Draft Environmental Assessment

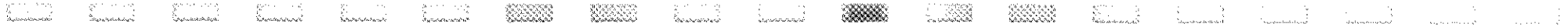
Halena Camp Site Improvements

Prepared for

MOLOKAI RANCH

July 1994

MUNEKIYO & ARAKAWA, INC.



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Preface

The Applicant, Molokai Ranch, Ltd., is seeking an after-the-fact Conservation District Use Permit for land clearing activities conducted at Halena Camp, Molokai. The actions completed involved the clearing and grubbing of approximately 24 acres of land adjoining the Halena campgrounds. The foregoing improvements were undertaken in mid-1993.

Since the lands underlying the subject property are within the State Land Use Conservation District, this Environmental Assessment has been prepared pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 200 of Title 11, Administrative Rules, Environmental Impact Statement Rules. This Draft Environmental Assessment (EA) evaluates environmental factors and impacts, and advances findings and conclusions relating to the significance of the completed actions.

I. INTRODUCTION

A. PROPERTY LOCATION, EXISTING USE AND LAND OWNERSHIP

Molokai, the fifth largest island in the State, is flanked by Maui on the southeast and Oahu on the northwest. Its elongated shape encompasses a land area of about 260 square miles, with western Molokai accounting for almost 30 percent of the total area.

Situated along Molokai's southwestern coastline, Halena Camp is approximately 1.3 miles east of Hale O Lono Harbor and 3 miles southwest of the town of Maunaloa. See Figure 1. The campground was originally built in the early 1900's to provide recreational amenities for Molokai Ranch employees and guests.

Existing improvements consist of eleven (11) wooden guest cabins, two (2) bath houses and a central pavilion.

Halena Camp is situated within TMK 5-1-2:por. 4, a parcel encompassing nearly 15,920 acres. See Figure 2. Molokai Ranch, the island's largest landowner, is the fee holder of the underlying property.

The campground has experienced consistent use over the past several years. The original structures, with the exception of the central pavilion, are in a state of disrepair. However, a number of cabins are still utilized for overnight camping activities. The central pavilion is considered to be in relatively sound structural condition and does not appear to have suffered from any loss of functional utility.

Areas immediately to the east and west of the campground were cleared and grubbed in June, 1993 to remove kiawe trees and surface vegetation. Kiawe trees have been selectively retained within the cleared areas. The

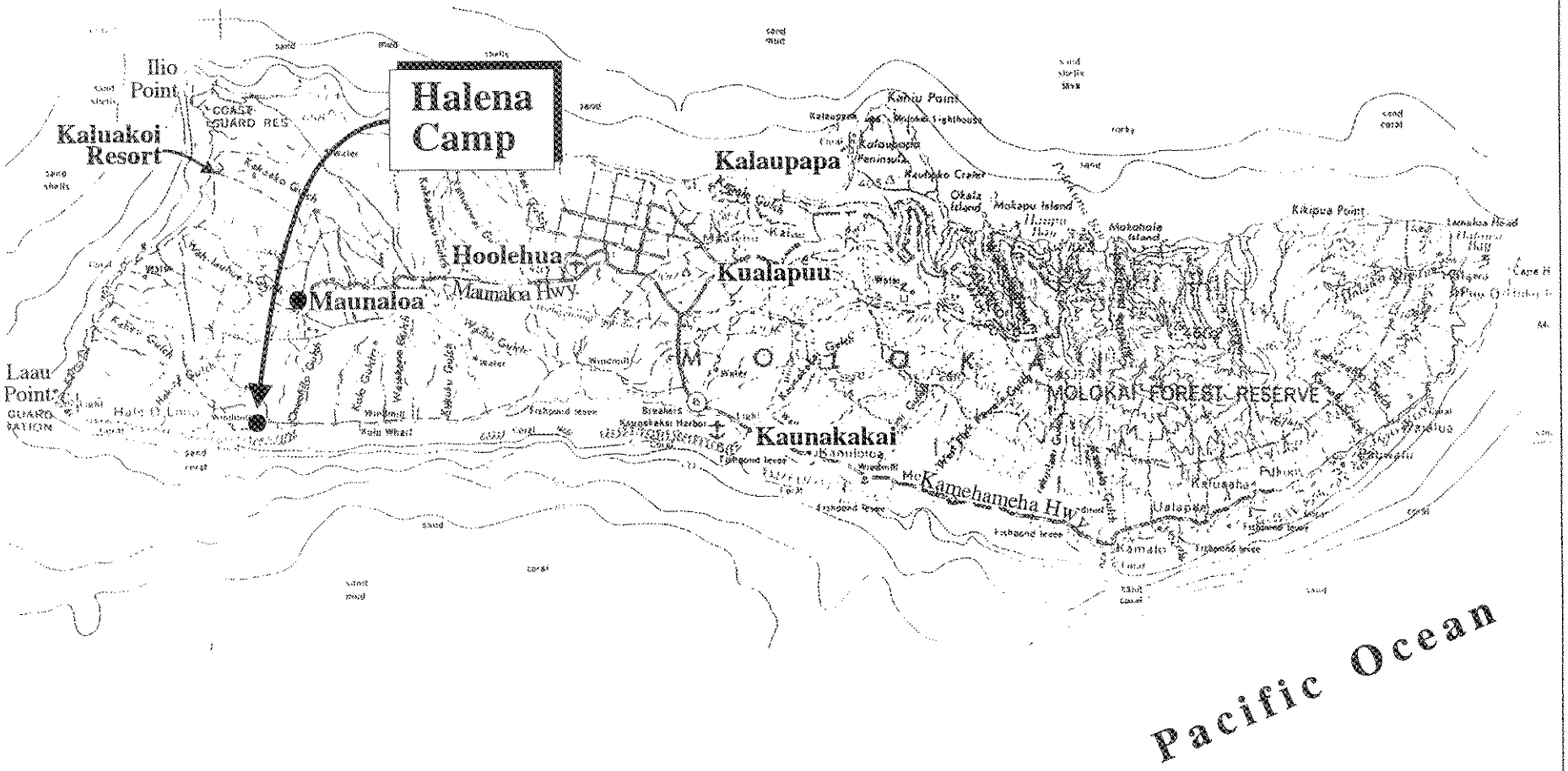

Figure 1

Halena Camp

Island Location Map

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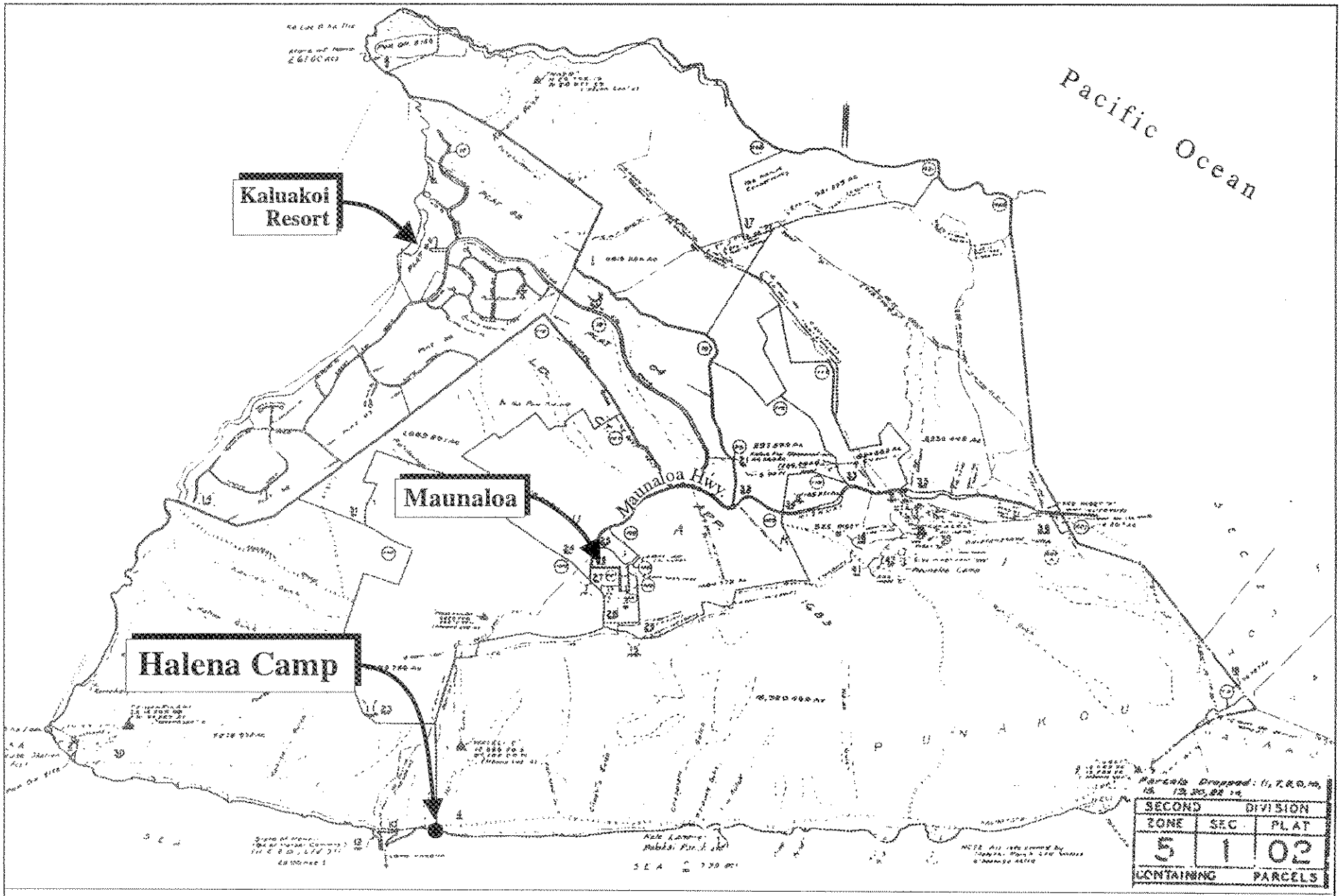

Figure 2

Halena Camp
Regional Location Map

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land area encompassed by the clearing and grubbing activities is approximately 24 acres.

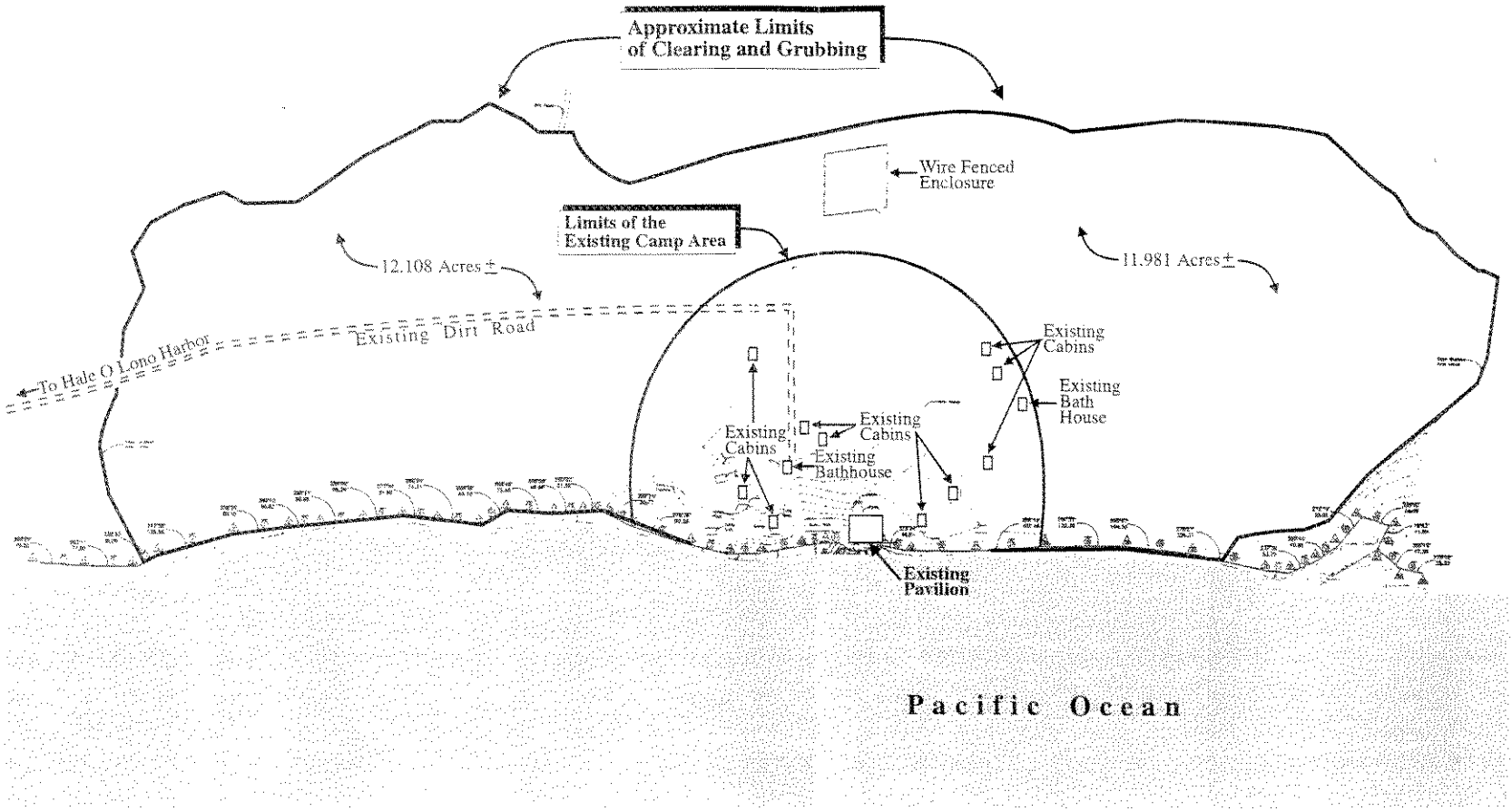
B. ***COMPLETED SITE IMPROVEMENTS***

The actions which are the subject of the after-the-fact Conservation District Use Application involved the clearing and grubbing of approximately 24 acres of vacant land to the immediate east and west of the campground. See Figure 3.

The clearing and grubbing activities to the immediate east and west of the camp site involved the selective removal of kiawe trees and surface vegetation. Kiawe trees were selectively retained in keeping with tree densities found at the campsite.

With an estimated cost of $21,800.00, the clearing and grubbing activities were implemented as the initial phase of site improvements for the restoration and expansion of the existing Halena Camp.

This area falls within the Conservation District as delineated by the State Land Use Commission (SLUC) and falls within the jurisdiction of the State Department of Land and Natural Resources (DLNR). This site falls within the Conservation District's Limited Subzone.



Source: Warren S. Unemori Engineering, Inc.

Figure 3

Halena Camp

Site Map

Scale is Approximate

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II. DESCRIPTION OF THE EXISTING ENVIRONMENT

A. PHYSICAL SETTING

1. Surrounding Land Use

Four-wheel drive vehicular access to Halena Camp is via an unpaved, dirt roadway off the Maunaloa Highway, an asphalt paved, two-lane State highway connecting the central and western regions of Molokai. The campground is in the sparsely populated western region of the island. This area consists of agricultural lands used for ranching and diversified agricultural operations. Kaunakakai, the island's principal town, is approximately 17 miles east of Halena Camp. Molokai Airport is to the northeast, almost 10 miles from the camp site.

Lands immediately surrounding Halena Camp are presently, and have historically, been utilized as cattle forage areas. A wildlife conservation preserve developed by Molokai Ranch is in an area about four (4) miles north of Halena Camp. In addition, the Kaluakoi Resort development is situated approximately nine (9) miles to the northwest of Halena Camp. The Kaluakoi development includes a residential-resort complex consisting of a hotel and three (3) condominiums, a large acreage residential subdivision and an 18-hole championship golf course. Except for lands employed for ranching and diversified agricultural activities, the remaining lands are undeveloped.

2. Climate

Hawaii's tropical location accounts for uniform weather conditions throughout the year. Climatic conditions on Molokai are characterized by mild and consistent year round temperatures, moderate humidity's, and steady northeasterly tradewinds.

Variations in Molokai's weather are attributable to regional topographic and climatic conditions.

Halena Camp is situated on the southwestern slopes of Molokai between an elevation ranging from sea level to around 20 feet. March is typically the wettest month of the year, with June usually being the driest. Annual median rainfall is 15 inches. Average temperature at Halena Camp range from lows in the 60's, to highs in the 80's.

The prevailing wind throughout the year is the northeasterly tradewind. Wind speed in the west Molokai region ranges from 4 to 24 knots depending on the season. The tradewinds are usually more persistent during the summer months than in winter, and stronger in the afternoon than at night. Cold fronts, preceded by southwesterly winds and succeeded by northerly winds, typically establish their presence between October and April. Also encountered during this time are "Kona" winds, storm-generated winds from the south.

