

1993-05-08-MO-*FEA-Molokai Water Distribution System* MAY - 8 1993

**DEPARTMENT OF HAWAIIAN HOME LANDS**  
**MOLOKAI WATER SYSTEM IMPROVEMENTS**  
**PHASES 3B AND 3C**  
**HOOLEHUA, MOLOKAI**  
**FINAL ENVIRONMENTAL ASSESSMENT**  
**NEGATIVE DECLARATION**

**Prepared for:** DEPARTMENT OF HAWAIIAN HOME LANDS  
STATE OF HAWAII

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

**APRIL 1993**

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MOLOKAI WATER SYSTEM IMPROVEMENTS

PHASES 3B AND 3C

HOOLEHUA, MOLOKAI

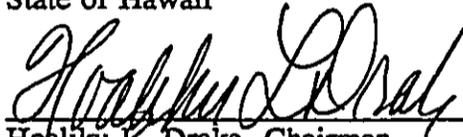
FINAL ENVIRONMENTAL ASSESSMENT

NEGATIVE DECLARATION

This environmental document is prepared pursuant  
to Chapter 343, Hawaii Revised Statutes

Prepared for: Department of Hawaiian Home Lands (DHHL)  
State of Hawaii

Responsible  
Official:

  
Hoaliku L. Drake, Chairman  
Department of Hawaiian Home Lands  
State of Hawaii

4/20/93  
Date

Prepared by: Wilson Okamoto and Associates, Inc.  
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**PREFACE**

This final environmental assessment/Negative Declaration is prepared pursuant to Chapter 343, Hawaii Revised Statutes, and Title 11, Chapter 200, Administrative Rules, Department of Health, State of Hawaii. Proposed is an agency action by the Department of Hawaiian Home Lands (DHHL).

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SUMMARY

DEPARTMENT OF HAWAIIAN HOME LANDS  
MOLOKAI WATER SYSTEM IMPROVEMENTS  
PHASES 3B AND 3C  
HOOLEHUA, MOLOKAI

FINAL ENVIRONMENTAL ASSESSMENT  
NEGATIVE DECLARATION

**Proposing Agency:** Department of Hawaiian Home Lands  
State of Hawaii  
335 Merchant Street  
Honolulu, Hawaii 96813  
Contact: Patrick Young, Project Coordinator

**EA Preparer:** Wilson Okamoto and Associates, Inc.  
1150 South King Street, Suite 800  
Honolulu, Hawaii 96814  
Contact: Earl K. Matsukawa, Project Manager

**Tax Map Key:** Zone 5; Section 2; Plats 01, 02, 03, 04, 05, 06,  
17, 21, 25, 26, 27

**Location:** Hoolehua, Molokai, Maui County

**Area:** Hoolehua is comprised of approximately 13,000 acres.  
Proposed improvements will add or replace 26.5 miles of  
water lines within Hoolehua.

**Ownership:** Department of Hawaiian Home Lands

**Proposed Action:** Water distribution system improvements

**Impacts:** Short-term impacts include dust emissions, noise, and  
occasional roadway obstruction. The long-term impact is  
improved water quality and service, benefitting residents of  
Hawaiian homestead lands.

**Agencies Consulted  
In Pre-Assessment  
Process:**

State of Hawaii

Department of Business, Economic Development and  
Tourism

Department of Land and Natural Resources, State Historic  
Preservation Division

County of Maui

Department of Water Supply  
Planning Department

**Agencies Consulted  
Prior to Preparation  
of Final Environmental  
Assessment:**

Federal Agencies

US Department of Agriculture, Soil Conservation Service  
US Army Corps of Engineers

State of Hawaii

Department of Agriculture

Department of Business, Economic Development and  
Tourism

Department of Land and Natural Resources

Department of Land and Natural Resources, State Historic  
Preservation Division

Department of Health

Department of Transportation

Office of State Planning

Office of Hawaiian Affairs

University of Hawaii, Water Resources Research Center

University of Hawaii, Environmental Center

County of Maui

Department of Public Works

Department of Water Supply

Economic Development Agency

Planning Department

Others

Maui Electric Company, Ltd.

**Determination:**

Negative Declaration

I. PROJECT DESCRIPTION

A. DEVELOPMENT PROPOSAL

A series of water line replacements and extensions are proposed for the Department of Hawaiian Home Lands domestic water system at the Hoolehua-Palaau Homestead on the island of Molokai. See Figure 1. This Draft Environmental Assessment encompasses Phase 3B and 3C of these water line improvements, which will complete the implementation of the currently planned domestic water distribution system for the Hoolehua portion of the homestead. Preceding phases of improvements have been completed. These include Phase 1 which improved the source and storage systems and Phase 2 which improved the Kalamaula water distribution system.

Phase 3, which will improve the Hoolehua water distribution system, is comprised of three subphases. See Figure 2. Phase 3A, which replaced or added approximately 5 miles of water lines, was completed in 1988. Construction of 3B, which will replace or add 9 1/2 miles of water lines, is scheduled for completion in 1994. Phase 3C, which will replace or add 17 miles of water lines, is scheduled for completion in 1995.

The intent of the Phase 3 improvements is to bring the domestic water distribution system at Hoolehua up to County of Maui standards, including those for fire protection. Since occupation of homestead parcels is contingent upon the availability of infrastructure, including water, the proposed improvements are necessary to allow many Hawaiian Homestead awardees to move onto their land.

B. PROJECT AREA

The ahupuaa of Hoolehua is among the largest land divisions on Molokai, running from the southern coast through the central plain to the rugged cliffs on the northern coast of the island. It lies immediately west of the town of Kualapuu and northwest of Kaunakakai, the island's major city. Molokai Airport and Molokai High School are both located in Hoolehua.

