatives selected for each of the water system improvements have minimal impact on agricultural lands of importance. We will be sending your Department copies of the Draft EIS for each project, so that you may comment on their impact on agriculture lands.

We appreciate your concern in this matter.

Very truly yours,

SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodrigues

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 800 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-8071

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

PODED-PV

31 March 1981

Mr. Dennis I. Hirota, Vice President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, HI 96813

Dear Mr. Hirota:

We have reviewed your Environmental Assessment (EA)/EIS Preparation Notice for Hana, Keanae, and Kaupo Water System Improvements sent to us on 6 March 1981. We provide the following comments:

a. Any work which requires the deposit of fill materials in streams may require a Department of the Army permit under Section 404 of the Clean Water Act.

b. All three parcels indicated in the EA are not within a designated floodway area and are areas of minimal flooding as indicated by a Zone C designation, as shown on the federal flood insurance map (Incl 1). None of the proposed sites would be subject to any regulatory practices with regard to flood hazard mitigation under the Zone C designation.

Thank you for the opportunity to review the subject EIS.

Sincerely,

KISUK CHEUNG
Chief, Engineering Division

1 Incl
As stated

RECEIVED
APR - 1 1981
Sam O. Hirota, Inc./Ins.
By_____

APR - 9 1981

SAM O. HIROTA, INC.

April 10, 1981

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

We have received and reviewed your letter of March 31, 1981, commenting on the abovementioned EIS Preparation Notices.

We will include your comments in the Draft EISs now being prepared.

Thank you for providing the information to us. We appreciate your concern in this matter.

Very truly yours,

SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodrigues

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9871

BROCK AND ASSOCIATES

7000
April 1st, 1981
reply to Wailuku office

RECEIVED
APR - 3 1981
Sam O. Hirota, Inc./Tes.
By

Mr. Ralph Morita
Sam O. Hirota, Inc
345 Queen Street, Suite 500
Honolulu, Oahu, Hawaii
96793

Dear Mr. Morita:

We have reviewed the Environmental Assessment/EIS Preparation Notice for the Proposed Keanae Water System Improvements.

The notice is well prepared and adequately covers all of our concerns.

We would appreciate receiving a draft of the EIS when it is prepared and will probably comment on the alternative selected when that information is known.

Very truly yours,
BROCK AND ASSOCIATES

James Melmuth Brock
Senior Principal

SAM O. HIROTA, INC.

April 10, 1981

Mr. James Melmuth Brock
Senior Principal
Brock and Associates
48 Market Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Brock:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

We appreciate your letter of April 1, 1981 on the abovementioned EIS Preparation Notices.

Please be assured that your name will be retained on the Distribution List of the Draft EISs for all three projects.

We appreciate your concern on these matters.

Very truly yours,
SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tate Imada

Environmental Communications, Inc.
Attention: F. J. Rodriguez

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9971

STATE OF
DEPARTMENT OF TRANSPORTATION

RECEIVED
APR - 7 1981
Sam O. Hirota, Inc./Hon.

April 2, 1981

STP 8.7177

Dr. Dennis Hirota, Ph.D., P.E.
Vice President
Sam O. Hirota, Inc.
345 Queen Street, Suite 500
Honolulu, Hawaii 96813

Dear Mr. Hirota:

Environmental Assessment/EIS Preparation Notice
(1) Hana Water System Improvements
(2) Keanae Water System Improvements
(3) Kaupo Water System Improvements

Thank you for the opportunity to express our concerns on the subject proposals.

We suggest the following points be added to the assessment:

1. Any work within the State highway right-of-way shall be subject to review and approval by the Highways Division, State Department of Transportation.

2. Any heavy equipment needed for construction shall be moved only during non-peak traffic hours to minimize interference with traffic on Hana Highway.

Very truly yours,

Ryokichi Higashionna

Ryokichi Higashionna
Director of Transportation

97

SAM O. HIROTA, INC.

April 10, 1981

Mr. Ryokichi Higashionna
Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Higashionna:

Subject: Environmental Assessments/EIS Preparation Notices for Hana, Kaupo, and Keanae Water System Improvements

Thank you for your letter of April 2, 1981, commenting on the above-mentioned EIS Preparation Notices.

We will include your comments (items 1 and 2) in our Draft EIS documents.

We appreciate your concern on these matters.

Very truly yours,

SAM O. HIROTA, INC.

Dennis I. Hirota, Ph. D.
Vice President

cc: Department of Water Supply,
County of Maui

Norman Saito Engineering Consultants
Attention: Tats Imada

Environmental Communications, Inc.
Attention: F. J. Rodrigues

APR - 9 1981

Surveying • Engineering • Computer Graphics • Ocean Sciences
345 QUEEN STREET • SUITE 500 • HONOLULU, HAWAII 96813 • TELEPHONE (808) 537-9071

XIV. SUMMARY OF UNRESOLVED ISSUES

At this time, one unresolved issue is to test the well water in accordance with the drinking water standards to verify all levels of contaminants are within the drinking water standards.

A second unresolved issue is whether the County can acquire the tank site from the interest of East Maui Irrigation Co. The County Corporation Council is negotiating with EMI.

XV. LIST OF NECESSARY APPROVALS

Table 9 identifies the necessary approvals and/or permits that will be required for the proposed action prior to its construction.

TABLE 9

LIST OF NECESSARY APPROVALS FOR THE PROPOSED ACTION

ENVIRONMENT IMPACT STATEMENT

An Environmental Impact Statement is required for all public projects.

STATE LAND USE

State Land Use Commission regulations (Part III, Section III) do not permit the location of water treatment facilities and accessory buildings in Agricultural Districts which are not ancillary to agricultural needs. A special use permit must be petitioned to the County Planning Commission to locate the new storage tank, and the well in the Agriculture District.

HISTORIC SITES

The Historic Sites Branch of the DLNR says permits are not required for construction near heiaus or other historic Hawaiian sites. A check with the register of State historic sites and an archaeological reconnaissance did not reveal any historically significant sites in the area. An archaeological survey was made at the well site and the 50,000 gallon storage tank site and no archaeological or historic sites were noted. Although there are no laws regulating this, it is considered prudent to stay at least 200 feet away from any archaeological structure or site of

significance. Keanae Valley may contain burial sites for people who lived and farmed the Valley. The Department of Water will ask the Keanae Community Association to identify if possible, any grave sites or historically significant sites within the construction area.

SPECIAL MANAGEMENT AREA (SMA)

A Special Management Area Use Permit is required for projects in the designated area which cost over $65,000, or which have significant adverse environment or ecological effects. Application for a permit to construct in a SMA is processed by the County of Maui, Planning Department. A public hearing for a SMA use on a portion of the Keanae Water System Improvements was held by the Maui Planning Commission on May 22, 1984. Subsequent to the public hearing, the Planning Commission approved the Special Management Area Use Permit request for the well site.

OTHER PERMITS AND LICENSES

In addition to the above, there are other agencies to be notified and other permits to be obtained before construction or including the well source in the water system.

PRELIMINARY ENGINEERING REPORT FOR NEW POTABLE WATER SOURCES

The Department of Health must be notified of the type, nature and scope of any proposed development of a new groundwater source.

COUNTY GRUBBING/GRADING PERMIT

Maui County Department of Public Works must issue a grubbing permit and grading permit before construction can start.

STATE DEPARTMENT OF TRANSPORTATION CONSTRUCTION PERMIT

The Department of Transportation will review and approve the construction drawings for the work in the Hana Highway right-of-way before issuing a construction permit. The construction drawings will include a traffic routing plan during construction.

LAND ACQUISITION

Title and easements for the land to be used must be obtained for the project. The Maui County Council has approved the resolution to obtain the necessary land and easements for the tank site. The processing of the eminant domain proceedings will begin after the EIS is accepted.

VARIANCE FROM MINIMUM LOT SIZE IN AGRICULTURAL AREA

Minimum lot size in the agricultural area is 2.0 acres, since the tank site is less than 2.0 acres in the subdivision, a variance is required from the County Planning Commission.

COUNTY BUILDING PERMIT

County building permit will be required for electrical work, the control and building at the well site and tank site.

XVI. RESPONSES TO COMMENTS ON DRAFT EIS

The responses to the comments made on the Draft EIS is in Appendix D.

REFERENCES

1. State of Hawaii, Administrative Rules, Chapter 20 of Title 11, Potable Water Systems, Department of Health, State of Hawaii, August 26, 1981.

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APPENDICES

APPENDIX A

POPULATION PROJECTION FOR HANA DISTRICT

APPENDIX A - POPULATION PROJECTION FOR HANA DISTRICT

The purpose of this population study is to provide a basis for estimating future water demands for the County Water Systems in the Hana District which includes the communities of Hana, Keanae, Kaupo, Nahiku, and Kipahulu (see Figure A-1). In turn, the future water demands will be the basis of determining the capacity of the proposed treatment facility.

The State Department of Health makes periodic field surveys to estimate the resident population served by the County Water Systems. The Department of Health estimates the number of people being serviced by the County Water System in 1980 are shown below in Table A-1.

TABLE A-1

DEPARTMENT OF HEALTH RESIDENT POPULATION SURVEY FOR THE HANA DISTRICT (REFERENCES 1 and 2)

Community	County Water System	Private Water System	Total Population
Hana	891	260	1151
Keanae	241	-	241
Kaupo*	22	21	43
Nahiku	68	-	68
Kipahulu	-	55	55
TOTAL	1222	336	1558

(*State Department of Health shows that Kaupo has 65 people using the County's Water System based on 3.4 people/meter (19 meters). However, from an interview with Mr. Carl Bredhoff, Kaupo Ranch Manger, on 2 February, 1981, there appears to be approximately 22 people on the County's

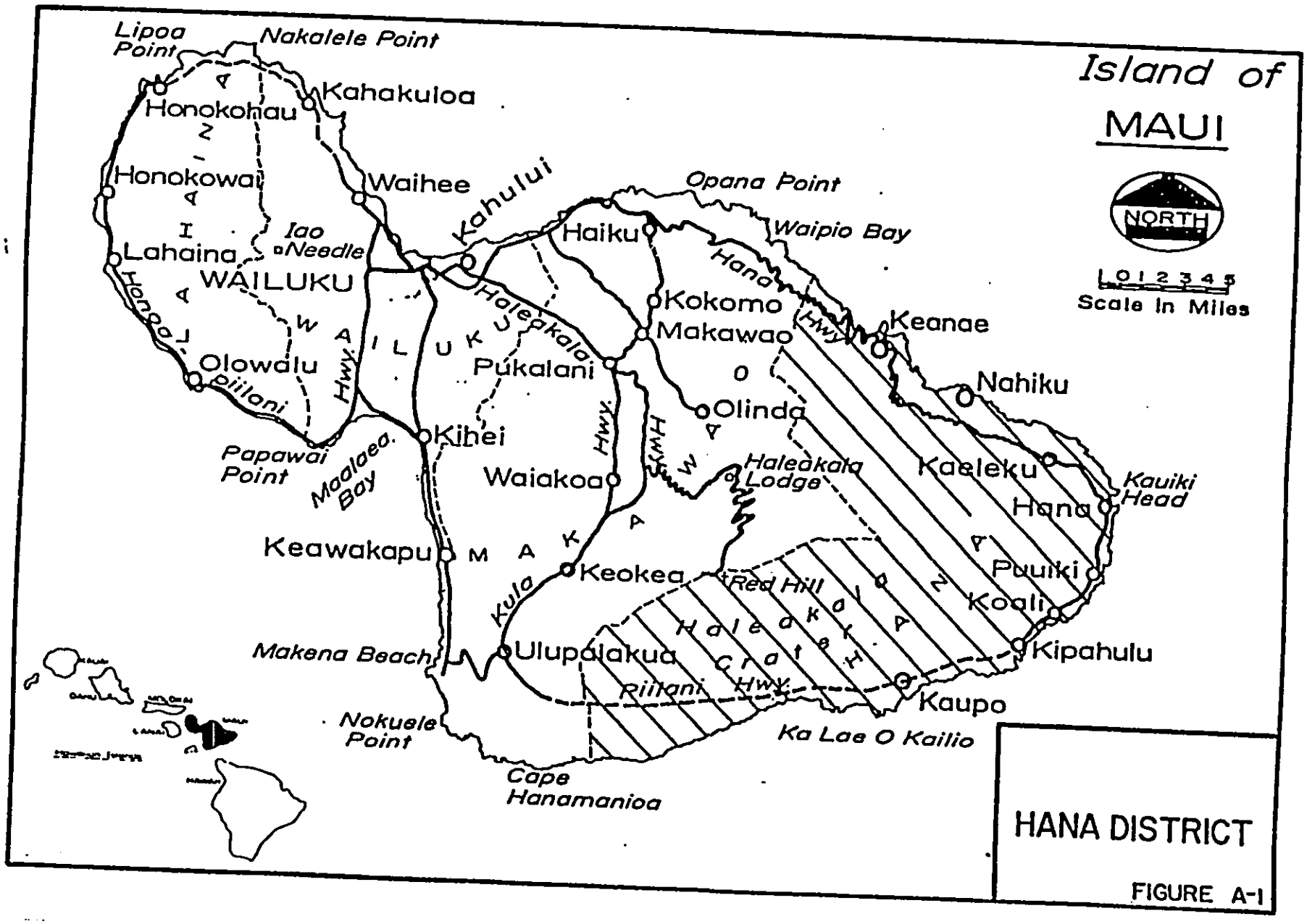

Island of
MAUI
NORTH
0 1 2 3 4 5
Scale in Miles
Lipoa Point
Nakalele Point
Kahakuloa
Honokohau
Honokowai
Waihee
Kahului
Opana Point
Waipio Bay
Haiku
Iao Needle
Lahaina
WAILUKU
Hana Hwy
Keanae
Kokomo
Makawao
Olowalu
Piiloni
Hwy
Pukalani
Nahiku
Olinda
Haleakala Lodge
Kihei
Papawai Point
Maalaea Bay
Waiakoa
Kaeleku
Kauiki Head
Hana
Keawakapu
Keokea
Red Hill
Puuiki
Koali
Kula
Makena Beach
Ulupalakua
Piilani Hwy
Kipahulu
Kaupo
Nokuele Point
Ka Lae O Kailio
Cape Hanamanioa
HANA DISTRICT

FIGURE A-1

Water System and 21 people using the Kaupo Ranch System. The County Department of Water Supply indicated that in 1978 there were 19 people and 19 meters on record, of which eight meters were connected to cattle troughs and two were serving vacant houses (Reference 5). Based on the above information the estimated population for Kaupo was adopted as being 43 people.)

Kaupo Ranch's system serves about 21 people and 2,000 head of cattle. Therefore, the resident population estimate for the Hana Distric using the Department of Health figures is 1,558 people.

The Department of Health estimate of 1,558 people is higher than the 1980 census data for the Hana District of 1,423 people (Reference 2). The resident population distribution of the Hana District as estimated by the Department of Health will be used for this report.

The Department of Health estimate includes only those individuals residing in the Hana District. The estimated population would be more representative to consider the total population of the Hana District. The total population was determined by adding the estimated number of overnight visitors to the estimated resident population of the Hana District.

The commercial accommodations for visitors are mainly in Hana Town and it was assumed that an insignificant number of visitors stayed overnight at the communities of Keanae, Kaupo, Nahiku, and Kipahulu. According to the Hawaii Visitor's Bureau, the representative commercial accommodations in Hana Town are the Hotel Hana-Maui, the Hotel Hana-Kai Resort, the Heavenly Hana Inn, and the Kanakea Kottages (Purdy Ranch). Wainapanapa State Park with its cabins is a popular vacation place for local people and was included in this study. All accommodations except Hotel Hana-Maui receive water from the County's Water System. Hotel Hana-Maui is served by the privately owned Hana Ranch Water System. Table A-2 below shows the estimated number of visitors who stay overnight at Hana Town. The occupancy rates were based on average occupancy rates during peak visitor periods.

TABLE A-2

ESTIMATED NUMBER OF VISITORS STAYING OVERNIGHT IN HANA

A. Served by County Water System

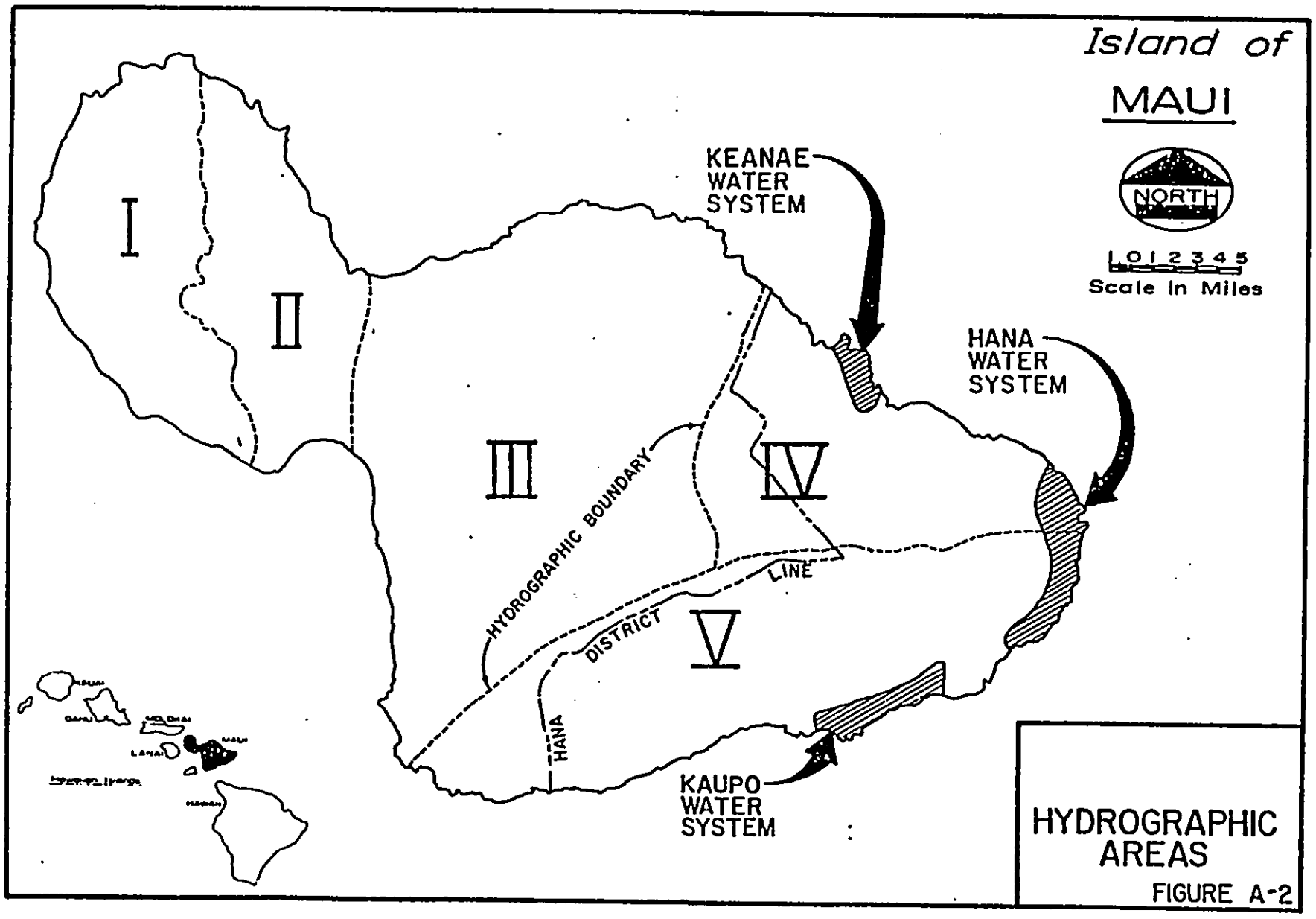
Hotel/Apt/ Cabin	Source of Information	Number of Rooms	Ave Number of People Per Room	Occupancy Rate	Ave Number of People Per Day
Hotel Hana-Kai Resort	Manager (Ref. 7)	19 units	8-studios=2 11-singles=4	95%	57
Heavenly Hana Inn	Manager (Ref. 8)	4 units	4	95%	15
Kanakea Kottages (Purdy Ranch)	Manager (Ref. 9)	3 cabins	1-cabin=4 1-cabin=6 1-cabin=8	95%	17
Wainapanapa State Park	DLNR (Ref. 10)	12 cabins	6	100%	72
					161

B. Served by Private Water System

Hotel Hana-Maui	Manager (Ref. 11)	61 units	53-singles=2 8-cottages=4	95%	131
				TOTAL	292

The total population of the Hana District is estimated at 1,850 people (1,558 + 292 = 1,850 people).

According to the 208 Water Quality Management Plan for the County of Maui, three State documents were used to estimate population growth. The 208 Plan divides the island of Maui into five Hydrographic Areas. The Hana District is closely represented by Hydrographic Areas IV and V (see Figure A-2). The 208 Plan population projection and distribution for Hydrographic Area IV and V from the year 1980 to 2000 is shown in Table A-3.



HYDROGRAPHIC AREAS

FIGURE A-2

TABLE A-3

208 PLAN POPULATION ESTIMATE OF THE HANA DISTRICT

	Year				
Hydrographic Area	1980	1985	1990	1995	2000
Hydrographic Area IV (Keanae to Nahiku to Hana Town)	1,150	1,323	1,484	1,676	1,938
Hydrographic Area V (Portion of Hana to Cape Hanamanioa)	550	610	665	734	861
Hana District (TOTAL)	1,700	1,933	2,149	2,410	2,799

The 208 Plan population projection for the 1980 resident population in the Hana District is 1,700 (Reference 4). This number is within ten percent of the total population estimated from the Department of Health data for the Hana District. It is assumed that the basic growth pattern of the Hana District would be the 208 Plan population projection and the population distribution throughout the Hana District is assumed to remain the same during the period. Therefore the estimated populations projected for each community within the Hana District was based on the growth rate of the Hydrographic Areas of the 208 Plan. Table A-4 shows the relative population distribution in the Hana area based on the 1980 population. These factors were applied to the 208 Plan population projections resulting in Table A-5 which shows the projected total population for Hana District Communities from the year 1980 to year 2000.

TABLE A-4

RELATIVE POPULATION DISTRIBUTION FOR HANA DISTRICT COMMUNITIES BASED ON HYDROGRAPHIC AREA IV AND V

Hydrographic Area	1980 Population	Realtive Dist. %	Comments
Total (IV)	1,251		$\frac{1150}{1700} \times 1850 = 1251$
Hana (Portion)	942	75.3	Calculated 942 = 1251-(241-68)
Keanae	241	19.3	
Nahiku	68	5.4	
Total (VI)	599		$\frac{550}{1700} \times 1850 = 599$
Hana (Portion)	501	83.6	Calculated 501=599-(55+43)
Kipahulu	55	9.2	
Kaupo	43	7.2	

TABLE A-5

TOTAL POPULATION PROJECTION FOR HANA DISTRICT

COMMUNITIES - YEAR 1980 TO YEAR 2000

Community (Hydrographic Area)	Year				
	1980*	1985	1990	1995	2000
Hana (IV+V)	1,443	1,506	1,673	1,876	2,176
Keanae (IV)	241	255	286	323	374
Kaupo (V)	43	44	48	52	62
Nahiku (IV)	68	72	81	91	105
Kipahulu (V)	55	56	61	68	79
Hana District	1,850*	1,933	2,149	2,410	2,799

*1980 total population derived from Department of Health figures and the estimated visitor count.

For the study areas of Hana, Keanae and Kaupo, there are two private water systems, one in Hana and the other in Kaupo. The distribution of the population being served by the County Water System and private water system was assumed to be the same as the 1980 distribution throughout the study period. Table A-6 shows the percent distribution of the total population being served between County and private water systems and Table A-7 shows the projected population being served by County and private water systems, respectively.

TABLE A-6

POPULATION DISTRIBUTION OF HANA DISTRICT COMMUNITIES SERVED BETWEEN COUNTY WATER SYSTEMS AND PRIVATE WATER SYSTEMS, IN YEAR 1980

Community	County Water System Population Distribution (%)	Private Water System Population Distribution (%)
Hana	1052/1443 = 72.90	391/1443 = 27.10
Keanae	241/241 =100.00	0 = 0.0
Kaupo*	22/43 = 51.16	21/43 = 48.84
Nahiku	68/68 =100.00	0 = 0.0
Kipahulu	0 = 0.0	55/55 =100.00

TABLE A-7

POPULATION PROJECTION FOR STUDY AREAS SERVED BY

COUNTY WATER SYSTEMS AND PRIVATE WATER SYSTEMS

YEAR 1980 TO YEAR 2000

Year	1980		1985		1990		1995		2000	
Community	C	P	C	P	C	P	C	P	C	P
Hana	1052	391	1098	408	1220	453	1368	508	1588	591
Keanae	241	0	255	0	286	0	323	0	374	0
Kaupo	22	21	23	21	25	23	27	25	32	30

C = County Water System
P = Private Water System

APPENDIX A - REFERENCES

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6. Telephone interview by Ralph Morita, SOH, Inc., with Mr. Carl Bredhoff, manager of Kaupo Ranch on 2 February 1981.