3. ***Topography and Soils***

Molokai possesses three (3) geological regions, each formed by three (3) separate shield volcanoes; western Molokai, created first, rises to a height of nearly 1,380 feet.

Its arid climate, plateaus and rolling plains characterize its predominant geographic features. The campground is on level to gently sloping terrain ranging from an elevation of sea level to 20 feet.

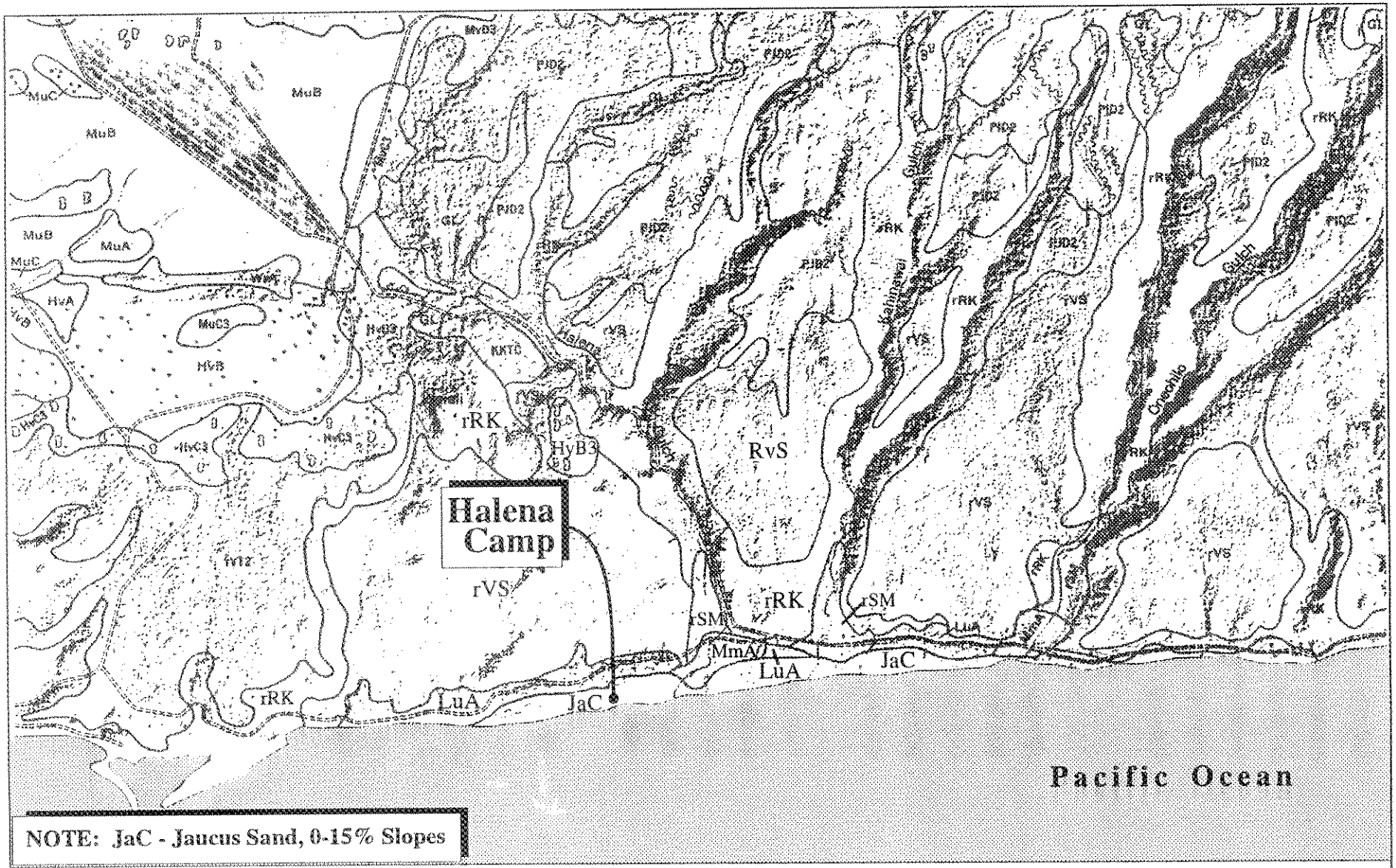
Halena Gulch commences its trek to the lowlands from a point around 1.6 miles below the southwestern quadrant of Maunaloa and emerges almost 0.3 mile east of the campground. Other geographic features within the immediate vicinity include Kahinawai and Oneoliilo Gulches, respectively situated about 0.6 mile and 1.2 miles east of Halena Camp.

The soils of the Jaucus-Mala-Pulehu association underlie the campground. This association appears as a narrow band along Molokai's coastal plains and consists of soils that formed in alluvium and coral sand that vary widely in texture and drainage. The soils are typically found on alluvial fans and in drainageways and are generally level and gently sloping.

The specific classification of the soil underlying Halena Camp is Jaucas Sand (JaC). See Figure 4. This soil type is characterized by neutral to moderate alkaline content, rapid permeability, and very slow to slow runoff. This specific soil type is generally suitable for pasture, sugarcane, truck crops, and urban development.

The University of Hawaii-Land Study Bureau's Detailed Land Classification for Molokai indicates that lands surrounding Halena Camp are designated "E37", "E49" and "E68". An overall productivity rating, embodied by the letter "E," establishes a value system on a declining scale from "A" to "E", with "A" representing high productivity.

Land types "37", "49" and "68" represent a grouping of lands having comparable features, such as soil properties, topography, and climate which result in similar utility. Characteristic of these land



NOTE: JaC - Jaucus Sand, 0-15% Slopes

Figure 4

Halena Camp
Soil Classification Map

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types are rocky, well-drained soils, with varying degrees of textures, depths ranging up to 30 inches, and slopes ranging from zero to 80 percent. These land types are generally considered favorable for grazing purposes and unsuitable for mechanized agriculture.

4. ***Flood and Tsunami Hazards***

Halena Camp is situated on the level to gently sloping coastal plains of southwestern Molokai. Due to Halena Camp's low-lying location, the campground may be subject to flooding generated by heavy rainfall and coastal flooding conditions. However, the natural drainageways provided by Halena, Kahinawai and Oneoliilo Gulches lessen the impact of any rain generated run-off. As indicated on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map, the proposed site is located within Zone V-15. See Figure 5. Lands defined by Zone V-15 are within areas of 100 year coastal flooding with velocity.

5. ***Hydrology***

Water resources on Molokai are typical of the islands with groundwater sources including basal groundwater, perched water and high level groundwater.

Basal ground water underlies most of Molokai. The water is fresh below most of east Molokai, and brackish in the central and western regions. The camp site is located in a zone of brackish basal water. See Figure 6.

Halena Camp is located at an elevation that ranges between sea level and 20 feet. Halena, Kahinawai and Oneoliilo Gulches provide natural drainageways for surface water runoff. There are no

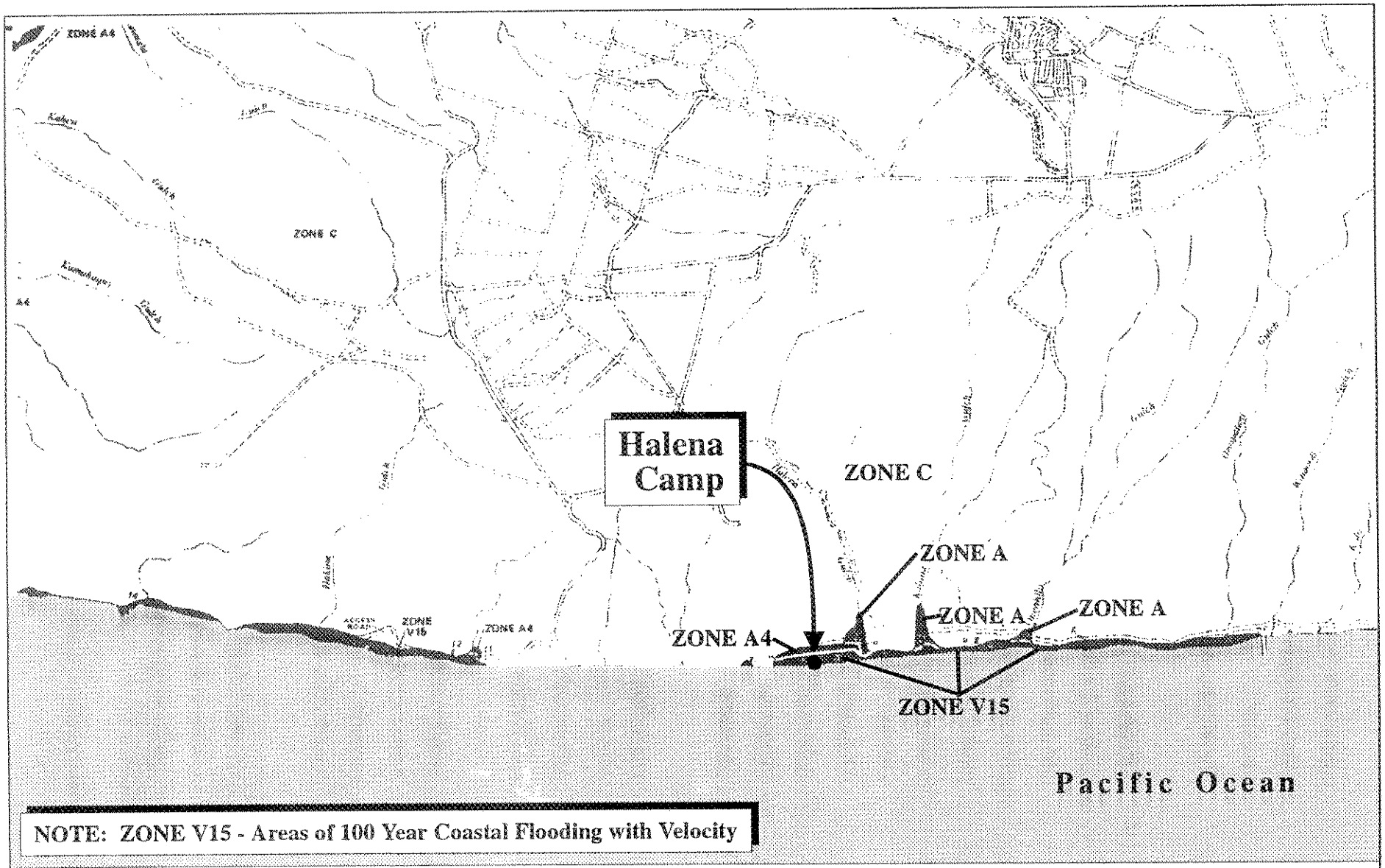

Figure 5

Halena Camp

Flood Insurance Rate Map

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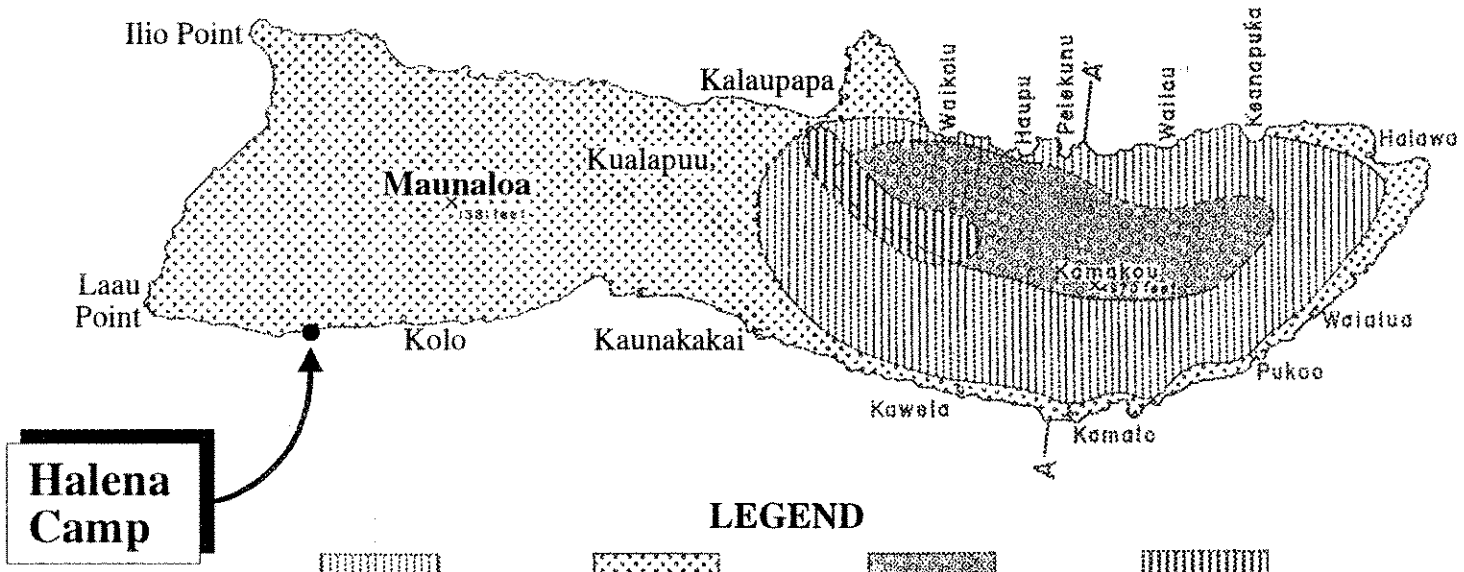

Source: Stearns, 1947.

Figure 6

Halena Camp
Molokai Groundwater Areas

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perennial streams within this region. Most of the perennial streams that flow into the sea are located on the windward side of the island, with the remaining streams scattered throughout east Molokai.

6. ***Flora and Fauna***

A botanical survey for the Halena Camp site and surrounding areas was conducted on January 18, 1994. The site is bounded by intact kiawe forest to the east and west, cliffs and hills to the north and the ocean to the south. A wetlands area was also identified to the east of the camp site, beyond the cleared and grubbed area.

The botanical field survey was executed by walking along the property perimeter, diagonally bisecting the site, and meandering through it. All species of vascular plants which were encountered were recorded.

The existing vegetation communities are known as "coastal dry grassland" and "coastal dry forest". The grassland parallels the shoreline and is a native community dominated by 'aki 'aki grass and includes 'ihi, pohuehue, nanea, and nohu. This community reflects the original vegetation of the area.

Until recent clearing operations, the coastal dry forest community was dominated by non-native species such as kiawe and buffel grass. There are a few intermittent kiawe trees and most of the area is covered by a number of pioneer species, including golden crown-beard mallow, 'aheahea, ma'o, and false mallow. Coconut, kou, milo, and crown flower are found on the property as a result of cultivation.

Directly east of Halena Camp is an undisturbed coastal wetland habitat dominated by pickleweed, which is an obligate species of wetlands in Hawaii. Ferns were not found in either of the vegetative communities located on the project site.

No plants listed as threatened or endangered by the U.S. Fish and Wildlife Service were found on the property. The native plants found on the property are all indigenous and are found in other areas of the world. There were no endemic plant species found at the camp site.

Cattle, deer, mongoose, and rodents represent the wildlife found in western Molokai. Avifauna within the region includes cardinals, doves, francolins, mockingbirds, pheasants, plovers, pueos, quails, ricebirds, and white eyes. There are no known rare, endangered, or threatened species of fauna or avifauna in the immediate vicinity of the camp site.

7. ***Archaeological Resources***

Cultural Surveys Hawaii conducted an archaeological inventory survey in the Halena region during the week of May 16, 1994. See Appendix B. The inventory level archaeological survey included a complete investigation and limited sub-surface testing.

The study area consists of a complex of existing camp structures within its south central quadrant and a recently constructed fence which delineates the campground area.