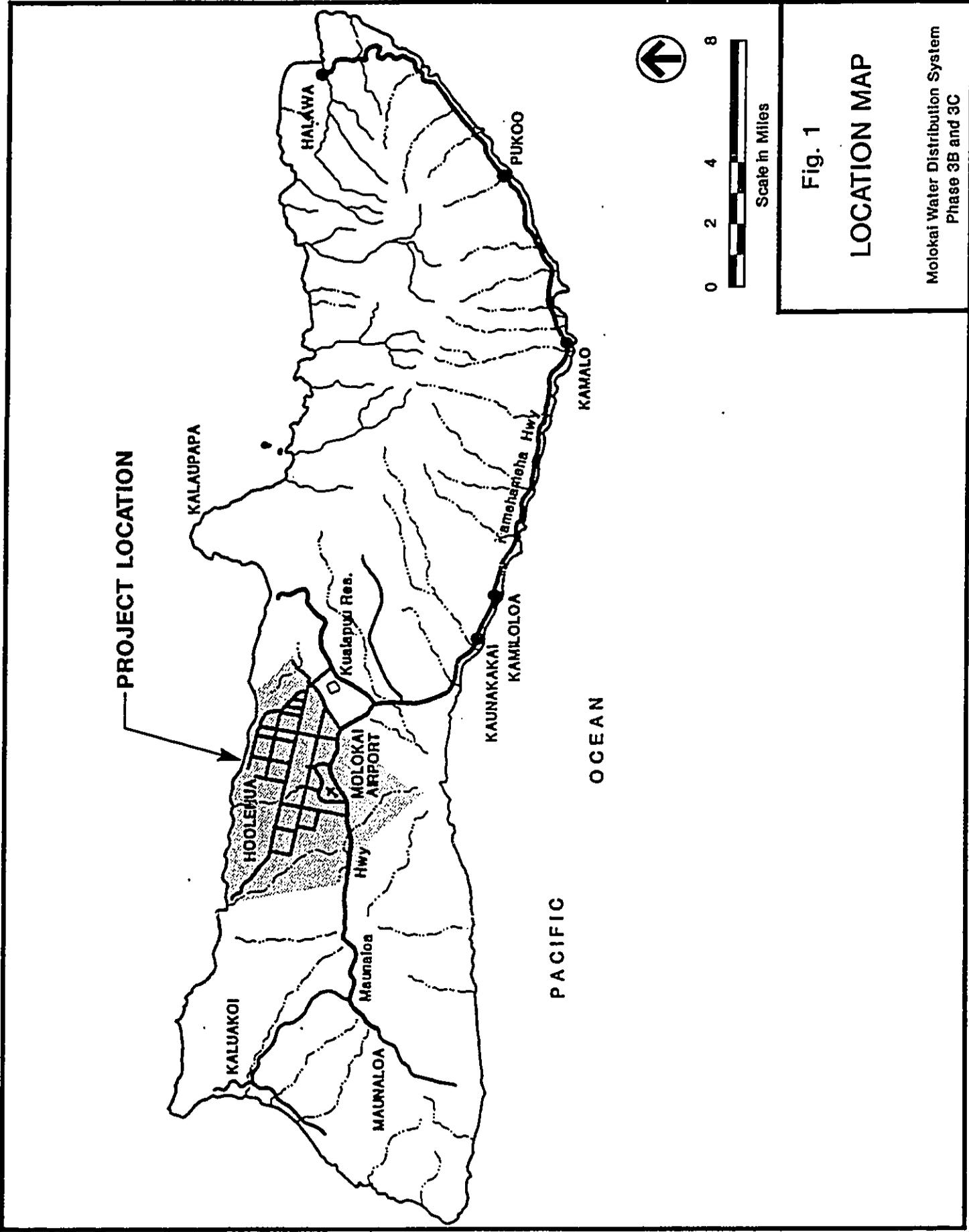


Fig. 1

LOCATION MAP

Molokai Water Distribution System  
Phase 3B and 3C



C. PROJECT SITE

1. Location

The project site is a section of the moderately populated Hawaiian homestead lands of Hoolehua, Molokai. Phase 3B of improvements to the water distribution system comprises underground sections along the following streets:

Puu Peelua Avenue	Puu Kapele Avenue
Moomomi Avenue	Kolea Avenue
Hauakea Avenue	Nenehanaupo Avenue

Proposed phase 3C of improvements to the water distribution system comprises underground sections along the following streets:

Maunaloa Highway	Hauakea Avenue
Moomomi Avenue	Nenehanaupo Avenue
Farrington Avenue	Keonelele Avenue
Palaau Street	Pine Avenue
Naiwa Avenue	

Eight water lines will not be following roadway alignments. Six are in the southeast portion of the project site and two are in the northwest portion.

2. Ownership

The project site is designated as part of Hawaiian homestead lands, which were set aside for Native Hawaiians by the Hawaiian Homes Commission Act of 1920, as amended, for residential and agricultural purposes.

3. Present Water System

The DHHL domestic water system serves three areas of West Molokai; Kalae, the Hoolehua-Palaau Homestead, and the Kalamaula Homestead. The sources for this groundwater system are two 1,000-foot deep wells at Kalae which began operating in 1980. Water from these wells is pumped to a 1,000,000-gallon reservoir at Kalae. To serve Hoolehua, two 6-inch parallel pipes direct water westward until they arrive at two 3,500,000-gallon concrete storage tanks north of Kualapuu. Numerous water lines from this storage system branch out in a westerly direction towards Hoolehua along Keonelele Avenue. Water service

currently extends to Molokai Airport and two homestead lots past Moomomi Avenue. Service along Farrington Avenue extends across Hoolehua and beyond. The system currently serving Hoolehua consists of 6- and 4-inch cast iron; 8- and 3-inch transite; 3-, 2-1/2, 2-, 1-1/2, and 1-inch galvanized iron pipes and lines serving fire hydrants.

In addition to serving Hoolehua, the water system also serves the Kalamaula homestead which lies west of Kaunakakai. Improvements to this branch of the system were known as Phase 2A and 2B, and were completed in 1983 and 1985, respectively. Water destined for Kalamaula gravity-flows from the Kalae reservoir through a 12-inch diameter pipe, two miles south to a 200,000-gallon concrete reservoir above Kalamaula. Water transmission and distribution lines from that reservoir were installed in 1985 to service existing homes and future developments in Kalamaula.

**II. PROJECT SETTING**

**A. PHYSICAL ENVIRONMENT**

**1. Climate**

Like the rest of the Hawaiian Islands, the Hoolehua area of Molokai has two identifiable seasons. During summer, between May and October, the weather is warmer and drier with the northeast tradewinds most persistent. In the winter months, between October and April, the weather is cooler and wetter and the trade winds are more frequently interrupted by other winds including southeasterly and southwesterly storms.

Temperature, wind and rain are the major climatic elements that characterize the weather patterns. Temperature, on the average, fluctuates from 70°F - 85°F in the summer to 65°F - 80°F in the winter months. Strong tradewinds sweep across the plains at maximum speeds of 30 mph during the summer. These winds diminish in frequency in the winter months allowing winds from a southerly direction to influence the area. Average annual rainfall varies from 15 to 35 inches. The summer months average a maximum of one inch a month with the winter months contributing the majority of rainfall, averaging 3-4 inches a month.

**2. Topography**

Hoolehua, referred to as the Central Plain of Molokai, comprises approximately 20% of the island. The Central Plain is flanked by the East Molokai mountains which rise to 4,970 feet at Kamakou and the West Molokai mountains, known as Maunaloa, which rise to 1,381 feet at Puu Nana.

The project site is generally level to rolling, encompassing prime agricultural land. Higher elevations prevail in the eastern portions of the plain where Molokai High School is situated at 850 feet above sea level. Elevations diminish heading in a westerly direction towards the Molokai Airport, which is at approximately 450 feet above sea level.

**3. Geology/Hydrology**

Molokai's natural land form consists of three separate shield volcanoes that divide the island into three main sections: East Molokai, West Molokai, and Kalaupapa

Peninsula. Forming the saddle between the volcanic shields of West Molokai and East Molokai, Hoolehua is where most of the island's agricultural activities are located.

There are no perennial streams on the project site due to the sparse rainfall in Central Molokai. However, water flows through several natural gulches during storms. Gulches draining the plains of Hoolehua direct flows to the north as well as south shore of the island. Maneopapa and Anahaki Gulches drain the northern portion of Hoolehua and discharge flows to the north coast. Kaluapeelua Gulch drains the southern portion of Hoolehua, directing flows beyond Molokai Airport, eventually reaching the south coast.

#### 4. Soils

The Soil Conservation Service classifies the soils in the vicinity of the proposed improvements as Molokai silty clay loam with slopes varying from 0 to 15 percent. This soil type is unique to the island of Molokai. The surface layer is dark, reddish-brown silty clay loam that has prismatic structure. The material at depths between 35 and 64 inches is moderately compact in place. The substratum is soft, weathered rock. This soil is used for sugarcane, pineapple, pasture, wildlife habitat, and homesites. A soil survey conducted for the project by Hawaii Geotechnical Group in August of 1992 determined that the subsurface soil conditions which will be encountered along the water line route will range from very stiff to soft soils to rocky ground.