7. Telephone interview by Ralph Morita, SOH, Inc., with Mrs. Liberman, manager of Heavenly Hana-Inn on 19 August 1981.

8. Telephone interview by Ralph Morita, SOH, Inc., with Ms. Mary Purdy, manager of Kanakea Kottages on 10 August 1981.

9. Telephone interview by Ralph Morita, SOH, Inc., with Ms. Danielle Lam, DLNR State Parks, on 10 August 1981.

10. Telephone interview by Ralph Morita, SOH, Inc., with Mr. Gil Moss, manager of Hotel Hana-Maui on 10 August 1981.

APPENDIX B

Sampling Results for Primary and Secondary Contaminants

CONTAMINANTS			INORGANIC CHEMICALS										ORGANIC CHEMI	
			ARSENIC	BARIUM	CADMIUM	CHROMIUM	LEAD	MERCURY	SELENIUM	SILVER	FLUORIDE[c]	NITRATE	EHDRIN	LINO
UNITS			mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/
M.C.L.[a]			0.05	1.0	0.010	0.05	0.05	0.002	0.01	0.05	1.4	10.0	0.0002	0.0
LOCATION	LAB[b]	DATE												
1. WAILUANUI INTAKE	DOH	6/16/75	<0.005	<0.1	<0.001	<0.005	<0.01		<0.001	<0.01				
"	BR (SOH)	2/13/81	<0.002	<0.1	<0.005	<0.05	<0.05	0.000029	<0.002	<0.01	0.28	0.07	<0.000001	<0.000
"	BR (SOH)	11/12/81			<0.005									
3. KEANAE SCHOOL	DOH	3/20/78	ND[d]	ND	ND	ND	ND	ND	ND	ND	ND	<0.1		
"	DOH	6/12/79											<0.0002	<0.0
"	DOH	8/20/79	<0.02	<0.8	<0.005	<0.01	<0.02	<0.0005	<0.01	<0.03	<0.1	<0.2		
"	DOH	10/14/80	<0.02	<0.8	<0.005	<0.01	<0.02	<0.0005	<0.02	<0.03	<0.2	<0.1		
"	PEL (SOH)	5/8/81												
2. ULTRA VIOLET PURIFIER	BR (DWS)	5/12/80	0.004	<0.1	<0.005	<0.05	<0.05	0.00008	<0.002	<0.01	<0.01	0.7	<0.000001	<0.000
"	BR (DWS)	7/8/80	<0.002	<0.1	0.015[e]	<0.05	<0.05	0.0001	<0.002	<0.01	<0.01	2.4	<0.000001	<0.000
"	PEL (SOH)	5/8/81												
"	BR (SOH)	11/12/81			<0.005		<0.05							
4. OHIA SPRING	BR (SOH)	2/13/81	<0.002	<0.1	<0.005	<0.05	<0.05	0.000021	<0.002	<0.01			<0.000001	<0.000

NOTES:

a. MAXIMUM CONTAMINANT LEVEL
b. LAB (SAMPLED BY) :
BR BREWER CHEMICAL (SOH) SAM O. HIROTA, INC.
PEL PACIFIC ENVIORNMENTAL LABORATORY (DWS) DEPARTMENT OF WATER SUPPLY
DOH STATE OF HAWAII DEPARTMENT OF HEALTH
DLNR REPORTED BY DEPARTMENT OF LAND AND NATURAL RESOURCES
c. FLUORIDE M.C.L. BASED ON ANNUAL MEAN HIGH TEMPERATURE OF 80.1 DEGREES FAHRENHEIT
d. ND NOT DECTECTED IN SIGNIFICANT AMOUNTS
e. EXCEEDS MAXIMUM CONTAMINANT LEVEL
f. AMENDED TO THE NATIONAL INTERIM TEMPORARY DRINKING WATER REGULATIONS
g. NOT REQUIRED FOR POPULATIONS LESS THAN 10,000

		ORGANIC CHEMICALS						NIPDWR AMENDMENTS[4]			
LUORIDE[3]	NITRATE	ENDRIN	LINDANE	METHOXYCHLOR	TOXAPHENE	2,4-D	SILVEX	TOTAL TRIHALOMETHANES[5]		SODIUM	CORROSIVITY
								INSTANTANEOUS	POTENTIAL TOTAL		
mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	L.I.
1.4	10.0	0.0002	0.004	0.1	0.005	0.1	0.010			20	>0.0
0.28	0.07	<0.000001	<0.000001	<0.000005	<0.000005	<0.010	<0.010				
										4.77	-2.54[6]
ND	<0.1										
		<0.0002	<0.002	<0.004	<0.005	<0.002	<0.0004				
<0.1	<0.2										
<0.2	<0.1										
								0.017	0.017		
<0.01	0.7	<0.000001	<0.000001	<0.000005	<0.000001	<0.010	<0.010				
<0.01	2.4	<0.000001	<0.000001	<0.000005	<0.000001	<0.010	<0.010			6	
										15	
								0.015	0.055		
										1.82	-2.3[6]
		<0.000001	<0.000001	<0.000005	<0.000005	<0.010	<0.010			9.33	-1.09[6]

KEANAE WATER SYSTEM
KAHIKINUI DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-1

RADIONUCLIDES

CONTAMINANTS			NATURAL		MAN MADE[e]		
				COMBINED			
			GROSS	RA 226	GROSS		
			ALPHA	RA 228	BETA	TRITIUM	STRONTIUM-90
UNITS			pCi/l	pCi/l	pCi/l	pCi/l	pCi/l
MCL			15	5	50	20.000	8
LOCATION	LAB	DATE					
KEANAE SCHOOL	CDOH[a]	1978[b]	0.5±0.6	-[d]	0.9±1.0	-[f]	-[f]
"	CDOH	1980[c]	0.0±0.2	-	-	-	-

NOTES:

a. CDOH - CALIFORNIA DEPARTMENT OF HEALTH
b. CDOH LETTER DATED 8/12/78 TO DR. JAMES S. KUMAGAI. STATE DEPARTMENT OF HEALTH
c. CDOH LETTER DATED 2/21/80 TO DR. JAMES S. KUMAGAI. STATE DEPARTMENT OF HEALTH
d. CDOH LETTER DATED 8/21/78. "SINCE GROSS ALPHA LESS THAN 2.0 pCi/l. NO RADIUM ANALYSIS REQUIRED."
e. MAN MADE RADIONUCLIDES APPLICABLE TO COMMUNITY SYSTEM SERVING A POPULATION OF 10.000 OR MORE. THEREFORE THIS REQUIREMENT IS NOT APPLICABLE TO THE KEANAE WATER SYSTEM.
f. CDOH LETTER DATED 8/21/78. "GROSS BETA LESS THAN 3.0 pCi/l. THEREFORE IF ALL BETA ACTIVITY FROM ^{90}Sr. A LARGE CONTRIBUTION FROM TRITIUM WOULD BE NECESSARY AND IN THIS CASE UNLIKELY."

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-2

TURBIDITY AT UV PURIFIER

DATE	MONTHLY AVERAGES (NTU)	MONTHLY HIGH (NTU)	MONTHLY LOW (NTU)	NUMBER OF TIMES 2-DAY AVERAGE OVER 5.0 NTU
JUL 1977	3.2	10.0	0.5	5
AUG	3.0	11.0	0.6	8
SEP	2.1	12.0	0.4	4
OCT	2.2	8.5	0.5	3
NOV	2.3	17*	0.4	4
DEC	1.5	7.0	0.4	2
JAN 1978	2.1	39*	0.4	2
FEB	1.9	9.5	0.4	3
MAR	2.1	6.7	0.4	0
APR	1.8	5.5	0.5	0
MAY	3.4	7.4	0.8	6
JUN	2.5	11*	0.5	4
JUL	2.4	7.1	0.6	2
AUG	4.9	27*	0.7	9
SEP	2.9	13*	0.7	6
OCT	5.7	15*	0.7	17
NOV	5.0	22*	1.0	8
DEC	3.7	15*	0.8	6
JAN 1979	5.2	24*	0.4	9
FEB	6.5	22*	1.2	15
MAR	3.0	9.4	1.1	3
APR	3.0	9.7	1.0	2
MAY	2.7	14*	0.4	4
JUN	3.2	9.7	0.3	7
JUL	3.3	12*	1.0	4
AUG	2.7	9.7	0.8	2
SEP	1.4	4.8	0.2	0
OCT	2.4	6.6	0.4	5
NOV	4.4	18*	0.5	9
DEC	3.1	17*	0.5	7
JAN 1980	4.8	35*	1.5	5
FEB	1.8	8.9	0.5	1
MAR	8.6	-	-	19
APR	3.7	-	-	6
MAY	3.7	-	-	5
JUN	2.7	9.8	0.6	3
JUL	4.5	-	-	12
AUG	3.5	-	-	8
SEP	4.3	-	-	11
OCT	3.9	16*	0.5	4

REF: SAMPLES AND TESTS BY COUNTY OF MAUI, DEPARTMENT OF WATER.

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-3

MICROBIOLOGY RESULTS - MEMBRANE FILTER METHOD

DATE	MONTHLY READING	MONTHLY BASIS REQ 1[a]	REQ 2[b]	3 MONTH AVERAGE	3 MONTH BASIS REQ 1[a]	REQ 2[b]
08-16-77	1					
09-20-77	14	•	•	4.7	•	•
10-18-77	1			5.3	•	•
11-15-77	2	•		.7		
12-13-77	1			.7		
01-17-78	1			1.33	•	
02-00-78	NO SAMPLE			-		
03-22-78	4	•	•	1.33	•	
04-18-78	1			2.0	•	
05-16-78	2	•		.7		
06-00-78	NO SAMPLE			-		
07-00-78	NO SAMPLE			-		
08-15-78	1			1		
09-18-78	1			1		
10-17-78	1			30	•	•
11-28-78	91	•	•	31	•	•
12-19-78	2	•		34.6	•	•
01-16-79	11	•	•	7	•	•
02-21-79	8	•	•	8.3	•	•
03-20-79	6	•	•	5.0	•	•
04-24-79	1			2.3	•	
05-15-79	1			.3		
06-19-79	1			.3		
07-17-79	1			TNTC	•	•
08-21-79	TNTC	•	•	TNTC	•	•
09-18-79	1			TNTC	•	•

NOTES:

• EXCEEDED MCL

TNTC TO NUMEROUS TO COUNT

a. REQUIREMENT 1 - 1 COLONY/100ml OF ARITHMETIC MEAN OF ALL SAMPLES EXAMINED PER MONTH (OR 3 MONTH PERIOD).

b. REQUIREMENT 2 - 4 COLONIES/100ml IN MORE THAN 1 SAMPLE WHEN LESS THAN 20 SAMPLES ARE EXAMINED PER MONTH (OR 3 MONTH PERIOD).

c. SAMPLES AND TESTING BY COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY.

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-4

MICROBIOLOGY RESULTS - FERMENTATION TUBE METHOD

DATE	NO. OF TUBES POSITIVE OF 5	MONTHLY BASIS REQ 1[a]	REQ 2[b]	3 MONTH AVERAGE	3-MONTH BASIS REQ 1[a]	REQ 2[b]
10-16-79	5/5	•	•			
11-20-79	5/5	•	•	4.7/5	•	•
12-17-79	4/5	•	•	4.7/5	•	•
01-15-80	5/5	•	•	3.0/5	•	•
02-18-80	0/5			2.7/5	•	
03-27-80	3/5	•	•	2.0/5	•	
04-21-80	3/5	•	•	3.7/5	•	•
05-19-80	5/5	•	•	2.7/5	•	
06-16-80	0/5					

NOTES:

- • EXCEEDED MCL
- a. REQUIREMENT 1 - COLIFORM BACTERIA SHALL NOT BE PRESENT IN MORE THAN 10 PERCENT OF THE PORTIONS IN ANY MONTH.
- b. REQUIREMENT 2 - COLIFORM BACTERIA SHALL NOT BE PRESENT IN THREE OR MORE PORTIONS IN MORE THAN ONE SAMPLE.
- c. SAMPLES AND TESTING BY COUNTY OF MAUI, DEPARTMENT OF WATER SUPPLY.

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
PRIMARY CONTAMINANTS

TABLE B-5

CONTAMINANTS			CHLORIDE	COLOR	COPPER	FOAMIN
UNITS			mg/l	COLOR U	mg/l	m
M.C.L.(a)			250	15	1.0	0
LOCATION	LAB(b)	DATE				
1. WAILUANUI INTAKE	DOH	6/16/75	8	10	<0.02	
"	BR (SOH)	2/13/81	9.5	11	<0.02	
"	BR (SOH)	11/12/81				<0
3. KEANAE SCHOOL	DOH	3/20/78	9			
"	DOH	6/12/79				
"	DOH	8/20/79				
"	DOH	10/14/80	3			
2. ULTRA VIOLET PURIFIER	BR (DWS)	5/12/80	10			
"	BR (DWS)	5/12/80	9			
"	BR (SOH)	11/12/81	9.7	10	<0.02	
4. OHIA SPRING	BR (SOH)	2/13/81	7	1	<0.02	

NOTES:

a. MAXIMUM CONTAMINANT LEVEL

b. LAB (SAMPLED BY)

BR	BREWER CHEMICAL	(SOH)	SAM O. HIROTA. INC.
PEL	PACIFIC ENVIORNMENTAL LABORATORY	(DWS)	DEPARTMENT OF WATER SUPPLY
DOH	STATE OF HAWAII DEPARTMENT OF HEALTH		
DLNR	REPORTED BY DEPARTMENT OF LAND AND NATURAL RESOURCES		

c. EXCEEDS MAXIMUM CONTAMINANT LEVEL

d. TOTAL DISSOLVED SOLIDS

e. ND NOT DETECTED IN SIGNIFICANT AMOUNTS

LOR	COPPER	FOAMING AGENT	IRON	MANGANESE	ODOR	SULFATE	T.D.S.[d]	ZINC	pH
OR U	mg/l	mg/l	mg/l	mg/l	TON	mg/l	mg/l	mg/l	
5	1.0	0.5	0.30	0.05	3.0	250	500	5	6.5-8.5
0	<0.02		0.17	<0.03	1	<5	38	0.14	
1	<0.02		<0.03	<0.01	45.3[c]		31.9	0.024	6.7
		<0.2	0.09						
							24		
							22		
							38		
			<0.03				80		
10	<0.02		0.18	<0.01		3.32	43.5	0.029	6.86
1	<0.02		<0.03	<0.01	ND[e]		83.1	0.018	7.19

HIROTA. INC.
ENT OF WATER SUPPLY .

CES

KEANAE WATER SYSTEM
HANA DISTRICT MAUI HAWAII

SAMPLING RESULTS
SECONDARY CONTAMINANTS

TABLE B-6

APPENDIX C

Information on Water Treatment Terminology

APPENDIX C

INFORMATION ON WATER TREATMENT TERMINOLOGY

SEDIMENTATION

Flow water in a natural stream is usually turbid, because it carries sand, silt, clay and other matter in suspension. Whenever the current is slowed, sand, silt and some of the clay particles begin to drop out of the water. If turbid water is led into a basin and allowed to remain quiet, a goodly portion of the suspended matter is removed by plain sedimentation. This fairly simple process is a first stop commonly used in surface-water purification.

Prior to the development of more efficient treatment methods, some cities relied on simple storage of water in basins or reservoirs for weeks or months to improve the quality of surface waters to the point where they were reasonably safe. Long storage of water in this fashion greatly reduced turbidity and bacterial count, but the method is neither economical nor does it made the water dependably safe.

Some cities obtain water supplies from rivers, such as the Mississippi and some of its tributaries, which are highly turbid. Some of the suspended matter is coarse and settles rapidly. Since the amount of suspended matter is large, it is advantageous to have presedimentation basins which hold the water for periods of 3 to 8 hours. A large portion of

the coarse, suspended material drops out at this stage. This helps prevent overloading of clarification units and reduces the cost of chemicals for the complete purification process.

FLOCCULATION

Plain sedimentation is practical for removing suspended particles that settle out within one to several days. It is rather impractical for muddy water carrying clay and colloidal particles. These smaller particles fall at a much slower rate than large particles.

To speed up the action, artifical means are used to flocculate--bring together in loose clusters--all the small suspended particles to permit practical removal by sedimentation. Chemicals, known as coagulants, are added to water to form chemical flocs that adsorb, entrap and otherwise assemble suspended particles into larger masses.

The chemical floc results from chemical reaction of the coagulant with the alkalinity of the water. It forms as a fragile, cloudy, gelatinous mass. The chemical most commonly used for coagulation is aluminum hydroxide.

Coagulation proceeds in three basic stages: 1) neutralization of the negative charges on the clay particles suspended in the water, 2) clustering or flocculation of the particles, 3) surface adsorption of particles on the large

surface area provided by the floc. Some bacteria become entangled in the floc and are swept downward as the flocculated masses settled to the bottom.

CLARIFICATION

After coagulants have been mixed with it, the water is passed to a settling basin known as a clarifier. Here the water is retained long enough to allow the flocculated material to settle out. The effect may be considered as chemically assisted sedimentation.

The heaviest floc particles settle readily, but the smaller, lighter ones remain in suspension. They are carried away in the effluent from the clarifier and are removed by the next stop in the treatment process which is filtration.

Contact units, also known as upward flow units, combine mixing, flocculation, and clarification in the same structure, thereby conserving space and usually decreasing investment cost. Since the incoming raw water is in intimate contact with both added and previously coagulated chemicals, continuous formation of new floc particles is speeded up.

FILTRATION

When water flows through a porous medium, such as sand, some of the suspended and colloidal impurities in the water are left behind in the pores or upon the surface of the grains

of the sand or other medium. This process is called filtration.

SLOW SAND FILTER

Characteristic features of the slow sand filter are: direct feed or raw water without chemical pretreatment slow rate of filtration, mechanical cleaning of the sand bed by scraping and removing about one inch of sand when clogging occurs.

DISINFECTION

Disinfection of water means kiling all the potentially dangerous organisms that may be present. Chlorination is by far the most common means for disinfecting drinking water. Other chemicals that may be used include ozone, iodine and potassium permanganate. Disinfection may also be done by boiling, pasteurization or by exposure to ultra-violet rays.

Source: Ground Water and Wells, A Reference Book for the Water-Well Industry, 1972

APPENDIX D

COMMENTS TO THE ENVIRONMENTAL IMPACT STATEMENT

AND

RESPONSES TO THE COMMENTS

The following letters require no response:

State Agencies

Department of Accounting and General Service
State Comptroller
State Public Works Engineer

Department of Defense

Department of Planning and Economic Development

Federal Agencies

15th ABW/DEE, Hickam AFB

Navy

U.S. Soil Conservation Service

U.S. Coast Guard

County Agencies

Department of Public Works

(P)1323.4

JUL 16 1984

Honorable Hannibal M. Tavares
Mayor
County of Maui
200 South High Street
Wailuku, Maui, HI 96793

Dear Mayor Tavares:

Subject: Environmental Impact Statement for the
Keanae Water System Improvements

We have reviewed the subject document and have no comments to offer

D-2

Respectfully,

HIDEO MURAKAMI
State Comptroller

RY:lkt
cc: Mr. William S. Haines
Sam O. Hirota, Inc.

RECEIVED
JUL 18 1984
SAM O. HIROTA, INC.
By

(P)1322.4

JUL 16 1984

Ms. Letitia M. Uyehara, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Environmental Impact Statement for the
Keanae Water System Improvements

We have reviewed the subject document and have no comments to offer.

Very truly yours,

RIKIO NISHIOKA
State Public Works Engineer

RY:lkt
cc: Mr. William S. Haines
Sam O. Hirota, Inc.

RECEIVED
JUL 18 1984
SAM O. HIROTA, INC.
By

State of Hawaii
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 Diamond Head Road
Honolulu, Hawaii 96816

13 JUL 1984

RECEIVED
JUL 16 1984
SAM O. HIROTA, INC.
By

HIENG

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Keanae Water System Improvements

Thank you for providing us the opportunity to review your proposed project, (enclosed).

We have no comments to offer at this time.

Yours truly,

signed

JERRY M. MATSUDA
Major, HANG
Contr & Engr Officer

Enclosure

cc: Mr. William S. Haines, Director (Dept. of Water Supply)
Sam O. Hirota, Inc.

D-3

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

KAMAMALU BUILDING 250 SOUTH KING ST, HONOLULU, HAWAII
MAILING ADDRESS: P.O. BOX 2359 HONOLULU, HAWAII 96804

GEORGE R. ARIYOSHI
KENT M. KEITH
LINDA K. ROSEHILL
MURRAY E. TOWILL

DIVISIONS
ECONOMIC DEVELOPMENT DIVISION
ENERGY DIVISION
FOREIGN TRADE ZONE DIVISION
HAWAII INTERNATIONAL SERVICES AGENCY
LAND USE DIVISION
PLANNING DIVISION
RESEARCH AND ECONOMIC ANALYSIS DIVISION

OFFICES
ADMINISTRATIVE SERVICES OFFICE
HAWAII FILM OFFICE
INFORMATION OFFICE
OCEAN RESOURCES OFFICE
TOURISM OFFICE

COPY

Ref. No. P-9939

July 12, 1984

The Honorable Hannibal Tavares
Mayor
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mayor Tavares:

Subject: DEIS for Keanae Water System Improvements, Keanae, Maui

We have reviewed the subject draft environmental impact statement and have no comments.

Thank you for the opportunity to review the document.

Very truly yours,

Kent M. Keith

cc: Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
Mr. William S. Haines, Director
Maui Department of Water Supply
Sam O. Hirota, Inc.

RECEIVED
JUL 17 1984
SAM O. HIROTA, INC.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 15TH AIR BASE WING (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96853

RECEIVED
JUL 12 1984
SAM O. HIROTA, INC.
By JUL 12 1984

REPLY TO ATTN OF: DEEV (Mr Fujimoto, 449-1831)

SUBJECT: Environmental Impact Statement for the Keanae Water System Improvements, Keanae, Maui

TO: Ms Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

1. This office has reviewed the subject EIS and has no comment relative to the proposed project.

2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your project and thank you for the opportunity to review the document. The EIS is returned for your file.

ROBERT M. OKAZAKI
Chief, Engrg & Envmtl Plng Div
Directorate of Civil Engineering

1 Atch
EIS

cc: County of Maui wo Atch
ATTN: Mayor Hannibal M. Tavares
200 South High Street
Wailuku, Maui, HI 96793

Dept of Water Supply wo Atch
County of Maui
ATTN: Mr William S. Hanes
P. O. Box 1109
Wailuku, Maui, HI 96793

Sam O. Hirota, Inc. wo Atch
864 S. Beretania Street
Honolulu, Hawaii 96813

D-4

HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
0028:WKL:jam
Ser 1254

RECEIVED
27 JUN 1984
JUN 2 1984
SAM O. HIROTA, INC.
By

The Honorable Hannibal M. Tavares
Mayor, County of Maui
200 South High Street
Wailuku, Maui 96793

Dear Mayor Tavares:

Environmental Impact Statement
Keanae Water System Improvements

The EIS for the Keanae Water Systems Improvements has been reviewed and the Navy has no comments to offer. As this command has no further use for the EIS, the EIS is being returned to the Environmental Quality Control, by copy of this letter.

Thank you for the opportunity to review the EIS.

Sincerely,

M. M. DALLAM
CAPTAIN, CEC U. S. NAVY
FACILITIES ENGINEER
BY DIRECTION OF THE COMMANDER

Enclosure

Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P. O. Box 1109
Wailuku, Maui 96793

Sam O. Hirota, Inc.
864 S. Beretania Street
Honolulu, Hawaii 96813

Office of Environmental Quality Control

Hirota

United States Department of Agriculture

Soil Conservation Service

P.O. Box 50004
Honolulu, Hawaii
96850

July 13, 1984

RECEIVED
JUL 17 1984
SAM O. HIROTA, INC.
By

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Honorable Hannibal M. Tavares
Mayor, County of Maui
200 South High St.
Wailuku, Hawaii 96793

Dear Ms. Uyehara and Mayor Tavares:

Subject: EIS for the Keanae Water System Improvements
Keanae, Island of Maui, Hawaii

We have reviewed the subject environmental impact statement and have no comments to make.

Thank you for the opportunity to review this document.