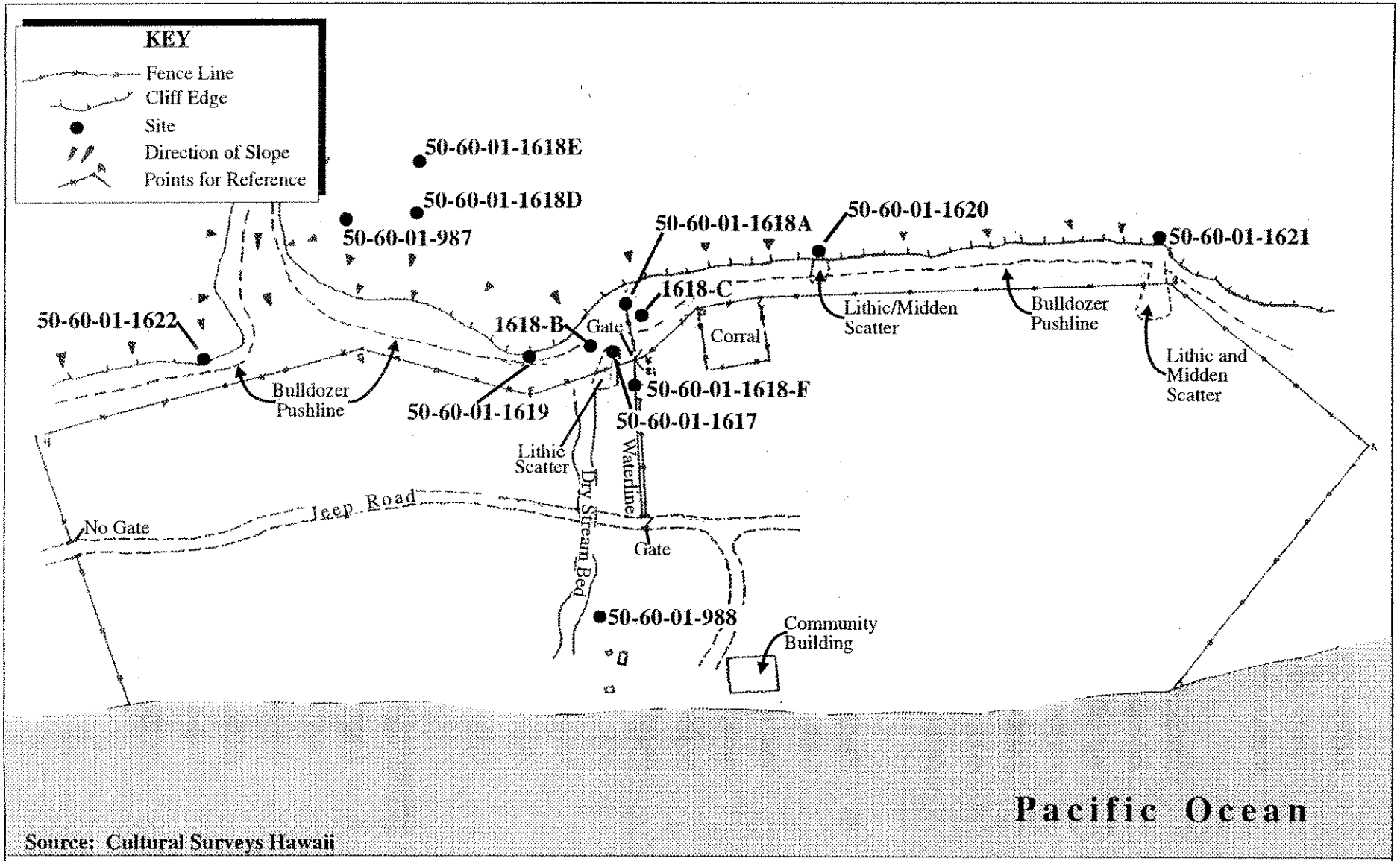
With the assistance of a Bishop Museum study conducted in 1993, eight (8) sites were identified during the surface survey. See Figure 7. Site 50-60-01-1618 consists of six (6) structures related to historic or modern water supply systems. Sites 50-60-01-988, 50-60-01-1617, 50-60-01-1619, 50-60-01-1620, and 50-60-01-1621 are linked to the prehistoric use of the area. It should be noted that Site 50-60-01-988 is the product of recent surface disturbance and does not reflect evidence of prehistoric use. Site 50-60-01-1922 is considered to be a cairn of modern construction.

The sites related to prehistoric use included one (1) enclosure, two (2) rock-overhang shelters, a fishing shrine, and possibly, the stone-lined well (feature C) of Site 50-60-01-1618. As determined by artifacts and midden collected and observed in the vicinity of these sites, activities relating to habitation, fishing, and tool production appeared to have occurred in this area.

To assist efforts to determine function, extent, and age of the sites, limited sub-surface testing was conducted at three (3) sites. Respectively situated on Sites 50-60-01-1617 and 50-60-01-1621, Test Units 1 and 2 provided evidence that these areas were used in the manufacture of stone tools as well as proof of nearby habitation. Test Units 3, 4, and 5, located at Site 50-60-01-988, confirmed that the area does not contain a cultural layer, and in all likelihood, did not experience any significant prehistoric use.

8. Air Quality

The quality of air in the immediate vicinity of the campground may be characterized as good due to the absence of any point and non-point sources of airborne emissions. In addition, the rapid



Source: Cultural Surveys Hawaii

Figure 7

Halena Camp
Archaeological Site Map

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dispersal of any emissions is prompted by the cleansing effect created by the area's constant exposure to the northeasterly tradewinds.

9. Noise Characteristics

Halena Camp is surrounded by undeveloped conservation and agricultural lands. Molokai Airport is approximately ten (10) miles northeast of the campground. There are no adverse noise conditions affecting the camp site or immediate surrounding environs. Background noises are predominantly weather-generated and attributed to rain, wind and surf conditions.

10. Scenic and Open Space Resources

Halena Camp is surrounded by level to gently sloping topography to the north, east and west. The campground is situated between an elevation ranging from sea level to twenty (20) feet and provides view corridors along the shoreline, out to sea, and inland, toward the uplands.

The campground is beyond the western terminus of the Maunaloa Highway, the principal vehicular corridor in the area, and is not visible from the highway.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Land Use and Community Character

Molokai Ranch, based in nearby Maunaloa, is the island's largest landowner. When Dole Foods closed its pineapple operations in 1976, it returned almost 10,000 acres of leased agricultural land to Molokai Ranch. Since then, ranching operations consisting of 4,000 to 8,500 head of cattle, has remained as the focus of Molokai

Ranch's commercial operations. In addition, diversified agriculture, as typified by the development of a commercial hay enterprise featuring Guinea and green panic grass, has been established to fill the void left by the departure of pineapple cultivation.

The Kaluakoi Resort development is situated along the western Molokai coastline, about nine (9) miles northwest of Halena Camp. The resort complex includes the Kaluakoi Hotel and Golf Club and the Ke Nani Kai, Paniolo Hale, and West Molokai Resort condominiums. An 18-hole championship golf course and the Papohaku Ranchlands subdivision are also within the resort area. The Kaluakoi Hotel and Golf Club, formerly the Sheraton Molokai, is considered the island's only "luxury" hotel. The Papohaku Ranchlands subdivision is an agricultural zoned, residential subdivision with a typical parcel size of five (5) acres.

2. ***Population***

According to the 1990 U.S. Census of Population and Housing, Molokai was represented by a resident population of 6,717, an 11 percent increase from the 1980 census (DBEDT, 1992).

Kaunakakai remains the population center of Molokai with 2,658 residents, followed by Kualapuu with 1,661 residents, and Maunaloa with approximately 500 residents. There are approximately 2,088 Molokai households represented by a household population of 6,647. The average Molokai household consists of 3.18 persons per household (DBEDT, 1992).

3. *Economy*

Generally, much of Molokai's agricultural activity involves ranching and diversified agriculture. Molokai Ranch has developed a commercial hay enterprise, and is also considering a commercial dairy venture. Ranching operations, consisting of 4,000 to 8,500 head of cattle, continues to be the primary focus of Molokai Ranch's agricultural activities.

In 1992, 161 building permits totaling $10,010,646.00, were issued to Molokai property owners for purposes of alteration, addition, construction, demolition, remodeling, renovation, and repair. Of these, 52 building permits totaling $6,285,020.00, were issued for the construction of new facilities on Molokai (telephone conversation with Department of Public Works and Waste Management employee, Sharon Norrad, September, 1993).

With regard to the visitor industry, 87,750 westbound visitors arrived on Molokai and stayed overnight or longer. Eastbound and northbound arrivals were represented by 8,870 visitors (DBEDT, 1992).

Molokai's total of 96,620 visitor arrivals represents 4 percent of the 2,322,060 total visitor arrivals for Maui County (DBEDT, 1992).

4. *Employment*

Based on data provided by the State Department of Labor and Industrial Relations-Research and Statistics Division, Molokai's civilian work force as of August 1993, included approximately 2,900 full-time and part-time employees. The unemployment rate for the same period was approximately 9.1 percent, with 300 individuals

receiving unemployment benefits (telephone conversation with Department of Labor and Industrial Relations employee, Manuel Fraganta, September, 1993). This rate compares to a statewide unemployment rate after the first five (5) months of 1993, of about 4.8 percent and Maui County's unemployment rate for the same period of about 5.8 percent (The Maui News, February, 1993).

C. INFRASTRUCTURE SYSTEMS AND PUBLIC SERVICES

1. Transportation Systems

Access to Halena Camp is via an unpaved, dirt roadway off the Maunaloa Highway, the principal roadway linking the central and western regions of Molokai. The Maunaloa Highway is an asphalt paved, two-lane State highway with a posted speed limit of 45 miles per hour.

Molokai is served by a commercial aviation airfield in Hoolehua, around ten (10) miles northeast of Maunaloa. Air Molokai, Aloha Island Air, and Hawaiian Airlines provide regularly scheduled daily passenger flights to and from Molokai.

Kaunakakai Harbor, almost 17 miles east of the campground, is Molokai's only commercial harbor. Facilities include 10,000 square feet of covered storage area and 123,000 square feet of open storage area. Harbor freight traffic accounted for 144,494 short tons of goods transported (DBEDT, 1992).

2. Water System

The County of Maui operates four (4) water systems on the island of Molokai. In addition, Molokai Ranch, Kukui Incorporated, the

Department of Hawaiian Home Lands, and the State of Hawaii maintain private domestic water systems.

Molokai Ranch's private water systems provides service to Maunaloa, Kualapuu, Kipu, and Manawainui. Six (6) stream diversions and one (1) tunnel in the upper Kawela, Kamoku, and Lualohi basins supply the system, which supports Maunaloa and Kualapuu.

There is no domestic water service available at Halena Camp.

3. ***Wastewater System***

Most regions of Molokai are not served by a wastewater treatment system. The Kaunakakai Wastewater Treatment Plant, built in 1987, provides service to the Kaunakakai area. Residents within one (1) mile of the plant are linked to the wastewater system. The Kaunakakai facility has a capacity of 300,00 gallons per day and an average flow ranging from 250,000-280,000 gallons per day. During peak periods, the facility operates near capacity at 290,000 gallons per day.

Residents situated beyond the Kaunakakai service area, including Halena Camp, utilize either cesspools or septic tanks. The County of Maui provides cesspool pumping services to readily accessible areas.

4. ***Solid Waste***

Except for remote areas such as Halena Camp, single-family solid waste collection service is provided by Maui County on a weekly basis.

Solid waste is collected by County refuse collection crews and disposed of at the recently opened landfill at Palaau. The new $2.3 million landfill has been designed to cover an area of around 12 acres and have a maximum depth of 70 feet. It has a projected life of 30 years and a capacity of 584,000 cubic yards. A recycling facility at the new landfill site is scheduled to open at a later date (Brown and Caldwell, June 1992 and 1993).

5. ***Electrical and Telephone Systems***

Electrical and telephone services for the island of Molokai are provided by Maui Electric Company and GTE Hawaiian Telephone, respectively. Due to its remote location, there is no electrical and telephone service at Halena Camp.

6. ***Police and Fire Protection***

Police services on Molokai are provided by the Maui County Police Department. The Molokai station, staffed by 26 full-time personnel, is located in the Mitchell Pauole Center in Kaunakakai, almost 17 miles east of the campground (telephone conversation with Maui Police Department employee, Wendy Tancayo, September, 1993).

Fire prevention, protection, and suppression services are provided by the Maui County Fire Department. The Fire Department maintains stations in Hoolehua and Kaunakakai, and a substation in Pukoo. The Hoolehua and Kaunakakai Fire Stations are about 15 and 17 miles, northeast and east, respectively, from Halena Camp.

The Hoolehua and Kaunakakai stations are each staffed by twelve (12) firemen and three (3) officers, while the Pukoo substation is manned by six (6) firemen. If necessary, additional firefighting

support can be provided by the three (3) man staff based at Molokai Airport (telephone conversations with Maui Fire Department employees, Steve Legare and Wren Wescott, September, 1993).

7. ***Medical Facilities***

Molokai General Hospital, which is owned by Queen's Medical Center on Oahu, is the only major medical facility on the island. The hospital is located in Kaunakakai, nearly 17 miles east of Maunaloa.

The 30-bed facility provides long-term, acute, and obstetrics care services. The hospital is staffed by two (2) resident physicians, 12 to 15 registered nurses (depending on staffing requirements), and two (2) licensed practical nurses. Twelve (12) specialty physicians from Oahu visit Molokai on a monthly basis. Additional facilities include an X-ray lab, a medical lab, a pharmacy, and a recently completed office building (telephone conversations with Molokai General Hospital employees, Dub McElhannon and Roxanne Tancayo, September, 1993).

Other medical facilities include the Molokai Family Health Center in Kaunakakai, a clinic operated by four (4) general practice physicians. In addition, the Women's Health Center located at the hospital, provides mid-wife and maternity services for local residents.

8. ***Education***

There are five (5) public schools on Molokai. With the exception of Molokai High and Intermediate School, located around 15 miles northeast of Halena Camp, the remaining public schools provide elementary education for children from Kindergarten through Grade 6.

Of all the schools, Molokai High and Intermediate School (Grades 7 to 12) in Hoolehua, has the largest student enrollment (725) and faculty (45). Kaunakakai School is Molokai's second largest school with an enrollment of 370 students and a faculty of 25.

Kualapuu School is next in size with a student population of 354 and a faculty of 25.

Kilohana School in east Molokai has as enrollment of 180 students and a faculty of 10. Maunaloa School is Molokai's smallest public school with a student population of 80 and a faculty of 10 (telephone conversations with Department of Education employees, Rose Brito and Ron Kula, September, 1993).

9. Recreational Facilities

The island of Molokai offers a wide range of recreational opportunities. Outdoor activities include bicycling, boating, camping, diving, fishing, golfing, hiking, horseback riding, hunting, surfing, swimming, tennis, and windsurfing.

Molokai's recreational and social event of the year involves the start of the Molokai to Oahu canoe race. Canoe clubs from foreign countries, Hawaii, and the U.S. mainland gather at Hale O Lono small boat harbor approximately 1.3 miles east of Halena Camp, to compete in this annual event.

For more than 75 years, Halena Camp and its immediate environs have provided recreational opportunities for camping, fishing, hiking and horseback riding.

III. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. IMPACTS TO THE PHYSICAL ENVIRONMENT

1. Topography and Landform

Lands to the immediate east and west of Halena Camp were recently cleared of kiawe trees and vegetation. The clearing and grubbing activities were limited to vegetation removal and did not include cut and fill earthwork operations. Existing drainage patterns have been maintained relative to the surrounding land area.

2. Drainage and Erosion Control

During the recent clearing and grubbing operations, the existing drainage pattern was maintained with runoff being discharged into existing, natural drainageways.

Due to the high permeability and sandy nature of the underlying soils, erosion attributed to rainfall in this region is not considered to be significant.

3. Flora and Fauna

The recent botanical survey identified two (2) existing vegetation communities. The existing "coastal dry grassland" community is dominated by 'aki 'aki grass and contains other indigenous forms of vegetation. This intact native community parallels the coastline and reflects the original vegetation of the area.

Intermittent kiawe trees and pioneer species, typified by golden crown-beard, 'aheahea, ma'o, and false mallow, reflect the present "coastal dry forest" community.

No legally protected, threatened, or endangered plant species were found within the project area.

The completed actions did not affect the wetland area and consequently, did not impact any species or plant communities with significant biological resource value.

In addition, there are no known endangered or threatened wildlife species in the vicinity of the camp site.

4. ***Air Quality and Noise***

The completed actions involved the clearing of land to the immediate east and west of the campground.

Due to its remote location, air and noise impacts associated with construction were considered minimal and temporary in nature.

There are no adverse long-term air and noise impacts anticipated from the proposed actions.

5. ***Scenic and Open Space Resources***

Halena Camp is situated in a remote coastal environment with shoreline and ocean views. The removal of kiawe trees and surface vegetation has altered the landscape character of the lands immediately surrounding the Camp to be consistent with the Camp itself.

The clearing and grubbing are part of Molokai Ranch's strategy to restore and enhance the campgrounds and surrounding environs.

6. ***Archaeological Resources***

Archaeological sites within the study area include two (2) overhang rock shelters (50-60-01-1620 and 50-60-01-1621), a lithic scatter (50-60-01-1617), a water system (50-60-01-1618), a religious shrine (50-60-1619), and the habitation enclosure (50-60-01-987). Refer to Appendix B. All of these sites are situated along the edge of the ancient sea cliffs that define the inland boundary of the study area. These sites are also beyond the limits of a recently constructed fence line which defines the campground area. Refer to Figure 7.