#### 5. Flood/Tsunami Hazard

According to the Flood Insurance Rate Map (FIRM) of the U.S. Federal Emergency Management Agency (FEMA), Hoolehua is designated Zone C, an area of minimal flooding. However, some localized minor flooding occurs during heavy rainfall, where natural drainage channels and roadways have become obstructed or clogged.

#### 6. Flora/Fauna

The proposed water lines will follow roadways adjacent to agricultural lots. Common vegetation along roadways include buffelgrass, fuzzy top, sour grass, haole koa, scarlet-fruited gourd, spiny amaranth, vervain, and golden crown beard. Landscaping bordering agricultural lots include such plants as hibiscus,

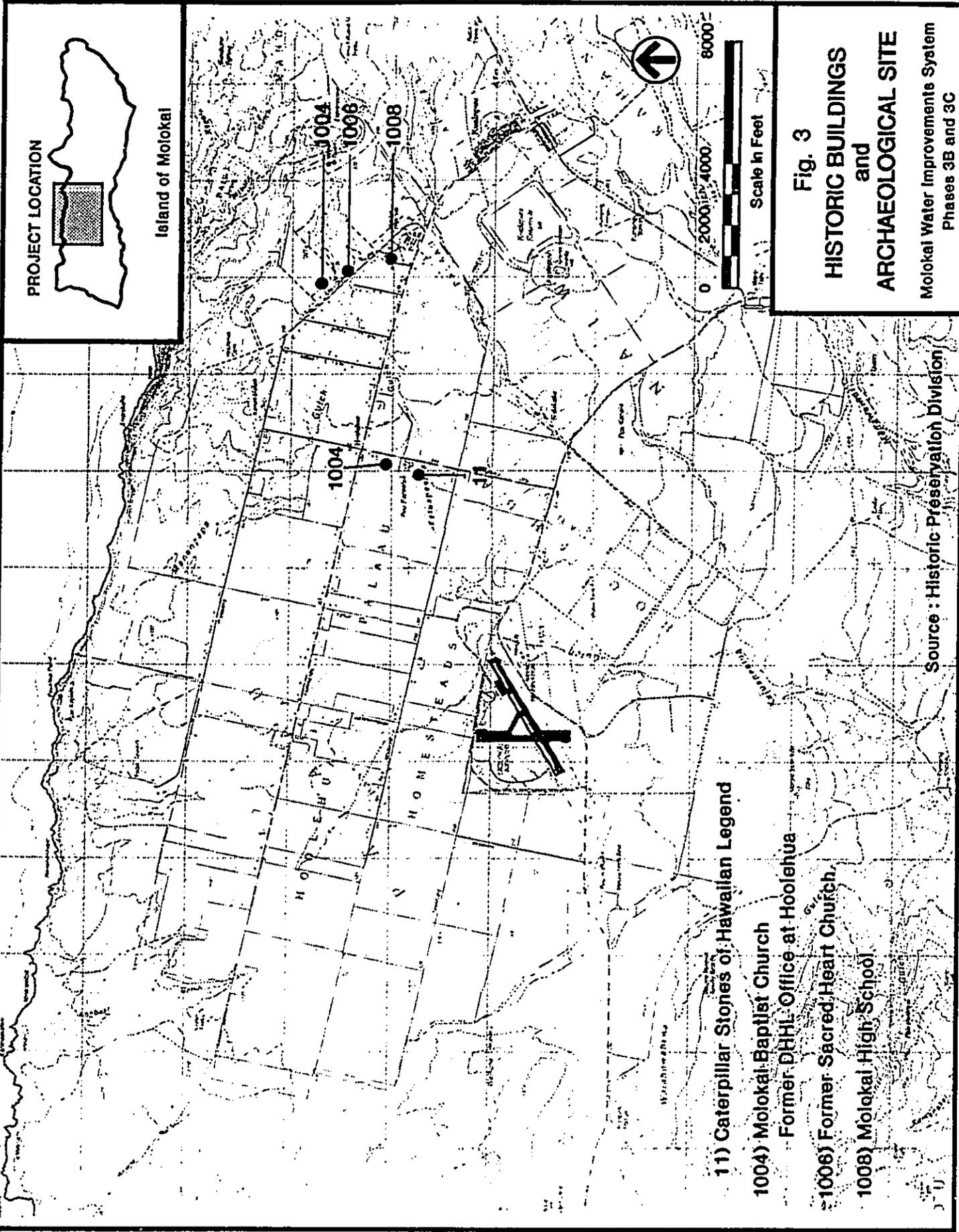
red and green ti leaf, bougainvillea, plumeria and lantana. Trees such as ironwood, palms, and kiawe, are frequently used as lot dividers.

Wildlife found in the vicinity are common introduced species. Mammals include feral dogs and cats, mongoose, rats and mice. Reptiles and amphibians include the metallic skink, giant neotropical toad, and various species of gecko. Avifauna include doves, sparrows, mynahs and cattle egrets. Introduced game species frequently seen in the area include the axis deer, pheasants and francolin. Domestic species which often roam the area include dogs, cats, farm animals such as cows and goats, and fowl such as chickens, ducks and geese. Horses and pigs are also raised in the area.

Hoolehua has been an agricultural region since the 1890s, the era of sugar production in Hawaii. By the mid-1920s, homesteaders were settling on Hawaiian Home Land lots at Hoolehua. After the decline of sugar, pineapple cultivation became the dominant crop until 1975, when the contract company terminated operations on Molokai. Currently, diversified agriculture is the most prevalent industry. As a result, the project site is highly disturbed, particularly along the paved and unpaved roadways where most of the pipeline will be installed. No threatened or endangered species of flora or fauna are known to inhabit the site.

#### 7. Archaeology/Historic Sites

There is one documented archaeological site within Hoolehua, and four historic buildings. The archaeological site and one historic building are located off Puu Peelua Avenue, while the other three historic buildings are located in the northeastern triangle of the project area. See Figure 3. In Phase 3B, a water line along Puu Peelua Avenue passes in the vicinity of the "Caterpillar Stones" of Hawaiian legend, which are now within the property boundaries of an occupied homestead lot, and the Molokai Baptist Church. The table on the following page lists the sites currently found within Hoolehua.



PROJECT LOCATION

Island of Molokai

11) Caterpillar Stones of Hawaiian Legend

1004) Molokai Baptist Church  
Former DRHL Office at Hoolehua

1006) Former Sacred Heart Church

1008) Molokai High School

Scale in Feet

Fig. 3  
**HISTORIC BUILDINGS  
 and  
 ARCHAEOLOGICAL SITE**  
 Molokai Water Improvements System  
 Phases 3B and 3C

Source : Historic Preservation Division

ARCHAEOLOGY/HISTORIC SITES	
Registered Site Number*	Site Description
11	"Caterpillar Stones" of Hawaiian legend
1004	Molokai Baptist Church
1004	Department of Hawaiian Homelands Office at Hoolehua
1006	Former Sacred Heart Church
1008	Molokai High School Complex

\* Sites are registered with the State Historic Preservation Division of the Department of Land and Natural Resources

**B. INFRASTRUCTURE**

**1. Water**

There are ten separate water systems on Molokai. The Maui County Department of Water Supply owns and operates four systems, while four private systems are owned and operated by Molokai Ranch, Del Monte, Kalua Koi Corporation and Kawela Plantation, respectively. The last two systems are owned and operated by the State of Hawaii: the Department of Land and Natural Resources (DLNR) Molokai Irrigation System and the Department of Hawaiian Home Lands' domestic water system. The last two systems are the primary suppliers of water for the Hoolehua-Palaa Homesteads.