Sincerely,

FRANCIS C.H. LUM
State Conservationist

cc:
Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, HI 96793

Sam O. Hirota, Inc.
864 S. Beretania St.
Honolulu, HI 96813

The Soil Conservation Service is an agency of the Department of Agriculture

D-5

U.S. Department of Transportation
United States Coast Guard

Commander (dpl)
Fourteenth Coast Guard District

Prince Kalanianaole Federal Building
300 Ala Moana Blvd.
Honolulu, Hawaii 96850
Phone: (808) 546-2861

OK

RECEIVED
JUN 27 1984
SAM O. HIROTA, INC.
By

11000
Serial No. 4/184
25 JUNE 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

The Fourteenth Coast Guard District has reviewed the Draft Environmental Impact Statement (EIS) for the Keanae Water System Improvements and has no objection or constructive comments to offer at the present time.

Sincerely,

J. E. SCHWARTZ
Commander, U. S. Coast Guard
District Planning Officer
By direction of Commander,
Fourteenth Coast Guard District

Copies: Mr. W. S. Haines, Director, Dept. of Water Supply, Maui
Mr. Sam O. Hirota, Inc., Honolulu

HANNIBAL TAVARES
Mayor

RALPH HAYASHI, P.E.
Director of Public Works

LESTER NAKASATO, P.E.
Deputy Director of Public Works

LOUIS ABREU
Superintendent of Highways

FRED ARAKI
Engineering Head

EDWIN KAGEHIRO
Waste Management Chief

AARON SHINMOTO
Land Use Administrator

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

July 6, 1984

Ms. Letitia N. Uyehara, Director
State Office of Environmental Quality
Control
550 Halekauwila Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Subject: Draft Environmental Impact Statement
For Keanae Water System Improvements

Per your June 22, 1984 letter regarding review of subject draft, we have no comments to offer at this time.

However, thank you for the opportunity to review and comment.

Very truly yours,

RALPH HAYASHI
Director of Public Works

cc: Mayor Hannibal Tavares
William S. Haines
Director of Water Supply
Sam O. Hirota, Inc.

Responses were made to the following letters:

State Agencies

Office of Environmental Quality Control

Department of Agriculture

Department of Health

Department of Land and Natural Resources (2 sheets)
Chairperson
Division of State Parks

Department of Transportation

University of Hawaii

Water Resources Research Center

Federal Agencies

U.S. Fish and Wildlife Service

Corps of Engineers

County Agencies

Planning Department

Council of the County of Maui

Utility Companies

Maui Electric Company

Other

The Sierra Club, Maui Group

Keanae-Wailuanui Community Association

GEORGE R. ARIYOSHI
Governor

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
550 HALEKAUWILA STREET
ROOM 301
HONOLULU, HAWAII 96813

Letitia N. Uyehara
Director
TELEPHONE NO.
548-6915

RECEIVED
JUN 26 1984
SAN[illegible]
By

June 25, 1984

Mr. William S. Haines, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui, Hawaii 96793

Dear Mr. Haines:

Subject: Environmental Impact Statement for the Keanae Water System Improvements, Keanae, Maui

We have reviewed your draft EIS and offer the following comments:

Page 57, Table 4, entitled "Summary of Anticipated Impacts at Sites for Recommended Alternative" indicates that there will not be any impacts of an archaeological or historical nature. To the best of our knowledge, the EIS contains no evidence such as an archaeological reconnaissance of the area, to support this conclusion.

Sincerely,

Letitia N. Uyehara
Director

cc: Honorable Mayor Tavares
Sam O. Hirota, Inc.

D-8

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Ms. Letitia Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated June 25, 1984, commenting on the subject draft Environmental Impact Statement.

An archaeological reconnaissance of the proposed tank site and well site have been conducted by the County Planning Department and no significant historical or archaeological site located in the immediate vicinity. The reconnaissance will be discussed in the Final EIS. A copy of the report is provided for your information.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

HANNIBAL TAVARES
Mayor, County of Maui

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822

July 19, 1984

MEMORANDUM

To: Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control

Subject: Draft Environmental Impact Statement (EIS)
for Keanae Water System Improvements
Department of Water Supply, County of Maui
TMK: 1-1-04: 43 (Well Site)
1-1-04: 10 (Tank Site)
Keanae, Maui

The Department of Agriculture has reviewed the subject EIS and offers the following comments.

The subject EIS is a resubmittal of a previously withdrawn EIS. The current EIS indicates deletion of a filtration facility and relocates the 50,000 gallon storage facility to a different site.

In our comments to the previous EIS (see attached copy of Memorandum from State Department of Agriculture to Honorable Hannibal H. Tavares, Mayor, dated November 3, 1983) we expressed the concern that taro cultivation in the vicinity of the then-proposed storage tank may be adversely affected.

Our assessment of the present project indicates that the anticipated impacts to land use and agriculture as a result of the proposed action will be minimal.

Thank you for the opportunity to comment.

Jack K. Suwa

JACK K. SUWA
Chairman, Board of Agriculture

Attachment

cc: Mr. William S. Haines, Director
Maui County Dept. of Water Supply
Sam O. Hirota, Inc.

"Support Hawaiian Agricultural Products"

Bombo
Keanae Co
Prop

GEORGE R. ARIYOSHI
GOVERNOR

JACK K. SUWA
CHAIRMAN, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRMAN

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822

November 3, 1983

MEMORANDUM

TO: Honorable Hannibal H. Tavares
Mayor, County of Maui

SUBJECT: Environmental Impact Statement
Keanae Water System
TMK: 1-1-04: 32, 1-1-05: 5, 1-1-08: 2, 4, 16
Keanae, Maui

The Department of Agriculture has reviewed the subject statement and offers the following comments.

Since alteration of Site I could potentially impact the adjacent taro growing area by increasing sedimentation and decreasing the amount of land available for growing taro (page 40), this Department recommends the selection of Site II or Site III.

Thank you for the opportunity to comment.

Suzanne D. Peterson

JACK K. SUWA, CHAIRMAN
Board of Agriculture

cc: Mr. William S. Haines, Director
Department of Water Supply, County of Maui
Sam O. Hirota, Inc.
Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control

"Support Hawaiian Agricultural Products"

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Jack Suwa, Chairman
Board of Agriculture
Department of Agriculture
State of Hawaii
1428 South King Street
Honolulu, Hawaii 96814

Dear Mr. Suwa:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated July 19, 1984, commenting on the subject draft Environmental Impact Statement. We appreciate your comments concerning the minimal anticipated impacts to land use and agriculture as a result of the proposed action.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

/Henry T. Oshiro
for HANNIBAL TAVARES
Mayor, County of Maui

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

CHARLES G. CLARK
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPHSO-85

RECEIVED
JUL 25 1984
SAM O. HIROTA, INC.
BY

July 20, 1984

MEMORANDUM

To: Mayor Hannibal M. Tavares, County of Maui
Ms. Letitia Uyehara, Director, Office of Environmental Quality Control

From: Director of Health

Subject: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Thank you for the opportunity to review and comment on the subject Environmental Impact Statement. It is our understanding that the proposed improvements to the Keanae water system consist of the following actions:

1. Development of an exploratory well drilled by the Department of Land and Natural Resources in the Keanae area on Wailua Road into a potable water source for the communities of Keanae and Wailua.
2. Installation of well pump, motors, controls, 10,000 gallon control tank, control building, disinfection, paving and disinfection equipment.
3. Installation of a 50,000 gallon storage tank adjacent to Waiokamilo Stream.
4. Installation of approximately 4,000 lineal feet of 6-inch pipe along Waika Road, Hana Highway, and the dirt road from Hana Highway to the new tank.

The groundwater well will require compliance with Section 11-20-29, Chapter 20, Title 11, Administrative Rules. This section requires Department of Health approval of all new potable water sources serving public water systems. Such approval is based upon the submission of an engineering report satisfactorily addressing all concerns set down in Section 11-20-29, Chapter 20, Title 11, Administrative Rules.

Concerns for well sources identified in Section 11-20-29 of Chapter 20, Title 11, include but are not limited to:

1. Nature of the soil and stratum overlaying the water source.
2. Nature, distance, direction of flow and time of travel of contaminants from present and projected domestic, industrial and agricultural sources of pollution, and waste injection wells and other waste disposal facilities.

D-11

3. Probability and effect of surface drainage or contaminated underground water entering the subject water source.
4. Water quality and quantity data during normal and stress periods.

Your careful review of these and other concerns as set down in Section 11-20-29, Chapter 20, is urged. Your consideration and use of this information in the determination of sites for wells of this nature will serve to avoid possible conflicts in use of resources. We also recommend that proper safety precautions be observed in the use and handling of chlorine.

The Department acknowledges the County of Maui Department of Water Supply efforts to bring the Keanae water system into compliance with the State and Federal drinking water regulations.

Should you have any questions concerning Chapter 20, Title 11, Administrative Rules, please feel free to contact the Drinking Water Program at 548-2235.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

Charles G. Clark
CHARLES G. CLARK

cc: Chief Sanitarian, Maui
Department of Water Supply
Sam O. Hirota, Inc.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Charles G. Clark
Director of Health
State of Hawaii
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Clark:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated July 20, 1984, commenting on the subject draft Environmental Impact Statement. Your concerns on the proposed groundwater well and the compliance with Section 11-20-29, Title 11, Administrative Rules are addressed in the EIS. The preliminary Engineering Report will be completed with the well pumping and water quality data for submission to the Department of Health, State of Hawaii prior to well operations.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

for HANNIBAL TAVARES
Mayor, County of Maui

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

DIVISIONS:
AGRICULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

July 18, 1984

RECEIVED
AUG 17 1984
SAM O. HIROTA, INC.
By _____

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Review of Draft EIS
Keanae Water System Improvements
Department of Water Supply, County of Maui
Keanae, Hana, Maui
TMK: 1-1-04:43 and 1-1-08:10

Thank you for your June 22, 1984 submittal of the subject draft EIS for our review and comments. Please be advised that our comments will be incorporated with our departmental response.

Sincerely yours,

Ralston H. Nagata
Acting State Parks Administrator

D-13

RECEIVED
JUL 23 1984
SAM O. HIROTA, INC.
By _____

JUL 19 1984

The Honorable Hannibal Tavares
Mayor of Maui County
200 South High Street
Wailuku, Maui 96793

Dear Mayor Tavares:

We appreciate the chance to review the draft environmental impact statement for the Keanae water system improvements.

The well will be located in an area that will not affect any "downstream" agricultural water supplies. The entire project lies on lands that are not environmentally sensitive. With proper construction and landscaping, this facility should blend into the Keanae-Wailua scenery.

This project will adequately meet the water needs for the Keanae area community for many years to come and represents an improvement in water quality as well as quantity.

Since construction within the Hana Highway will disrupt and slow down the traffic, the public, tour companies, car rental agencies, and residents of the area should be notified of construction activities in advance.

There are two corrections which should be made:

1) Page 2, line 5, and page 38, line 2: The word "ceded" should be corrected to read "set aside." The property involved is set aside by Executive Order to the County of Maui and not ceded to them.

2) Page 23, line 9: "Tax Map Key 1-1-08: 43" should be corrected to read "Tax Map Key 1-1-04: 43."

Sincerely,

Susumu Ono

SUSUMU ONO
Chairperson

cc: Mr. Wm. S. Haines
Sam S. Hirota, Inc.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Susumu Ono, Chairperson
Department of Land and
Natural Resources
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Ono:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated July 19, 1984, commenting on the subject draft Environmental Impact Statement.

Your concern on the use of the word "ceded" and the correction of the Tax Map Key number for the well site have been corrected on pages 2, 38, and 23 respectively in the Final EIS. During construction of the pipeline in Hana Highway, the public will be notified of the construction date.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

for HANNIBAL TAVARES
Mayor, County of Maui

GEORGE R. ARIYOSHI
GOVERNOR

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

WAYNE J. YAMASAKI
DIRECTOR

DEPUTY DIRECTORS
JONATHAN K. SHIMADA, PH.D
WALTER T.M. HO
CHERYL D. SOON
ADAM D. VINCENT

IN REPLY REFER TO:
STP 8.10007

June 28, 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Keanae Water System Improvements
Keanae, Maui
Environmental Impact Statement

D-15

Our previous comments contained in Section XII of the preparation notice remain applicable for this EIS. The applicant's response of April 10, 1981 assured us that they would be included in the EIS. However, our review of the text failed to substantiate this.

Please advise the applicant of our concerns.

Very truly yours,

Wayne J. Yamasaki
Director of Transportation

RECEIVED
JUL 9 1984
SAM O. HIROTA, INC.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7888

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Wayne J. Yamasaki, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Yamasaki:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated June 25, 1984, concerning your comments made. We apologize for the oversight of not including your comments in the previous EIS. The Final EIS will include that the Department of Transportation will ". . . review and approve the construction drawings for the works in the Hawaii Highway right-of-way before issuing a construction permit" and that movement of heavy construction equipment will be allowed only during non-peak traffic hours.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

for HANNIBAL TAVARES
Mayor, County of Maui

University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

9 July 1984

Mayor Hannibal M. Tavares
County of Maui
200 South High Street
Wailuku, Maui 96793

Dear Mayor Tavares:

SUBJECT: Environmental Impact Statement for the Keanae Water System Improvements, Keanae, Island of Maui, Hawaii, June 1984

We have reviewed the subject EIS and offer the following comments:

1. P. 5. Discharge of chlorinated water into an organic environment will produce trihalomethane (THM) which is a carcinogenic water contaminant. Thus, with THM formed, the chlorine will not necessarily dissipate as stated, but has been transformed to another compound. So the issue that needs to be addressed is, what are the possible effects of THM on the environment?

2. P. 25. Why does the well water need chlorination? By and large water from deep wells are clean and do not require chlorination. Surface waters on the other hand generally need disinfection.

Thank you for the opportunity to comment. This material was reviewed by WRRC personnel.

Sincerely,

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: L. Uyehara, OEQC
W.S. Haines, DWS
Sam O. Hirota, Inc.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Edwin Murabayashi
EIS Coordinator
Water Resources Research Center
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

Dear Mr. Murabayashi:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

D-17

Reference is made to your letter dated July 8, 1984, commenting on the subject draft Environmental Impact Statement. Your letter indicated two areas of concern and are addressed below and in the final EIS.

1. Trihalomethane Formation of Overflow Water

Studies on the toxicology of trihalomethanes have shown that these organic compounds can be carcinogenic and the MCL in drinking water have been established at 0.1 mg/l.

Based on studies conducted on trihalomethanes, we feel that the issue on the possible effects of THM on the environment will be minimum for the following reasons.

a. The reaction of chlorine with organic material (mainly humus on the ground) need time to complete the reaction. In some studies, it took approximately 24 hours to show an increase in trihalomethanes after the injection of fairly large doses of chlorine to surface water. In this

project, the overflow water will flow over ground for a very short time since the distance from the outlet to this stream is about 30 feet.

Approximately 10 feet from the outlet to the top of the bank is fairly flat, then 20 feet down the bank is steep approximately 1:1 slope. Therefore, the chlorinated water will have little contact time with the ground. There is a likelihood that the overflow could run for several hours if the proposed altitude valve shut off system does not operate. Daily visits to the tank site by DWS personnel should curtail the overflow from a longer period.

b. The concentration of chlorine residual should be small at 0.2 mg/l. The concentration will be further diluted when the overflow reaches the stream. Although there may be some trihalomethane formation in the stream, the natural aeration of the stream will aid in dissipating both residual chlorine and the volatile trihalomethanes.

c. The frequency of overflows should be few or none at all in the first 10 years of operation, depending on the maintenance of the pumps and control equipment by the Department of Water Supply.

2. Need for Chlorination of Clear Well Water

Chlorination is a common method of providing disinfection of a water supply system, even for clean groundwater. The supplier is responsible to deliver clean water to the consumer's tap and the chlorine residual in the water distribution

system assures there will not be microbiological regeneration within the water system.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

for HANNIBAL TAVARES
Mayor, County of Maui

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P.O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:
ES
Room 6307
JUL 3 1984

Ms. Letitia H. Uyehara
Director, Office of Environmental
Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

We have reviewed the Draft Environmental Impact Statement for the Keanae Water System Improvements, dated June 1984. The Service believes that the document adequately addresses resources within our jurisdiction. We recommend, however, that the Maui County Department of Water Supply allow all surface water in Wailuanui Stream to pass downstream of the existing intake while the proposed groundwater well is in operation. This would create additional habitat for native stream species of recreational fishery value while preserving the potential use of the existing diversion in case of well failure.

We appreciate the opportunity to comment on this proposal.

Sincerely yours,

Original signed by

Ernest Kosaka
Project Leader
Office of Environmental Services

cc: RD, Portland, OR (AFR)
DLNR
HDAR
Mayor, County of Maui
Director, Dept. of Water Supply, Maui
Sam O. Hirota, Inc. ✓

RECEIVED
JUL 5 1984
SAM O. HIROTA, INC.
By _____

D-19

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Ernest Kosaka, Project Leader
Office of Environmental Services
Fish and Wildlife Service
United States Department of the
Interior
P. O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

RE: Environmental Impact Statement (EIS) for
Keanae Water System Improvements,
Keanae, Maui

Reference is made to your letter dated July 3, 1984, commenting on the subject draft Environmental Impact Statement. Your recommendation of allowing surface water in Wailuanui Stream to pass downstream of the existing intake while the proposed groundwater well is in operation is not possible at this time. The proposed well site will have only one well and the existing surface water source will be used as a backup to the well should the pumps require servicing. The existing transmission line between the intake and the existing 20,000 gallon storage tank is old and water needs to flow continuously through the pipe to prevent accelerated deterioration of the interior of the pipeline. Also, because of the large elevation difference between the intake and the storage tank (760-360 ft.), pipes burst when control of the water is attempted. Presently, the water between the intake and the tank flows in an open system where the overflow from the existing 20,000 gallon tank flow into an irrigation ditch which diverts water from the Waiokamilo Stream to lower Wailua. The USGS map (Keanae Quandrangle) shows the terminus of the ditch near the Wailuanui Stream. Therefore, most of the

diverted water will be used to create habitat for native stream species in the irrigation ditch.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

HANNIBAL TAVARES
for Mayor, County of Maui

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FT SHAFTER, HAWAII 96858

REPLY TO ATTENTION OF

July 10, 1984

RECEIVED
JUL 12 1984
SAM O. HIROTA, INC.
By

Mr. William Haines
Director, Dept of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Maui 96793

Dear Mr. Haines:

Thank you for the opportunity to review and comment on the EIS for Keanae Water System Improvements, Keanae, Maui, Hawaii. Our letter dated March 31, 1981 on this matter adequately describes our comments. We have no further comments.

Sincerely,

Kisuk Cheung
Chief, Engineering Division

CF:
✓Sam O. Hirota, Inc.
864 S. Beretania St.
Honolulu, Hawaii 96813

D-21

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7838

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
Pacific Ocean Division,
Corps of Engineers
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

RE: Environmental Impact Statement (EIS) for
Keanae Water System Improvements,
Keanae, Maui

Reference is made to your letter dated July 10, 1984, commenting on the subject draft Environmental Impact Statement. Your comments on the proposed sites and their relation with the flood hazard maps are appreciated and have been included in this chapter EIS.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

for HANNIBAL TAVARES
Mayor, County of Maui

HANNIBAL TAVARES
Mayor

TOSHI ISHIKAWA
Planning Director

CHRISTOPHER L. HART
Deputy Planning Director

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

July 3, 1984

Ms. Letitia N. Uyehara
Director
Office of Environmental Quality Control
550 Halekauwila St. Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Re: Draft Environmental Impact Statement for the Keanae Water System Improvements, Keanae, Maui.

This acknowledges receipt of your transmittal of a resubmitted draft Environmental Impact Statement for the Keanae Water System Improvements. Please note the following comments on page 92 under the heading "Special Management Area (SMA)":

D-22

1. A Special Management Area Use Permit is required for projects in the designated area whose valuation is greater than $65,000.00, or which may have significant adverse environmental or ecological effects; not $25,000.00 as mentioned.

2. An application to process a Special Management Area Use Permit is processed by the Department of Planning with action on the permit request decided by the Maui Planning Commission; not by the Division of Land Use and Codes of the Department of Public Works.

3. A public hearing for a Special Management Area Use on a portion of the Keanae Water System was held by the Maui Planning Commission on May 22, 1984. Subsequent to the public hearing, the Planning Commission approved the Special Management Area Use Permit request.

We have no further comments to offer at this time, however, we thank you for the opportunity to review this draft Environmental Impact Statement.

Should you have any questions, please contact my office.

Very truly yours,

TOSHIO ISHIKAWA
Planning Director

cc: W. Haines, Water Supply
Sam O. Hirota, Inc.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Toshio Ishikawa
Director of Planning
County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Ishikawa:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated July 3, 1984, commenting on the subject draft Environmental Impact Statement. Your clarification on the requirements of a Special Management Area Use permit and the processing of the Special Management Area Use permit by the Planning Department and not the Division of Land Use and Codes have been corrected in the Final EIS. We appreciate the information on the public hearing for the Special Management Area Use permit on a portion of the Keanae Water System and have included it in the EIS.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

HANNIBAL TAVARES
for Mayor, County of Maui

COUNTY COUNCIL
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

July 13, 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

AND

Honorable Hannibal Tavares
Mayor, County of Maui
Wailuku, Hawaii 96793

Dear Ms. Uyehara and Mayor Tavares:

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT FOR THE KEANAE WATER SYSTEM IMPROVEMENTS, JUNE 1984

D-84-24

I am in receipt of the Environmental Impact Statement for the Keanae Water System Improvements, June 1984.

As noted in the subject statement, the Maui County Council did approve the acquisition of the site for the 50,000 gallon storage tank. The Council's approval involved a resolution authorizing proceedings in eminent domain for the acquisition of the site. During its deliberations on the resolution, the following concerns of the proposed improvements were raised:

1. Potential adverse impacts of the proposed improvements on the stream flows of the Waiokamilo and Wailuanui Streams.

2. Selection of a storage tank site which was not included in the original EIS.

3. Adverse impacts of the proposed improvements on the lifestyle of the residents and on stimulating urban development of the area.

4. Because of the eminent domain proceedings, requiring the owners of the tank site to go through a lengthy quiet title action.

5. Propriety of the Council's approval to acquire the tank site prior to the completion of the EIS requirements.

The first three concerns appear to have been adequately addressed in the resubmitted EIS, dated June 1984, while the remaining two were not within the statement's purview.

For the fourth concern, the County's Corporation Counsel advised the Department of Water Supply that the best method for acquiring the tank site was through eminent domain because of the number of property owners with an undivided interest in the property and because some owners are unknown. To address the concerns of the property owners, the Corporation Counsel indicated that attempts will be made to negotiate with East Maui Irrigation Co., Ltd., the principal owner, to have the condemnation affect its interest in the property rather than the interests of other owners.

In addressing the fifth concern, the Corporation Counsel advised the Council that its approval of the site acquisition was proper in spite of the EIS requirements not being complete. The Council was further informed that the eminent domain proceedings would not commence until the EIS requirements were completed.

In reviewing the subject statement, it appears that the major environmental impacts of the proposed improvements have been adequately addressed. However, the following apparent discrepancies should be noted:

1. Although several maps in the EIS depict an existing 10,000 gallon redwood tank on the Keanae School property, no reference is made to the tank nor is an explanation contained in the EIS.

2. On page 52, of the EIS, the elevation of the alternate well site is described as being approximately 80 feet above mean sea level and located adjacent to and mauka of the Keanae School property. However, the maps in the EIS depict the elevation of Keanae School as being 280 feet above sea level.

3. On page 53 of the EIS, the elevation of the alternate storage tank site is described as being approximately 460 feet above mean sea level and the site as being located in the vicinity of the existing 20,000 gallon storage tank. However, the maps in the EIS depict the elevation of the existing 20,000 storage tank as being 360 feet above sea level.

Thank you for the opportunity to review and comment on the Environmental Impact Statement for the Keanae Water System Improvements, dated June 1984.

Very truly yours,

GORO HOKAMA
Council Chairman

GH:GYO:po

cc: Mr. William S. Haines, Director
Department of Water Supply

Sam O. Hirota, Inc.

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7611

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Goro Hokama, Chairman
Council of the County of Maui
200 South High Street
Wailuku, Maui, Hawaii 96793

Dear Mr. Hokama:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated July 13, 1984, commenting on the subject draft Environmental Impact Statement. The concerns of the quiet title proceedings are included in the Final Environmental Statement. The discrepancies you have noted have been clarified in the Final EIS. The 10,000 gallon redwood tank on Keanae School belongs to the State and is used for the school only. The elevation of the alternate well site should be 290 feet instead of 80 feet above sea level.

The elevation of this alternate storage tank site should be 360 feet above sea level and not 460 feet.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

for HANNIBAL TAVARES
Mayor, County of Maui

Maui Group, Hawaii Chapter
The Sierra Club
P. O. Box 416
Haiku, Maui, Hawaii 96708
July 20, 1984

Ms. Letitia Uyehara, Director
Office of Environmental Quality Control

And

Mayor Hannibal M. Tavares
Maui County, et al

Comments on Resubmitted Draft Environmental Impact Statement for Keanae Water System Improvements.