The proposed limits of development at Halena Camp do not encompass the existing sites which are recommended for future study. Accordingly, the Cultural Surveys Hawaii study recommended the implementation of mitigation measures such as avoidance and passive site treatment. The study further advises that a re-evaluation of the sites be conducted within a period of approximately six (6) months to one (1) year, to assure the State Historic Preservation Division (SHPD) that the renewed use of the campground has not affected the condition of the sites.

Should expansion of the campground be planned or implemented, and should proposed usage levels increase, the recommended avoidance and passive site treatment mitigation measures will be re-evaluated in consultation with the SHPD. Mitigation measures, if required, could possibly include data recovery operations and the formulation of preservation plans.

B. ***IMPACTS TO PUBLIC SERVICES***

Recreational facilities within close proximity to Halena Camp include several public beach parks along Papohaku Beach and a private, 18-hole

championship golf course in nearby Kaluakoi. The completed action is part of Molokai Ranch's efforts to enhance recreational facilities and opportunities in the region.

The completed action does not adversely affect service or facility requirements for educational, police, fire and medical services.

C. ***IMPACTS TO INFRASTRUCTURE***

The clearing and grubbing operations do not adversely affect roadway, water, wastewater, solid waste disposal and drainage system requirements.

IV. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES, AND CONTROLS

A. STATE LAND USE DISTRICTS

Chapter 205A, Hawaii Revised Statutes, relating to the State Land Use Commission, establishes the four (4) major land use districts by which all lands in the State are classified. These districts are designated "Urban," "Rural," "Agricultural," and "Conservation". See Figure 8. The subject property falls within the State Conservation District.

Chapter 2, of Title 13, Hawaii Administrative Rules, requires that a Conservation District Use Permit (CDUP) be issued by the State Board of Land and Natural Resources (DLNR), for the use of lands within the Conservation District.

Title 13 establishes Subzones within the Conservation District. These subzones are designated "Protective" (P), "Limited" (L), "Resource" (R), "General" (G), and "Special" (SS). Halena Camp is situated within the "Limited" subzone. The objective of the "Limited" subzone is to limit uses where natural conditions suggest constraints on human activities. Permitted uses within the "Limited" subzone include: all permitted uses within the "P" subzone, as well as emergency warning or telephone systems; flood, erosion, and siltation control projects; and the growing and harvesting of forest products. See Appendix C.

Inasmuch as the clearing and grubbing activities have been completed, an after-the-fact application for Conservation District Use Permit will be prepared and processed in accordance with Title 13.

It should be noted, however, that Halena Camp has operated as a formal campground in excess of 75 years.

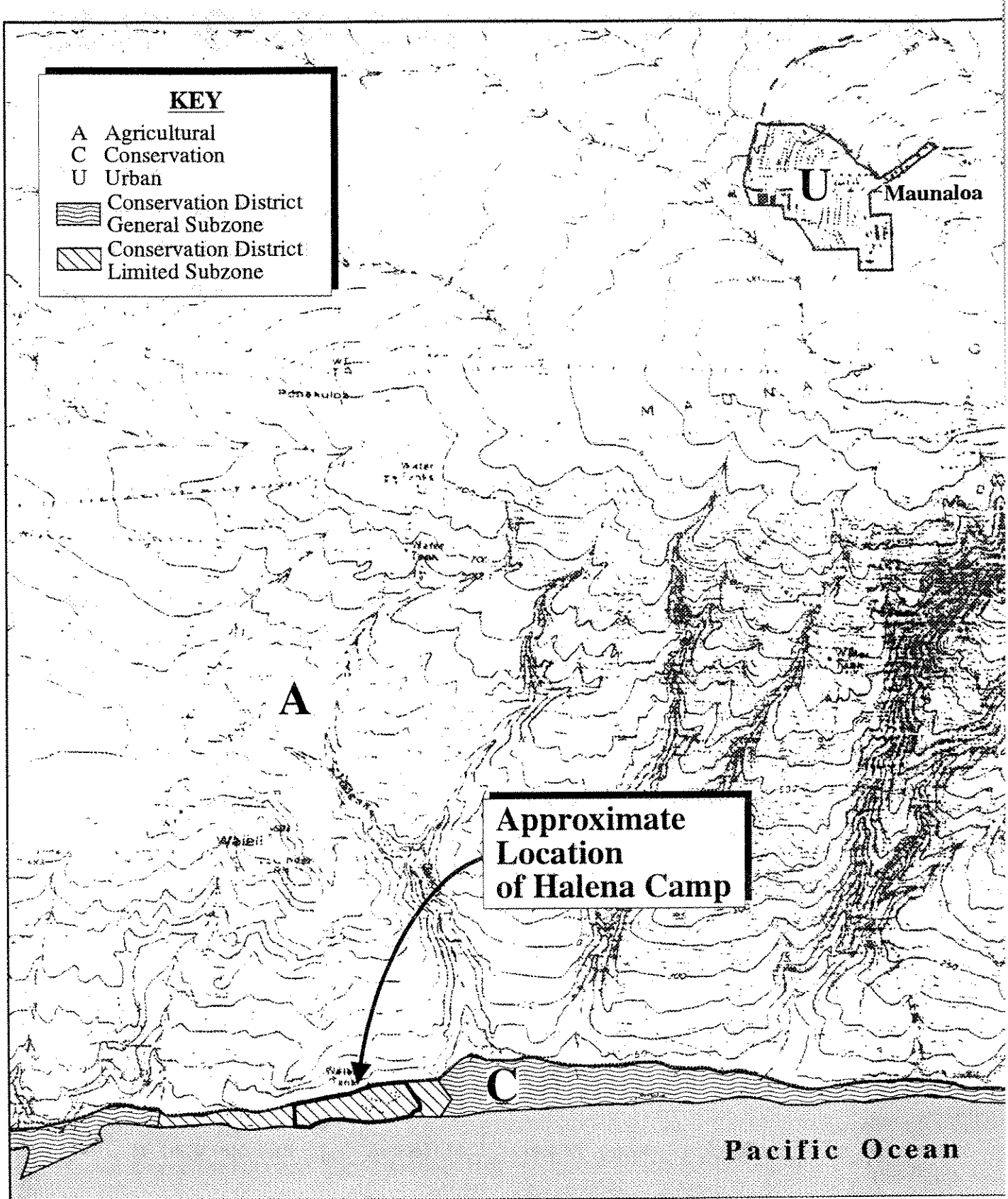

Figure 8

Halena Camp

State Land Use
District Classifications

MUNEKIYO & ARAKAWA, INC.

Prepared for: Molokai Ranch, Ltd.

NOT TO SCALE

B. *MAUI COUNTY GENERAL PLAN*

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and the development of the County and the social, economic, and environmental effects of such development and set forth the desired sequence, patterns, and characteristics of future growth."

Objective: To provide high-quality recreational facilities to meet the present and future needs of our people.

Policy:

1) Maintain existing recreational facilities so as to permit their uninterrupted use.

2) Maintain recreational facilities for both active and passive pursuits.

3) Maintain the natural beauty of recreational areas.

4) Expand and improve parks, camp sites, and other facilities designed for family use.

C. *MOLOKAI COMMUNITY PLAN*

Nine (9) community plan regions have been established in Maui County. Each region's growth and development is guided by a Community Plan, which contain objectives and policies drafted in accordance with the County General Plan. The purpose of the Community Plan is to outline a relatively detailed agenda for implementing these objectives.

The Halena Camp facility falls within the jurisdiction of the Molokai Community Plan adopted in January, 1984. Land use guidelines are

established by Molokai Community Plan Land Use Map. The campground is designated as Conservation by the Community Plan.

V. FINDINGS AND CONCLUSIONS

The completed action involved the clearing and grubbing of approximately 24 acres of lands surrounding the existing Halena Camp. The completed action is part of Molokai Ranch's initial effort to restore, enhance and expand recreational use opportunities at Halena. Because the affected areas fall within the Conservation District, an after-the-fact Conservation District Use Application will be prepared and filed with the Department of Land and Natural Resources.

The completed action has been evaluated in terms of its impacts upon the natural and man-made environments. With regard to the natural environment, the clearing and grubbing activities modified the local landscape character of the area to be in consonance with the adjoining campground. There are no known rare or endangered species of flora or fauna which have been displaced as a result of the completed action.

An archaeological inventory survey undertaken during the week of May 16, 1994, revealed several archaeologically significant sites within the study area. Refer to Appendix B. These sites are situated along the northern extent of the study area and are located beyond the limits of a recently constructed fence line which defines the limits of the campground area. Implementation of avoidance and passive site treatment measures recommended by the archaeological study are anticipated to mitigate impacts to these sites. Should expansion of the campground be planned or implemented, and should proposed usage levels increase, the recommended avoidance and passive site treatment mitigation measures will be re-evaluated in consultation with the SHPD.

Based on the assessment of the completed actions, there is no evidence of adverse impacts to public services or infrastructure systems.

VI. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT

The following agency was contacted during the preparation of the Draft Environmental Assessment:

1. Department of Land and Natural Resources
   State of Hawaii
   Office of Conservation and Environmental Affairs
   1151 Punchbowl Street
   Honolulu, Hawaii 96813

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Telephone Conversation with Department of Labor and Industrial Relations employee, Manuel Fraganta, September, 1993.

Telephone Conversation with Department of Public Works and Waste Management employee, Sharon Norrad, September, 1993.

Telephone Conversations with Maui Fire Department employees, Steve Legare and Wren Wescott, September, 1993.

Telephone Conversation with Maui Police Department employee, Wendy Tancayo, September, 1993.

Telephone Conversations with Molokai General Hospital employees, Dub McElhannon and Roxanne Tancayo, September, 1993.

BOTANICAL SURVEY

INTRODUCTION

A botanical survey was conducted by David Paul, botanical consultant, and Erik Fredericksen, Field Director for Xamanek Researches, on January 18, 1994, on the Halena Camp property of Moloka'i Ranch, Moloka'i Island. It is located in Kaluakoi *ahupua'a*, and is identified as TMK 5-01-2: por.4 (Map 1). The study area is located on the arid leeward coast of Molokai. The property is c. 24 acres in area, and bounded by intact *kiawe* forest to the west, hills and cliffs to the north, wetlands area to the east and the ocean to the south. Much of the project area has recently been grubbed by machinery.

The purpose of this study is to describe the vegetation existing on the land and identify ecologically sensitive plants and communities which may be impacted by the project planned there. Careful consideration was taken in the search for rare and endangered species which are protected by law and might require mitigation.

METHODS

The study was initiated by searching literature to point out any plant species which are listed as threatened or endangered by the U.S. Fish and Wildlife Service that might occur within the region. Those listed plants are protected by Federal and State law. Updated lists of threatened and endangered species were researched (from the USFWS, Pacific Islands Office, Honolulu, HI.) and the plants geographical ranges were determined from the "Manual of Flowering Plants of Hawaii" (Wagner, et al. 1990).

The botanical field survey was executed by walking the perimeters of the property, then going catacornered, and meandering through it. All species of vascular plants which were encountered were recorded. The plant communities were matched up with a general vegetation type. Nomenclature used for flowering plants follow Wagner, et al. (1990).

RESULTS

Vegetation Type - The existing communities are known as "coastal dry grassland" and "coastal dry forest" (Gagne & Cuddihy 1990). The grassland parallels the shoreline and is a native community dominated by *'aki 'aki* grass (Sporobolus virginicus) and includes *'ihi* (Portulaca lutea), *pohuehue* (Ipomoea pes-caprae), *nanea* (Vigna marina), and *noʻhu* (Tribulus cistoides). This community reflects the original vegetation of the area. The coastal dry forest community was dominated by *kiawe* (Prosopis pallida) and buffel grass (Cenchrus ciliaris) before the recent grading done by a bulldozer. Now there are *kiawe* trees left intermittently and most of the area is covered by a number of pioneer species, including golden crown-beard (Verbesina encelioides), *'aheahea* (Chenopodium murale), *ma'o* (Abutilon incanum), and false mallow (Malvastrum coromandelianum). Coconut (Cocos nucifera), *kou* (Cordia subcordata), *milo* (Thespesia populnea), and crown flower (Calotropis gigantea) are found on the property as a result of cultivation.

Directly east of the study parcel is coastal wetland habitat that is dominated by pickleweed (Batis maritima) which is an obligate species of wetlands in Hawai'i (Reed 1988). At least one Hawaiian bird, *'auku'u* or night heron (Nycyicovax hoactli) was observed flying over the project area during the survey. This individual landed in the wetland. In addition, a possible siting of an *ae'o* or Hawaiian stilt (Himantopus mexicanus knudseni) was made while walking the eastern boundary of the project site. The strip of *kiawe* trees left between the wetlands and the project site after the recent grading should be a good protective buffer between the two habitats.

Pteridophytes (ferns) were not found in either of the communities located on the project site.

Rare or endangered plants - No plants which are listed as threatened or endangered by the U.S. Fish and Wildlife Service were found on the property. A review of the listed threatened or endangered plant species showed that the native beach panic grass, (Panicum fauriei var. carteri), exists in habitats typical of that found on the project site. This plant was not found. *'Ena'ena* (Gnaphalium sandwicensium var. molokaiense) and *'ohai* (Sesbania tomentosa) are rare plants that live in habitats typical of the project site; they are candidates for listing as endangered or threatened. They were not found on the property.
The native plants found on the property are all indigenous and are found in other areas of the world. There were not any endemic plant species found on the site.

DISCUSSION AND RECOMMENDATIONS

Biological Resource Value of the Vegetation

For the purpose of this report, alien plants and alien dominated plant communities are considered to have no biological resource value. Plants and communities that are considered to have value are 1) rare and endangered native plants, and 2) native plant dominated communities. Plant communities are especially valuble when they contain a variety of plant species found nowhere else.

No legally protected threatened or endangered species were found on the property. The coastal dry grassland community which runs parallel to the shore on the property is dominated by native indigenous plants.

Recommendations

The Ranch should strive to avoid displacing land along to the coastal strand, as it contains a biologically significant native plant community. Maintaining this community will add to the beauty of the project which is planned for the area, and may provide habitat for rare species.

There were no legally protected threatened or endangered plant species found on the property. As long as the shoreline community and wetland habitat are avoided, the actions of the project will not impact any species or plant communities with significant biological resource value.

Species List

Key - Botanical Name - comprised of the Genus and species of a plant as depicted by Western binomial nomenclature.

Common Name - comprised of Hawaiian or other locally common terms.

Status - E = endemic, specific to the immediate area.

I = indigenous, specific to a confined geographical region.
P = Polynesian, introduced to Hawaii prior to 1778 (Western contact).
A = alien, introduced into historical or contemporary Hawaii.

The following list is comprized of the plant species which were found during the botanical survey of this property on the 18th of January, 1994. It does not represent the whole of plant species which may be found there through-out the year, as the number of species may increase or decrease accourdingly with varying climatic conditions.

Botanical Name	Common Name	Status
DICOTYLEDONAE		
AMARANTHACEAE		
Amaranthus spinosus	*pakai kuku*	A
ASCLEPIADACEAE		
Calotropis gigantea	crown flower	A
ASTERACEAE		
Bidens pilosa	*ki nehe*	A
Calyptocarpus vialis	-	A
Emilia sonchifolia	Flora's paintbrush	A
Sonchus oleraceus	*pualele*	A
Synedrella nodiflora	node weed	A
Verbesina encelioides	golden crown-beard	A
Vernonia cinerea var. parviflora	little ironweed	A
Xanthium strumarium	cocklebur	A
BATACEAE		
Batis maritima	pickleweed	A
BORAGINACEAE		
Cordia subcordata	*kou*	P
BRASSICACEAE		
Lepidium virginicum	pepperwort	A

CAPPARACEAE		
Cleome gynandra	wild spider flower	A
CHENOPODIACEAE		
Atriplex semibaccata	Australian saltbush	A
Chenopodium murale	*'aheahea*	A
CONVOLVULACEAE		
Ipomoea pes-caprae	*pohuehue*	I
Ipomoea sp.	morning glory	A
Merremia aegyptia	*koali kua hulu*	I
EUPHORBIACEAE		
Chamaesyce hirta	garden spurge	A
FABACEAE		
Acacia farnesiana	klu	A
Canavalia cathartica	*maunaloa*	A
Indigofera suffruticosa	indigo	A
Macroptilium lathyroides	cow pea	A
Prosopis pallida	*kiawe*	A
Vigna marina	*nanea* / beach pea	I
MALVACEAE		
Abutilon incanum	*ma'o*	I
Malva parviflora	cheese weed	A
Malvastrum coromandelianum	false mallow	A
Sida fallax	*'ilima*	I
Thespesia populnea	*milo*	I
MYRTACEAE		
Psidium guajava	guava	A
NYCTAGINACEAE		
Boerhavia coccinea	*alena*	A
PORTULACACEAE		
Portulaca lutea	*'ihi*	I
SOLANACEAE		
Datura stramonium	Jimson weed	A
Nicandra physalodes	apple of Peru	A
STERCULIACEAE		
Waltheria indica	*'uhaloa*	I

VERBENACEAE		
Lantana camara	lantana	A
ZYGOPHYLLACEAE		
Tribulus cistoides	*nohu*	I

MONOCOTYLEDONAE

ARECACEAE		
Cocos nucifera	*niu* / coconut	P
POACEAE		
Cenchrus ciliaris	buffel grass	A
Chloris barbata	swollen finger grass	A
Cynodon dactylon	*manienie* / Bermuda grass	A
Dactyloctenium aegyptium	beach wire grass	A
Eragrostis tenella	love grass	A
Eleusine indica	goose grass	A
Panicum coloratum	panic grass	A
Sporobolus virginicus	*'aki'aki*	I

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U.S. Fish and Wildlife Service. 1993. "Hawaiian Islands Species Listed by the Government as Endangered or Threatened. Updated: July 9, 1993". USFWS, Pacific Islands Office. Honolulu, HI. 10p.