The DLNR's Molokai Irrigation System was completed in 1962 for agricultural use. Its service area includes the Hawaiian Home Lands in Hoolehua, the agricultural park south of the airport, and extends as far west as Mahana.

The proposed improvements are part of the Department of Hawaiian Home Lands' domestic water system. The system serves homesteaders in Hoolehua-Palaa and Kalamaula areas, Molokai Airport, and Molokai High School. It also provides water to a few non-homestead users.

2. Wastewater

All homes in the vicinity of the proposed improvements presently use cesspools for sewage disposal. There is no system for centrally collecting and treating sewage.

3. Drainage

Drainage at the project site flows through natural drainage courses. Only Farrington Avenue has roadside concrete drainage swales. Both Puu Peelua Avenue and Maunaloa Highway have box culverts for flows to pass through.

4. Roadway System

The main road linking east and west Molokai through Hoolehua is Maunaloa Highway. It is owned and maintained by the State Department of Transportation -- Highways. Hoolehua is presently served by a road network within the rural residential area and the agricultural area. Secondary roads through Hoolehua include Puu Peelua Avenue and Moomomi Avenue. All roads in Hoolehua are owned by State DHHL, but maintained by Maui County. See Figure 4.

Maui County recently completed upgrading of the paved roads, which now have smooth surfaces, painted dividing lines and wide shoulders. Improved roadways are generally 20-foot asphaltic concrete pavement within a 50-foot right-of-way. Rural residential roadways have 18 feet of paved surface within a 40-foot right-of-way.

Unpaved roads, generally those running north to south, range from good condition to highly eroded. Roads eroded by years of use and runoff have a characteristic "scoop" that is as much as two feet below ground level.

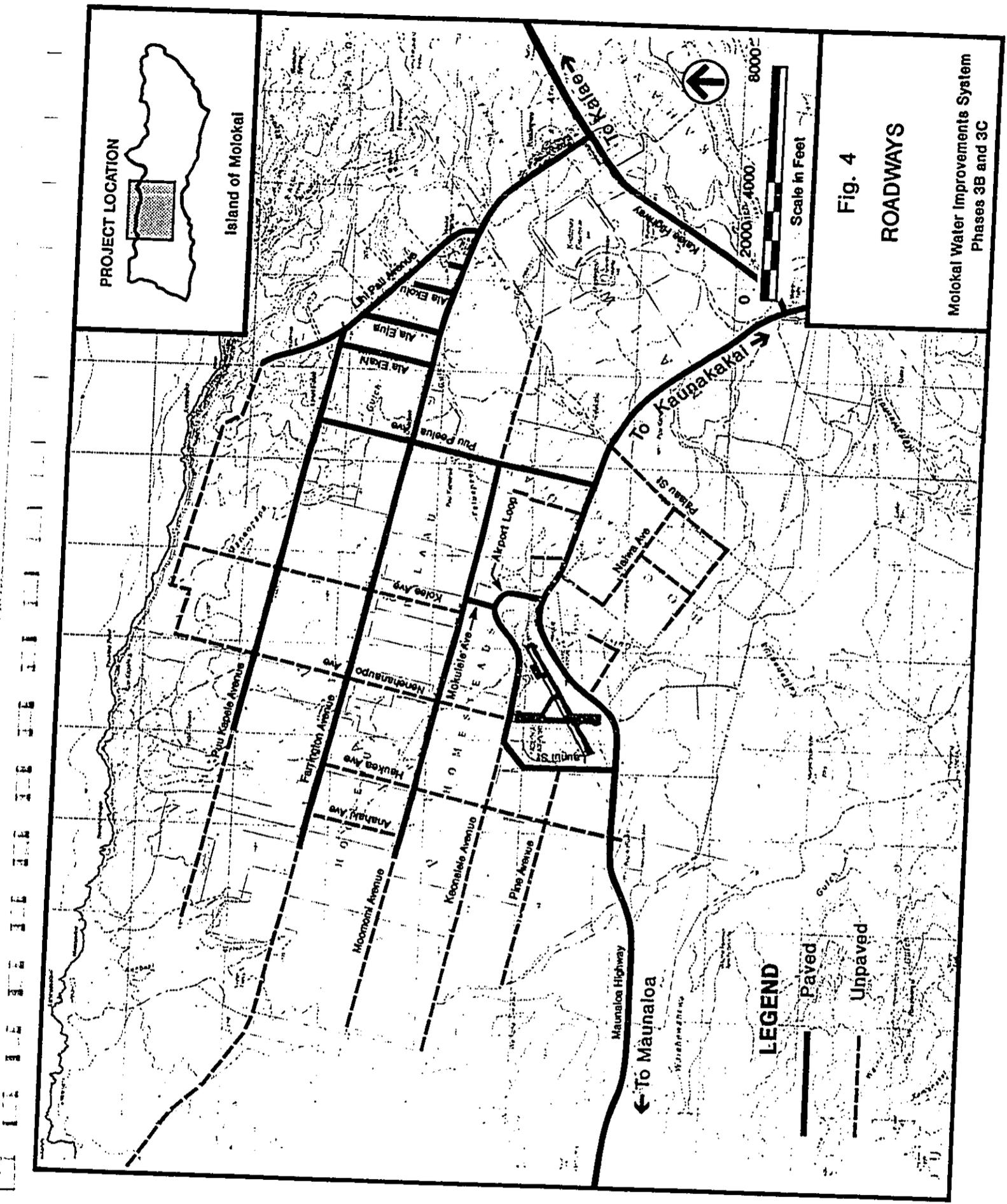
Paved roadways along which water distribution lines are proposed are:

Maunaloa Highway  
Puu Peelua Avenue  
Moomomi Avenue  
Farrington Avenue  
Puu Kapele Avenue

PROJECT LOCATION



Island of Molokai



LEGEND

— Paved

- - - Unpaved

Fig. 4

ROADWAYS

Molokai Water Improvements System  
Phases 3B and 3C

Unpaved roadways along which water distribution lines are proposed are:

Palaau Street  
Naiwa Avenue  
Hauakea Avenue  
Nenehanaupo Avenue  
Kolea Avenue  
Keonelele Avenue  
Pine Avenue

5. Electrical

Limited electrical service is provided by Maui Electric Company, Ltd., Molokai branch. Presently, service is available only to homes located along streets east of Hauakea Avenue.

### III. SOCIOECONOMIC CHARACTERISTICS

#### A. POPULATION

The island of Molokai has a population of about 6,717 according to US Census figures for 1990. From a low of 1,117 in the 1920s, Molokai's population has risen steadily to just over 5,000 residents during the past fifty years. This reflects the relatively low rate of population increase on the island as compared with the other four major islands.

Approximately 2,168 people were counted in West Molokai (US Census Tract 318) in 1990, representing about 32% of the island population. Within the project site, US Census Tract Blocks indicate a total population of 648.

#### B. HOMESTEAD LIFE

Hoolehua is a rural/agricultural community. All residences are located along paved roadways and have access to water and electrical service. At present, there are approximately 220 households in Hoolehua.