This organization was granted Consulted Party status for this EIS in April, 1981. No comments were previously submitted on either the Preparation Notice of February, 1981, or the original Draft EIS of September, 1983, because we felt the Department of Water Supply was making a sincere, if belated, effort to comply with the federal Safe Drinking Water Act of 1974. While we had a strong preference for utilization of groundwater rather than surface sources, so long as appropriate standards were met, we did not want to appear to obstruct this needed improvement in any way. We still urge the earliest possible compliance with Safe Drinking Water standards.

The revised Draft EIS implies that at least a portion of the water supplied to the people of Keanae will be drawn from a basal aquifer. There are hints that this may be mixed with surface water. If so, we need to know what the proportions will be and what cost factors are involved in determining the proportions. If basal lens water of excellent quality is reasonably available, it may be undesirable to degrade this to the point of minimal acceptability by using it to dilute contaminated water.

The time sequence of this EIS (preparation notice - 31 months - draft EIS - 9 months - resubmitted draft EIS) spanning more than three years and seven months, during which period a series of definitive actions have been taken (installation of an ineffective filtration and UV purification system; drilling of an "exploratory" well which, due to its 8" diameter with 221 feet of solid casing and cement grouting, capable of producing 100 gpm (144,000 gpd), appears to be, in actuality, a producing well; condemnation procedures for a previously undiscussed storage tank location; Special Management Area permit based on premature decisions; actual selection of a contractor to implement premature decisions). If everything has been decided, indeed even implemented, why are we reviewing the EIS and why will others go through the motions of evaluating it for acceptability? This is a dangerous procedure which makes a mockery of environmental protection, and to which we strenuously object.

Comparative costs for the various alternatives are impossible to determine from the information provided. On page 26, construction cost of the 50,000 gallon storage tank at the selected site is $150,000, while on page 51 a total cost of $200,000 is given. The alternative site is described as costing $50,000 more for sitework alone, but in the September, 1983 version of the Draft EIS (page 44) the total estimated cost of a 45,000 gallon tank at that site was $80,000. Reviewers of this EIS need a good set of comparative, all-inclusive costs. Delays due to site changes between the Draft EIS and the resubmitted Draft EIS, and all costs for land acquisition, should be shown. Furthermore, a cost-benefit analysis of pumping to a higher elevation at the newly proposed site (381' el. vs. 360' el.), purportedly required for adequate service and fire protection in the Keanae School area (approximate el. 280') is needed for comparing relative costs. The ultimate long-term cost of lifting millions of gallons of water this extra 21 feet could be considerable, and its necessity should be proven.

In the interest of promoting private land ownership and traditional Hawaiian agriculture, the Maui Group of the Sierra Club strongly urges that private lands be condemned only as a very last resort consistent with meeting legitimate public service needs. Such a need has not been adequately shown in this Draft EIS.

Submitted with approval of the Executive Committee.

Mary Evanson

Mary Evanson
(For the Conservation Committee)

cc: W. S. Haines
S. O. Hirota
Conservation Committee, Hawaii Chapter, Sierra Club

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7611

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Ms. Mary Evanson
Conservation Committee
Haui Group, Hawaii Chapter
The Sierra Club
P. O. Box 416
Haiku, Maui, HI 96708

Dear Ms. Evanson:

RE: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter dated July 20, 1984 commenting on the subject draft Environmental Impact Statement. Your letter indicated several areas of concern and are addressed below in the Final EIS.

1. Mixing of Groundwater and Surface Water

This project is intended to make the groundwater source the primary water source and to keep the surface water source as a backup should the pumps or pump motors require any servicing. There is no intent to mix the groundwater and the well water.

2. Definitive Actions of the County:

a. UV Purifier:

The existing UV purifier was installed before studies started on the Keanae Water System to meet the SDWA standards.

b. Multimedia Filtration Plant

The Multimedia filtration plant was installed last year as part of the surface water system to bring down the turbidity readings to show the State and the EPA that the County was taking interim measures to comply with the SDWA. Although turbidity has been reduced significantly (highs of 20 NTU to 6-7 NTU), the reduction was not within the SDWA standards.

c. Drilling of an Exploratory Well by DLNR

The exploratory well site was selected by the State DLNR for their progress of groundwater data collection and testing. The County has asked and received permission from DLNR to develop the well into a producing well. In this way, the cost of drilling the well and pump testing was borne by the State and not the County of Maui.

d. Council Approval to Start Proceedings to Acquire the Tank Site by Eminent Domain

The DWS has obtained a resolution from the Council to proceed with the acquisition of the proposed 10,000 square feet tank site. However, the eminent domain proceeding will not start until the EIS requirements are completed.

e. Special Management Area Use Permit for Well Site

The proposed well site is located within the SMA zone and a Special Management Area Use permit is required for construction on the well site.

f. Actual Selection of a Contractor

The project was advertised and bids received in June, however, the contract for the project has not been awarded and the actual

selection of the contractor has not yet been made. The award of the contract depends on the acceptability of EIS.

The Department acted in the interest of providing the Keanae Community with domestic water conforming to the requirements of the State's Drinking Water Standards and was faced with the short time frame of getting available State funds committed before the funds lapsed.

3. Cost

The construction cost of $150,000 should be the same on pages 26 and 51.

In the September 1983 version of the draft EIS, the cost of an access road from the site was not included in the cost of the tank. The $50,000 should be included as part of the sitework.

Pumping Cost

Based on a pumping time four hours per day and electrical rate of $15/day, the additional power cost to raise the water an additional 20 feet will be approximately $173 per year.

Comparative Costs

In reassessing the sites for the existing 20,000 gallon tank, it was found that the 20,000 gallon tank lies entirely on private property (TMK 1-1-8:04) and locating the storage tank at the present site would again involve the taking of land, and in this case, would remove lands currently in taro production.

Also at this site, the construction area will be limited because of the high knoll, the taro patch, and the irrigation ditch on three sides of the construction area.

If the tank site was moved to be located entirely on State land and to clear the limitations

mentioned above, the elevation of the tank would be located at Elevation 440 feet, which would be too high for the water system.

Therefore, considering the difficulty in sitework, the acquisition of land from private owners and taking land constantly in taro out of production, constructing new access road and required elevation of tank, the construction cost of the proposed tank site will be lower than the alternative site at the vicinity of the existing 20,000 gallon tank.

Promoting Private Land Ownership

Parcel 10 will not be taken away entirely but that the owner's interest will be reduced by 0.23 acres out of 104.05 acres. Traditional Hawaiian agriculture and land ownership will still be there. The proposed project will serve the public health and welfare in providing drinking water conforming to the State's Standards and improving the fire protection capacity of the system where the new 6 inch water lines are installed.

Very truly yours,

for Hannibal Tavares
Mayor, County of Maui

ENV
M-W

MAUI ELECTRIC COMPANY, LIMITED

July 16, 1984

STATE OF HAWAII
Office of Environmental Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Attention: Ms. Letitia N. Uyehara
Director

Subject: (EIS) Keanae Water System Improvements
Keanae, Maui

We are in receipt of your June 22, 1984 transmittal, which we received from Hawaiian Electric Company, for subject project.

We foresee no major problems or adverse effects to the area in providing electrical service to the pump station as requested for by the County of Maui, Department of Water Supply. Electrical service design coordination has been in progress with the County of Maui DOWS and their electrical consultant since April 1984.

It is our understanding only the Booster Pump Station location associated with this project requires electric service from our Company.

Enclosed is the EIS for your use and files.

for DONALD CHAI
Distribution Engineering Supervisor

DC:rt

Enc.

cc: CofM - Mayor Hannibal M. Tavares
DOWS, Mr. William S. Haines
Sam O. Hirota, Inc.

RECEIVED
JUL 18 1984
SAM O. HIROTA, INC.
By _____

POST OFFICE BOX 398 • 210 KAMEHAMEHA AVENUE • KAHULUI, MAUI, HAWAII 96732 • (808) 871-8461

D-29

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7855

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 20, 1984

Mr. Donald Chai
Distribution Engineering
Supervisor
Maui Electric Company, Ltd.
210 Kamehameha Avenue
Kahului, Maui, Hawaii 96732

Dear Mr. Chai:

RE: Environmental Impact Statement (EIS) for
Keanae Water System Improvements,
Keanae, Maui

Reference is made to your letter dated July 16, 1984, commenting on the subject draft Environmental Impact Statement. Your comments on the availability of electrical service to the well site is appreciated. You are correct in your understanding that only the booster pump station location associated with this project requires service from Maui Electric Company.

Thank you for reviewing our Environmental Impact Statement for the Keanae Water System Improvements.

Very truly yours,

HANNIBAL TAVARES
for Mayor, County of Maui

RECEIVED

JUL 27 1984

SAM O. HIROTA, INC.

By _____

S.R. 1 Box 138
S.R. 1 Box 170
Haiku, Maui, Hawaii 96708
July 23, 1984

Ms. Letitia N. Uyehara, Director
Office of Environmental Quality Control
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Enclosed please find original of the Comments on the Environmental Impact Statement for the Keanae Water System Improvements. These are being submitted by the Keanae-Wailuanui Community Association, Inc. and also by myself as an individual. Please send us any responses received to these comments and keep us informed as to the status of this project.

As you requested, we are sending copies to Mayor Tavares, Director Haines of the Department of Water Supply, and Sam O. Hirota, Inc. However, we take exception to the designation of the Mayor as one of the accepting authorities in this project. Section 1:72(a) of your EIS Regulations specifies that "In the event the action involves both State and County lands and/or funds, the Governor shall have final authority to accept said EIS."

Thank you for your assistance.

Very truly yours,

Stephanie A. Hookano

Stephanie A. Hookano
Vice-President
Keanae-Wailuanui Community Association, Inc

Stephanie A. Hookano

Stephanie A. Hookano
individual resident and landowner of
Keanae-Wailuanui

cc: Mayor Tavares
Director Haines
Sam O. Hirota, Inc.

D-30

COMMENTS

ON THE

ENVIRONMENTAL IMPACT STATEMENT

FOR THE

KEANAE WATER SYSTEM IMPROVEMENTS

Keanae, Island of Maui, Hawaii

Proposing Agency
Department of Water Supply
County of Maui
Wailuku, Maui, Hawaii

Comments Submitted by
KEANAE-WAILUANUI COMMUNITY ASSOCIATION, INC.
S. R. 1 Box 138
Haiku, Maui, Hawaii 96708

and

Stephanie A. Hookano
S. R. 1 Box 170
Haiku, Maui, Hawaii 96708

JULY 23, 1984

The following comments are designed to elicit point by point responses from the Department of Water Supply (DWS) of the County of Maui, as required by Environmental Impact Statement (EIS) Regulations of the Environmental Quality Commission (EQC) Section 1:62. Unless otherwise noted, references are to these Regulations and to the revised EIS submitted in June, 1984. Responses are requested both to the comments made and to the questions posed. If a "yes" or "no" answer does not fully explain the issue, please explain the answer.

I. THE PROCEDURES REQUIRED BY SECTION 1:71(a) AND (c) HAVE NOT BEEN COMPLETED SATISFACTORILY

A. NO NEW EIS PREPARATION NOTICE WAS FILED FOR THE REVISED EIS

The DWS filed an EIS Preparation Notice for Keanae Water System Improvements in February 1981. This notice described six possible sites where parts of this project would be located. Nowhere was the present proposed site for the 50,000 gallon storage tank mentioned (TMK 1-1-08:10, hereinafter referred to as"Parcel 10" or "hui land"). Nowhere was the discharge of chlorinated water into Waiokamilo Stream mentioned.

An EIS based on this Preparation Notice was submitted in September, 1983. On June 20, 1984 the original EIS was withdrawn and a revised EIS submitted. No new Preparation Notice was filed for this revised EIS.

Section 1:31(c) requires the Preparation Notice to contain descriptions of proposed sites and indications of major impacts and other information. Persons who request consultant status after the publication of availability of the Notice are sent copies and given the opportunity to comment. These comments are then addressed in the EIS.

Had a new Preparation Notice been published, the Keanae-Wailuanui Community Association, Inc. (K-WCA) would have requested consultant status, and would have commented on the Notice. By failing to prepare a new Notice for the revision, the community was deprived of the right to be consulted during its preparation. Although the DWS was well aware of K-WCA's opposition to the new tank site, the revision does not mention this. This defect cannot be remedied by the review and comment process which is now being conducted, for

this is a separate, subsequent review process.

Section 1:41 requires:

> ...(A)gencies and applicants shall endeavor to develop a fully acceptable EIS prior to the time the EIS is filed with the Commission, through a full and complete consultation process, and shall not rely solely upon the review process to expose environmental concerns.

By bypassing the Notice and consultation process, the DWS has violated Sections 1:31(c), 1:41, 2:00 and 2:10. Even if the revision were considered a Supplemental Statement, the requirements are the same.

Table 6 (p. 70) identified persons receiving a copy of the EIS Preparation Notice in 1981. Table 6 and Table 8, Reproduction of Comments and Responses Made During the Consultation Process (p. 71-85) are completely irrelevant, as this correspondence relates to the Notice which identified sites different from those considered in the revised draft EIS, and different impacts.

1. Did the EIS Preparation Notice dated February 1981 and the EIS dated September 1983 consider the alternative for locating the 50,000 gallon tank on Parcel 10?
2. Does the proposed site now under consideration (Parcel 10) involve:
   a. a change of location?
   b. new or different impacts?
   c. new social or economic impacts?
   d. proposing an essentially different action?
   e. use of private land necessitating condemnation proceedings to take land from private owners? Explain all answers.
3. Was the EIS dated September 1983 withdrawn by June 20, 1984?
4. Was a revised EIS submitted for review and comment on June 20, 1984?

5. Did the new EIS discuss a new location (Parcel 10) for the 50,000 water storage tank for the first time?
6. Did the new EIS discuss the discharge of chlorinated water into Waiokamilo Stream for the first time?
7. Was a Preparation Notice filed with the EQC regarding the EIS - submitted on June 20, 1984?
8. Was there any consultation process, as required by the EQC Regulations, regarding the EIS which was submitted on June 20, 1984, separate from any consultation for the withdrawn EIS? If so, who was consulted and what comments were made?
9. Do the comments and responses beginning on p. 72 of the revised EIS relate to the original EIS which has been withdrawn and not to the EIS submitted on June 20, 1984?

B. THE COUNTY HAS SELECTED AN ALTERNATIVE AND TAKEN ACTION TO PROCEED WITH THIS PROJECT PRIOR TO THE ACCEPTANCE OF AN EIS

The environmental laws and regulations make it clear that an EIS must be accepted before a project can be implemented. The County has already chosen an alternative and taken and continues to take actions to implement this project despite the fact that the EIS has not been accepted and that the project has been changed in major ways from the original plan.

The following actions have been taken:

1. the County Council voted on May 18, 1984, 7-2, to approve a Resolution authorizing the County of Maui to condemn a portion of Parcel 10 for the tank. This resolution was prepared and submitted by the DWS;

2. the Governor on May 18, 1984 authorized the calling of bids on the project and the awarding of the contract if the low bid was within the available appropriation and/or project estimate, as well as the giving of notice to proceed, promising the release of funds;

3. the Maui County Planning Commission granted a Special Management Area (SMA) permit for the project on May 22, 1984;

4. the County put the project based on the proposed sites out to bid on May 25, 1984;

5. the bids were opened by the County on June 14, 1984;

6. the Mayor requested that the Governor release the funds on June 19, 1984;

7. the Director of the DWS (Director) applied for a subdivision of the proposed tank lot and access and utility easements on June 21, 1984. A public hearing is scheduled for July 31, 1984 by the Board of Variances and Appeals.

8. The County has executed a contract for consulting and engineering services for this project, and considerable work based on the proposed sites has been done pursuant to this contract.

Furthermore, the County plans to award the construction contract regardless of whether the EIS has been accepted. In response to the request of the Chairman of the County Council for a status report on the actions taken in compliance with Ch. 343 H.R.S. in this matter, the Director stated on June 28, 1984 that the Department expects that the EIS will be accepted prior to the deadline for awarding of the construction contract which is 90 days after the June 14, 1984 bid opening. He continued:

> If there are any major unforseen delays in processing the environmental impact statement, this would require delaying the notice of proceed to the contractor after awarding of the contract.

The County continues to thumb its nose at the requirements of the law and is proceeding in implementation of the project. In effect, this entire review process is a sham, since the alternatives have already been chosen and the plan is being implemented before the environmental consequences have been evaluated.

Thus the procedures required by Section 1:71 (a) and (c) have not been completed satisfactorily and the EIS is not acceptable.

10. Does the EIS law state that acceptance of an EIS is a condition precedent to the taking of any actions on a project?

11. Do the EQC Regulations prevent the use of State or County funds before the acceptance of an EIS?

12. Should an EIS be accepted before a decision is made to select any of the alternatives or to go forward with a project?

13. Has an EIS been accepted for this project?

14. Have you selected an alternative and proceeded with the project even though the EIS has not been accepted?

15. Have you obtained the passage of a resolution authorizing the condemnation of a part of Parcel 10?

16. Have you requested and been granted an SMA permit?

17. Have you put the project out to bid?

18. Have you opened the bids?

19. Have you accepted a low bid?

20. Have you received authorization from the Governor to commit funds?

21. Have you executed a contract for consulting and engineering services?

22. If so, has considerable work been done pursuant to this contract? Explain what work has been done.

23. Have you requested encumbrance of funds from the State?

24. Have funds been encumbered?

25. Have you applied for a variance for the tank lot?

26. Do you intend to award a contract regardless of whether the EIS has been accepted?

27. Which of the acts above (14-26) constitute taking action on a project prior to acceptance of an EIS? Please enumerate.

28. Are all of the acts above (14-26) based on the assumption that the tank will be located on Parcel 10?

29. Do you intend to stop taking further action on this project until the EIS is accepted?

II. THE CONTENT REQUIREMENTS OF SECTION 1:42 HAVE NOT BEEN SATISFIED

A. PROJECT DESCRIPTION 1:42(b)

1. No "general description of the action's technical, economic, social and environmental characteristics" is provided. These issues will be discussed below.

2. The discussion of use of public funds or lands is misleading and confusing. On p. 26 the construction cost of the new tank site is estimated at $150,000. At p. 51 the estimate is $200,000. None of the figures given coincide with the data provided the Governor's office on project costs.

The statement that "public land will be used at both sites" (p. 38) is a fiction. Parcel 10 belongs to many private owners. It will become public land only if the owners are forced to sell via condemnation.

3. There is no adequate discussion of phasing and timing of the action. This will be discussed below.

4. No detailed map is provided. A USGS topographic map, as suggested by the Regulations, would be very helpful in showing alternative sites at adequate elevation.

5. Contaminants and Contaminant Levels:

The well water has still not been tested to verify that all levels of contaminants are within the drinking water standards (p. 88). Given that

> The objective of the proposed project is to provide the communities of Keanae and Wailua with potable water complying with the State and Federal Drinking Water Standards (p. 1).

it is quite incredible that the County cannot verify that in fact the well water will meet these standards!

To say that "the contaminants listed on the drinking water standards and tested for were within the limits of the standards (p. 21) is misleading. Using as reference the table in Appendix B, B-1, "Sampling Results, Primary Contaminants", which gives results of the testing of the current water source, and Table 2 (p. 22), which gives results of the testing of the well water, and Title 11, Ch. 20 of the Department of Health Administrative Rules, it becomes obvious that the well water was tested for only three primary contaminants: flouride, nitrogen, and sodium. No results for the following primary contaminants are given:

INORGANIC CHEMICALS:	ORGANIC CHEMICALS:
Arsenic	Endrin
Barium	Lindane
Cadmium	Methoxychlor
Chromium	Toxaphene
Lead	2, 4-D
Mercury	Silvex
Selenium	Trihalomethanes
Silver	

CORROSIVITY
MICROBIOLOGICAL CONTAMINANTS
RADIONUCLIDES

The tests that were done show that the contaminant level for sodium, 20 mg/l, is at the Maximum Contaminant Level (MCL).

Referring to B-6, "Sampling Results, Secondary Contaminants", which gives results of the testing of the current water source, and Table 2 (p. 22), it is clear that the levels for iron and manganese in the well water are tremendously in excess of the MCL. The MCL for iron is 0.30 mg/l. The tested sample contained 12 mg/l. This is 40 times the MCL. The MCL for manganese is 0.05 mg/l. The sample tested contained 1 mg/l, or 20 times the MCL.

The required testing must be completed successfully before this

EIS is accepted. Given the fact that the well exists in the midst of an intensively cultivated agricultural area, the failure to test for the required contaminants cannot be ignored.

There is no discussion of the proposed mixing of the surface and ground waters, which is what the DWS has told the community it plans to do. No analysis of the resulting contaminant levels is presented. The level of selenium in the present water system apparently exceeded the MCL in one sample (see B-1).

30. What is the projected cost of construction of the 50,000 gallon tank?
31. What is the total projected cost of the project?
32. Give a breakdown of the answer to 31.
33. How do you propose to fund the project? How much will be State and how much County funds?
34. Does the current water system for the Keanae area use chlorination?
35. If so:
    a. where is the chlorine injected?
    b. does any chlorinated water overflow?
    c. where does the overflow go?
    d. how much overflow is discharged?
36. Is the sump described on p. 27 included in the plans given to contractors who bid on this project?
37. What is the size and capacity of this sump?
38. Why is an easement rather than ownership of the sump planned?
39. Why would the new tank be "better situated" on parcel 10 (p. 36)?
40. Please provide a USGS map of the project site area indicating the location of the proposed tank and also the boundaries of

Parcels 1-1-08:5 and 1-1-08:24.

41. Is the level of sodium in the well water equal to the MCL?

42. Is the level of iron in the well water equal to the MCL?

43. Is the level of manganese in the well water in excess of the MCL?

44. Was the level of selenium in the water sample taken from the Keanae School on 10/14/80 in excess of 0.01 mg/l?

45. The information in the last 5 lines of page 27 is garbled. What did you mean to say?

B. DESCRIPTION OF THE ENVIRONMENTAL SETTING 1:42(c)

1. Cumulative Impacts

Section 1:42(c) specifically requires that:

> ...Specific reference to related projects, public and private, existent or planned in the region shall be included for purposes of examining the possible overall cumulative impact of such actions...

a. The Deputy Director of the DWS in response to questions informed community residents on May 16, 1984 that the DWS has definite plans to drill at least one additional well in the vicinity of the current well. This was the first time the community became aware of such future plans. Nowhere in the entire draft EIS is this plan mentioned, and the cumulative impact discussed.

The Maui County budget projects $500,000 to be spent in fiscal years 1986-90 for a pump station and storage tank in Keanae. These programs are not discussed in the EIS.

b. DWS officials, including the Director, have on numerous occasions informed residents that the DWS plans to mix the surface water which is the current water source for the community with the well water. Only enough well water will be added to bring the surface water up to the required clean water standards.

Apparently the DWS does not plan to construct the pipeline between the existing 20,000 gallon tank and the 10,000 gallon tank at the well site at this time. However, it clearly is part of the overall project, and details should be included so that the cumulative impact can be analyzed.

Instead, throughout the EIS statements such as the following are made:

The surface water source could be maintained as a back-up system when power failures occur or when the pumps are inoperable due to maintenance. (p. 34)

Similar statements which ignore the plan to mix the two sources are made on p. 60-61.

No data is given as to the contaminant levels of the mixed water.

The phasing and timing of the entire project should be discussed.

46. Did the Deputy Director tell members of the community on May 16, 1984 that at least one more well is planned for the Keanae area?

47. Does the State or County plan to drill more wells or build more water tanks in the Keanae area?

48. According to the information available to you at this time, describe:

a. other wells or tanks the State or County plans to drill or build in the Keanae area

b. the location of each well or tank

c. the pumping capacity of each well

d. the storage capacity of each tank

e. the water source for each well or tank

f. whether the water from each well or tank is planned to be used completely for the benefit of Keanae area residents

g. if the answer to (f.) is no, identify the intended beneficiaries of these water resources

h. what is the purpose of each well or tank?

i. if the purpose of any of these wells is as a "backup" to the existing well, describe in full why such a backup is needed

and why a backup pump would not be sufficient

j. if a breakdown of the pump for the existing well were to occur, how long would it take to:

(1) remove the pump

(2) install another pump

(3) fix the pump?

49. To the best of your knowledge, describe for each well or tank:

a. the phasing and timing for the drilling or construction

b. the proposed date for the initiation of drilling or construction

c. the proposed completion date of drilling or construction

d. the cost

e. the funding

50. Describe in full the cumulative impacts which will result from the drilling of one or more additional wells in the Keanae area.

51. Describe in full the cumulative impacts which will result from the construction of one or more additional tanks in the Keanae area.