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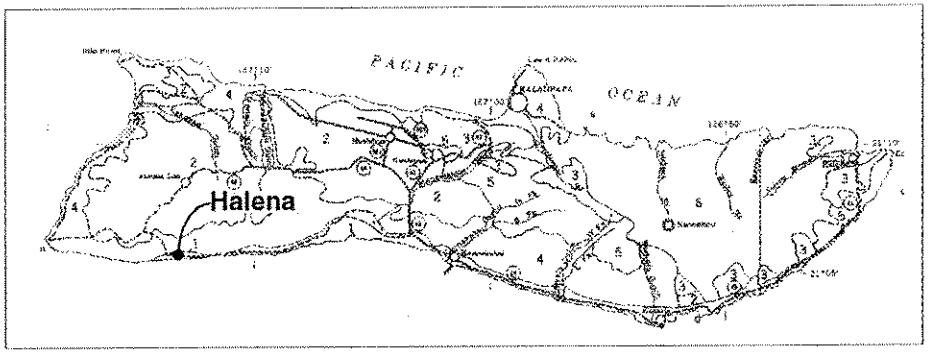

12.108 Acres±

11.981 Acres ±

Pacific Ocean

Map No. 1
(Not to Scale)

Source: Warren S. Unemori Engineering, Inc.

HISTORIC AND ARCHAEOLOGICAL SURVEY OF LANDS SURROUNDING HALENA CAMP HALENA, KALUAKOʻI, MOLOKAʻI

by

William H. Folk, B.A.
Patrick O. Walsh, M.A.
Rodney Chiogioji, B.A.
and
Hallett H. Hammatt, Ph.D

for

Molokai Ranch

by

Cultural Surveys Hawaii
July 1994

ABSTRACT

Cultural Surveys Hawai'i conducted an inventory level archaeological survey in Halena Kaluako'i, Moloka'i island during the week of 16 May 1994. The inventory survey consisted of 100% surface survey, limited sub-surface testing.

The project area (portion TMK 5-1-2:4) consists of approximately 28 acres and is located 1.3 miles east of Hale O Lono Harbor and 3.0 miles southwest of the town of Mauna Loa. The project area is predominately within the narrow coastal plain, bordered on the north by an ancient sea cliff, and to the south by the Pacific ocean. The area is known as Halena Camp and consists of a complex of existing camp structures within the central *makai* portion of the area, and a recently constructed fence which outlines the campground area. The entire area surrounding the camp structures had been cleared of vegetation with a bulldozer 15 years ago, from the shoreline up to the base of the cliff. Recently, thick *kiawe* growths have been again selectively cleared with numerous single *Kiawe* trees left in place.

Eight sites were identified during the surface survey, with the assistance of a previous archaeological reconnaissance survey conducted by the Bishop Museum Anthropology Department in 1993. Site 50-60-01-1618 consists of six structures related to historic or modern water supplying systems. Sites 50-60-01-988, 50-60-01-1617, 50-60-01-1619, 50-60-01-1620, and 50-60-01-1621 are related to the prehistoric use of this area. Site 50-60-01-988 is the product of recent surface disturbance and is without evidence for prehistoric use. Site 50-60-01-1622 is considered to be a cairn of modern construction.

The sites related to prehistoric use included one enclosure, two rock-overhang shelters, a fishing shrine, and probably the stone lined well - feature C of site 50-60-01-1618. On the basis of artifacts and midden collected and observed around these sites, use of this area probably included habitation, and activities related to fishing and tool production.

Limited subsurface testing was conducted at three locations to aid in determining function, extent and age of the sites. Test Unit 1, placed on State site 50-60-01-1617 Lithic Scatter, and Test Unit 2, placed on State site 50-60-01-1621, provided evidence that these areas were used in the manufacture of stone tools as well as evidence of nearby habitation. Test Units 3, 4 and 5, located at State site 50-60-01-988, confirmed that this area does not contain a cultural layer, and probably did not see any significant prehistoric use.

All but one of the archaeological sites are located along the *mauka* edge of the project area, outside of the recently constructed fence. Based on the understanding that the proposed improvements and subsequent use of the area will be restricted to the area within the fenceline, avoidance of these sites is recommended. The site within the fenceline 50-60-01-988, does not exhibit an intact cultural layer, therefore, no further work is recommended there.

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INTRODUCTION

Description of the Study Area

The Hawaiian place name Hālena refers to the large and deep gulch and stream that flows into the sea east of the well known modern harbor at Hale O Lono. The land immediately west of the stream mouth is a sandy strip of lowland, also referred to as Hālena, which constitutes the study area reported on herein (Figure 1-3). It is bounded on the ocean side by shallows of exposed beachrock formations, and further out, of by coral reef; it is bounded on the inland or *mauka* side by low, former sea cliffs of about 30 feet in height - sea cliffs cut by a higher stand of the sea, possibly the Kapapa stand about 5 feet above present sea level in recent geologic time.

The study area is also known as Halena Camp, an historic name derived from use of the area as a campground since the early 1900's, by employees and guests of the Moloka'i Ranch. The concrete floors and wooden structures of the camp buildings are still present; the windmill, concrete water tank, and stone lined well of the old water system are still present also, but a new pipeline from further *mauka* supplies water to the campground today.

The archaeological sites observed and surveyed are situated along the foot of the cliffs at the *mauka* edge of the study area, and the Hawaiian sites there include small shelter caves carved into the soft clinker layers between the dense flow layers in the face of the old cliffs, lithic scatters of tool quality basalt, and a fishing shrine or *ko'a*.

The study area conscribed by the lava cliffs and the sea, is bulldozed. Few mature kiawe trees remain giving the place the appearance of savanna. Some of the debris from bulldozing is piled along the edge of the beach ramp at the vegetation line. In the eastern portion of the study area the ground is littered with charcoal and fire blackened debris from the burning of the bulldozed vegetation.

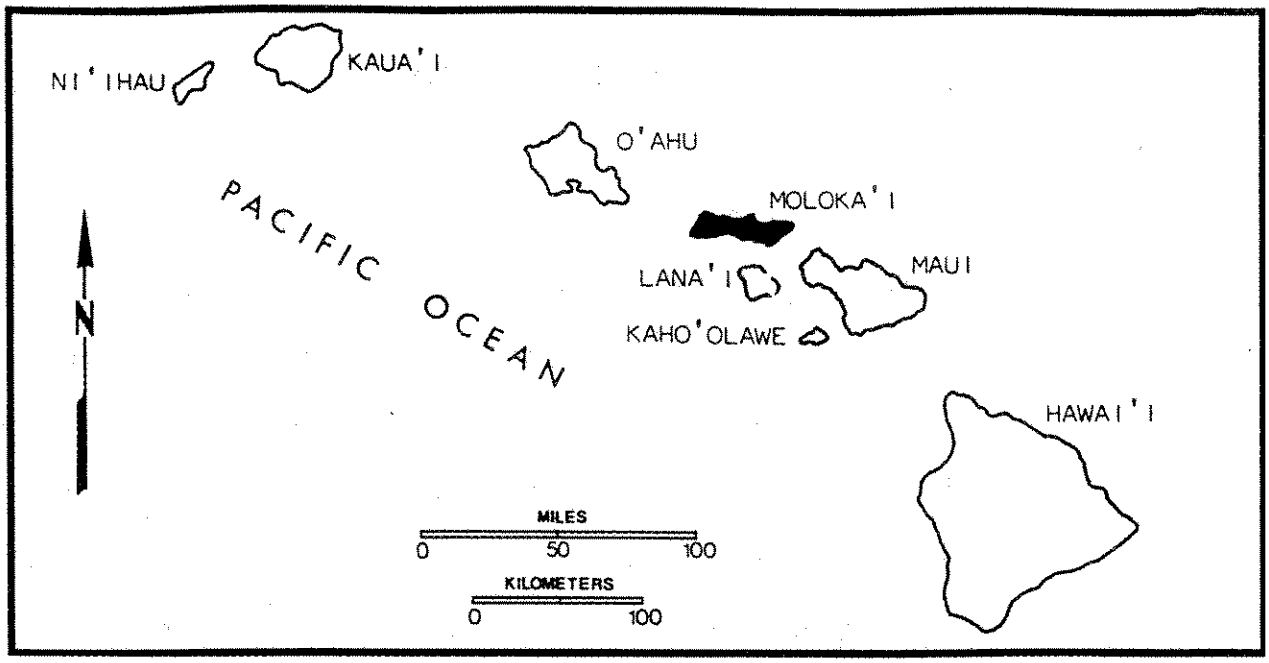


Figure 1 State of Hawaii

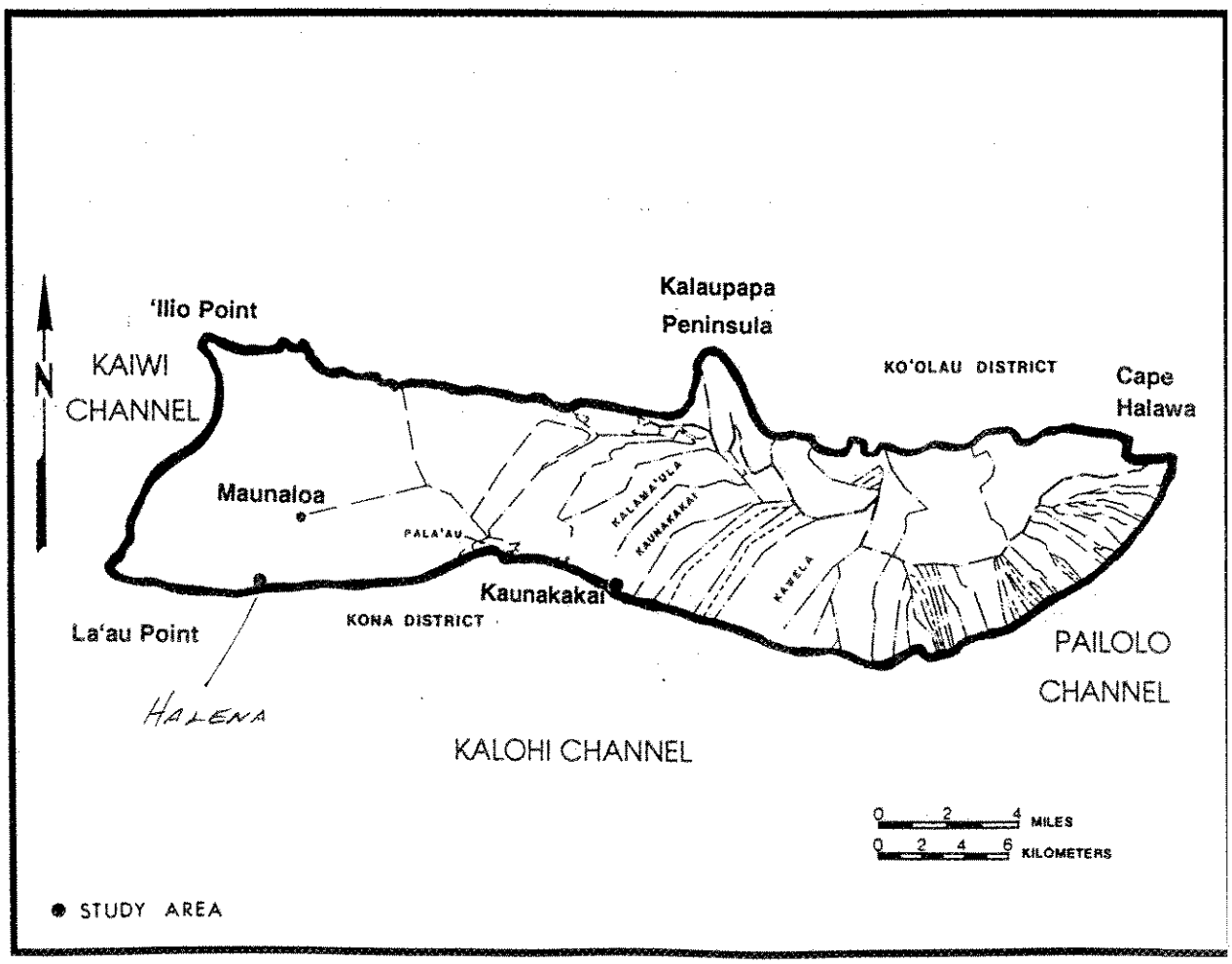


Figure 2 Moloka'i Island Location Map

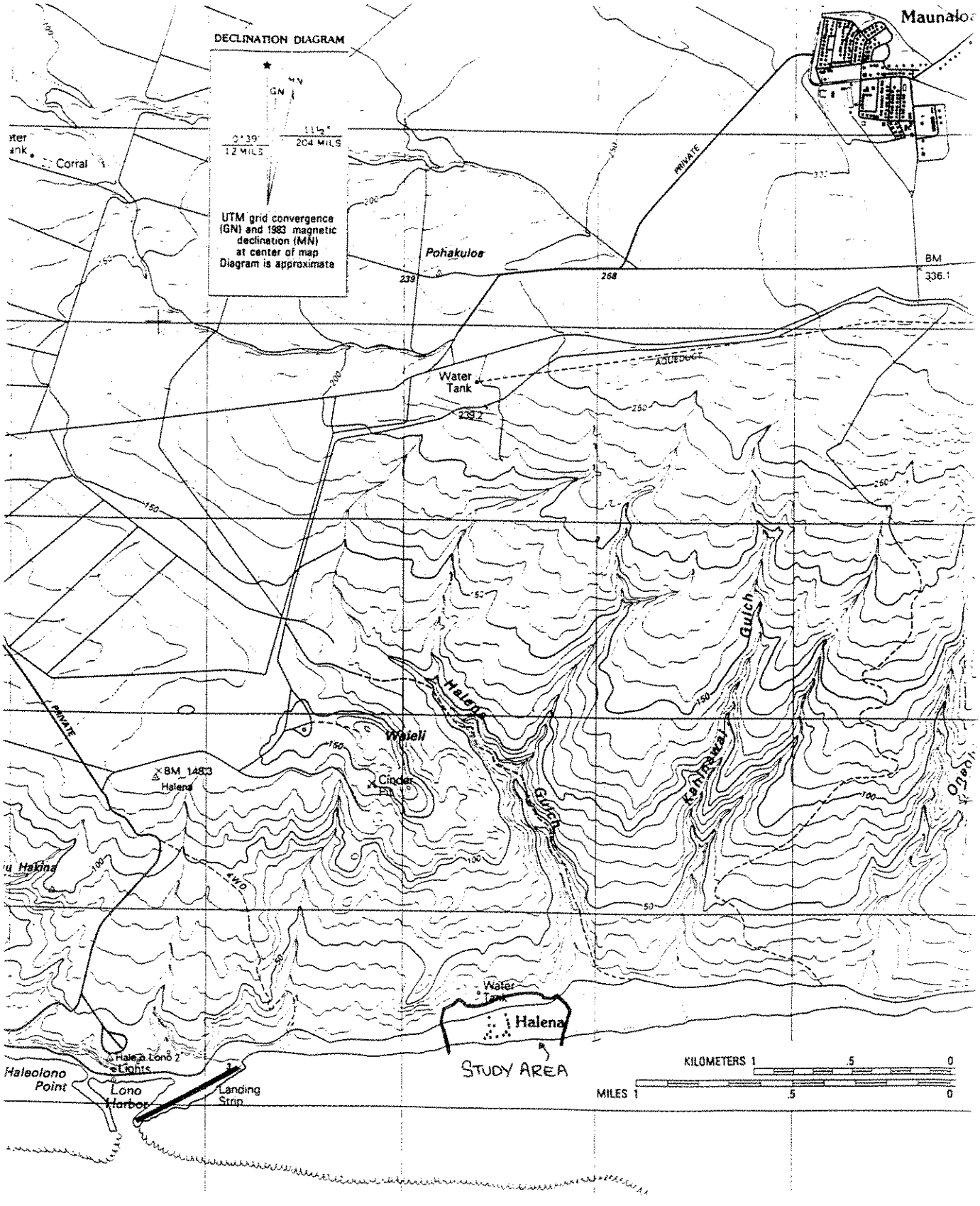


Figure 3 Portion of USGS Topographic Map 11x19.5 minute Quadrangle Molokai West, Showing Study Area

Scope of Work

The following Scope of Work, which is standard for satisfying the State and County requirements for an inventory survey level of investigation. was followed for the archaeological survey of the Hālena Camp grounds in Kaluako'i, Moloka'i.