The majority of the awards are agricultural/residential lots ranging in size from 1 to 40 acres. In general, the larger lots are located in the northwestern portion of the project site along Puu Kapele and Farrington Avenues, while the smaller lots are located to the northeast, on the eastern end of these avenues. Medium-sized lots comprise the southern portion of the site, approximately from Moomomi Avenue to Maunaloa Highway.

Homestead life is centered on adherence to Hawaiian cultural values and contribution to community ohana. The social fabric of this particular neighborhood is tightly interwoven with other communities on the island of Molokai. Therefore, the residents of Hoolehua are likely to interact at family gatherings, unorganized functions or cultural events throughout the island.

In Hoolehua, community interaction frequently centers on the intersection of Puu Peelua and Farrington Avenue where the credit union, post office, and Baptist church are located. Facilities for organized community interaction include Molokai Recreational Community Center Office Complex and Molokai High School. These are located along Farrington Avenue in the northeastern portion of the project site.

C. ECONOMIC CONDITIONS

Since the decline of the pineapple industry on Molokai in the 1970s, the local economy has shifted to diversified agriculture. The produce crops which have proven successful are watermelon, sweet potatoes, bell peppers and snap beans. Other crops which thrive well in the dry climate and acidic soil include Chinese bananas, Italian squash, broccoli and sweet corn. Existing feed operations on Molokai include harvesting of volunteer hay and some cultivated hay.

**IV. RELATIONSHIP TO LAND USE PLANS AND POLICIES**

**A. HAWAII STATE LAND USE LAW**

The project site and most of the surrounding lands are classified within the Agricultural district, as shown in Figure 5. A few pockets outside the vicinity of the proposed project are designated Urban, for example Molokai High School and Molokai Airport. The North shore is classified Conservation. While state law requires a minimum lot size of 1 acre under the agricultural classification, some of the lands within Hoolehua have been subdivided into lots of less than 1 acre.

**B. DEPARTMENT OF HAWAIIAN HOME LANDS (DHHL)**

DHHL is the state agency charged with management of the Hawaiian Home Lands Trust, development of attendant lands, administration of land awards, and provision of legal counsel and fiscal assistance to current and potential homesteaders.

In 1986, DHHL published the Hoolehua-Palaau Development Plan which outlined its three-fold purpose. It provides a forum for decision-making by DHHL related to land use and management of resources; directs proper management and utilization of lands for the benefit of Native Hawaiian homesteaders; and presents a comprehensive overview, identifying short- and long-term capital improvements necessary to maintain and/or achieve higher utilization of these lands. Phase 3B and 3C of improvements to Molokai's Water Distribution System are consistent with the following recommendations of the Hoolehua-Palaau Development Plan:

*1.0 Rural/Residential Homesteads*

*1.2 Give priority consideration to infrastructure improvements within the rural/residential core to meet existing and future residential demands, and maintain the rural character of the area.*

*4.0 Agriculture/Residential*

*4.1 Retain the agricultural integrity of the central plain area within Hoolehua.*



6.0 Pastoral Area

- 6.5 *Work with Molokai Irrigation System to modify water policy to allow for use of agricultural water for pasture use if adequate water is available.*

C. COUNTY ZONING, PLANS, AND PERMITS

1. Zoning

The County of Maui's zoning code states that agricultural lands are zoned Agriculture with a minimum lot size of 2 acres. DHHL is exempt from County zoning controls on Homestead lands according to Section 206 of the Hawaiian Homes Commission Act, as interpreted by the State Attorney General.

2. Plans

The Molokai Community Plan was prepared in 1981 to establish a program for implementing the Maui County General Plan. The purpose of the plan was to provide the County of Maui with a decision-making tool to guide development of Molokai through the year 2000, with updates to occur every 5 years to incorporate new data. Within the land use component of the plan, the project site was identified as primarily for agricultural use. The proposed water system improvements are intended to serve such uses.

Phase 3B and 3C of improvements to Molokai's Water Distribution System are consistent with the following recommendations of the Molokai Community Plan:

A. Socioeconomic Aspects

1. *Economic Activity*

- a. *Maintain agriculture as the primary economic activity.*
- b. *Support expansion of diversified agriculture, including aquaculture, by establishing agricultural marketing cooperatives and agriculture parks and by providing technical and financial assistance.*

- e. Promote self-sufficiency by using local raw materials, food products and natural energy sources wherever and whenever possible.*
- h. Coordinate the designation and development of agricultural park sites between the County and the Departments of Hawaiian Home Lands and Agriculture.*

*C. Support Systems: Transportation and Utilities*

*2. Water*

- a. Develop a comprehensive water system for agricultural use.*
- b. Improve current water quality and distribution system and develop new water sources for the Molokai Community Plan area.*

*3. Permits*

Inasmuch as the water line improvements follow roadways, two permits pertaining to work along such roadways are required. Along Maunaloa Highway, which is a State highway, a permit to perform work upon a State highway is required pursuant to Chapter 264, Hawaii Revised Statutes. Similarly, a permit is required to perform work along County roads pursuant to Chapter 12.04, Maui County Code. In addition, trenching and stockpiling activities require a County grading permit.

Since the proposed improvements traverse several drainage ways, requirements for state and federal permits are currently being evaluated by DHHL and the respective administering agencies, including the U.S. Army Corps of Engineers, and the State Department of Land and Natural Resources.

**V. PROBABLE IMPACTS AND MITIGATIVE MEASURES**

**A. SHORT-TERM IMPACTS**

**1. Water Quality**

The proposed improvements will entail excavating to depths between four feet and ten feet. There is no caprock or basal aquifer in the area which would be affected by such activity.

Following installation, the waterlines will be disinfected with chlorine after being hydrostatically tested and checked for leaks. This chlorinated water will be retained in the pipeline overnight and disposed of in accordance with applicable State and County environmental requirements.

**2. Air Quality**

All work will be in conformance with the Air Pollution Control Standards and regulations of the State Department of Health and County Grading Ordinance. Dust emissions will be controlled, if necessary, by watering active work areas and covering open-bodied trucks.

**3. Noise**

Noise disturbances will occur due to excavating, grading, and maneuvering of equipment and materials. Mufflers and other noise-attenuating equipment will be used, as required. In cases where construction noise is expected to exceed limits set by the Department of Health, a permit to allow such noise is required.

**4. Public Health & Safety**

Construction sites typically pose various safety hazards to the public, particularly during non-work hours such as evenings, weekends and holidays. Necessary mitigative measures to assure protection of public health and safety will be provided throughout all phases of construction. During non-work hours, construction areas will be secured by adequate warning signs and other safety devices as required by State and County regulations.

5. Traffic Flow

Trucks, heavy equipment and other vehicles will use existing roads to import materials and to access construction areas. The increased traffic from construction-related vehicles should not be significant, but may cause some minor inconveniences in the immediate vicinity. The low volume of traffic in this area should minimize any inconveniences.

6. Archaeological

None of the five archaeological and historic sites listed in the State Register of Historic Places will be adversely impacted by the project. Any discovery of previously undocumented sites will cause work to be halted and the State Historic Preservation Division to be notified.

B. LONG-TERM IMPACTS

Long-term impacts of the proposed water line improvements on Hoolehua are positive. Many of the awardees are currently barred from moving onto their property because domestic water service is not available. Thus, the project will directly benefit homesteaders and their agricultural pursuits and, thereby, indirectly benefit Molokai's diversified agriculture industry as a whole.