52. Describe in full the projects referred to in the DWS Five-Year Capital Improvement Plan for Fiscal Years 1986-1990 as:

Storage Construction Program
Keanae Storage Tank (Keanae Water Project, Phase I)
P.A. $100,000 sp
Source Development Program
Keanae Deepwell Pump Station (Keanae Water Project, Phase I)
P.A. $400,000 s
(County of Maui Proposed Budget for the Fiscal Year 1985, p. 53-54)

Include in your answer replies to questions 47 through 51 as they apply to this program.

53. Do you plan to construct a pipeline between the existing 20,000 gallon tank and the 10,000 gallon tank at the well site?

54. What will be the purpose of this pipeline?

56. What will it cost?

57. How will it be funded?

58. How large will the pipeline be?

59. Describe in full the cumulative impacts which will result from the construction and operation of this pipeline.

60. Do you plan to mix the surface water from Wailuanui and the well water for domestic use in the Keanae area?

61. When do you expect to begin mixing the water?

62. Why do you plan to mix the water?

63. What contaminant levels do you expect will remain in the mixed water?

64. What will be the ratio of well to stream water?

65. Describe in full the process by which the water will be mixed.

66. Describe in full the cumulative impacts which will result from mixing the water.

67. Describe any other potential future water projects involving the Keanae area or water resources therein which have not already been discussed. Include a full description of the cumulative impacts of each project.

2. Source of Data

Section 1:42(c) states:

> ...It is essential that the sources of data used to identify, qualify or evaluate any and all environmental consequences be expressly noted...

At several points the EIS discusses the effects of the dumping of chlorinated water into the stream. Nowhere are the sources of the data noted.

On p. 57 Table 4 gives a Summary of Anticipated Impacts at Sites for Recommended Alternative. Nowhere is the source of the data used in these charts explained, or why particular ratings were given. In several cases the rating has no relationship to the discussion of the topic. This subject will be further explored below.

68. What is the source of your data on the probable impact of the dumping of chlorinated water into the stream?

69. What is the source of your data in Table 4?

C. LAND USE PLANS 1:42(d)

1. Well Site

In the proposed Community General Plan drawn up by the K-WCA, parcel 1-1-04:43 (parcel 43), the current well site, was to be used for a gas station, general store, equipment storage facility and community center. County officials were made aware of the community's desires. The Mayor was given a copy of the plan, which noted this parcel, and met with community leaders regarding the project.

The plan was included in a proposal for a grant to the Administration for Native Americans, (ANA) which has since been awarded to the K-WCA. The use of the parcel was also specifically referred to in the proposal at page 49:

> Need Statement: A parcel of land is needed to maintain the various functions and equipment of the Keanae-Wailuanui Community Association...
> Statement of the Objective: Acquire by lease or purchase the "Laborers' Camp and Stables" site at Wailuanui which is under the management and control of the County of Maui to service the Hana Highway (Tax Map Key No. Zone 1, Section 1, Plat 04, Parcels 32 and 43, under Executive Order Number 235 of the Governor of Hawaii, for use by the Keanae-Wailuanui Community Association, Inc. as a maintenance and service facility...

Mayor Hannibal Tavares wrote to the President of the K-WCA on May 23, 1983, endorsing the grant proposal, stating:

> Keanae-Wailuanui is an underdeveloped area that holds excellent potential for economic growth. Your community association's proposal to the Administration for Native Americans to stimulate such development is well-conceived and warrants propitious consideration. I strongly support your association's efforts to utilize agricultural resources in an attempt to increase job opportunities for unemployed residents, especially the youth of the community.
>
> The community's economic development strategy is consistent with the County's goals and objectives. The County is therefore most willing to work closely with the association to assure success of this necessary program. If I can be of further assistance to you in this matter, feel free to contact me or our Office of Economic Development.

However, less than a month after the Mayor expressed his full support for this project, he wrote to the Chairman of the Board of Land and Natural Resources that the County had no objection to using parcel 43 for the exploratory well. The community was not told of this letter.

Thinking it had the support of the Mayor for its use of the site, the community was very surprised when the well was drilled on parcel 43. The community currently has the use of a number of large machines acquired through the grant. It had hoped to erect a storage facility for the machinery, which is greatly needed, on the site where the well has now been drilled.

A community center is projected in the County's budget for 1985-1986 - 1989-1990. There are very few small parcels belonging to the County which would be suitable for a community center.

Throughout the EIS, it is emphasized that the County will in fact use only a small portion (.15 ac. or 6,649 sf) of this 1.01 acre parcel (p. 4, 23, 38). The implication is that the rest of the parcel will be available for other uses. When the community originally asked the Director if the rest of the parcel could be made available for community use, it received a positive response. Later, however, the Director said that the DWS would not be willing to share the parcel and would keep the entire parcel for its own use. However, there is no discussion in the EIS of the use to which the remainder of the parcel will be put, or the reasons for refusing the community use of the parcel.

2. Tank Site

The proposed tank site is near cultivated agricultural land and will remove about 10,802 sf from potential agricultural use or use as an agricultural dwelling.

3. Amount of Water Available

The EIS states at p. 40: "The proposed water system improvements will:...3. increase the amount of water which will be available to the Keanae community." This statement is made in several other places, and is apparently based on the assumption that the surface water from Wailuanui which is replaced by well water will be available for agricultural use by the community.

At the contested case hearing on the SMA permit for this project the K-WCA asked the County to agree to a condition to the permit formalizing this assumption. We asked for a condition stating that any water "saved" at Wailuanui by not being used by the DWS be released for downstream users. The DWS refused this condition, stating that it could not control the amount of water that East Maui Irrigation Co. (EMI) takes, and that it was quite likely that EMI would in fact take any "extra" water. Thus it is completely misleading to say that there will be any increase in water available to the community from this source.

70. Was Mayor Tavares aware of the community's desire to use parcel 43 for a gas station, general store, equipment storage facility and community center?

71. Was the Mayor given a copy of the proposed Community General

Plan drawn up by the K-WCA, referring to this site? (old parcel 19)

72. Did the Mayor meet with community leaders concerning their proposed project on this site?

73. Did the Mayor write to the K-WCA endorsing its ANA grant proposal, which included plans for community use of parcel 43?

74. Did the Director originally tell community members that the community could use part of parcel 1-1-04:43?

75. Did the Director later tell community members that the DWS was unwilling to share parcel 43?

76. What use do you plan to make of the .86 acre portion of parcel 43 which is not needed for the well site?

77. Why are you unwilling to share the site with the community?

78. Has Executive Order No. 235 been cancelled as to parcel 43?

79. Has a new Executive Order been granted for parcel 43? If so, what are its conditions.

89. What site(s) does the County have in mind for the projected Keanae Community Center?

90. Is there cultivated land (planted in ti leaf) near the proposed tank site?

91. Would the tank consturction remove 10,802 sf from potential agricultural use or use as an agricultural dwelling?

92. Have you been unwilling to guarantee that any water "saved" from Wailuanui because of use of well water will be released for downstream users?

93. If so, is this because of the likelihood that EMI will take any "extra" water? Explain.

D. THE PROBABLE IMPACT OF THE PROPOSED ACTION ON THE ENVIRONMENT 1:42(e)

1. All Phases Not Discussed

Section 1:42(e) specifies that:

> consideration of all phases of the action and consideration of all consequences on the environment, secondary or indirect, as well as primary or direct shall be included. The interrelationships and cumulative environmental impacts of the proposed action and other related projects shall be discussed in the EIS.

As discussed above, the county has plans for a broader project than is discussed in the current EIS. All phases of the project and other related projects have not been discussed.

2. Well Site, Parcel 1-1-04:43

a. Impact on water

(1) The EIS refers to the opinion of the consulting hydrologist, who drafted "Groundwater Exploration at Keanae Well 5108-01, Maui", Circular C95 of the Department of Land and Natural Resources, Division of Water and Land Development.

He states:

> The Waiokamilo and Wailuanui Stream source diversions, which supply irrigation water for taro cultivation in the Wailua area, are 3/4 and 1 mile away, respectively, from the well. The higher elevations and large distances of over 1/2 mile make it impossible for the existing spring and stream sources for taro irrigation to be affected by the Keanae well.

The diversions referred do not include the source and diversion which have concerned the community throughout this process. There is a final diversion from Waiokamilo just above the Hana Highway and again just below the highway--only 100 feet or so from the well site. This diversion feeds a large portion of the Wailua taro

patches. The proximity of the well to these diversions has been of great concern to the taro farmers who rely on this source for irrigation.

The water from Waiokamilo Stream which is not diverted supplies downstream users with water for domestic and agricultural use. It normally flows to the ocean. However, during very dry times, such as we are currently experiencing, the stream does not flow to the ocean. Downstream users are also concerned about the close proximity (less than 100 feet) of their stream from the well and the possible effect on the streamflow, especially during dry times when the County will rely more on well water. The tests of the well's pumping capacity were made during a period when the stream was flowing to the ocean.

The stream also supports various aquatic wildlife which are a food source for the community which would be affected if the stream flow is diminished.

Almost three months ago the community requested that the County keep stream flow measurements, beginning a year before the well becomes operative, so that we could measure the possible impact of the well on the stream flow. Although the U.S. Geological Survey was willing to cooperate, and the County was originally receptive to the idea, it later refused to devote any resources to keeping these records. Without such baseline measurements of stream flow it will be very difficult to show later whether or not there has been any effect of the well on the stream.

(2)Cumulative Effect

As noted above, the County plans additional wells for Keanae. There is no discussion of what effect such additional wells might

have on the stream flow.

(3) There is no mention on what effect construction may have on the quality of the water in the nearby stream.

(4) The overflow from the 10,000 gallon tank at the well site will go back into the well. This water will have been chlorinated. There is no discussion of the effect of this action.

b. Impact on Flora and Fauna

The EIS states that there are no known endangered plants or animals in the project site or the adjacent area (p. 44). Often endangered species exist in tiny populations and are not discovered until someone looks for them. It would be a fairly simple procedure for the County to request experts in endangered species to survey the area to make sure that no such species exist. Rene Sylva of the Maui Zoological and Botanical Gardens, who is an expert on endangered plants, would be willing to make such a survey of plants. There are state employees who are experts in endangered animal species who could make a survey of animals.

c. Impact on Objects of Historic Significance

The discussion in Section V of the EIS ignores the possible impact on objects of historic significance. However, this issue is addressed in Table 8 (p. 90). We concur with the following statement:

> It is recommended, however, that an archaeological survey be made prior to construction to ascertain any historic sites and the degree of historic significance.

This survey should, however, be conducted prior to the acceptance of the EIS. Otherwise there will be no way to evaluate the results.

Actually, the survey should have been conducted prior to the publication of the EIS, so that the results could be subject to review and comment.

d. Impact on Other Socioeconomic Aspects

The EIS incorrectly assumes that socioeconomic impacts are "not relevant" to this project. The discussion above relating to "Impact on Water" relates also to the possible socioeconomic impact. Wailua Valley is one of the major wetland taro producing areas of the state. Waiokamilo Stream is the major source for the water for Wailua Valley taro patches. If the streamflow is affected in any way, it would have a major socioeconomic impact on the taro growers and the downstream users.

Removal of parcel 43 from use by the community also constitutes a socioeconomic impact as discussed above.

3. Tank Site, Parcel 1-1-08:10

a. The EIS states: "The location of the tank is centrally located in the water system and will respond better to sudden high demands." (p. 46) Given that the capacity of the tank is 50,000 gallons, that the 1980 usage of the community was an average of 16,427 gallons/day (see Preliminary Engineering Report) and the maximum daily demand is approximately 28,000 gallons/day and the projected maximum daily demand for the year 2000 is estimated to be 45,000 gallons/day, there should be no problem in "responding to sudden high demands" regardless of the location of the tank, as long as it has sufficient elevation.

b. Land Modification

The proposed easement crosses the pipeline belonging to one

of the tenants. There is a danger that the pipeline could be damaged during the upgrading of the roadway.or the laying of pipe.

c. Soil Erosion

It is essential that careful attention be given to soil erosion.. to reduce the amount of silt that enters the stream since this water goes both to the taro patches, which need clean flowing water, and to downstream users.

d. Impact on Water

There is no discussion here of the proposed dumping of chlorinated water into Waiokamilo Stream, although this issue is addressed elsewhere.

The EIS states that the concentration of chlorine in the water will be small, approximately 1.5 mg/l (parts per million). However, the Preliminary Engineering Report for the project states: "The dosage will be determined on the basis that a 0.2 mg/l residual of free chlorine can be maintained in the system."

The EIS states that "the amount of chlorinated water that will be emptied into the stream will be minimal," but does not quantify this statement. There is no explanation of the frequency with which the tank will be visually inspected. If the controls were to fail and the tank overflowed, it could put 14,400 gallons of chlorinated water into the stream per day assuming that the pump is operating at 100 gallons per minute.

On p. 27 there is a description of a sump into which the chlorinated water will first flow before reaching the stream. The sump is not included in the blueprints given to contractors who bid on this project.

No source of the data used as required by 1:42(c) is given.

e. Impact on Flora and Fauna

The discussion of the well site is also applicable here.

f. Impact on Land Use

The project will remove a portion of land from potential use for agriculture or use as an agricultural dwelling.

g. Impact on Agricultural Lands

See above.

h. Impact on State-County Expenditures

At p. 51 the cost of the tank is $200,000; at p. 26 it is $150,000.

i. Cost to Maui County Water Users

The cost to county taxpayers could be decreased if State or County land were used for the project, as $30,000 has been budgeted for the purchase of the land from private owners. This money will come from county funds.

j. Impact on Other Socioeconomic Aspects

(1) Taking of Private Land by Condemnation.

Section 1:42(e) states:

> It should be realized that several actions, in particular those that involve the construction of public facilities or structures (e.g.,...water resource projects,etc.) may well stimulate or induce secondary effects. Such secondary effects may be equally important as, or more important than, primary effects, and shall be thoroughly discussed to fully describe the probable impact of the proposed action on the environment.

"Environment" is defined by Section 1:4(k) as:

> ...man's surroundings, inclusive of all of the physical, economic and social conditions which exist within the area which will be affected by a proposed action including land, human and animal communities, air, water, minerals, flora, fauna,..ambient noise, and objects of historic or aesthetic significance.

Nowhere does the EIS address the social and economic impact of

the condemnation of land belonging to a "human community", mainly Hawaiian, in order to build the storage tank on parcel 10. It states that socioeconomic impacts are "not relevant" to this project!

The original EIS identified the site of the proposed 45,000 gallon (now 50,000 gallon) tank as the current location of the 20,000 gallon tank, which was to be replaced. No other site was suggested by the County. Throughout the original consultation process the community was assured that only State or County land would be used in all aspects of this project. In the original EIS, use of County land was viewed as an "advantage" since no purchase of land was required (p. 53).

Toward the end of April, 1984 county surveyors appeared on private land owned in part by a great number of Hawaiians as tenants in common (hui land): parcel 10, and began survey work for the tank. The County had apparently received permission from EMI, a wholly-owned subsidiary of Alexander & Baldwin, the largest private landowner on Maui, to enter the property. EMI claims ownership of a large interest in this 104.050 acre parcel. This parcel was never mentioned in the original EIS.

Still, no communication had been made with the large number of owners of this land. Community members who heard about the surveyors assumed that EMI was selling an interest to the county.

On May 1, 1984 community members discovered via conversation with the Director that the County intended to condemn the land in question. When asked why the landowners had not been informed of the County's intentions, the Deputy Corporation Counsel in charge of the case stated that he had advised the DWS not to tell the

landowners until the resolution authorizing condemnation proceedings had passed the County Council. This procedure would have guaranteed no opposition from the community.

On April 25, 1984 the Director wrote to the Maui County Council requesting the passage of a Resolution Authorizing Proceedings in Condemnation by Eminent Domain of a Tank Lot Site located in Keanae, Maui.

Despite the protests of the K-WCA, which voted at a meeting attended by the Director and some Council members to oppose the new tank location, and 56 residents of the community (whose total population including children approximates 241), who in a period of two days signed a petition in opposition, the Maui County Council on May 18, 1984 voted, 7-2, to approve the Resolution.

The vote came after two lengthy committee meetings at which community representatives expressed their opposition, two Council meetings where members gave lengthy speeches in opposition, and a visit to Keanae by five members of the Council, DWS Deputy Director, the Corporation Counsel, and the consultant, where alternative sites were visited.

Five of the nine Council members expressed their outrage at the way in which the County had proceeded, without informing the community or taking its concerns into consideration. Three of the five eventually voted for the resolution after being assured by the County that it would pursue obtaining the land interest from EMI and that it would make every effort not to disturb the interests in the hui. They were forced into a corner by the County, which said that the whole project would fold if the resolution did not pass, since State funding would lapse on June 30, 1984 if the funds

were not encumbered by then, and it was too late to make changes. Two members voted against the resolution, supporting the community's opposition to the taking of Hawaiian land.

On Maui, 47.6% of the land is owned by the government (Federal, State and County). Another 48.9% is owned by large private landowners (over 5,000 acres each). The largest private landowner on Maui is Alexander & Baldwin, Inc. Only 3.5% of the land on Maui, or 16,356 acres, is owned by small private landowners (less than 5,000 acres each). This percentage of land held by small private landowners is the lowest for the four major Hawaiian islands. (Source: Atlas of Hawaii)

Most of the land in the Keanae area is owned by the State or EMI. There are a number of land grants which were conveyed to Hawaiians after the Great Mahele. R.P. Grant 1899, of which parcel 10 is a part, was issued in 1855 to eleven Hawaiians. Through the years this land has passed to many people, and now the tax map lists over twenty owners, many of them unprobated Hawaiian estates. EMI claims the largest share.

Of the 3.5% of Maui land owned by small private landowners, only a small portion is owned by Hawaiians. For Hawaiians, land, 'aina, is the basis of culture and identity. Over the past century and a half, Hawaiians have routinely been dispossessed of their lands. From the Great Mahele of 1848, which left commoners in control of less than 30,000 acres of land in Hawaii, through the illegal overthrow of the Monarchy with the support of the U.S. Government in 1893, and up to the present day by means of adverse possession by large landowners and the State, Hawaiians have lost their lands.

The DWS cannot understand why we are upset about such a small piece of land that they now want to take. Our feelings are summed up by one of our kupuna who asked at a community meeting, "how come every time the government wants our land, it can take, but when we need land, we cannot take from them?" For the government to take more land from people who have already had so much taken from them and who have so little left is an insult. We have lost enough of our land.

The State already owns many hundreds, perhaps thousands, of acres in our area. There are sites on State land very appropriate for this tank (see below).

The County is unwilling to give any guarantee that only EMI's interest will be affected, and is proceeding with condemnation actions against the many owners of the hui land, parcel 10.

Nowhere in the draft is this issue discussed, despite the fact that theCounty was fully aware of the community's feelings. It states that parcel 10 is "owned by several owners" (p. 2) and that "the County of Maui has started acquisition process to obtain the 10,000 SF lot from the privately owned parcel" (p. 4). It incorrectly states that "public land will be used at both (well and tank) sites. (p. 38).

(2) Cost of Condemnation Action to Owners

Not only will the landowners have a portion of their land taken from them; they will have to pay for the privilege! The condemnation proceedings will require a quiet title action to be pursued in court by the County against the many landowners. The county will actually sue the owners. All of these owners will have to hire attorneys to prove their title in court. This will also

necessitate the hiring of persons to do title search. The landowners must prove their title if they are to receive any payment for the land. Also, if they default and do not appear in court, the judgment of title which is finally made may be used against them in a future action. Thus, it is much more than the land which the County plans to take which is at issue.

The combined costs to the landowners, most of whom are Hawaiians of modest means, will be many thousands of dollars. We have received estimates of a minimum of $10,000 and a likely cost of $20,000 from several attorneys. Fees could go even higher. Multiply this by the twenty plus owners and you can see that the economic impact of this action will be enormous. Since there may be conflicts in title, each family may have to hire its own attorney. They will also have to invest their own time to appear in court in this action. The stress brough on by such involvement is an additional impact.

This action will certainly have a "significant effect" on the environment, as defined in Section 1:31(a)(4), in that it "substantially affects the economic or social welfare of the community or State."

(3) Cost of Condemnation Action to County

The cost to the County will also be high. It has budgeted $30,000 for the acquisition of land. To this must be added the cost of County employees who will have to pursue this matter in court, and have already spent a good deal of time pushing the condemnation resolution through the Counci,.as well as State court employees.

(4) Road and Pipeline Easement

The road that would be used on the hui land, parcel 10, was constructed by a tenant farming the land. The County wishes to take advantage of this road by condemning an easement over it and thus avoid creating its own road. Naturally it is easier to do the project where someone else has already done the work for you, at their expense. On the surface, this is the easy way out. It is undoubtedly because of the existence of this road that parcel 10 was chosen for the tank site.

What is the message here to individuals who, at their own expense, improve their property? Perhaps it is that we should not do too much, or we risk that the government will come along and, liking what it sees, will take it rather than doing their own work on their own land.

This is a severe socioeconomic impact, and really strikes at the basis of the concept of private property.

(5) Dumping of Chlorinated Water

The dumping of chlorinated water in the stream also could have socioeconomic impacts if it damages the aquatic stream life and/or the taro fed by the stream.

(6) Invasion of Privacy

The placement of the tank on private land will require the DWS to daily travel through private property to inspect the tank. This will involve a certain invasion of privacy of the occupants of the land.

The alternative sites and the chart on p. 57 will be considered below.

4. Disinfection

No source of data is given.

94. Discuss the impact on water given the fact that one of the stream sources (diversions) for the taro patches is approximately 100 feet from the well site, and that the water that is not diverted at this point supplies downstream users.

95. Discuss the cumulative impacts of additional wells located on parcel 43 or other sites in the Keanae area on the flow of Waiokamilo or other streams.

96. Will there be dirt runoff into Waiokamilo Stream due to the well site construction?

97. If so, what will be the impact of this runoff?

98. What effect will the overflow of chlorinated water into the well have on the basal lens?

99. What will be the effect of this already chlorinated water being re-chlorinated when it is pumped up a second time?

100. Will this re-chlorination result in excessive levels of chlorine in the water?

101. Why is it necessary to chlorinate the well water which is supposed to be so pure?

102. Will you request experts in endangered species and archeological sites to survey the well and tank sites? If not, why not? If so, when will such surveys take place? Who will conduct them?

103. Does the withdrawal of possible use of parcel 43 from use by the community constitute a socioeconomic impact?

104. To what are you referring when you state (p. 46): "The location of the tank is centrally located in the water system and will respond

better to sudden high demands." Better than what?

105. Would there be any problem in responding to sudden high demands if the tank were located near the present 20,000 gallon tank on parcel 1-1-08:5?

106. What precautions will you take to make sure you do not damage the existing pipeline running near the proposed easement to the tank site during construction?

107. What will the concentration of chlorine be in the water? Is this different from the residual of free chlorine? Please explain.

108. What is the basis for considering these levels (in 107) acceptable? What is the source of your data?

109. What constitutes a "minimal" amount of chlorinated water which might be dumped in the stream? What is the source of your data?

110. How often will the tank be visually inspected?

111. What is the maximum amount of chlorinated water that might be dumped in the stream?

112. What would be the cumulative impact of a buildup of chlorine residue on the rocks in the stream during dry periods which would then be released at one time when streamflow increases?

113. What levels of chlorine can the stream life tolerate?

114. What levels of chlorine can taro tolerate?

115. What is the source of your data for 111-114?

116. Do you know of any studies done to determine what levels of chlorine Hawaiian stream life and/or wetland taro can tolerate?

117. Has $30,000 been budgeted from County funds for the purchase of the proposed tank site through condemnation procedures?

118. Did the original EIS identify the site of the proposed ...

new storage tank as the current location of the 20,000 gallon tank, which was to be replaced?

119. Why was the tank location changed?

120. Prior to May, 1984 was the community informed that the proposed tank location had been changed to parcel 10?

121. If you disagree with any of the statements made under the discussion of Impact on Other Socioeconomic Aspects, state the nature of your disagreement.

122. Does the condemnation of private land constitute an adverse socioeconomic impact?

123. How much do you estimate it will cost the owners to defend themselves in the condemnation action?

124. How much do you estimate it has cost the County to pursue the condemnation action thus far?

125. How much do you estimate will be the total cost to the County to conclude the condemnation action?

126. Was the existence of a roadway created by one of the tenants of parcel 10 a major factor in proposing the location of the tank on that parcel? No

127. What is the source of your data on Disinfection (p. 56-57)?

E. ANY PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED 1:42(f)

Since the socioeconomic impacts were not addressed in previous sections, they are also ignored here. While it is true that "no families will have to be relocated", it is also true that the land which is taken from the families owning parcel 10 will never be replaced. There is no way to avoid this impact. There is also no way to avoid the impact of the time, stress and expense of litigation, unless the owners wish to abandon their claims to their property.