1. A complete ground survey of the entire project area for the purpose of site inventory. All sites were located, described, and mapped with evaluation of function, interrelationships, and significance. Documentation included photographs and scale drawings of selected sites and complexes. All sites were assigned Hawaii State Inventory of Historic Places site numbers.

2. Limited subsurface testing to determine location, boundaries, depth and quantity of cultural materials within archaeological sites and to obtain datable samples for chronological information if none is available for sites in the immediate area from previous studies.

3. Research on historic and archaeological background, including search of historic maps, written records, Land Commission Awards, and Native Testimony. This research focused on the specific area with general background on the *ahupua'a* and district, emphasizing settlement patterns.

4. Preparation of this survey report.

A reconnaissance, previously conducted by the Bishop Museum, which covers the Hālena area, will be used as a baseline. The maps in that report aided us in locate all the sites; the major effort concentrated on completing the description of the archaeological features of Sites 987 and 988, and on testing at Site 988 to determine the depth and horizontal extent of any cultural layers.

NATURAL SETTING AND CULTURAL BACKGROUND

The present study area is situated at the shoreline of Hālena Gulch in the southern portion of Kaluako'i *ahupua'a* which encompasses 46,500 acres of west Moloka'i. A delineation of Hālena and the study area within the context of pre- and post-western contact settlement and history on west Moloka'i may be educed from accounts by visitors, researchers and authors extending from the last years of the eighteenth century up to the present. While the first accounts are generalized - limited to broad descriptions of vast expanses of the west Moloka'i landscape - subsequent and more recent reports enable a more precise focus upon Hālena and the present study area.

West Moloka'i: Documentary Evidence

Captain George Vancouver, sailing along the southern coast of Moloka'i in 1793, essayed a comprehensive portrait of the island's geographic texture and of the distribution of the Hawaiian population:

> Early the next morning, with a pleasant breeze from the N.E., we stood over towards the east point of Morotai, until we were within a league of the shore, which was bounded by a reef extending about half a league from it. Thus we sailed along to the westward, and saw several shallow breaks forming passages for boats, but not affording any shelter for shipping against the prevailing winds. About half a league south of the east point of Morotai...lies a small barren rocky islet, called by the natives Modooenete . . . In this direction east the land rises rather abruptly from the sea, towards the lofty mountains in the center of the east part of Morotai; and though the acclivity was great, yet the face of the country diversified by eminences and vallies; bore a verdant and fertile appearance. It seemed to be well inhabited, in a high state of cultivation, and presented not only a rich but a romantic prospect. To the westward of these cliffs, the shores terminated in the former direction, by a low point of land, called by the natives Crynoa [likely Kalaeloa]. . . From Crynoa the country assumes a dreary aspect. The mountains, forming the eastern part of the island, gradually descend to the westward, and like those of Mowee, terminate on a low isthmus, which appears to divide the island into two peninsulas...the easternmost, which is far the largest is composed of very high land, but the westernmost does not rise to any elevation, beyond that of a mean height. The country from Crynoa rises from the sea by an ascent, uninterrupted with chasms, hills or vallies. This uniform surface, on advancing to westward, exhibited a gradual decrease in the population; it discovered an uncultivated barren soil, and a

> tract of land that gave residence only to a few of the lower orders of the islanders, who resort to the shores for the purpose of taking fish, with which they abound. Those so employed are obliged to fetch their fresh water from a great distance; none but what is brackish being attainable on the western parts of Morotai. (Vancouver 1798: 201-202)

Vancouver's shipboard perception - in the first years of western contact - of a wide-spread Hawaiian population throughout the eastern portion ("in a high state of cultivation") of Moloka'i and a much decreased population clustered along the shoreline within the western portion is a theme restated by subsequent visitors and authors. In 1818, the Russian navigator Vasilii Golovnin confirmed Vancouver's description:

> Vancouver reported that [Moloka'i's] eastern section is beautiful, having fertile well-cultivated valleys, and that it is rich in many products; while the western section has a wild and arid aspect with only poor people who subsist by fishing, living there because its shores abound in fish; but even to obtain fresh water the fishermen must go to the eastern side. I did not see the eastern side, but passed quite closely to the western side and it is indeed just as Vancouver described it. (Golovnin 1822:80)

Like Vancouver's, Golovnin's observations were based on sightings from aboard ship; neither navigator actually stepped ashore on Moloka'i. Nevertheless, the general outlines of population distribution both men reported likely was accurate: the traditional Hawaiian settlement pattern probably conformed to the configurations of rainfall and fresh water resources on the island. The *Rainfall Atlas of Hawai'i* notes that the

> ...rainfall pattern of Moloka'i closely resembles the island's topography. The East Moloka'i rainfall maximum occurs near the summit of the East Moloka'i mountains, while the West Moloka'i minimum includes most of the coastal portion of western Moloka'i. The orographic uplifting of trade winds is responsible for the East Moloka'i maximum. Despite its 1515-m (4,970-ft) height, East Moloka'i's rainfall maximum is not as great as for other peaks in Hawai'i, primarily because the mountain's ridge line is oriented nearly parallel to the trades. All of western Moloka'i is dry although a small local rainfall maximum is found near the town of Mauna Loa. (Giambelluca *et al.* 1986: 16)

More recent commentators suggest that while west Moloka'i may have been less densely populated than the more hospitable eastern portion of the island, the inhabitants of west Moloka'i were inadequately described as a "few of the lower orders of the

islanders" or "only poor people." E.S. Craighill and Elizabeth Handy, while noting the population differences, also present evidences of a highly-evolved Hawaiian life on west Moloka'i by the time of western contact:

> According to [George P.] Cooke [in *Moolelo o Molokai* (1949)] many of the Molokai legends have to do with the western end of the island, which was called Kaluako'i (Adz quarry), although the eastern end had the larger population. Kaluako'i folk were sweet-potato planters and deep-sea fishers. There were many fishermen's shrines (*ko'a*), and many temple sites (*heiau*) in Kaluako'i, and *holua* slides, bowling places, and 'a quarry for *konani*' (checkers-stones). The people lived on the shores, and paved trails led to their potato patches in the uplands. (Handy and Handy 1972:514)

The developed legendary traditions, the many spiritual, work and recreational sites, and the evidences of exploitation of both sea and agricultural resources all suggest that, while the lack of fresh water may have constrained population growth, a more than viable environment had been created by the inhabitants of west Moloka'i at the end of the eighteenth century.

The actual size of the pre-contact Hawaiian population in the central and western portions of Moloka'i can only be conjectured. An anecdote recounted by Abraham Fornander late in the nineteenth century points to a formerly substantial population which may, however, have been widely dispersed:

> As an instance of the dense population, even a few years previous to *Kamehameha*'s death, the author has often been told by a grand-niece of *Kekaulike*, who was a grown-up girl at the time, that when the chief's trumpet-shell sounded, over a thousand able-bodied men would respond to the call, within a circle described by Palaau, Naiwa, Kalae and Kaunakakai. Those lands together cannot muster a hundred men this day. (Fornander 1880: 73 footnote)

Fornander alludes to the rapidly diminishing native Hawaiian population on Moloka'i during the nineteenth century and the resultant desuetude of lands no longer inhabited and worked. Records of the mid-nineteenth century Great Mahele likely evidence that diminishment. At the Mahele the *ahupua'a* of Kaluako'i was retained by the Hawaiian Government. Tellingly, no *kuleana* lots - for tenants actually working on the

land at the time of the Mahele - were claimed or awarded within the 46,500-acre *ahupua'a*.

Halena: Documentary Evidence of the Pre-contact Environment

As noted above by E.S. Craighill and Elizabeth Handy, west Moloka'i is rich in legendary traditions, involving historical and mythical personages. The origin of the area called Hālena - which means yellow -is itself is the subject of a tale that has survived into the present. The eighteenth-century *ali'i nui* (high chief) Kahekili, ruler of Molokai but living on Maui at the time, on his voyage to invade O'ahu, travelled along the southwest coast of Molokai:

> As he looked ashore, he saw no taro patches or people, nor did the land look fertile; but he knew that he must find drinking water for his men. Just as the sun was sinking, he chose the most promising stretch of coastline, and they beached their canoes. (Ne and Cronin 1992:47)

On shore, Kahekili and his men came upon a "large cave containing several people, including a woman with a newborn babe." The infant is the son of the "chief of the district" and Kahekili presented a "piece of white tapa cloth as his gift to the newborn son of a lesser chief."

> As was the custom, [Kahekili] breathed upon the tape, then gave it to the lesser chief, who, in turn, breathed on it. As he did so, the white tapa turned yellow, a sign that he was sickly. (*Ibid.*:48)

The district chief offered Kahekili and his men the "hospitality of his cave" and "immediately prepared a meal for them." When, before departing the next morning, Kahekili asked the "name of this place":

> "There is no name for this place," said the lesser chief.
> Kahekili responded, "Then I shall call it Hālena because of the sign of the yellowish tapa."
> And so it was. (*Ibid.*:48)

Significantly, the tale notes the apparent desolation of the area and implies that it remained obscure and unnamed well into the eighteenth century. Nevertheless, the newly-named Hālena is also depicted as maintaining at least some inhabitants ruled by an *ali'i* capable of offering hospitality to a large party including the highest *ali'i*. Further, the tale implies that fresh water sources were available within Hālena.

An observation made during a 1993 archaeological reconnaissance survey that included Hālena suggests, at least, that water may have been more readily available there than within other portions of Kaluako'i *ahupua'a*:

> ...it is important to note that the portion of coastline surveyed in 1993 exhibits more surface moisture than is found farther to the west [in Kaluako'i]. This has been a very dry year on Moloka'i, but still there are...areas near the beach where brackish water can be found in the streambeds. Halena, Kahinawai, Oneohilo and Onopalani Gulches were all observed to have water in their channels crossing the sandy coastal flats. In most areas, this creates a marshy inland pond between the cliffs and the higher dunes immediately inland of the shore. (Major and Dixon 1994:11)

The archaeologists propose a "possibility [which] should be kept in mind for further investigations" that such marsh environments - including that at Hālena - may have been utilized as fishponds. They note that "lush vegetation surrounds the water, and the water itself is potable enough for consumption today by cattle and deer" (*Ibid.*:11).

Besides the likely availability of water - for human consumption and aquaculture - other resources were accessible in and around Hālena for the Hawaiian inhabitants. Archaeological studies have documented the presence within Kaluako'i of adz-making quarries of substantial size scattered throughout the *ahupua'a* (see Dye *et al.* no date). As noted above, the *ahupua'a* name itself means Adz quarry. During the present survey, notable quantities of tool-quality basalt flakes were found around and within each of the living sites (see SUMMARY OF RESULTS section of this report). This suggests that quarried stone was carried to the coast at Hālena from known quarries on Mauna Loa to the northeast or, possibly, from other sites - closer to Hālena - that have not yet been

documented.

The description of the "Kaluakoʻi folk [as] sweet-potato planters and deep-sea fishers" cited above would certainly have applied to the inhabitants of Hālena. Easily accessible to inhabitants of the Hālena shoreline, the southern slopes of Mauna Loa, dissected by Hālena Gulch, provide planting areas characterized by a "deep red soil cover" (Macdonald and Abbott 1970:345) and sustained by an average of 30 inches annual rainfall (Armstrong 1973:56).

The current survey provided evidence of a continuing Hawaiian fishing practice at Hālena. A ridge spur above the coastal flats of Halena was observed by the archaeologists to be a lookout site where an individual directed fishing boats to a school of *akule* fish. This practice hints at a long and ongoing history of near shore netting of fish at Hālena. Further, the attributes of Hālena detailed above - the availability of water and accessibility to food stuffs - along with the observation that the area exhibited "more surface moisture than is found farther to the west [in Kaluakoʻi]" are evidence that the coastline at and around Hālena may have been the westernmost section of the southern shore of Kaluakoʻi where temporary camps would have been established for fishing expeditions to the Penguin Banks - an excellent bottom fishing locale - to the southwest.

The availability of fresh water sources and the access to high-quality tool-making materials, inland planting areas and ocean resources: these characteristics suggest that Hālena represents a portion of the west Molokaʻi environment that, while harsh, would not have been intractable to the ingenuity and skills of its Hawaiian inhabitants.

Halena and the Present Study Area: the Post-contact Era

Post-contact transformations in the character of west Molokaʻi and Hālena were generated by the introduction of cattle ranching to the island. Lucille Fortunato de Loach summarizes the first effort at commercial ranching on Molokaʻi:

> Rudolph W. Meyer, who was...responsible, along with [Reverend] Hitchcock, for the introduction of cattle on the island, had come to Moloka'i in the 1840s. . .He established a ranch stocked with longhorns in the Kalae area. A lucrative trade in cattle and hides was begun between Moloka'i and Honolulu. The cattle were exported from the village of Palaau on the southwestern shore, over the reef, and onto a waiting ship. Palaau grew wealthy on cattle and dry land taro. All this came to an end, however, in the 1850s, when Meyer discovered that the number of cattle in the herd had diminished considerably. He found that almost every male in the village was guilty of rustling, and so all the men were shipped off to jail in Honolulu. The men's families followed and the village was deserted. Today Palaau sits abandoned in a *kiawe* forest, as no one ever returned to live there. (de Loach 1975: 68)

Despite this first setback, cattle ranching - along with other livestock - continued to expand during the second half of the nineteenth century:

> During this period, cattle, sheep and goats were imported to the island in ever-increasing numbers. According to [Gerrit P.] Judd, there were no cattle on the island in 1832 and by 1853 there were only 200 head. The 1866 census, however, revealed 2,586 head of cattle, 13,332 sheep and 196 goats on the island. By 1900, the number of cattle and sheep had increased to 6,354 and 15,800, respectively. Sheep reached a peak of about 17,000 in 1807 [*sic*; likely 1907], but gradually declined from about that time. In 1868, Kamehameha V released axis deer on the island. (*Ibid*: 86)

The rise in numbers of cattle during the latter 1800's followed the formation and development of the Moloka'i Ranch in west Moloka'i:

> According to [George P.] Cooke, [Moloka'i Ranch] had come into existence in 1897 when a *hui*, or partnership, composed of four prominent Hawaiian businessmen, acquired almost 70,000 acres of fee simple land from the Bishop Estate at a cost of $150,000. These lands consisted of crown lands once held by Kamehameha V, and also the *ahupua'a* of Kaluako'i which had been awarded to Charles R. Bishop in 1875. They were mainly located at the west end of the island. (*Ibid.*:86)

The present study area was developed at the beginning of the twentieth century as a campground for Moloka'i Ranch employees and their families.

Halena: Traditional Settlement Pattern

Based on the background documentation cited above, the contours of traditional Hawaiian settlement and enterprise established at Hālena likely included, most

prominently, temporary habitation above the coast focussed on itinerant fishing camp activities. Certain favorable elements of the Hālena environment have been noted: the possibility of fresh water sources; the availability of quality stone for tool-making; and the relative proximity to *mauka* planting areas. It is suggested that these components made feasible more extended occupation of the area on a seasonal basis compared to areas of the coastline of Kaluakoʻi further west.

While the Hālena legend cited above points to a resident social order - including families and *aliʻi* - established within Hālena, its extent and viability can only be discerned through further archaeological investigation, especially in more *mauka* areas along the slopes of Hālena Gulch.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeologists began, in 1974, detailed archaeological survey and data recovery work on sites along the western Moloka'i coastline, on the west flank of Maunaloa, for the forthcoming development there of a hotel - the Sheraton Molokai, now called the Kaluakoi Resort. After construction of the hotel and golf course, condominium projects were planned for areas to the north of the hotel at Kawakiu Nui, inland of the hotel, and south of the hotel along Papohaku beach, and lastly, Kaiaka rock was considered for another hotel site. The sites and work accomplished during this period of actual and proposed development, that culminated in the creation of the Kaluakoi Historic Sites Advisory Committee (1987), whose goal was to "develop procedural guidelines for the management of the cultural resources [at Kaluakoi]", are presented in the following reports: for the hotel and golf course development, Cleghorn 1974, and Barrera 1975, 1982c, and 1984; for the proposed development around Kawakiu Nui, Ching 1978, Hammatt 1978, 1979, and 1980, Barrera 1981a, 1981b, 1982b, 1983b, and 1983c, and Weisler 1987a, and 1987b; for Papohaku beach, Hammatt, 1980 and Barrera 1982a; and for Kaiaka rock, Barrera, 1983a.