As a result of constructing the proposed domestic water distribution lines, more people will be moving into the Hoolehua-Palaau Homestead area. According to DHHL projections, the long-term domestic water demand for the residential lots is 0.76 million gallons per day (mgd). The Maui County Water Use and Development Plan states that the long-term projection for domestic consumption on Molokai is on the order of 5 mgd. It further states that groundwater resources should be developed to meet this demand and that such resources are adequate. The plan further states, however, that agricultural irrigation demands will compete with domestic water needs if projected estimates, which are near 40 mgd, are realized.

**VI. ALTERNATIVES TO THE PROPOSED ACTION**

A "no action" alternative is available, but is not consistent with Molokai Community Plan mandates to provide infrastructural improvements. The improvements are intended to implement objectives and policies stated in the Development Plan for Hawaiian Home Lands at Hoolehua-Palaau. The phasing plan was developed after consideration of age of the systems, general condition, seasonal impacts of construction, as well as fiscal considerations.

**VII. DETERMINATION**

A draft environmental assessment was prepared and distributed for review in accordance with the consultation process of Chapter 343, Hawaii Revised Statutes. Based on the significance criteria set forth in section 11-200-12 of Title 11 Chapter 200, the Department of Hawaiian Home Lands (DHHL) has determined that the improvements will have no significant adverse impact on the environment, and that an Environmental Impact Statement is not required.

**Findings and Reasons Supporting the Determination**

The effect of the proposed improvements on the environment is determined to be insignificant. Construction and use of the water system improvements will not:

- o Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;
- o Curtail the range of beneficial uses of the environment;
- o Conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, etc;
- o Substantially affect the economic or social welfare of the community or state;
- o Substantially affect public health;
- o Involve substantial secondary impacts, such as population changes or effects on public facilities;
- o Involve a substantial degradation of environmental quality;
- o Be individually limited, but cumulatively have considerable effect upon the environment or involve a commitment for larger actions;
- o Substantially affect a rare, threatened or endangered species or its habitat;
- o Detrimentially affect air or water quality or ambient noise levels; or
- o Affect an environmentally sensitive area, such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, freshwater area, or coastal waters.

**VIII. CONSULTATION**

**A. Pre-Assessment Consultation**

**State of Hawaii Agencies**

Department of Business, Economic Development and Tourism

Department of Land and Natural Resources; State Historic Preservation Division

**County of Maui Agencies**

Department of Water Supply

Planning Department

**B. EA Consultation**

**Federal Agencies**

US Department of Agriculture, Soil Conservation Service

US Army Corps of Engineers

**State of Hawaii Agencies**

Department of Agriculture

Department of Business, Economic Development and Tourism

Department of Land and Natural Resources

Department of Land and Natural Resources, State Historic Preservation  
Division

Department of Health

Department of Transportation

Office of Environmental Quality Control

Office of Hawaiian Affairs

Office of State Planning

University of Hawaii, Water Resources Research Center

University of Hawaii, Environmental Center

**County of Maui Agencies**

Department of Public Works

Department of Water Supply

Economic Development Agency

Planning Department

**Others**

Maui Electric Company, Ltd.



DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, HONOLULU  
BUILDING 230  
FT. SHAFTER, HAWAII 96858-5440

REPLY TO  
ATTENTION OF:

Planning Division

3009-01

April 13, 1993

**WILSON**  
**OKAMOTO**  
ASSOCIATES, INC.



ENGINEERS  
ARCHITECTS  
PLANNERS  
1115 SOUTH KING STREET  
HONOLULU, HAWAII 96813  
PHONE: (808) 931-1211  
FAX: (808) 931-1211  
HONOLULU, HAWAII 96813

Mr. Patrick Young  
State of Hawaii  
Department of Hawaiian Home Lands  
P.O. Box 1879  
Honolulu, Hawaii 96805

Dear Mr. Young:

Thank you for the opportunity to review and comment on the Molokai Water System Improvements, Phases 3B and 3C (Draft Environmental Assessment), Hooilehua, Molokai. The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and to issue Department of the Army (DA) permits under the Clean Water Act; the River and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

- a. The project includes numerous on-going as well as proposed utility line stream and gulch crossings; therefore, a DA permit will be required. Please contact our Operations Division at 438-8552 for further information.
- b. The flood hazard information provided on page 7 of the report is correct.

Sincerely,

Kisuk Cheung, P.E.  
Director of Engineering

Copy Furnished:

Mr. Earl K. Matsukawa, Project Manager  
Wilson Okamoto and Associates, Inc.  
PO Box 3530  
Honolulu, Hawaii 96811

Mr. Kisuk Cheung, P.E., Director of Engineering  
U.S. Army Engineer District, Honolulu  
Department of the Army  
Building 230  
Fort Shafter, Hawaii 96858-5440

Dear Mr. Cheung:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: 5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of January 25, 1993, verifying the information presented in the EA regarding hazard ratings from the Federal Emergency Management Agency's Flood Insurance Rate Map.

We have been in contact with your Operations Division regarding the need for a Department of the Army permit, and we will continue to work with your agency during the application process.

Your letter, together with this response, will be reproduced in the Final Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

*Earl K. Matsukawa*

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFM Engineers, Inc.



3009-01  
April 13, 1993

**WILSON  
OKAMOTO  
& ASSOCIATES, INC.**



ENGINEERS  
ARCHITECTS  
PLANNERS  
1115 KANE OHS STREET  
HONOLULU, HAWAII 96813  
PHONE: (808) 534-1101  
FAX: (808) 534-1101  
P. O. BOX 3330  
HONOLULU, HAWAII 96811

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

Dear Mr. Hibbard:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: 5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of February 1, 1993, commenting on the subject Environmental Assessment/Negative Declaration Anticipated. We appreciate your concurrence on the findings presented in the document. We will also note in the Final Environmental Assessment (EA) that your agency considers it highly unlikely for unidentified sites to be present along the waterline.

Your letter, together with this response, will be reproduced in the Final EA. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFM Engineers, Inc.

JOHN WALKER  
DIRECTOR



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

February 8, 1993

REX D. JOHNSON  
DIRECTOR  
DEPT. DIRECTORS  
ADVICE T. DUBIE  
AL. P. HARRIS  
JEANNE M. HARRIS  
CALVINIA TRUDA  
BY NEARLY REFER TO:  
STP 8.5012

TO: The Honorable Hoalika Drake, Chairperson  
Department of Hawaiian Home Lands

ATTN: Mr. Patrick Young

FROM: Rex D. Johnson  
Director of Transportation

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENTS (DEIS)  
MOLOKAI WATER SYSTEM IMPROVEMENTS, PHASES 3B AND 3C  
HOOLEHUA, MOLOKAI, COUNTY OF MAUI  
TMK: 5-2-01-02, 03, 04, 05, 06, 17, 21, 25, 26, AND 27

We have no objections on the proposed Molokai water system improvements as described in the DEIS.

However, we would be interested to find out if there will be any impacts in the Molokai Airport vicinity from run-off during and after construction of the line replacements and extensions. In addition, please verify if Keonele Avenue along the proposed water distribution lines is unpaved. We are asking for this clarification because the portion of Keonele Avenue accessing Molokai Airport is paved.

We would appreciate being kept apprised of subsequent phases of the water distribution system development that would involve Molokai Airport.