All of the other impacts addressed in the previous section should also be addressed here.

The revised EIS states, "The amount of land involved in the acquisition will be 0.23 ac." This is in reference to the tank site. This ignores the 2,600 foot long 15 foot wide easement which will also be condemned, and the 802 sf for the sump. In addition, the well site will remove 1.01 acres from other potential community uses.

Section 1:42(f) concludes that:

> ...rationale for proceeding with a proposed action, notwithstanding unavoidable effects, must be clearly set forth in this section.

No rationale at all has been presented.

128. What is your rationale for proceeding with this action notwithstanding the environmental effects which have been noted in this review?

P. ALTERNATIVES TO THE PROPOSED ACTION 1:42(g)

1. The discussion in this section contains an inaccurate description of the planned water system. Again, there is no discussion of the plan to mix the stream and well water. The EIS discusses the two systems as if they are alternatives, when in fact the County plans to use the two together, adding just enough well water to bring the surface water up to standard.

2. The EIS again makes the misleading assumption that the use of well water will "allow more surface water to remain in the stream for agricultural or other uses" (p. 61). In fact, even the County assumes that EMI will take any "extra" water before it gets to the present intake and ship it to central Maui.

3. The statement that the development of the well "will provide...potable water in conformance to the drinking water standards" is made on assumptions, not facts, since the well water has not been tested for most of the primary contaminants.

4. Section 1:42 requires that the EIS:

> must include responsible opposing views, if any, on significant environmental issues raised by the proposal.

The K-WCA has on numerous occasions expressed its opposition to the location of the tank on private land for the reasons discussed above. Many individual residents have also expressed this view. This Has been expressed to the DWS both in writing and in formal and informal meetings. When County officials visited Keanae on May 16, 1984 they were shown the alternative site proposed by the community. These officials suggested it would be possible to put out alternative bids on different sites. Community members made clear their desire to be consulted during the preparation of

any revisions to the original EIS.

The position of the K-WCA was supported fully by two County Council members who refused to acquiesce to the DWS's request for authority to condemn the hui land. Were it not for the bind that the Council was put into due to the threat of lapse of funding, it is quite possible that the Council would have voted against the Resolution Authorizing Condemnation.

Nowhere does the EIS refer to these "responsible opposing views." Nowhere are the concerns of the community addressed.

5. The data on the alternative well site is confusing. Parcel 1-1-8:16 is not 2,600 feet from Hana Highway. Nor is its elevation 80 feet above sea level.

The discussion of an alternative well site is academic since the well has already been dug at the proposed site.

6. Section 1:42(g) states:

> Any known alternatives for the action which could feasibly attain the objectives of the action - even though more costly - shall be described and explained as to why they were rejected...
>
> A rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternative actions, particularly those that might enhance environmental quality or avoid or reduce some or all of the adverse environmental benefits, costs, and risks shall be included in the agency review process in order not to prematurely foreclose options which might enhance environmental quality or have less detrimental effects...In each case, the analysis shall be sufficiently detailed to allow the comparative evaluation of the environmental benefits, costs, and risks of the proposed action and each reasonable alternative.

The discussion of the proposed alternative tank site on pages 53-57 certainly does not meet the requirements of this section.

The alternative site is in fact near the chosen site in the original EIS. In the original, the County proposed demolition of

the existing 20,000 gallon tank and replacement with a 45,000 gallon tank. In the revised EIS, there is no mention of demolition of the 20,000 gallon tank. The new tank, now 50,000 gallons, would apparently be located near the existing tank in this alternative.

The community has proposed that the tank be located entirely on State land, rather than on State and private land as suggested in this alternative. If the access road were constructed as described on p. 55, there would be no necessity of involving private land in this project. The tank could be built entirely on parcel 1-1-08:5(parcel 5).

No explanation is given as to why these alternative--either as proposed by the County or the community--were rejected. No "rigorous exploration and objective evaluation" has been made. This is particularly perplexing since the site favored by the community is so close to the site originally chosen by the County. The County has never given us an explanation as to why our alternative--and their original choice--have been rejected.

7. Alternative Tank Sites Analyzed

Table 4 on p. 57 of the revised EIS incorrectly quantifies the "Summary of Anticipated Impacts at Sites for Recommended Alternative". The analysis is not detailed enough to allow the kind of evaluation which the law requires. Each impact will here be discussed under the appropriate heading, as it relates to the alternative sites.

a. Land Modification

The EIS states on p. 54 that the project site is 17,000 square feet. This conflicts with other statements that the site consists of only 10,000 square feet.

b. Land Use

The EIS states on p. 55 that "Impact on...land use...(is) the same as the proposed well site." The EIS says (p. 44) that there will be no effect on land use at the proposed well site. Yet in Table 4 the alternative tank site is given a rating of -3 on land use, which means "short- and long-term adverse, unmitigated impact expected." There is no justification for this rating given the data presented. The rating should be the same as for the proposed site on hui land (parcel 10).

c. Socioeconomic Impacts

The socioeconomic impacts would be entirely different if the alternative site, using only State land, was adopted. None of the adverse impacts described above for the site on parcel 10 would be involved. No condemnation of private land would be necessary. The County would use government land for the project, as they promised the community all along.

Socioeconomic impacts are not even considered in Table 4.

d. Impact on Agricultural Lands.

Careful attention would need to be paid to soil erosion controls so as to negate or minimize any adverse effects on the taro patches below the 20,000 gallon tank.

The EIS states that the present area is not under cultivation but that "the construction may adversely affect the taro patch located just below the existing 20,000 gallon tank". Thus this impact would be of a short-term nature, during the construction phase, and would be negated or minimized by the use of adequate soil erosion measures.

Thus, in the chart, a rating of -1 (short-term (construction)

adverse impacts would be more accurate than -3.

Furthermore, if the site suggested by the community were used, the impact would be even less, since the site is located further from the taro patches.

The impact at the proposed site on hui land would also be more accurately rated as -1, since excessive siltation would affect the taro patches, downstream users and stream life.

e. Impact on Views and Aesthetics

The impact described will be of a temporary nature and thus a rating of -1 is more accurate than -3. The community does not consider the fact that the tank might be visible from the road to be a negative impact. We have lived with water tanks clearly visible for many years and have no problem with these structures.

f. Impact on State-County Expenditures

The original EIS estimated that the cost of the new tank, at what is now the alternative site, would be approximately $80,000. The revised EIS estimates that the cost, on parcel 10, will be $200,000, and that the sitework at the alternative site would cost about $50,000 more because of the nature of the terrain and the cost of constructing an access road.

However, there is no consideration of the additional costs which will be incurred if the hui land is used. These costs are described above. At a minimum, the cost of the land must be taken into account. This is budgeted at $30,000. In addition, there are the other costs to the County of going through the condemnation action. Not to mention the considerable costs to the landowners. Even if only the $30,000 is considered, this must be deducted from the $50,000 additional cost of construction at the alternative site.

Thus, the excess would be only $20,000 at the most.

The total cost of this project is currently budgeted at $879,538.50 (Letter from Mayor Tavares to Governor Ariyoshi of June 19, 1984). This includes $100,000 for "inspection and contingencies". This could easily accomodate the $20,000. Even if it were extra, it would represent an increase of only 2.5% in the total cost of the project. The law is clear that cost alone is not an acceptable reason for rejection of an alternative.

g. Impact on Utilities

The EIS states that power is available within 2,600 feet from the proposed tank site on parcel 10 (p. 45), and within 2,500 feet from the alternative tank site (p. 54). However, Table 4 states that power is unavailable within .5 miles of the alternative site, and assigns a rating of -1. The data presented is contradictory. In fact, power is available within .5 miles of the alternative site, and thus a rating of +1 should be given to the alternative.

h. Potable Water Quality

No data is given to support the lower rating of potable water quality at the alternative site (+2) as opposed to the proposed site on parcel 10 (+3). Since the water will be pumped from the well to the holding tank, there should be no difference in the potable water quality, regardless of the tank site.

In summary, no "rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternative actions" has taken place. If the County had conducted such an evaluation, it would have been obvious that the severe environmental impacts of the proposed tank site on hui land, parcel 10, could be avoided by

choosing the alternative suggested by the community. What the County has done is to "foreclose options which might enhance environmental quality or have less detrimental effects." There has been no "comparative evaluation of the environmental benefits, costs, and risks of the proposed action and each reasonable alternative."

129. Do you consider the opinions of the K-WCA, individual residents and County Council members who oppose the proposed tank site on parcel 10 to be responsible opposing views?

130. Why did the revised EIS omit any discussion of these opposing views?

131. Is the alternative tank site discussed on p. 53-57 near the location of the proposed tank site in the original EIS?

132. Why was this alternative rejected?

133. Why was the alternative proposed by the community (to be entirely on parcel 1-1-08:5, State land) rejected?

134. If the access road described on p. 55 were constructed, could the tank be built entirely on State land? Explain.

135. Is the project site 17,000 sf or 10,000 sf (tank site)?

136. What justifications do you have for the following ratings for site D., the alternative tank site, in Table 4:

a. land use -3

b. agricultural impact -3

c. view and aesthetics -3

d. cost -1

e. utilities -1

f. potable water quality +2

Refer to the comments made above regarding Table 4 in formulating your response.

137. Why was there no consideration of socioeconomic impacts in Table 4?

138. What justification do you have for the following ratings for site B, the proposed tank site, in Table 4:

a. land use 0

b. agricultural impact 0

c. potable water quality +3

Refer to the comments made above regarding Table 4 in formulating your response.

139. Have you foreclosed the option of an alternative tank site prior to the acceptance of the EIS?

140. Make a comparative evaluation of the environmental benefits, costs, and risks of the proposed action and both the alternative proposed (site D) and the alternative suggested by the community (parcel 1-1-08:5).

G. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY 1:42(h)

The EIS in fact contains no discussion of this issue. Since it ignored the socioeconomic impacts of the proposed action, it does not evaluate them here.

H. MITIGATION MEASURES PROPOSED TO MINIMIZE ADVERSE IMPACT 1:42(i)

1. Short-term construction related impacts are mentioned, but no mention of erosion and controls which will be used to minimize erosion and siltation are discussed.

2. No mitigation measures are discussed to minimize the significant adverse socioeconomic impacts of the condemnation of hui land (parcel 10).

3. In the discussion of the dumping of chlorinated water into the stream, the assumption is made that only well water will be dumped, and "since the well water is very clean and clear, the amount of chlorine will be small." (P. 63) Since, in fact, the DWS plans to mix the well and surface water, using only enough well water to clean up the surface water, the level of chlorine will be higher than if only well water were used.

4. The sump described elsewhere is not mentioned.

141. What controls will be used to minimize erosion and siltation?

142. What measures will you take to mitigate the socioeconomic impacts of the condemnation of hui land?

143. Will you reimburse hui landowners for the expenses they will incur to prove their titles?

I. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES THAT WOULD BE INVOLVED IN THE PROPOSED ACTIONS 1:42(j)

1. The EIS states at p. 65 that the well site will use 16,650 sf of land; at p. 4, it is only 6,649 sf. In fact, since the DWS refuses to share the parcel, the entire 1.01 acres will be removed from use by the community or for any other purpose.

2. The condemnation of the land for the tank site irreversibly and irretrievably takes land from Hawaiians who already own only a tiny fraction of the island which once was their ancestors'. This cultural and natural resource will be committed to loss by the action.

3. The draft fails to consider at all "the possibility of environmental accidents resulting from any phase of the action", as required by Section 1:42(j). There is a potential for accidents in the use of chlorine, both at the point where the chlorine is injected into the system and where a possible overflow will occur.

144. How much land will the well site use?

145. Do you agree that the condemned land will be irreversibly and irretrievably taken from Hawaiians, and that this cultural and natural resource will be committed to loss by the action?

146. What possibility of environmental accidents resulting from any phase of this action exists?

147. What is the expected electricity cost to pump the water from the well and to the storage tanks?

148. How much will water rates to Maui County users be raised as a result of this project?

J. AN INDICATION OF WHAT OTHER INTERESTS AND CONSIDERATIONS OF GOVERNMENTAL POLICIES ARE THOUGHT TO OFFSET THE ADVERSE ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION 1:42(k)

There is no discussion of these "interests and considerations" --only a list of laws.

This list of laws does not fulfill the requirements of 1:42(k) which states:

> The Statement must also indicate the extent to which these stated countervailing benefits could be realized by following reasonable alternatives to the proposed action that would avoid some or all of the adverse environmental effects.

149. Discuss the interests and considerations of the listed laws and regulations.

150. Indicate whether the benefits of these laws could be realized by adopting the alternative tank site proposed by the community.

K. SUMMARY OF UNRESOLVED ISSUES 1:42(n)

Section 1:42(n) requires:

> Summary of unresolved issues and either a discussion of how such issues will be resolved prior to commencement of the action, or what overriding reasons there are for proceeding without resolving such problems.

The draft admits that the well water has not been tested to verify that all levels of contaminants are within the drinking water standards. However, there is no discussion as required.

151. Will the well water be tested for contaminants to verify acceptable levels before any further action is taken on this project?

152. If so, when and how will such testing take place?

153. Why has this testing not been done already?

154. Will the testing take place before the acceptance of the EIS?

155. If the answer to 151 or 154 is no, what overriding reasons are there for proceeding without resolving this problem?

There is no discussion here of the tank site. This reinforces the conclusion that a final, definite decision has been made to locate the tank on parcel 10, and that any discussion of alternatives in the EIS is a sham.

L. LIST OF NECESSARY APPROVALS 1:42(o)

K-WCA hereby requests to be notified of all applications for permits and approvals for this project.

156. What is the status of the application for a special use permit?

157. Regarding this permit:

a. has application been made?

b. when?

c. what procedure must be followed?

d. will there be opportunity for public input? Describe.

158. Must the Department of Health approve this project?

159. What is the status of ntoification and/or approval of the Department of Health?

160. When was this project submitted to the Department of Health?

161. Have the requirements of the Department of Health been met?

162. If so, when?

163. What procedure must be followed regarding the Department of Health?

164. What information has been submitted to the Department of Health?

165. Is there opportunity for public input before the Department of Health? Describe.

166. Can Department of Health approval be given when the information on contaminant levels is incomplete? Explain.

167. Have you applied for a grubbing permit and grading permit from the Department of Public Wroks?

168. If so, when?

169. If so, has it been granted?

170. If you have not yet applied, when do you plan to apply?

171. Is there opportunity for public input regarding this permit? Describe.

172. Have you begun condemnation procedures through court to obtain the land for the tank site?

173. If not, when do you plan to begin court proceedings?

174. Have you applied for a variance for the tank lot?

175. Why wasn't this approval included in this section?

176. Are there any other permits pending or anticipated for this project?

The above comments are submitted by the Keanae-Wailuanui Community Association, Inc.

23 July 1984

Stephanie A. Hookano

STEPHANIE A. HOOKANO
Vice-President
Keanae-Wailuanui Community Assn., Inc.
S.R. 1, Box 138
Haiku, Maui, Hawaii 96708

The above comments are also submitted by Stephanie A. Hookano as an individual resident and landowner of Keanae-Wailuanui.

23 July 1984

Stephanie A. Hookano

STEPHANIE A. HOOKANO
S.R. 1, Box 170
Haiku, Maui, Hawaii 96708

HANNIBAL TAVARES
Mayor
TELEPHONE 244-7333

OFFICE OF THE MAYOR
COUNTY OF MAUI
WAILUKU, MAUI, HAWAII 96793

August 17, 1984

Ms. Stephanie A. Hookano
Vice President
Keanae-Wailuanui Community
Association, Inc.
S. R. 1, Box 138
Haiku, Maui, Hawaii 96708

Dear Ms. Hookano:

Re: Environmental Impact Statement (EIS) for Keanae Water System Improvements, Keanae, Maui

Reference is made to your letter, dated July 23, 1984, commenting on the subject Environmental Impact Statement. Your letter indicated several areas of concern which are addressed below and in the Final Environmental Impact Statement.

I. The Procedures Required by Section 1:71(a) and (c) have not been completed satisfactorily.

A. No new preparation notice was filed.

Response to Comments: See Response to Questions.

Response to Questions:

1. No, the preparation notice did not include parcel 10 as an alternative site.

2. (a) Yes, a change in location is involved in the 50,000 gallon tank site.

(b) The impacts to the environment would be the same at both sites in that there would be no adverse impact to flora and fauna.

(c) The new site may have more socio-economic impact on the owners of the land who would be subject to have the total lot size reduced by 10,000 square feet.

(d) The action of the Department is the same as previously described in the EIS in that it included the development of a groundwater source to back up the existing surface water source. However, attempts by the County to filter the surface water to reduce turbidity and microbiology did not produce water within the MCL of the SDWA and the State's Chapter 20. The State planned to drill a well for information gathering on ground water in the Keanae area and the County requested to turn the well into a production well should the pump and water quality testing prove successful. The purpose of the County's action is still to provide to its consumers drinking water conforming to Chapter 20, Stae Department of Health.

(e) Yes, the County proposes to locate the new tank on private property which will necessitate the acquisition of the land by eminent domain where the land will be appraised and the affected owners will be paid for their interest which is obtained.

3. Yes, the September 1983 EIS was withdrawn by June 20, 1984.

4. Yes, a new EIS was submitted for review and comments on June 20, 1984.

5. Yes, this was the first time parcel 10 was discussed as a storage tank site.

6. Yes, the new EIS discussed the discharge of chlorinated water into Waiokamilo Stream for the first time.

7. No, a Preparation Notice was not filed with the EQC regarding the EIS submitted on June 20, 1984.

8. No, there was no formal consultation process separate from any consultation for the withdrawn EIS. However, there were informal consultations with the individuals of Keanae. Because of their concern that the present project was different than that mentioned in the September 1983 EIS, that EIS was withdrawn and a new EIS was prepared based on the proposed well development and tank installation.

9. Yes, the comments relate to the original EIS in which many parts were applicable to the new EIS except for this change in location of the tank.

I. B. The County Has Selected an Alternative and Taken Action to Proceed With This Project Prior to the Acceptance of an EIS.

Response to Comments:

An agency can select an alternative on which the EIS is written about. Also, the actions taken by the County was to encumber State Funds which were to be used for this project as soon as an EIS could be accepted.

Response to Comments: See Response to Questions.

Response to Questions:

10. No, the EIS laws states: "Acceptance of a required statement shall be a condition precedent to <u>implementation</u> of the proposed action".

11. Yes, it does.

12. An alternative could be selected prior to the writing of the EIS and on which the EIS will address. However, an EIS shall be accepted before the project construction is begun.

13. No, as of this date, the EIS has not been accepted for this project.

14. Yes, an alternative has been selected and in anticipation of the EIS being accepted, preliminary work has been done to facilitate the construction.

15. Yes, the Maui Council passed a resolution to authorize the acquiring of a portion of Parcel 10 through eminent domain proceedings.

16. Yes, a public hearing was held on the SMA use permit for the well site.

17. Yes, the project has been advertised for bids.

18. Yes, bids were opened.

19. No, the low bid has not been accepted.

20. Yes, authorization from Governor was received.

21. Yes.

22. Yes, as stated, the project was advertised for bids which means that the design and construction specifications were prepared.

23. Yes.

24. Yes, funds have been encumbered.

25. Yes, the tank lot is only 10,000 square feet where the minimum lot size is 2 acres on agricultural zoned land. Thus, a variance is presently required.

26. No, if the EIS is not accepted this time, the contract will not be awarded.

27. None. The actions taken are preparatory to the letting of the contract. The County must acquire the land before construction can begin (implementation).

28. Yes.

29. Based on the EQC'S Declaratory Ruling, the County will respect the order to stop further action on this project.

II. A. The Content Requirements of Section 1:42 Have Not Been Satisfied

Response to Comments:

2. The estimated construction cost for the well site was $150,000 and on page 51 the $200,000 should have been $150,000. The reason the construction cost figures do not coincide with the data given to the Governor is that the estimated construction cost is an engineer's estimate based on the drawings prepared for the project while the costs given to the Governor is based on the bid results. When two persons make independent estimates or bids on a set of plans, the probability of getting the same figures is negligible.

On page 38, the statement "public lands will be used at both sites" should have read that public land will be used at the well site. The discussion following this sentence gives detail on the well site only.

3. A general construction schedule is given in the EIS. The EIS states this particular project will take approximately 1 year to construct and that construction was to begin in September, 1985. The Contractor will work out a schedule as to the actual phasing of the work. If he has a large crew, he could work on all three sites at the same time or if he has a smaller crew, he may work on each site separately. Traffic phasing on the Hana Highway will be done when the pipeline crosses the highway where one lane would be closed to install the pipe then the other lane would be closed to install the pipe in the other half of the highway.

5. The Department recognizes the fact that a complete drinking water analysis was not done on the well water and has indicated so in Section XIV Summary of Unresolved Issues. To get an indication of the quality of the groundwater in the area, a sample was taken from Ohia Spring which showed excellent drinking water quality and the results for the well water can be expected to be approximately the same.

The EPA as yet has not adopted the MCL of 20 mg/l for sodium. This MCL has been recommended only and therefore, there is no violation of the MCL. Should the 20 mg/l MCL be adopted, many wells in Hawaii tapping the basal water may not meet this requirement.

On iron and magnesium - both of these elements are secondary contaminants. The purpose of setting the secondary contaminant level is for taste and aesthetic reasons. The State has not adopted secondary drinking water standards for the State of Hawaii.

The drinking water analysis will have to be completed before the Department of Health will approve this new source of water.

No discussion was made on mixing surface water and groundwater because the project is to make the groundwater well the primary source of water. The surface water source will be used as a back up water source should the well pumps or motors require maintenance or repair.

One sample of water contained a selenium reading of "less than" 0.02 mg/l and it is hard to say if selenium was equal to or over the MCL. Other more recent readings in Table B-6 show that selenium is within the MCL.

Response to Questions:

30. The projected construction cost is $150,000 including the tank and related site work.

31. The total Estimated Construction Cost of this project is $700,000.

32. The breakdown of the Estimated Construction Cost is as follows:

Tank 50,000 gallon tank including site work	$150,000
Well site, pumps, controls	320,000
Pipeline in Wailua and Hana Highway	230,000
Total Estimated Cost	$700,000

33. Other Costs

Design Engineering & Specifications	$105,000

Land Acquisition	30,000
Inspection of Contingency	100,000
Total Estimated Cost	$935,000

34. State and County Funds will be used to fund project

State Funds	
Construction (Based on Bid)	$644,538
County Funds	
Design	$105,000
Land Acquisition	30,000
Inspection & Contingency	100,000
Total Estimated Cost	$235,000

34. Yes, approximately 2 or 3 times per year when bacteriological testing at the UV purifier is positive.

35. (a) The chlorine in the form of tablets are placed in the existing 20,000 gallon tank.

(b) Yes, the 20,000 gallon tank has an overflow which enters the irrigation ditch which diverts water from Waiokamilo Stream to the lower Wailua area.

(c) See answer above.

(d) On an average day, the flow is approximately 100,000 gallons. The water system is an open system between the intake and the existing 20,000 gallon tank. The system is open to prevent

pipes from bursting in the existing lines.

36. Yes, it was included.

37. The sump is part of the outlet structure. The sump is 2' wide x 4' long x 4' deep = 32 cubic feet or 240 gallons. The bottom of the sump is gravel and will allow water to seep into the ground.

38. The usual practice of the County is to obtain easements for the pipelines relating to storage tanks to minimize land acquisition. The present owners may still use the land provided certain structures are not constructed over the easement. By providing an easement, the owners do not lose all use of the land.

39. The new tank located on parcel 10 would be better situated (hydraulically) because the pipe sizes will be larger and can respond faster to demands from the extremities of the system.

40. See attached USGS map. The numbers in parenthesis refer to parcel numbers of TMK 1-1-8. TMK 1-1-8:24 is the Keanae Valley Lookout Park.

41. At present, the 20 mg/l MCL for sodium is recommended by the Environmental Protection Agency (EPA) and has not been formally adopted. However, the initial testing by the USGS indicates the sodium level is 20 mg/l.

42. Iron is a secondary contaminant and the State has no secondary drinking water standards. Secondary standards are mainly to improve the aesthetic quality (appearance, taste, odor) of water. The test sample showed an iron concentration of

12 mg/l which is above the EPA recommended level of 0.3 mg/l.

43. Yes, manganese is also a secondary contaminant with an EPA recommended level of 0.05 mg/l. One test showed the level of manganese to be 1 mg/l.

44. Don't know, the selenium reading was recorded as "less than" 0.02 mg/l. This sample was related to the existing surface water source. Later samples taken at the Wailuanui intake recorded values of less than 0.002 mg/l.