Other work elsewhere in Kaluako'i during this period was limited to a reconnaissance of a proposed Hawaiian Construction and Dredging (HC&D) quarry at Hale o Lono (Hommon 1972) on the south coast, and proposed sand mine operation at Mo'omomi (Schilt and Shun 1981, and Collins 1983) on the north coast.

In 1984 Marshall Weisler began an archaeological survey of nearly 4,000 acres (1,568 hectares) of west Moloka'i. This included *acres (231 hectares) of shoreline, from the north edge of Kapukahehu bay south to Lā'au point - the southern 3.15 mi.(5.1 km.), or one third of the western shore of the island, where Weisler inventoried 19 residential and 11 non-residential archaeological site complexes. Settlement, he notes, "within the

study area is generally confined to protected bays along the coast, and consists primarily of residential complexes." (Weisler 1984:31); a similar settlement pattern is documented at the north end of the west coast, and sites at both localities contain uncommon archaeological histories on ancient Hawaiian fishing and quarrying as evidenced by site 50-60-01-38 (Hammatt 1979). Initial findings by Schilt and Shun, and Collins, and ethnohistory recorded by Cooke (*opera cit.*) suggest a similar pattern of settlement and resource use along the north coast; the present study, reported on herein, also suggests a similar settlement pattern on the south coast of west Moloka'i, a pattern emerging archaeologically, for all of west Moloka',i. Ironical that the pattern should have been stated so concisely by J.F.G. Stokes (1909) three quarters of a century ago:

> This part of the island does not give any evidence of a dense population...It is probable that formerly, as now, coasts were periodically visited by the inhabitants of the rest of the island for the purpose of fishing, the waters there yielding very abundantly

To this we may now add, based on solid archaeological data:

> '...and for quarrying of tool stone, inland, at sites of quality basalt.'

(On west Moloka'i quarrys see Dye *et al.* 1985, McCoy 1974, Summers 1971, Bonk 1954, Stearns and Macdonald 1947, Phelps 1941, Cartwright 1927, Wentworth 1925, Fowke 1922).

In 1993 Shapiro, *et al.* located a new archaeological site (50-60-02-892) about a mile and a half northeast of the 'Amikopala quarry sites; they report features at the site with religious, agricultural and tool manufacturing functions, and they suggest a relationship of these sites to the 'Amikopala quarry.

The work on MaunaLoa's adz quarries are of particular import to the sites at Hālena where tool quality lithic flakes are abundant within the recorded archaeological sites. If tool blanks are extracted from the quarries and reduced to preforms there, but carried elsewhere for further reduction and finishing, then Hālena is certainly one place

to be looking for the debitage associated with the preform to finished tool making processes.

The early archaeological surveys on Moloka'i that include the entire Kaluako'i region in some detail - Phelps 1941, Bonk 1954, Summers 1971 - record an increasing, absolute number of archaeological features with each successive bit of fieldwork; this is true of the more recent surveys, in the 1980s, of portions of Kaluako'i also.

The survey of Kaluako'i, begun two decades ago, by Catherine Summers (1971) confirmed the location of site 50-60-01-74 (also Bishop Museum number *MO- -6; also site 74 in Summers 1971), which had been surveyed and excavated by William Bonk (1954) in 1951 and 1952. "This site is a bluff [overhang] shelter on the N side of the road about 0.3 mile W of the Boy Scout Camp at Halena." (Summers 1971:62). The sites at Hālena (Boy Scout) Camp, addressed in this report, were clearly, not previously known.

To the west of Hālena and site 50-60-01-74, to Hale o Lono, Summers has located a burial cave near Wai'eli hill, a *ko'a* at Makakiloi'a, a *ko'a* "...on the headland to the E of Hale O Lono cliff..."(*op.cit.*:60), and a *ko'a* at Hale O Lono.

East from Hālena no sites are recorded by Summers until Kolo gulch, a distance of nearly three statute miles, where there are house sites, a canoe house, and a trail leading *mauka* to "...the slopes below 'Amikopala [quarry]."(op.cit.:62). Sites are present, however, between Kolo and Hālena, and noted by Pantaleo (1988) and Major and Dixon (1994) in surveys of this stretch of coastline. They are single, or very limited groups, of structures widely separated from one another, on the coastal strip or low cliff overlooking that strip, and are primarily sites related to human habitation. Thus, the settlement pattern for west Moloka'i, recorded in early ethnography and later proposed by archaeologists based on field survey data, appears applicable to the south shore of the island's west end also.

SURVEY METHODS

Surface Survey

Archaeological surface survey of the study area was conducted by three archaeologists, walking transects over the entire area, on foot, at less than fifty foot intervals. The ground was freshly cleared of vegetation so the disturbed surface was clearly visible throughout the area. The survey consisted of detailed mapping of each archaeological site and of the entire project area using the tape-and-compass method from known points. The identified archaeological sites are summarized below, and described in detail, including excavation testing results, in the **SITE DESCRIPTIONS** section of this report.

Subsurface Testing

Limited subsurface testing, consisting of five hand excavated 50X50 cm. test units, was conducted at the following sites: 50-60-01-1617 - lithic scatter, one test unit (TU 1); 50-60-01-1621 - overhang shelter, one test unit (TU 2); and 50-60-01-988 lithic scatter, three test units (TU 3,TU 4 and TU 5). Within each soil strata, layers were excavated in arbitrary 10 cm. levels. Excavation maximum depths varied from 45 to 60 cmbs., generally terminated 10 to 25 cm. into the Stratum II layer, which consistently lacked any cultural material. Excavation was terminated at arbitrary depths, at the point where cultural materials were virtually nonexistant.

Excavated sediments were sifted through a 1/8" wire mesh screen. All artifacts, midden and charcoal observed during excavation were collected. Artifacts and midden were sorted, measured and weighed, the data is presented in Tables II and III - Appendix A. Charcoal was also weighed and that data is presented in Table IV - Appendix A. A charcoal sample has also been sent to Beta Analytic, Coral Cables, Florida, for dating

analysis.

Several artifacts were also collected from the ground surface of the level plain within the project area, but not from any designated sites. These artifacts lack specific context, likely dragged to their present location from elsewhere inthe study area during recent bulldozing activity. These artifacts (Table II, Acc.# 1 and 2) were found in the area west of the small drainage course that bisects the project area. They were collected for possible future petrographic analysis and sourcing.

SUMMARY OF RESULTS

Surface Survey

During the archaeological surface survey of the study area, eight (8) surface archaeological sites were found; seven of these are on the fringe of the study area - up against the low cliffs that form the *mauka* study area boundary; the eighth site is a surface scatter of basalt flakes, near the shoreline, in the center of the study area (Figure 4). Among the seven (7) sites at the study area's *mauka* fringe, one is an historic water system (site 50-60-01-1618), developed as part of Halena Camp in the early 1900's; it includes five (5) individual features. The other six sites, more typical of pre-contact Hawaiian sites, include two (2) rockshelters (sites 50-60-01-1620 and 50-60-01-1621), a *ko'a*, or shrine (site 50-60-01-1619), a lithic scatter (site 50-60-01-1617), a possible cairn (site 50-60-01-1622), and an elaborate habitation enclosure (site 50-60-01-987).

The habitation enclosure (site 50-60-01-987) is situated on top of the cliffs that serve as the project area boundary, and is therefore outside of the present study. Because of this, site 50-60-01-987 is described only briefly herein and was not tested during the archaeological survey.

The rockshelters, possibly enhanced by limited excavation, utilize natural rock overhangs created by erosion of a softer clinker layer between two dense layers of lava flow. As archaeological sites the rockshelters are further distinguished by a scatter of, primarily, basalt tool fragments and tool making refuse, and shells of edible marine mollusks, extending seaward, or *makai*, from the cliff base below the overhang shelter. The actual shelters have rock floors and offer little or no excavation potential; the midden scatters fronting the shelters, however, are upon the sand and clay plain at the foot of the cliffs, and have important excavation potential.

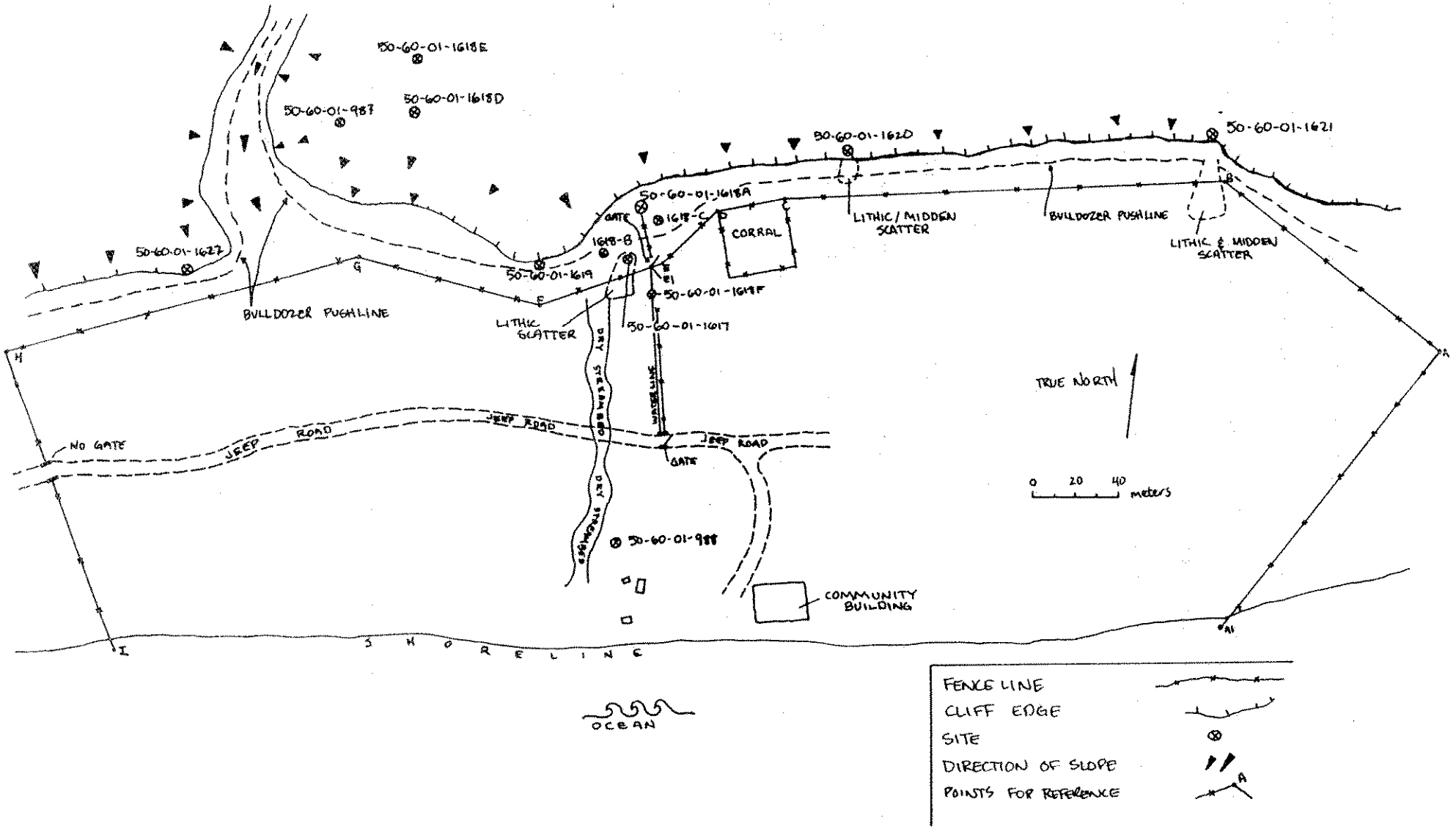


Figure 4 Map of the Study Area, Showing Archaeological Sites and Major Geographic Features

The *ko'a*, or shrine, is a narrow terrace created by the construction of a low wall of boulders at the base of the cliff forming the *mauka* edge of the study area. Thus the back side of the *ko'a* is the vertical cliff face. The surface of the terrace - the *ko'a* - is littered with fragments and heads of a species of branch coral, some of which is partially buried within the sediments of the terrace. It is this latter aspect of the terrace that has led to identifying it as a *ko'a*.

Site 50-60-01-1617, previously described as a low platform and lithic scatter, is situated on the *mauka* edge of the plain at the foot of the cliffs, in the same location as three of the historic water system features (site 50-60-01-1618). We were unable to locate the low platform feature of site 50-60-01-1617 during the present survey even with the aid of a photograph. However, we easily found the lithic scatter, which differed little, with the exception of being smaller in horizontal extent, from the lithic scatters at the two shelter sites 50-60-01-1620 and 50-60-01-1621.

Two other sites first identified in the January 1994 reconnaissance - a cairn (site 50-60-01-1622) and a lithic scatter (site 50-60-01-988) - were located again during the present survey. The cairn is viewed as a modern structure, possibly a temporary survey marker; it does not compare in form or stability of construction to other cairns of definite antiquity.

The latter site 50-60-01-988 was tested by three 50 centimeter square test units, spaced about 15 meters apart, in an area central to that described in the reconnaissance as having a surface scatter of basalt flakes and marine shell, and as having backdirt piles from excavations for canvas tent - wood floor footings that contained possible marine midden and basalt flakes. The archaeological test excavations in site 50-60-01-988 showed that the surface scatter of basalt flakes is not in the context of an archaeological deposit

(see **SITE DESCRIPTIONS** section of this report). The flakes, many of which appear to be of the same material constituting the lava cliffs along the *mauka* fringe of the study area, and thus of poor quality for stone tools, probably were moved here and scattered about by the vegetation clearing bulldozing activity. Natural layers of yellow to pale brown coralline beach sand was all that was found below the disturbed 10 centimeter thick surface layer.

Subsurface Testing

The archaeological subsurface testing phase of this survey consisted of excavating five 50x50 centimeter test units. Three test units (TU 3-5) were excavated in the area of site 50-60-01-988. Two of these units (TU 3&4) contained only natural coralline beach sand sediment layers; the third unit (TU 5) at this site, located on the fringe of the centrally located dry stream course, contained rock hard clay deposits overlain by wind and bulldozer deposited coralline sand. In contrast, test unit 1 at site 50-60-01-1617, and test unit 2 at site 50-60-01-1621 contained distinct cultural deposits overlying the hard basal clay sediments layer.

Stratigraphy

Stratigraphy in the five test units, and by an uprooted kiawe tree 45 feet (13.7m.) meters *makai* of site 50-60-01-1619, provide a stratigraphic history of sediments in the Hālena Camp study area. The stratigraphic sequence in the *mauka* fringe of the project area consists of a prehistoric cultural A Horizon (Stratum I) formed upon the surface limits of an alluvial clay layer, deposited over an extensive terrace of coralline beach sand.

The study area is remarkable for its geomorphic stability, at least at the *mauka* fringe of this sandy coastal plain. Except for erosional activity at the present shoreline, a single major depositional event has occurred, consisting of slow continuous introduction of clay sediments on top of the inland, or *mauka* fringe, since the formation of the otherwise

stable sand plain. These sediments are being introduced as alluvial deposits from the cliff top and therefore are thickest, and continuous along the base of the cliffs. The clay layer thins as one proceeds *makai* except in the center of the plain (from east to west) where the dry stream course has cut into the sand of the plain and laid down thick clay deposits. Test Unit 5 at site 50-60-01-988, situated along the east edge of the dry stream course, near the present shoreline, contained a thick deposit of this clay.
In other central and *makai* areas of the plain the sediments consist only of coralline sand deposited by the ocean and wind.

The cultural deposits (Stratum I) are found overlying the hard clay Stratum II, inland along the cliff fringe. The boundary between the hard clay and the overlying cultural layer, of looser sandy clay, is very irregular due to abundant deep contraction cracks 50 centimeters or more in depth, in the clay layer. Thus, though the clay layer may begin at 20 centimeters depth, the overlying cultural layer may extend to depths of 50 centimeters below the surface inside the contraction cracks of the clay.