Thank you for this opportunity to provide comments.

c: OEQC  
Wilson Okamoto & Associates, Inc. (Attn: Earl K. Matsukawa)

3009-01  
April 13, 1993

Mr. Rex D. Johnson, Director  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813

Dear Mr. Johnson:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: 5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of February 8, 1993, commenting on the subject Environmental Assessment/Negative Declaration Anticipated. Since no major structures or paved roadway widenings are being proposed, there should be no net increase in non-porous surfaces or quantity of runoff. The future agricultural roadways proposed are of gravel surfaces and pervious.

While some soil disturbance would be involved, appropriate measures will be taken to assure that the potential for soil runoff is minimized during construction and until disturbed areas revegetate. To clarify the locations of proposed water distribution lines and paved/unpaved roadways, we have prepared a new figure to be included in the Final Environmental Assessment (EA).

Your letter, together with this response, will be reproduced in the Final EA. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFM Engineers, Inc.

WILSON  
OKAMOTO  
& ASSOCIATES, INC.



ENGINEERS  
ARCHITECTS  
PLANNERS  
1115 SOUTH WALK STREET  
HONOLULU, HAWAII 96813  
PHONE: (808) 531-5111  
FAX: (808) 531-5111



# University of Hawaii at Manoa

Environmental Center  
A Unit of Water Resources Research Center  
Crawford 317 • 2530 (Campus Road) • Honolulu, Hawaii 96822  
Tel: phone: (808) 957-7361

February 7, 1993  
EA:00014

Mr. Patrick Young  
Department of Hawaiian Home Lands  
P.O. Box 1879  
Honolulu, Hawaii 96805  
Dear Mr. Young:

Draft Environmental Assessment  
Holohai Water System Improvements  
Phases 3B and 3C  
Holohai

The referenced project encompasses Phases 3B and 3C of a series of water line replacements and extensions planned for the Hoolehua-Palaau Homestead. The Phase 3 improvements intends to bring the domestic water distribution system up to County of Maui standards, including those for fire protection. Construction of 3B will replace or add 9-1/2 miles of water lines; 3C will replace or add 17 miles of water lines.

Our review of the Draft Environmental Assessment (DEA) was prepared with the assistance of Michael Graves, Anthropology; and Elizabeth Gordon, Environmental Center.

### General Comments

Pursuant to the Environmental Impact Statement (EIS) Rules (Section 11-200-9; 11-200-10; 11-200-12, H.A.R.), Environmental Assessments are intended to provide sufficient information to evaluate the significance of potential impacts. Our reviewers have noted two areas in which additional information will contribute to a better basis for decision making, and we suggest that the present EA be expanded to accommodate these concerns.

### Flora/fauna (page 7-8)

How was the determination of "no threatened or endangered species of flora and fauna are known to inhabit the site" reached? We are concerned that there was no reference in the DEA to any floral/faunal survey conducted. Holohai has several species of birds and plants federally listed as endangered or threatened. If some of the water lines are going through undeveloped land that has not been previously surveyed, this is an important concern.

An Equal Opportunity/Affirmative Action Institution

Mr. Patrick Young  
February 3, 1993  
Page 2

### Archaeology/Historic Sites (page 19)

We are concerned that there is also no mention in the DEA of an archaeological survey conducted before construction began. Is this because the area was previously surveyed? If so, then this should be referenced in the document. If not, we recommend that an archaeological survey be conducted before Phase 3C begins, and that a trained archaeological monitor be present in all situations involving excavation during 3B and 3C.

Thank you for the opportunity to review this EA. We hope that our comments are helpful.

Sincerely,

*Jacquelin N. Miller*

Jacquelin N. Miller  
Associate Environmental Coordinator

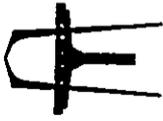
cc: ODJC

Wilson Okamoto and Associates, Inc.  
Roger Fujioka  
Michael Graves  
Elizabeth Gordon

**WILSON  
OKAMOTO  
& ASSOCIATES, INC.**

3009-01  
April 13, 1993

**WILSON  
OKAMOTO  
& ASSOCIATES, INC.**



**ENGINEERS  
ARCHITECTS  
PLANNERS**  
1111 SOUTH OAK STREET  
HONOLULU, HAWAII 96813  
PHONE: (808) 531-3151  
FAXING: (808) 531-3151  
P. O. BOX 3330  
HONOLULU, HAWAII 96811

Ms. Jacquelin N. Miller, Associate Environmental Coordinator  
University of Hawaii at Manoa  
Environmental Center  
2550 Campus Road, Crawford 317  
Honolulu, Hawaii 96822

Dear Ms. Miller:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: 5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of February 7, 1993, commenting on the subject Environmental Assessment/Negative Declaration Anticipated.

**Flora/Fauna**

Hoolehua has been an agricultural region since the 1890s, the era of sugar production in Hawaii. By the mid-1920s, homesteaders were settling on Hawaiian Home Land lots at Hoolehua. After the decline of sugar, pineapple cultivation became the dominant crop until 1975, when the contract company terminated operations on Molokai. Currently, diversified agriculture is the most prevalent industry. As a result, the project site is highly disturbed, particularly along the paved and unpaved roadways where most of the pipeline will be installed. Therefore, it is highly unlikely that the project poses any threat to flora and fauna habitats.

**Archaeology/Historic Sites**

The Department of Land and Natural Resources State Historic Preservation Division (SHPD) is familiar with the area and has standard documentation of the project site. In a letter dated February 1, 1993, the SHPD stated its concurrence with the evaluation of long-term impacts in the Draft Environmental Assessment. It further stated that it is considered highly unlikely for unidentified sites to be present along the waterline since the corridor has been previously disturbed by the existing waterline and also by agricultural activities.

3009-01  
Letter to Ms. Miller  
Page 2  
April 13, 1993

Your letter, together with this response, will be reproduced in the Final Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFM Engineers, Inc.

LINDA CROCKETT LINGLE  
Mayor  
GEORGE N. KAYA  
Director  
CHARLES JENCKES  
Deputy Director



COUNTY OF MAUI  
DEPARTMENT OF PUBLIC WORKS  
LAND USE AND CODES ADMINISTRATION  
250 SOUTH HIGH STREET  
WAILUKU, MAUI, HAWAII 96793

AARON SHINMOTO, P.E.  
Land Use and Codes Administration  
EASSIE WILKER, P.E.  
Wastewater Reclamation Division  
RALPH HAGALINE, P.E.  
Engineering Division  
BRADY HASKIRO, P.E.  
Solid Waste Division  
MELVIN HIPOLITO  
Highways Division

3009-01  
April 13, 1993

**WILSON  
OKAMOTO**  
A ASSOCIATES, INC.



ENGINEERS  
ARCHITECTS  
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1115 BERKELEY STREET  
PUEBLO BLVD. 10TH FLOOR  
PUEBLO, CO 81001-1111  
MAILING ADDRESS  
P.O. BOX 5330  
PUEBLO, COLORADO 81001

Mr. George N. Kaya, Director  
Department of Public Works  
County of Maui  
250 South High Street  
Wailuku, Maui, Hawaii 96793

Dear Mr. Kaya:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: 5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of March 2, 1993, commencing on the subject Environmental Assessment/Negative Declaration Anticipated. Please be advised that the project engineers sent a complete set of construction plans to DPW on September 30, 1992.

Your letter, together with this response, will be reproduced in the Final Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFM Engineers, Inc.