45. "The new 6-inch water line will be installed in Wailua Road, Hana Highway and in an easement through private property. Approximately 895 lineal feet will be installed in Wailua Road which is owned by the County. Approximately 1,000 lineal feet will be installed in the State's Hana Highway and 2,635 lineal feet will be installed along the existing dirt road on private property from Hana Highway to the new tank site."

B. Description of the Environmental Setting

1. Cumulative Effects

Response to Comments:

a. The Deputy Director's response on the additional well was in reference to good water supply engineering practice of providing a back up well for your primary well in case the pumps or mator needs to be repaired. The well capacity and pump size would be the same as the primary pump. If the back up hwell is constructed, the surface source could possibly be abandoned.

The storage tank and pump station listed in the 1986-90 budget are the proposed storage

tank and pump station. No other wells or storage tanks are planned in the Keanae area.

b. At this time, there is no plan to mix the groundwater with surface water. There will be a connection made between the new cinch line and the existing water line near the UV purifier. This in fact will connect the existing 20,000 gallon storage tank with the new 10,000 gallon tank when the valves are open connecting the two systems. The existing system will be used as a back up except that the primary source of water will be the well. Water from Wailuanui Stream will continue to flow through the existing pipe from the intake to the 20,000 gallon tank to minimize further deterioration of the old pipes. The surface water overflowing the 20,000 gallon tank will enter the irrigation ditch which diverts water from Waiokamilo Stream at the approximate elevation of 435 feet. After crossing the Hana Highway, the irrigation ditch heads toward Wailuanui Stream and serves Wailua. Thus, most of the water collected from the Wailuanui Stream will be used for irrigation water. The line between the 20,000 gallon tank and the UV purifier will be flushed periodically to clean the line of standing water.

Response to Questions:

46. The Deputy Director's comments on "one more planned well for the Keanae Area" was in reference to the usual water supply engineering practice where a backup well is provided in case the primary well pump or motor needs to be serviced or repaired. In this way, water service is not interrupted to the consumers.

47. The State or County has no plans to drill more wells or build more water tanks in the Keanae Area at this time.

48. (a) to (i) see answer to question #47.

(j) Based on the County's experience with other wells in other systems on Maui it takes:

(1) Approximately 2 to 3 weeks to remove a deep well pump.

(2) Approximately 4 to 6 months to install a new pump.

(3) The time it takes to fix a pump depends on the problem and the availability of the parts in Hawaii.

(49) to (51) See answer to question #47.

52. (1) The Storage Construction Program
Keanae Storage Tank (Keanae Water Project, Phase I) P.A. $100,000 SP.

Refers to the present 50,000 gallon tank in this project. The project was to be funded by the County at $100,000.

(2) Source Development Program
Keanae Deep Well Pump Station (Keanae Water Project, Phase I)

P.A. $400,000

This project refers to the deep well pump station in this project. The project was to be funded by the State as part of $1,000,000 granted to the County for Water Projects.

53. No pipeline is planned between the existing 20,000 gallon tank and the 10,000 gallon tank at the well site.

54. See #53.

55. No question.

(56) to (59) see answer to question #53.

60. There is no plan to mix the surface water with the well water in the Keanae area.

The primary source of domestic water supply will be the well. However, if the well pump or motor needs servicing or repair, the surface water will be used as a backup source. Any mixing of groundwater and surface water will be incidental to the change over from groundwater to surface water and vice versa but there is no plan to mix these waters on a continuous basis.

(61) to (66) see question #60.

67. As the Deputy Director mentioned a backup well may be a potential future project. The well would be located near the proposed well site and would probably have the same capacity of the proposed well. By being located near the proposed well, it can use the same facilities as the proposed well (control building and control tank). There would be no additional environmental effects except that the additional well site will require some land for construction.

B. Description of the Environmental Setting

2. Source of Data

Response to Comments: See Response to Questions.

Response to Questions:

68. Water Chlorination Principles and Practices, AWWA M20, American Water Works Association, Denver, 1973.

69. Table 4 was based on the judgment of impacts which were perceived by the engineer.

C. Land Use Plans

Response to Comments:

1. The Mayor is aware of the Keanae-Wailua Community Associations' ANA Development Plan for the Keanae area and supports it. However, the Mayor is not aware of all the details of the plan concerning the specific properties involved. The Mayor is not opposed to joint use of parcel 43 as long as the use is compatible with the water well pump station.

2. The tank site will remove 10,000 square feet from potential agricultural use. But as to locating a dwelling at the tank site, it would be difficult because the limit of the water service will be approximately 110 feet in elevation below the tank. A dwelling at this tank location will have to provide its own water service or provide a booster pump.

3. Amount of Water Available.

The statement "The proposed water system improvement will - increase the amount of domestic water which will be available to the Keanae Community." Since the increase in size of the storage capacity and the wells should be a more consistent source than the surface water source.

However, as stated in the answer to part B-1-6, most of the water taken from

Wailuanui Stream will end up in the irrigation ditch diverting water from Waiokamilo Stream Wailua and will be available for agricultural use.

Response to Questions:

70. The Mayor was familiar with the community's desire for establishment of a community center and other related facilities as contained in the ANA grant proposal. However, he was not familiar with the specific site which was proposed.

71. The Mayor does not recall receiving a copy of the proposed plan drawn up by the K-WCA.

72. The Mayor did meet with community leaders regarding the ANA proposal. As previously stated, he is not familiar with the specific site discussed.

73. The Mayor did write a letter, generally endorsing the ANA grant proposal. Again, although the Mayor was generally familiar with the proposal, he was not familiar with all of the specifics.

In addition, the Mayor does not object to multiple use of the Well site should the ANA grant be approve.

74. No, he did not

75. No.

76. At this time, there is no plan for a backup well but this location would be the ideal spot for it.

77. The County is willing to share the site as long as the use is consistent with the well.

78. Executive Order 235 has been cancelled.

79. Yes, a new executive order has been granted for parcel 43 for the purpose of a well.

(80 to 88) No questions.

89. At this time, the County has no definite site in mind for the Community Center but a suggestion would be to locate it on the County Park Property adjacent to Keanae School.

90. The cultivated land (in ti leaf) is approximately 100 to 150 feet below from the tank site and should not be affected adversely from the construction at the tank site.

91. Yes.

92. Yes.

93. The County has no control on how much water EMI can withdraw from the stream and therefore cannot guarantee that all waters released will be available downstream.

D. The Probable Impact of the Proposed Action on the Environment.

Response to Comments:

1. All phases not discussed.

At this time, the action is limited to the well development, the tank installation and the pipelines between the well site and the tank site. The construction period is approximately one year and the Contractor will schedule his work according to his capabilities.

2. Well Site.

As stated in the Keanae Well Report, the well's source is the basal water lens

underlying the area with elevation about 6 feet, while the source of the Waiokamilo Stream are high level springs and surface runoff. Therefore, the well will have no effect on the stream flow.

(2) Cumulative Effect

As mentioned before, the County do not have any plans for additional wells for Keanae. If a back up well is constructed near the proposed well, only one well will be in operation at one time. Therefore, the effect of operating one well will not change.

(3) At the well site, the construction should not have any effect on the quality of the water in the Waiokamilo Stream. The Contractor will use appropriate dust control (wetting down) or erosion control measures during clearing, grubbing and grading operations.

At the tank site, there will be similar precautions taken during construction to control erosion or silt runoff into the stream.

(4) There is no adverse effect from letting the chlorinated water down the well.

b. Impact on Flora and Fauna

The County will request the State Department of Land to survey the area for endangered plants or animals.

c. Impact on objects of Historical Significance.

An archaeological reconnaissance was recently done by personnel of the County's Planning Department on the well site and the

tank and pipeline sites on parcel 10. The survey reported no historical or archaeological sites were noted on the ground surface. At the tank site, an unrecorded structure approximately 250 pares west of the tank site was noted and concluded that it would not be in the construction zone of the tank site.

d. Impact on Other Socio-economic Aspects.

(1) As stated by the State's hydrogeologist, the sources of water of Waiokamilo Stream and the source of water for the well are different and the well pumping will not affect the stream.

(2) The Mayor has indicated that the County has no objection to joint use of parcel 43 as long as the uses are consistent with the water well and pumping station.

Response to Questions:

94. Refer to Figure 10. Water System Improvements - Ground Water Wells.

The surface water which runs in the Waiokamilo Stream are fed from upstream springs and surface runoff from rains in the high elevations. The well water is taken from the fresh basal lens which floats on sea water. The basal lens water is provided from surface water seeping through hundreds of feet of soil material. Generally, the surface water may take as long as two to five years, depending on the permeability of the rocks, to reach the basal lens. As the water moves downward, the ground acts as a natural filter in removing small particles and bacteria. Thus, groundwater is generally clear and clean. Since water

takes so long to travel from the surface to the basal lens, the well will have no effect on the surface water 100 feet upstream of taro patch.

95. Assuming that a backup well is installed on parcel 43, only one well will be in operation at any given time. Therefore, there will be no cumulative effects from the well.

96. At the well site, the ground contours of the area would have surface runoff flow toward the Wailua Road and away from Waiokamilo Stream. Therefore, the probability of dirt runoff from the construction site reaching Waiokamilo Stream would be small. The Contractor will need to control erosion on the construction site. Also, the heavy vegetation below the well site (on State land) will aid in filtering out dirt from the construction of the well.

97. The impact should be minimal.

98. The chlorinated water entering the well is clean water and will not have any detrimental effect on the basal lens. The residual chlorine will be further diluted and may react with the natural alkalinity and other inorganic elements such as calcium or magnesium to form harmless salts and water.

99. There will be no adverse effects since the original chlorine will be used up.

100. No.

101. The water supplier is responsible to provide safe drinking water from the source to the consumer's tap. The chlorination acts as a disinfectant in water to assure there will

be no regeneration of microbiological substance within the distribution system.

102. An archaeological walk through was conducted by the County. The County will request the State Department of Land & Natural Resources, Division of Wildlife to conduct such surveys before construction starts. (See Exhibit A.)

103. Depends on whether a new site can be found for the Community Center.

104. Hydraulically, should there be sudden demands from the extremities of the water system, the tank elevation and the larger piping can respond to that demand better than the alternative of having the tank located at the existing 20,000 gallon tank site. The sudden demand alluded to was fire demand where 500 to 1,000 gpm would be required at the hydrants or standpipes.

105. Hydraulically, the response would be slower than having the tank located at the 20,000 gallon tank site.

106. The general location of the existing pipeline is known, the Contractor will take precautions when trenching in the area of the waterline. With metallic pipes, the Contractor can "tone the line" to locate it, then expose it by excavating to make sure the new water line can cross it. Should the water line be broken, the Contractor will repair the line. At the proposed tank site, the pipe will be relocated.

107. The injected concentration of chlorine will be approximately 1.5 mg/l. As the chlorine enters the water, it forms hydrochloric and hypochlorous acid with the water. These react with the natural inorganic and organic substance in the water. These reactions

reduce the available chlorine (residual) for disinfection. A residual chlorine concentration of about 0.2 mg/l is considered a good level to maintain the disinfection process throughout the water distribution system.

108. The basis of considering these levels are from general practice of water supply engineering throughout the U. S.

The source of data is the American Water Works Association publication on the Principles and Practices of Chlorination.

109. At the tank site, an altitude valve pressure switch will be installed above the high water shutoff in case this switch does not work. The pressure switch will turn off the motor. It is estimated that the first 10 years of the equipment's life, there will be no spillovers. Beyond ten years, the frequency of spillovers may increase depending on the maintenance of the equipment. There is no source of data, but that based on experience.

110. Daily inspections will be made of the tank site.

111. With the daily inspections, the maximum estimated spillover is 14,400 gallons assuming that the spillover occurs immediately after the inspector left the tank site.

112. Because of this volatility of chlorine, there will be no buildup of chlorine residue on the rocks in the stream.

113. There are no known studies on chlorine tolerance of Hawaiian stream life.

114. There are no known studies on the chlorine levels having detrimental effects on taro. However, in discussing this topic with Mr. Ramon Dela Pena a researcher at the U. H. Agricultural Experimental Station in Wailua, Kauai, mentioned that he has grown taro using domestic water from Kauai County System and he did not have any problems with chlorine in the water. In checking with the Department of Water Supply in Kauai, their testing station for residual chlorine is about 7,000 feet from the experimental station and their residual chlorine readings at this station is about 0.3 mg/l. The DWS personnel estimated that the chlorine residual at the experimental station would be approximately 0.1 to 0.2 mg/l.

115. Telephone interviews with Mr. Ramon Dela Pena, and Mr. Wayne Hirazumi, DWS, Kauai County.

116. See questions 113 to 114.

117. Yes.

118. Yes

119. The following reasons were:

1. Construction would be easier on this site.

2. Less earthwork would be required.

3. Construction at the 20,000 gallon storage tank site may affect the irrigation ditch diversion from Waiokamilo Stream.

4. Did not want to take any land cultivated in taro or other crops out of production.

5. The accessibility to the site would be easier than constructing a road through the Hau Forest behind the knoll of the Hana Highway.

120. No.

121. Other socio-economic impact.

Water Well Site: We disagree that the well will have any effect on the flow of the Waiokamilo Stream. As the State's hydrogeolist mentioned in his report, the source of the well is the basal water lens while the source of the stream are high level springs--two different sources of water.

The removal of parcel 43 may be a socio-economic impact to the community if an alternate site for the equipment storage and community center cannot be found. However, the Mayor has indicated that the County has no objections to joint use of the property as long as the uses are consistent with the well site.

Impact of Other Socio-economic Aspects:

The socio-economic topics stated as not relevant had to do with items dealing with urban topics. The DWS's selection of the tank site was based on engineering judgment of factors including accessibility, room for construction, steepness of the topography, elevation and impact to the physical environment. The County is not being vindicative in trying to "take land away from the Hawaiians." The State and County may own many acres of land in the Keanae area, but the factors which make a good site for the tank on this system could not be found on State or County lands.

The County is negotiating with EMI to obtain the required land out of their interests and so far EMI has agreed to in principle. However, should the condemnation of the land proceed against all owners, the amount of land subtracted from each interest the Tax Maps will be as shown below. The smallest interest will not be reduced at all because of the small size. The eminent domain action will reduce the interests of the owners, but the land will be available to the "Hui" for cultural aid.

The cost to the owners on proving their interest in the land will vary according to the amount of documentation is required and whether or not the owners have them or can get them. The County will be making the title search of this property should the proceedings go to court.

The budget of $30,000 includes the estimated time that County personnel will have to spend on this matter.

Road:

The road has very little to do with the selection of the tank site. Yes, the road was there and the work was made easier to align the pipes along the road. But both the owners and the County will benefit in that the County will have access but will maintain the road from Hana Highway to the tank site.

Dumping of Chlorinated Water:

The dumping of chlorinated water will occur infrequently or not at all because of the new equipment and extra precautions (adding an altitude valve and pressure switch). The dumping of chlorinated water will not produce lasting effects because of the low

concentration and the volatility of chlorine. The taro patch closest to the tank site is located downstream of the Hana Highway, approximately 0.5 mile from the tank site. By the time the overflow water reaches the taro patch, the residual chlorine should be very low or zero.

The effect on stream life may be of concern immediately below the tank but as the water flows downstream, the effects on chlorine will become less because of the dissipation and depletion of the free available chlorine.

Invasion of privacy:

At this time only one house on the property is visible from the access road and the house is on Hana Highway. There is a cabin above the tank site but is not visible from the tank site. There is no invasion of privacy if the occupants of the land know that a DWS person will be on the property daily inspecting the tank. (Does the mailman invade your privacy when he delivers the mail?)

122. The impact will be on claimants who cannot readily prove their claims to the land. Should the County be able to negotiate with EMI, to obtain the required land from their interest then there will be no impact on the other owners.

123. Don't know, depends on each claimant's situation. Expenses will be minimized if proper documentation is at hand.

124. Approximately $5,000 - $3,000 Appraisal, $2,000 County.

125. $15,000.

126. No.

127. (a) Water Chlorination Principles, American Water Works Association, Manual No. M20, Denver, 1973.

(b) Water Quality and Treatment, 3rd Ed., American Water Works Association, McGraw Hill Company, New York, 1971.

(c) Water Treatment Plant Design, American Society of Civil Engineer, American Water Works Association and Conference of State Sanitary Engineers, AWWA, Inc., New York, 1967.

E. Any unvoidable Adverse Environmental Effects which cannot be avoided.

Response to Comments:

Socio-economic Impact:

The County will acquire the property by eminent domain which requires that the owners be compensated for the property acquired by the County. Every effort will be made by the County to take the necessary tank site from EMI's interest.

The number of owners that will go into litigation will depend on how many owners can provide the necessary documents to prove their claim.

The 2,600 feet long, 15 feet wide easement will not be condemned. The easement for access and the water and telephone lines will follow the existing dirt road on the property. Thus, the owner and the County will both have the right to use the access road. The 802 square feet drainage easement also lies mainly in the existing access road

and thus the owners will have use of the property over the easement.

The well site will use 0.15 acres and the Mayor has indicated the County is willing to allow joint use of parcel 43 as long as the use is consistent with the well.

The rationale for proceeding with the proposed action is to have the Keanae Water System in compliance with the State's drinking water standards and to upgrade the water system to provide better service pressures to the Keanae School area and fire protection capability with the increased size of the public health and welfare which is one of the functions of the County Government. The action taken was also to encumber State funds for this project and lessen the burden on the citizens of the County.

Response to Questions:

128. The County's actions taken have been to look out for the best interest of its people by intending to upgrade the existing water system to meet the State's drinking water standards and also to encumber State funds to the project before the funds lapse. By having State funding, the County's share in this project would be greatly reduced.

F. Alternatives to the Proposed Action.

Response to Comments:

1. There is no plan to mix surface water with the groundwater.

2. More water will be available for agricultural use in that the County can reduce the amount of water taken from the Wailuanui Stream but a certain amount would

need to flow in the existing pipes to prevent accelerated deterioration in the pipelines. The water will enter the existing redwood tank and overflow into the existing irrigation ditch which receives its water from a diversion on Waiokamilo Stream. Thus, when the well is in operation, more water will be available for agricultural use.

3. True, the well water has not been fully tested for the complete drinking water contaminants analysis, however, date from Ohia Springs and the information provided by the tests of the OSGS indicates groundwater quality to be excellent for potable water. The Department of Water Supply is currently arranging for the testing for the required drinking water contaminants.

5. The well site on the County Park property is approximately 670 feet instead of the 2,600 feet from Hana Highway. The elevation is approximately 290 feet and not 80 feet. Please excuse the typographical errors!!

The Department of Land and Natural Resources selected the well site on the present site to collect data on groundwater in the Keanae area. The State drilled and tested the well with State funds. The County has requested that they be allowed to develop the well into a production well.

Although the well has been drilled, the alternative well site was considered and as you point out below, other alternatives should be discussed. Based on County economics it makes sense to develop the State well than to drill another one.

6. Existing Tank Site.

It was found by preliminary survey in the field that the existing tank site is located entirely in private property instead of being partly in State land and private property. Therefore, to construct the storage tank in this location would also involve the acquisition of private land. Other factors involved in the rejection of this site were:

(a) Access--a new access road will have to be constructed (approximately 0.5 miles) from the Keanae Valley Lookout Park and crossing the valley to the knoll.

(b) Construction Site--The construction area is tight with knoll, taro patch and irrigation ditch making it difficult for construction equipment to operate.

(c) Taro Patch--Construction would take a portion of the productive taro patch out of production.

(d) Knoll--The earthwork would require the cutting of the steep knoll to create a level area for the storage tank and may leave some scars on the knoll until the vegetation can grow back.

Demolition of Existing Tank.

In the original EIS, the surface water source was to be primary source with the well as the back up source. In this proposal, the well will be the primary source and the surface source will be the back up, therefore, the existing system including the existing tank will remain in place.

D-71

Community Proposed Site.

The site the community suggested has the same factors which caused the rejection of the existing 20,000 gallon tank site. Also, in order that the tank be placed entirely on State land and to remove the construction limitations on the site, the tank would be located approximately 1,400 feet above the existing 20,000 gallon tank. The elevation at the location would be about 440 feet which is too high for the water system.

7. See Response to Questions.

Response to Questions:

129. No, because they fail to consider the long term ramifications in the event the project is not constructed.

130. The size of the tank site was small compared to the overall size of the property, 0.23 acres vs. 104.05 acres, that the reduced interests of the owners other than EMI ranged from zero acres to 0.023 acres with the average reduction being 0.006 acres. Thus, it was felt that the socio-economic impact would not be adverse. Also, it was assumed that the rightful owners would have the required documentation to substantiate their claim to the property, requiring little or no services of a lawyer.

131. Yes.

132. In the planning stages, the USGS map of Keanae was used to study the area of the existing 20,000 gallon storage tank site. The small scale of the map (1" - 2,000 ft.) did not give the engineers the feeling for the tight construction area enclosed by the taro patch, the knoll, and the irrigation ditch at the tank site. Also, the property

lines from the tax maps suggested the tank may be located partially on State land and partially on private property. A spot check survey made on the property line between parcels 4 and 5 indicated the existing tank is located entirely in private property and the property line is at the base of the knoll. Therefore, to construct at the existing tank site, private property will have to be acquired. Also, to move the tank site entirely into State land and to open up the area for construction equipment, the tank would be sited on about elevation 440 feet which is higher than the elevation of the proposed tank site. In addition, the pipe length would increase while the access road length would decrease. The installation of the pipe near the taro patch could still place a portion of the taro patch out of production. For the above reasons, the existing tank site was not selected in the final design of this project.

133. See answer to question #132.

134. If the access road was constructed from the Keanae Valley lookout, the tank could be located on State land. However, in addition to the cost of construction, there would be added cost of surveying and designing. The location of the tank site would have to clear the knoll and the irrigation ditch from Waiokamilo Stream. This would make the tank elevation 440 feet (See attached USGS map. Question 40)

135. The area requirement for the tank site depends on the topography of the ground. Usually a steep topography would require more land to construct because of larger excavated areas. The more gentle the slopes, the less land required for site work. Thus, 17,000 square feet was the estimated requirement at the alternative

tank site with the steep knoll there. The proposed tank site requires only 10,000 square feet because of the gentle slope.

136. Site D, Alternate Tank Site.

(a) Land Use

The rating should be 0 as the land use in the Keanae area will not be affect by the new tank site.

(b) Agricultural Impact

The construction of the tank in this area may adversely affect the taro patch by removing a portion of it out of production during the construction period. This action is short termed and a -1 instead of a -3.

(c) View and Aesthetics

The larger construction area required will necessitate cutting into the ridge such as the Hana Highway Cut on the road side of the ridge. The steep cuts may take a long while before vegetation can be established again. Also, the tank would be a steel tank in the ground and not redwood which blends with the surroundings.

(d) Cost

The cost of construction at this site will cost more than the proposed site to include the access road and tight construction area between the knoll, the taro patches and the irrigation ditch from Waiokamilo Stream.

(e) Utilities

This rating should have been +1 based on the distance from which power is available.

(f) Potable Water Quality

Again this rating should be the same as the others at +3.

137. As far as items pertaining to the ANA use of the well site property, the Department of Water Supply was not aware of the study and the proposed use of that property by the Keanae Association.

The land area required for the tank site is small compared to the total land area of the parcel. The amount of land taken for each interest would be small. Also, it was assumed that the rightful owners could substantiate their claim to the land without too many problems. Therefore, the socio-economic impact was perceived to be small.

138. Justification for site B in Table 4

(a) Land Use

The construction of the proposed tank would not have any effect on the agricultural land use in the Keanae area.

(b) Agricultural Impact

Presently the tank site is not under cultivation and the construction will not affect any cultivated fields in the area. Although 0.23 acres of land would be removed from possible agricultural production, the effect over the total land area of 104.05 acres was believed to be small.

(c) Potable Water Quality

The water quality of the well will be much better then the water quality from the existing system. By extracting the chemical analysis data of Ohia Springs and including the tests conducted by the Department of Land and Natural Resources, it is expected that the quality of the water will meet the Safe Drinking Water Standards and thus a +3 rating.

139. No, however, if an alternative is chosen, any improvements to the system will have to wait until funding is available.

140. See answer to question #132.

G. The Relationship between Local Short-Term Users of Environment and the Maintenance and Enhancement of Long-Term Productivity.

Response to Comments:

As indicated in the EIS, the project will provide drinking water conforming to the State Drinking Water Standards, provide a consistent source of water, and an increase in fire protection along the new six inch waterline to enhance the long term public health and welfare of the community.

The short term impact connected with the construction such as traffic, dust, noise, erosion, etc. were considered to be minor in relation to the benefits gained.

The decrease in the owner's interest in parcel 10 was thought to be a minor impact especially if the County could obtain the 0.23 acres from EMI's interest.

H. Mitigation Measures Proposed to Minimize Adverse Impact.

Response to Comments:

1. The Contractor will have to comply with the grading ordinance and in doing so will have to provide adequate erosion control during construction. After the grading is complete to final graders grassing of slopes and landscaping will provide permanent erosion control measures.

2. To minimize the reduction of land to the small landowners, the County is negotiating with EMI to have the entire 0.23 as reduction from their interest only.

3. As stated in previous discussions, the Department does not have any plans to mix the well and surface water just to reduce the concentration of contaminants. Furthermore, the frequency of having an overflow will be very small or none at all. The equipment will be new, there is a secondary switch on the pump should the primary switch fail and the outlet structure is designed to aid in the dissipation of free available chlorine by aeration and reaction with organic materials before entering the stream.

4. The sump is part of the outlet structure design, where the bottom is gravel lined to allow water to seep through the bottom. Should the overflow rate be more than the sump can handle, the overflow water will flow overland in a swale and over the bank to the stream.

Response to Questions:

141. (a) Permanent grassing as soon as finished grade is constructed.

(b) Wetting down for dust control.

(c) Controlling rain runoff water away from exposed slopes.

142. County will negotiate with EMI to have all the reduction taken from EMI's interest.

143. No.

I. Any Irreversible and Irretrievable Commitments of Resources that would be Involved in the Proposed Action.

Response to Comments:

1. See response to question.

2. The eminent domain proceedings will reduce the amount of each owner's holding by 0.001 acres to 0.130 acres which will be irreversible and irretrievable action. The landowners hui will be able to use remaining portion.

3. The possibility of environmental accidents involving the chlorine would be small. As stated earlier, the hazards of working with chlorine are well known in the water industry and the Department's personnel are trained in the use of this disinfectant. In the event of an overspill, the chlorinated water may affect some stream life in the immediate area of the stream, but the effect should be temporary. The taro will not be affected by the small concentration of chlorine residual. (Refer to question 114.)

Response to Questions:

144. 6,649 square feet.

145. Yes.

146. None.

147. Using a rate of $.15 per kwhr, and assuming the well's booster pump will pump 4 hours per day, the cost of pumping the additional 21 feet would be approximately 97 cents per day or $173 per year.

148. Don't know, since water rates are based on the entire County's revenue and expenses for the DWS.

J. An Indication of What Other Interests and Considerations of Governmental Policies are Thought to Offset the Adverse Environmental Effects of the Proposed Action.

Response to Comments: See Response to Questions.

Response to Questions:

149. Water Quality

The Federal and State laws and regulations concerning the Safe Drinking Water Standards are requirements of water suppliers to provide their consumers with water that is beneficial to the public health and welfare. These standards include maximum contaminant levels (MCL) on primary contaminants which the supplier is mandated to meet.

The Federal standards on the MCL for secondary contaminants are related to the aesthetic quality of drinking water and are not mandatory requirements.

Environmental Protection

The laws and regulations concerning the effects of a project on the environment, especially if government funds are involved, are included in the State's environmental impact statement process covered in HRS, Chapter 343 and other related environmental quality laws.

Land Use

The State Land Use regulations are used to control the type of projects constructed in an area so that the project conforms to the planned land use or will be compatible with the designated land use. For small areas, the County Planning Commission will approve a special use permit for uses which do not conform to specified uses in a land use district. In this project the water supply storage tank for domestic water supply is a non-conforming use.

Design and Construction

The Rules and Regulations of the Department of Water Supply, Department of Water Supply Standards, Uniform Building Code, and the Grading ordinance are to insure that design and construction of the proposed facilities meet the County standards. The grading ordinance assures the Contractor to control erosion to the project site during construction.

150. The purpose of the project is to provide the consumers on the Keanae Water System with water that conforms to the State's Drinking Water Standards. This will be achieved by whichever tank site is adopted.

K. Summary of Unresolved Issues.

Response to Comments: See Response to Questions.

Response to Questions:

151. Yes.

152. DWS is arranging for the tests to be made with the State Department of Health or the U. S. Geological Survey to get the necessary drinking water analysis done.

153. The Department assumed the DLNR testing included The Safe Drinking Water Tests but those tests were not included.

154. No.

155. The testing of the water samples may take some time because of the number of tests and some tests may have to be sent to mainland labs since local labs are not equipped to handle some of the tests such as radioactivity and trihalomethanes.

Comments: See response to Questions.

Response to Comments:

For those applications involving a public hearing, the Community Association will be notified of the hearing date.

Response to Questions:

156. The Special Use Permit is included in the application for subdivision variance on which a public hearing was scheduled on July 31, 1984, but the application has since been withdrawn.

157. (a) See Question #156.

(b) See Question #156.

(c) The Planning Department is the agency that processes the application. The application must go through a public hearing before the Planning Commission acts on it.

(d) See item (c).

158. No, however, a preliminary engineering report on the well will have to be submitted

to the Department of Health before the well can be placed on line.

159. The Chapter 20 preliminary engineering report has not been submitted to the Department of Health as of this date. The report will be submitted after the testing of the well water for compliance of the Drinking Water Standards.

(160) to (162) See Question #159.

163. The procedure is to submit the preliminary engineering report concerning the new well to the Department of Health, which will approve the well based on meeting the requirements of the Safe Drinking.

164. The EIS has been submitted to the Department of Health.

165. Depends, if the Director of the Department of Health determines the report "fails to demonstrate to the director's satisfaction that the proposed new water source is not subject to actual or potential contamination. . . "

166. No, the preliminary engineering report must contain the complete water quality analysis on the well water before the well can be approved.

167. No.

(168) to (169) See Question #167.

170. Subsequent to the acceptance of the EIS.

171. No.

172. No.

173. See Question #170.

174. Yes.

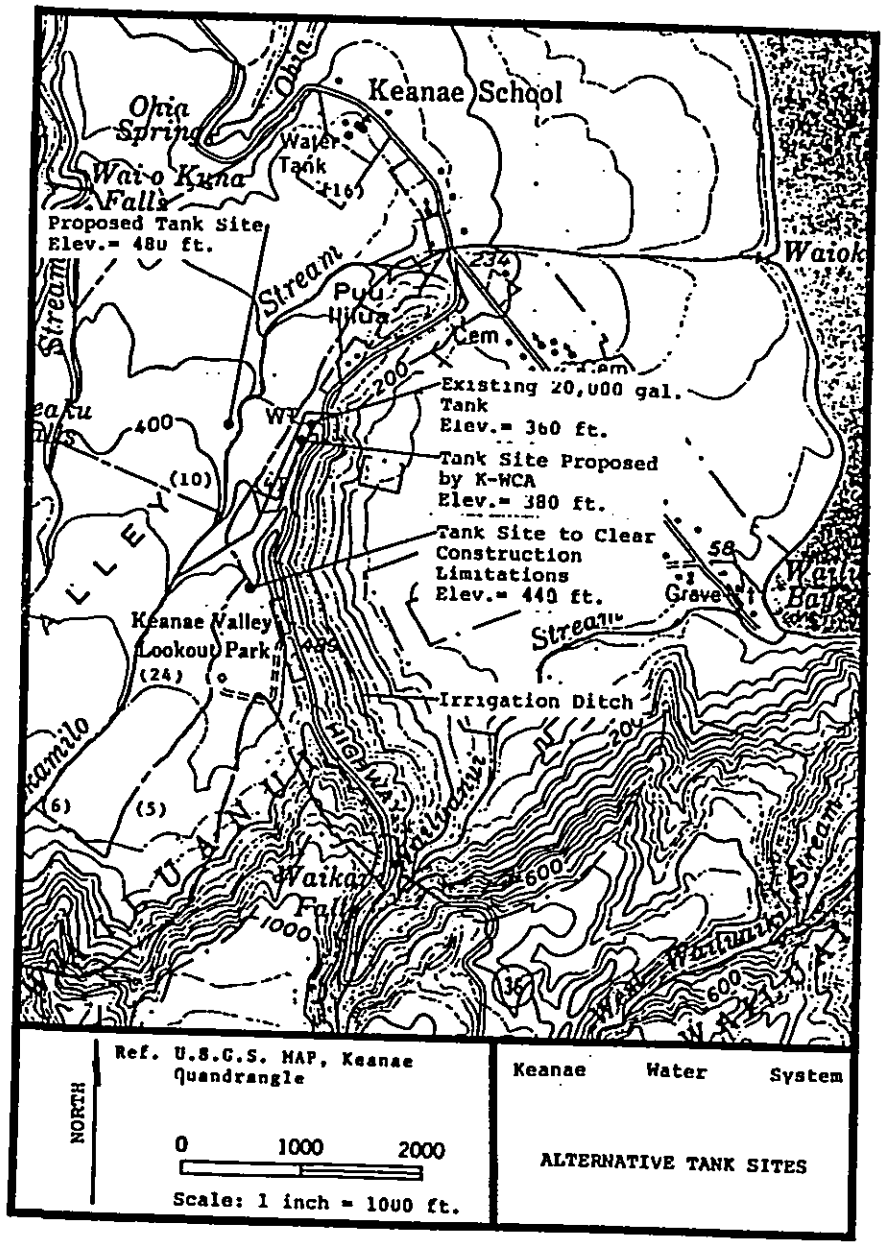
175. Should have been included in EIS.

176. Yes. Building permits, from Land Use and Codes, Department of Public Works.

Thank you for reviewing our Environmental Impact Statement on the Keanae Water System Improvements.

Very truly yours,

Henry T. U. Tam
for HANNIBAL TAVARES
Mayor, County of Maui



APPENDIX E

ARCHAEOLOGICAL RECONNAISSANCE

OF THE PROPOSED WELL SITE (TMK 1-1-04: 43)

AND

THE PROPOSED 50,000 GALLON STORAGE TANK SITE (TMK 1-1-08:10)

July 18, 1984

ARCHAELOGICAL RECONNAISSANCE

T O: William Haines, Director
Department of Water Supply, County of Maui

F R O M: Charles Keau

SUBJECT: Construction of Keanae Water System
Keanae, Maui

TMK: 1-1-08:10 (50,000 Gallon Water Tank)
Approx. 10,000 Sq. Ft.

TMK: 1-1-04:43 (Well Site) Acre 1.01

LOCATION: Water Tank - Approx. 2,000 Ft. South of Highway, Fronting Keanae School

LOCATION: Well Site - Approx. 750 Ft. From Junction of Highway 36 & Wailua Road.

Purpose of this Reconnaissance Survey (archaelogical) is to look for pre-historic structures in the construction area. The water tank site which is located about 2,000 feet north of Highway 36, Hana side of Keanae School have been cleared. East of this site is the Waiokamilo Stream. Approximately 250 paces west of this site is a low circular wall enclosure (height, 35-50 cm: width: 40 CM: intile diameter, 2 M: wall construction, multiple stack). No further study was done to this structure because it was outside of the water tank site construction boundary. Types of vegetation in the tank site area are the same as the 6" water line, which lead to the Highway 36 (Mangos, Avocados, Waiwi (cherry guava), Java Plum, Rose Apple, Ulu-hi (Hog Wire Fern), Sword Ferns, assorted grasses, Lau Hala (Pandanus), & Ti Leaves.

There is no archaelogical sites within the tank and the 6" water line area. Also no artifacts found on surface.

The well site which is located (SE) off Wailua Road approximately 750 ft. from Hana Highway and Wailua Road Junction. The drilling of the well is completed, and rock material from the well were used for the pad surrounding the wall. No pre-historic structure or artifacts found on the surface in this area.

For further information, please refer to Ms. Muffy Mitchell's memo to Mr. Gordon Okazaki, dated June 28, 1984.

Attachment

HANNIBAL TAVARES
Mayor

COUNTY OF MAUI
PLANNING DEPARTMENT
200 S. HIGH STREET
WAILUKU, MAUI, HAWAII 96793

June 28, 1984

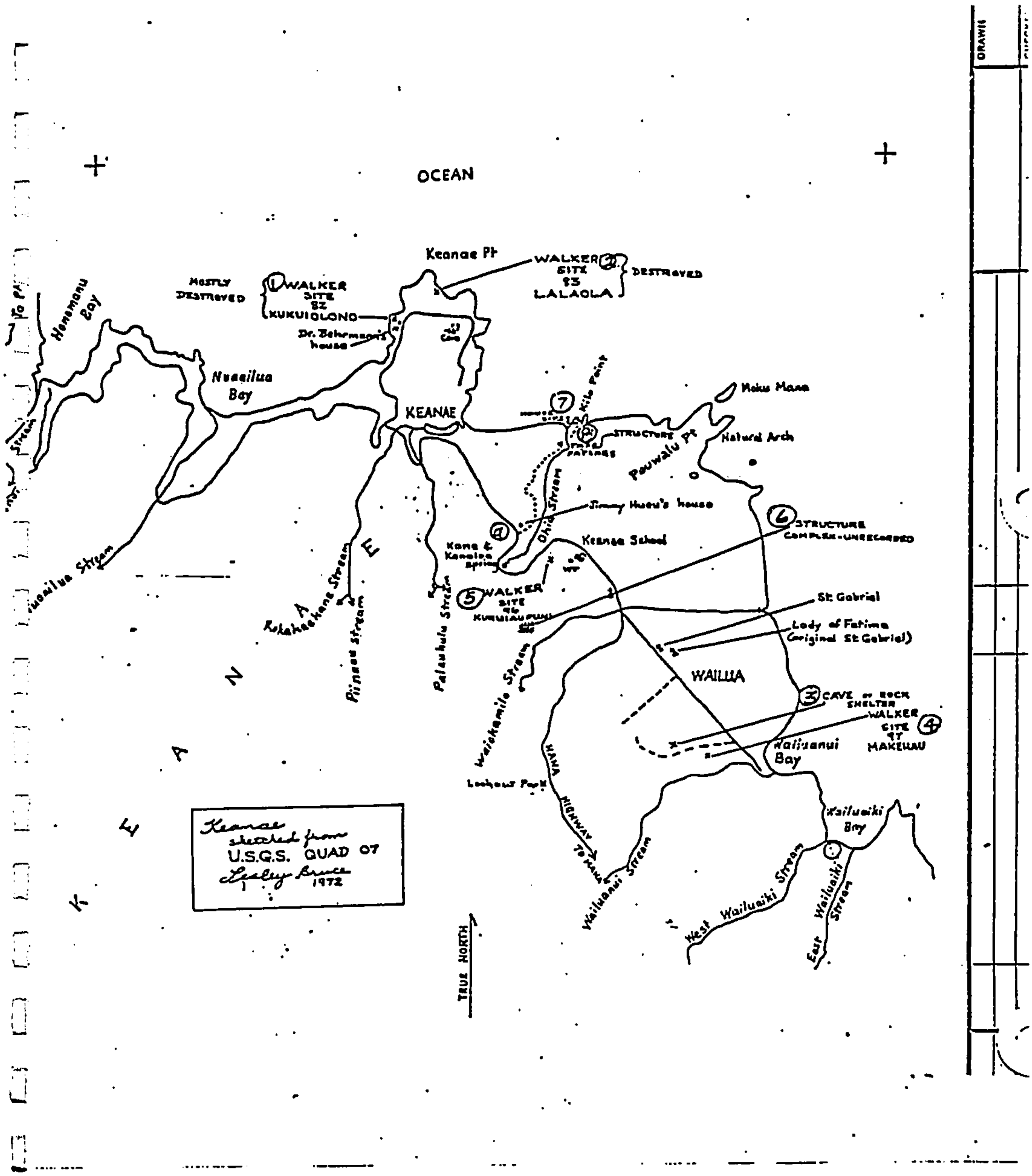
MEMO

To: Mr. Gordon Okazaki, Deputy Water Director
From: Muffy Mitchell, Planning Department *mm*
Subject: Keane Water System Improvements-Archaeological Sites

Attached for your information are lists of archaeological sites in the vicinity of the water tank as well as a rough map of the area with sites indicated. Many of the sites were not located during survey work in 1974 and therefore believed to have been destroyed. There is a slight possibility that when these sites were surveyed that they were missed. However, the site of the tank appears to not have been an area of significance during ancient times.

A search of the historical records indicate that soil was transported in baskets from the valley to the lava point of the peninsula. No other reference to historic sites was found in the brief review of available resources within the Planning Department.

Due to time restraints, I will not be able to assist in a reconnaissance survey of the area. I hope the attached information will be helpful.


OCEAN
Keanae Pt
WALKER SITE 93 LALAOLA
DESTROYED
MOSTLY DESTROYED
WALKER SITE 92 KUKUIOLONO
Dr. Behrmann's house
Honomanu Bay
Nuaailua Bay
KEANAE
Kilo Point
STRUCTURE
Moku Mana
Pauwalu Pt
Natural Arch
Jimmy Hueu's house
Kane & Kanaloa spring
Keanae School
STRUCTURE COMPLEX-UNRECORDED
WALKER SITE 96 KUKUIAUPUNI
St Gabriel
Lady of Fatima (original St Gabriel)
WAILUA
CAVE or ROCK SHELTER
WALKER SITE 97 MAKEHAU
Wailuanui Bay
Wailuaiki Bay
Lookout Park
HANA HIGHWAY
TO HANA
Ohia Stream
Palauhulu Stream
Piinaau Stream
Kolokolokane Stream
Waiokamilo Stream
Wailuanui Stream
West Wailuaiki Stream
East Wailuaiki Stream
KEANAE
TRUE NORTH
Keanae sketched from U.S.G.S. QUAD 07
Lesley Bruce 1972

KEANAE

Field Trips: May 18, 25, 26, 1972

Summary of Sites

1. KUKUIOLONO HEIAU (Walker Site #82) (BPBM # Ma-A-4-1)
2. LALAOLA HEIAU (Destroyed) site confirmed
3. CAVE OR ROCK SHELTER - UNRECORDED
4. MAKEHAU HEIAU (Walker Site #97) (BPBM # Ma-A-5-4)
5. KUKUIAUPUNI HEIAU (Walker Site #96) (BPBM # Ma A-5-6)
6. STRUCTURE COMPLEX - UNRECORDED
7. HOUSE SITES - UNRECORDED
8. STRUCTURE - UNRECORDED
9. HAWAIIAN CEMETERY
10. WAILUAIKI BAY SITES

Koolau

Heiau Sites Destroyed or Not Found

Kaanaa region

Site

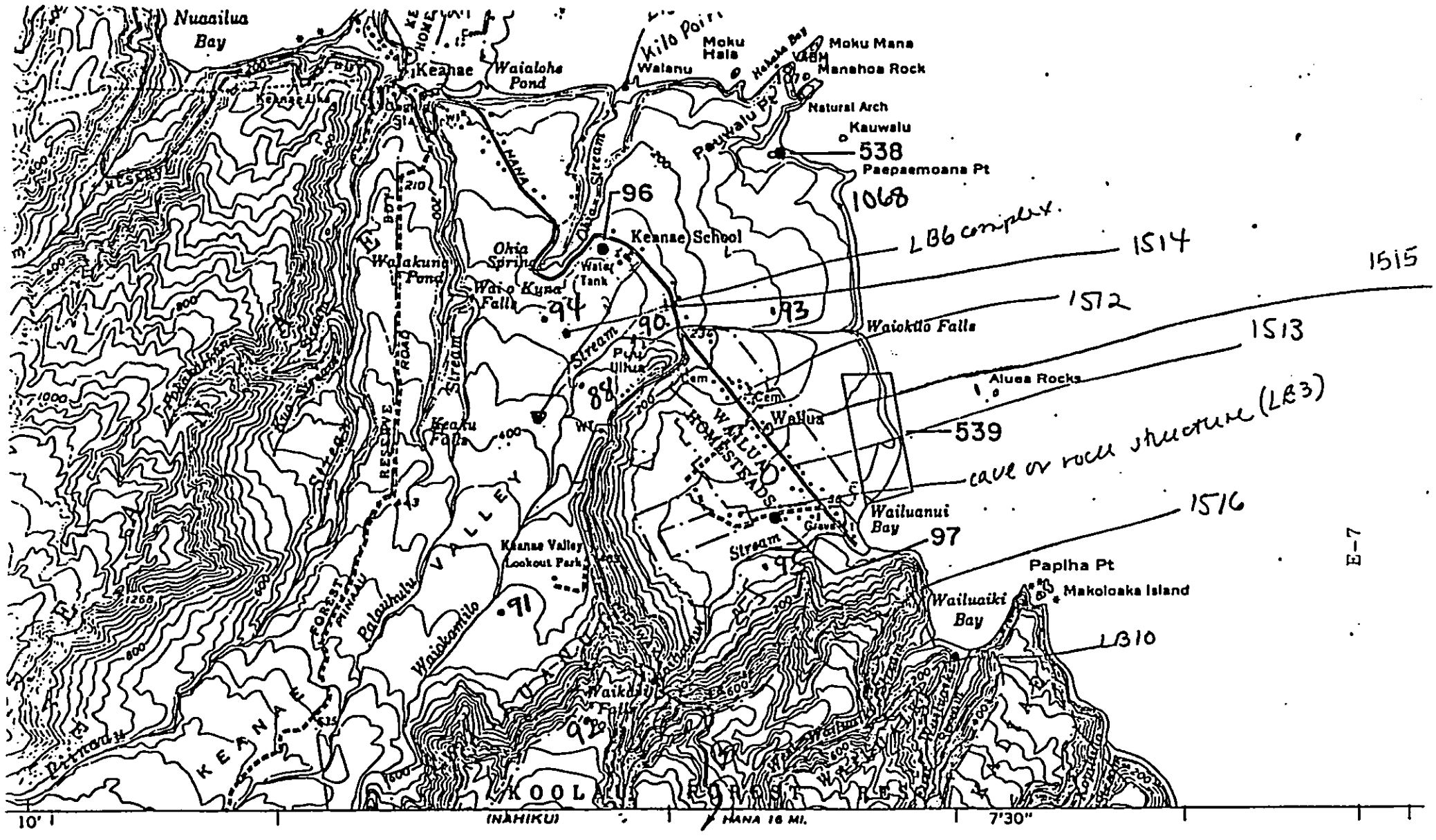
82. Kukuiolono on point of Keanae peninsula A 4-1 d
83. Lalcola " " " " A 4-2 d
84. Pakanaloa, upper slopes of Keanae peninsula. A 4-3
Said to have been a war heiau to Kanehekili.
85. Leleiwi at Koolau A 4-4 d
86. Peliuli A 4-6 d
87. Kanekamoloma A 4-5
88. Kamokulaupeu A 5-2 d?
89. Puu o Kohola at Honomanu A 3-1 d?
90. Kawalimukala at Pauwalu A 4-7 d
91. Kupau above the road in Keanae valley toward the ditch trail 84 feet of terrace wall is all that remains. A 4-1 trace
92. Kualani on top of ridge on west side of Waiokamo Falls. A 5-3

Walker Ms pg 167

#5 - 96 Kukuiaupuni - rect. platform w/ pit nearby (S)
enclosure. 440cm x 120cm

#6 unrecorded structures
lg. platform
enclosure makai of plat.
walls on W of plat.

50-6-66	Heiau		D
*50-6-67	Piilani Heiau	2-8-07-3	R
*50-6-68	Poohoolewa Heiau	2-9-01-30	R
50-6-69	Puuokaupu Heiau		D
50-6-70	Mokupapaakua Heiau		D
50-6-71	Oanapele Heiau		D
50-6-72	Puuokalepa Heiau		D
50-6-73	Kupaikaa Heiau	2-9-11-13	U
*50-6-74	Pohakuokaia Heiau	2-9-11-12	R
50-6-75	Honomauuloa Heiau		D
50-6-76	Halepaahau Heiau		D
50-6-78	Pohakuokane Heiau	2-9-13-16	R
50-6-79	Halekanaloa Heiau	2-9-13-16	D
50-7-80	Kalaeohia Heiau		D
50-7-81	Nakeikiikalalomakaiwa Heiau		D
50-7-82	Kukuiolono Heiau		D
50-7-83	Lalaola Heiau		D
50-7-84	Pakanaloa Heiau		D
50-7-85	Leleiwi Heiau at Koolau		D
50-7-86	Paliuli Heiau		D
50-7-87	Kanekauolono Heiau		D
50-7-88	Kamokukupeu Heiau		D
50-7-89	Puuo Kohola Heiau at Honomanu		D
50-7-90	Kawalimukala Heiau		D
50-7-91	Kupa-u Heiau		D
50-7-92	Kualani Heiau		D
50-7-93	Kamilo Heiau		U
50-7-94	Ohia Heiau		D
50-7-95	Kaluanui Heiau		U
50-7-96	Kukuiaupuni Heiau	1-1-08-10	M
*50-7-97	Makehau Heiau	1-1-06-47	R
*50-12-98	Kaluakelea Heiau	1-2-01-18	R
*50-12-99	Pohoula Heiau	1-2-2-20	R
*50-12-100	Haleaka Heiau	1-2-02-11,12	R
50-13-101	Heiau at Lanikele	1-2-03-6	U



SURVEY DENVER 2, COLORADO OR WASHINGTON 25, D. C.