Earl K. Matsukawa, Project Manager  
Wilson Okamoto & Associates, Inc.  
P. O. Box 3530  
Honolulu, Hawaii 96811

SUBJECT: Draft Environmental Assessment  
MOLOKAI WATER SYSTEM IMPROVEMENTS, PHASES 3B & 3C  
at Hoolahua, Molokai  
TMK:5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26 & 27

Dear Mr. Matsukawa:

We reviewed the subject application and have the following comments:

1. Comments from the Engineering Division:
  - a. Construction plans shall be submitted to the County of Maui, Department of Public Works for review and approval prior to any work.

The applicant is requested to contact the Engineering Division at 243-7745 for additional information.

Very truly yours,

  
GEORGE N. KAYA  
Director of Public Works

RMN:mht  
1052f; Page 100

cc: L.U.C.A.  
Engineering Division  
Solid Waste Division  
Wastewater Reclamation Division





DEPARTMENT OF WATER SUPPLY  
COUNTY OF MAUI  
P.O. BOX 1109  
WAILUKU, MAUI, HAWAII 96793-7109

RECEIVED  
APR 13 1993

February 5, 1993

Patrick Young  
Department of Hawaiian Home Lands  
State of Hawaii  
PO Box 1879  
Honolulu, Hawaii 96805

Re: Draft Environmental Assessment for Holokai Water System  
Improvements, Phases 3B & 3C; THK 5-2- 1-6, 17, 21, & 25-27

Dear Mr. Young,

Thank you for the opportunity to review the Draft Environmental Assessment for Holokai Water System Improvements, Phases 3B & 3C. We agree that the impact of improved fire protection will be positive. However, since these improvements will allow increased settlement in the area, as stated on page 19; secondary impacts will include increased water consumption. We have no objections to such increase, but we recommend that your final EA include some mention of potential consumption impacts.

Sincerely,

*David Craddick*  
David Craddick  
Director

elk

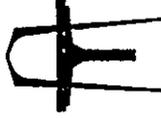
cc: Brian Choy, OEQC  
Earl Matsukawa, Wilson Okamoto

"By Water All Things Find Life"



3009-01  
April 13, 1993

WILSON  
OKAMOTO  
ASSOCIATES, INC.



ENGINEERS  
ARCHITECTS  
PLANNERS  
1115 SOUTH SHORE DRIVE  
HONOLULU, HAWAII 96813  
PHONE: (808) 935-1111  
FAX: (808) 935-1111  
P.O. BOX 3330  
HONOLULU, HAWAII 96811

Mr. David Craddick, Director  
Department of Water Supply  
County of Maui  
P.O. Box 1109  
Wailuku, Maui, Hawaii 96793

Dear Mr. Craddick:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: 5-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of February 5, 1993, commenting on the subject Environmental Assessment/Negative Declaration Anticipated. According to project engineers, the waterlines were sized for domestic water requirements based on the forecast for demand from Hawaiian Home Lands development at Hooloehua (as of June 1991). As suggested, we will address the potential for increased water consumption in the Final Environmental Assessment.

Your letter, together with this response, will be reproduced in the Final Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

*Earl Matsukawa*

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFM Engineers, Inc.

Maul Electric Company, Ltd. • 210 West Kamehameha Ave. • PO Box 398 • Kahului, Maui, HI • 96732-0398



February 7, 1993

Mr. Patrick Young  
Department of Hawaiian Home Lands  
State of Hawaii  
P.O. Box 1879  
Honolulu, Hawaii 96805

Dear Mr. Young:

Subject: Molokai Water System Improvements, Phases 3B and 3C

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

In reviewing the information transmitted and our records, we will require specific electrical data (load, voltage, etc.) to determine the probable impact to our electrical system on Molokai. We encourage the project's electrical consultant to meet with us as soon as practical to plan for the proposed project's electrical requirements. Given the long lead times for electrical service equipment, we cannot place enough emphasis on the need to meet with the project's electrical consultant as soon as possible to verify the project's electrical requirements so that service can be provided on a timely basis.

If you have any questions or concerns, please call Fred Oshiro at 872-3202.

Sincerely,

*Edward Reinhardt*  
Edward Reinhardt  
Manager, Engineering

FO:rt

cc: Brian J. J. Choy, Office of Environmental Quality Control  
Earl K. Matsukawa, Wilson Okamoto & Associates

AG-E-Company

3009-01  
April 13, 1993

**WILSON  
OKAMOTO**  
ASSOCIATES, INC.



ENGINEERS  
ARCHITECTS  
PLANNERS  
1112 SOUTH KING STREET  
HONOLULU, HAWAII 96813  
PHONE: (808) 531-5101  
FAX: (808) 531-5102

Mr. Edward Reinhardt, Manager Engineering  
Maul Electric Company, Ltd.  
210 West Kamehameha Avenue  
P.O. Box 398  
Kahului, Maui, Hawaii 96732

Dear Mr. Reinhardt:

Subject: Molokai Water System Improvements  
Draft Environmental Assessment (Draft EA)  
Tax Map Key: S-2-01, 02, 03, 04, 05, 06, 17, 21, 25, 26, 27  
Molokai, Maui County, Hawaii

Thank you for your letter of February 7, 1993, commenting on the subject Environmental Assessment/Negative Declaration Anticipated. We have forwarded your comments regarding electrical service for the project to the project engineers for their consideration.

Your letter, together with this response, will be reproduced in the Final Environmental Assessment. We appreciate your interest and participation in the consultation phase of the environmental review process.

Sincerely,

*Earl K. Matsukawa*

Earl K. Matsukawa  
Project Manager

cc: Mr. Patrick Young; Department of Hawaiian Home Lands  
Ms. June Nakamura; SSFN Engineers, Inc.

Molokai Water System Improvements, Phases 3B and 3C *Final EA*

REFERENCES

- County of Maui. Molokai Community Plan. January 1984.
- Department of Hawaiian Home Lands. Engineering Report for Molokai Water System Improvement. Prepared by Park Engineering, Inc. Honolulu, Hawaii. August 1977.
- Department of Hawaiian Home Lands. Environmental Assessment for the Hoolehua Residence Lots, Units 1 & 2, Hoolehua, Molokai, Hawaii. Prepared by R.M. Towill Corporation. Honolulu, Hawaii. August 1991.
- Department of Hawaiian Home Lands. Hoolehua-Palaa Development Plan. Prepared by Phillips, Brandt, Reddick & Associates, Inc. Honolulu, Hawaii. July 1986.
- Piianaia, Ilima A.; Chairman, Hawaiian Homes Commission. Available Lands of the Hawaiian Home Lands Trust. Congressional Testimony before US Senate Select Committee on Indian Affairs and US House Committee on Interior and Insular Affairs.
- State of Hawaii Department of Business, Economic Development and Tourism. The State of Hawaii Data Book 1991: A Statistical Abstract. Honolulu, Hawaii. November 1991.
- State of Hawaii Office of the Governor, Department of Hawaiian Home Lands. Hawaiian Homes Act, 1920, as amended; Hawaii State Constitution; Hawaii Revised Statutes 1988. Honolulu, Hawaii. 1989.
- State of Hawaii Office of the Governor, Office of State Planning. The Hawaii State Plan Chapter 226, Hawaii Revised Statutes 1988. Honolulu, Hawaii. 1989.
- United States Department of Agriculture Soil Conservation Service. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. In cooperation with the University of Hawaii Agricultural Experiment Station. August 1972.
- United States Department of Commerce Bureau of the Census. 1990 Census of Population and Housing: Census Tracts. 1992.
-