The integrity of the cultural deposits indicates that aside from modern disturbances such as grubbing, cattle grazing, and historic use of Hālena as a camp ground the land surface has remained stable for a long period. Mechanized grubbing has affected the *makai* most portions of the cultural deposits along the foot of the cliff face; cattle grazing, by effect of trails down the cliffs, has aided in erosion of deposits that might have been located on the cliff face itself, and has loosened and mixed the surface levels of the cultural deposits at the foot of the cliffs. Impact to the archaeological sites by former use of Hālena as a camp appears to have been very minimal, limited to the building of the water system (site 50-60-01-1618) in the locality of site 50-60-01-1617, and possibly converting an ancient stone lined well (site -1618 Feature C) for the historic camp water supply.

SITE DESCRIPTIONS

State Site #: 50-60-01-987
Site Type: Enclosure
Function: Temporary or Recurrent Habitation
Features (#) 1

Description: Site 50-60-01-987 (Figure 5) is a temporary or recurrent habitation enclosure with internal features. It is located on the edge of a bluff, with a steep cliff to the south (*makai*) and a steep tributary gulch to the west. The site is surrounded by bedrock outcroppings and a'a boulders which continue down the slope with thin soil deposits. Vegetation includes several *kiawe* trees and various small shrubs and grasses. The site is located approx. 200 ft. at 167°TN from Point G on the fenceline to the southeast corner of the enclosure.

The enclosure has five sides with maximum exterior dimensions of 11.0 m. N/S by 12.0 m. E/W. Interior dimensions are 8.0 m. N/S by 8.5 m. E/W. Wall widths range from 0.5 m. to 1.5 m., averaging 1.0 m. (the northeast and southeast walls being somewhat wider). Exterior wall heights range from 0.5 m. to 1.7 m. and interior heights range from 0.5 to 1.0 m., except in the northwest corner where the wall has been trodden to almost level with the interior surface. Wall construction is of simple boulder stacking with large boulders at the base, some of which were placed upright (observed along the northeast exterior wall and the south wall interior). The southeast corner of the enclosure contains an entrance constructed out of 1.0 m.-wide bedrock stepping stones, suggesting a trail once led down to the flat plain below.

The floor of the interior is at least 0.5 to 0.6 m. higher than ground level on the exterior of the enclosure, showing signs of soil build-up.

Interior features include a raised stone-paved platform within the northeastern corner of the enclosure interior. The platform is raised 0.3 m. from the rest of the interior floor and measures 1.8 m. wide at the northwest end, 3.0 m. wide at the southeast end and 4.0 m. long E/W. The paved area has branch coral and one upright stone 0.4 m. high along northeast wall, suggesting a possible altar area. The other interior feature is a roughly defined stone alignment in the western end of the enclosure which measures approx. 2.0 m. N/S by 3.0 m. E/W. At the western end of the alignment is a 0.8 m. square depression - 0.1 m. to 0.1 5 m. deep - identified as a possible hearth.

Blocks of tabular beach rock are scattered throughout the enclosure.

Artifacts observed include: basalt flakes on the floor of the enclosure, scattered around the outside of the enclosure and within the northeast wall; water-rounded basalt stones (possible hammerstones); and midden.

The enclosure structure is in excellent condition except for the southeast corner in which the wall exterior is collapsing downslope (*makai*) and the northwest corner which appears to have been trodden (probably by cattle) and has collapsed toward the interior of the enclosure.

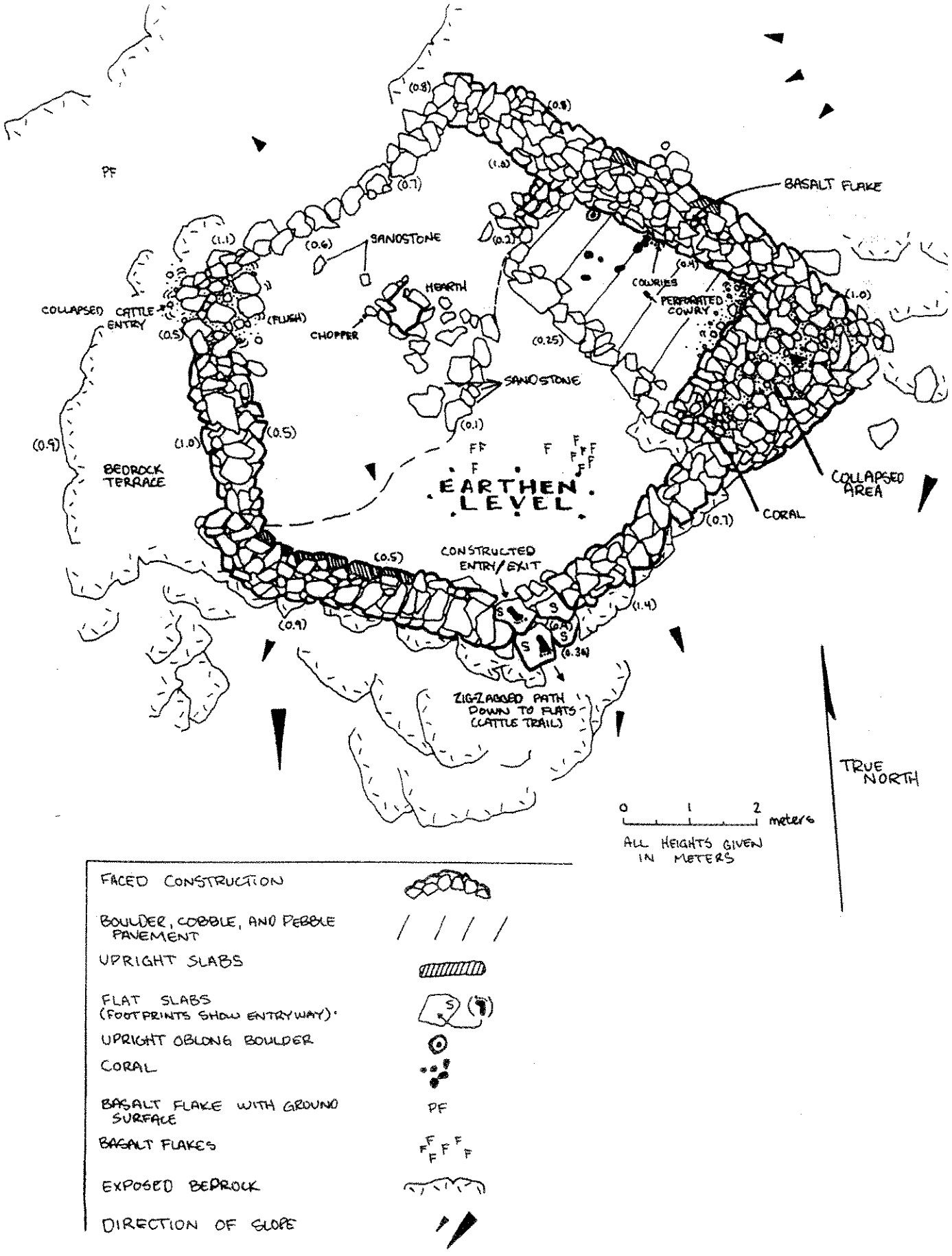


Figure 5 Site 50-60-01-987 Plan View. Habitation Enclosure

State Site #: 50-60-01-988
Site Type: Lithic scatter
Function: Stone tool manufacture
Features (#): 1

Description: Site 50-60-01-988 (Figure 6) consists of several basalt flakes scattered over the surface of a wide area that has been disturbed by both recent bulldozer activity and by excavations undertaken in the construction of cement foundations for camp structures. The site was identified and briefly described during a previous reconnaissance survey. During the present survey, the site was conjectured to be within an area west of the westernmost wooden camp structures and east of a small intermittent drainage stream approx. 20 m. *mauka* of the shoreline. The site is situated on relatively level sandy terrain.

Surface survey revealed little in the way of evidence for indigenous cultural activity. Several possible basalt flakes were observed on the surface.

Testing Results: Three test units were placed within the site area to determine the nature and extent of the site and to determine if there was a cultural layer below the sand that had been the source for the artifacts on the surface.

A 50x50 cm. unit, designated *Test Unit 3* (Figure 7), was placed 15 m. northwest of the concrete slab located on the western edge of the present camp Halena. Excavation continued to a depth of 60 cmbs., 25 cm. into Stratum II which produced no cultural material.

The following stratigraphy was noted:

Stratum IA: 10 cm. thick; a weak A-horizon consisting of dry yellowish brown (10YR 5/4) very fine sand with a loose, noncoherent structure; includes approx. 20% coral and shell. No artifacts, midden or charcoal were found.

Stratum I: 25 cm. thick; consists of a brownish yellow (10YR 6/6) very fine to fine sand with a soft, weakly coherent structure; includes approx. 10% coral and shell. No artifacts, midden or charcoal were found.

Stratum II: 25+ cm. thick; consists of a very pale brown (10YR 7/4) very fine to fine sand with a soft, weakly coherent structure; includes approx. 10% coral and shell. No artifacts, midden or charcoal were recovered.

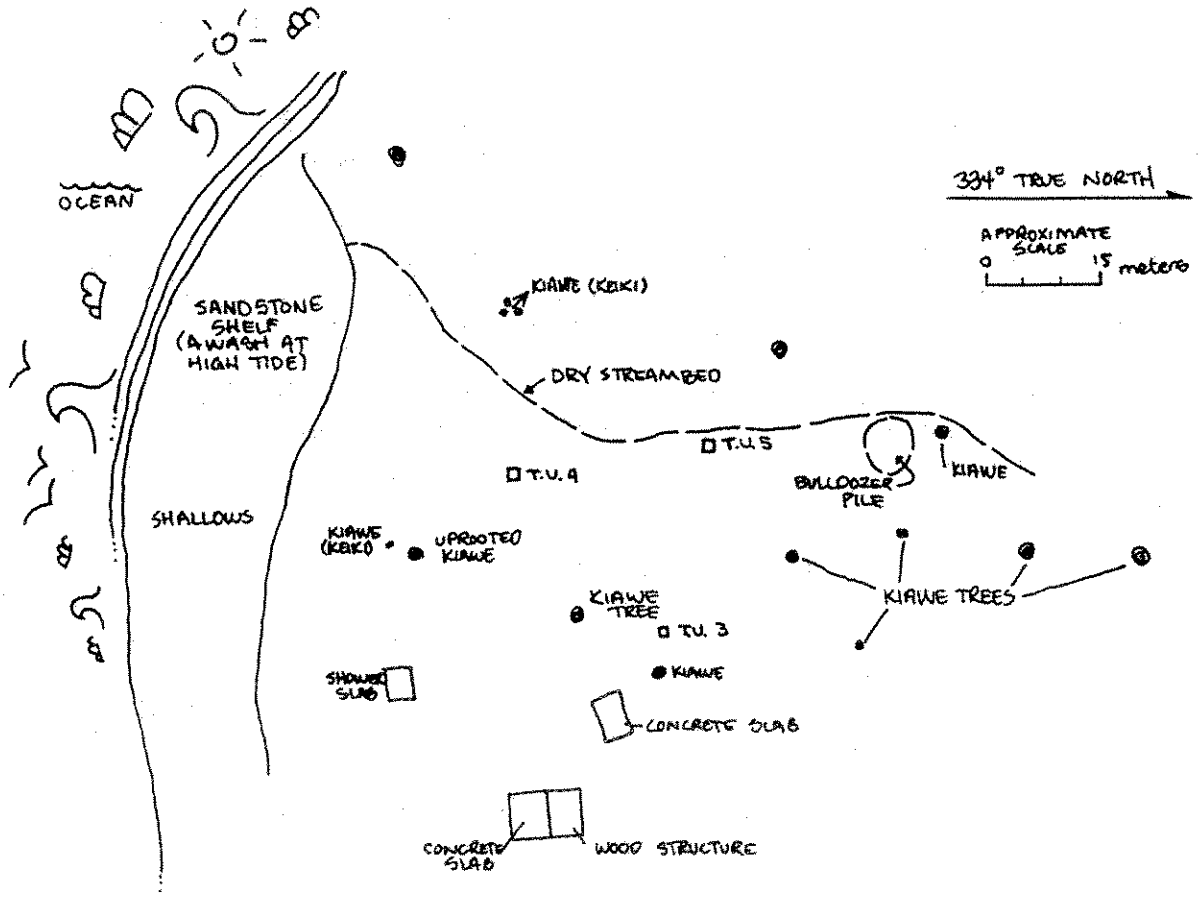
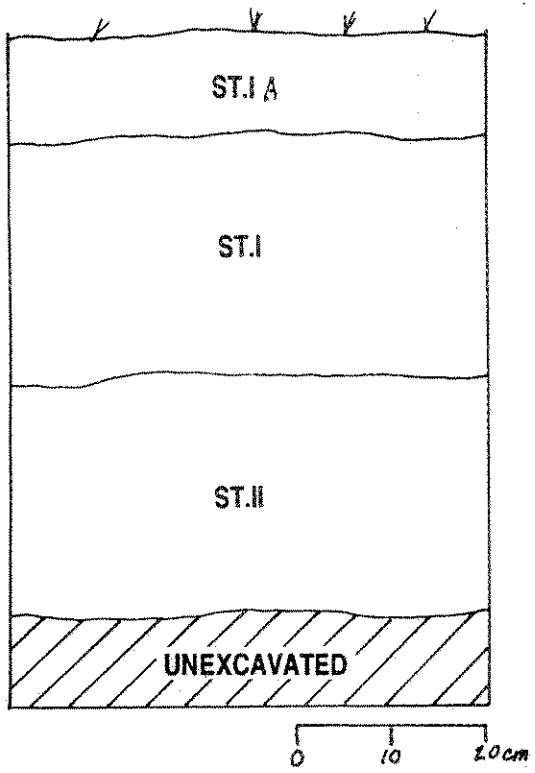


Figure 6 Site 50-60-01-988 Plan View. Lithic Scatter



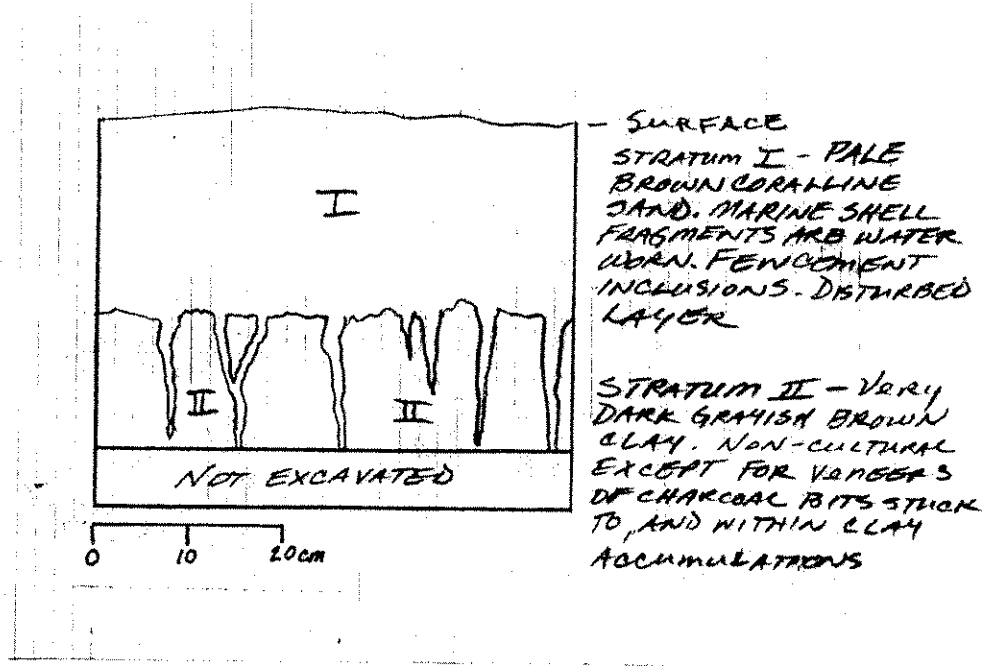


Figure 7 Site 50-60-01-988. Test Unit 3 (at left), North Profile; and Test Unit 5 (at right), North Profile

Test Unit 4, also 50x50 cm., was placed 19 m. from Test Unit 3 at 202°TN. Excavation continued to a depth of 60 cmbs., 25 cm. into Stratum II.

The following stratigraphy was noted:

Stratum IA: 10 cm. thick; similar to Test Unit 3 Stratum IA; contained 3 basalt flakes. No midden or charcoal were present.

Stratum I: 25 cm. thick; similar to Test Unit 3 Stratum I. No artifacts, midden or charcoal were present.

Stratum II: 25+ cm. thick; similar to Test Unit 3 Stratum II with the addition of some vertical mottling of darker soil with small charcoal flecks; probably from root intrusions. No artifacts, midden or charcoal were present.

Test Unit 5 was placed 15.7 m. at 258°TN from Test Unit 3 on top of an existing 50x50 cm. hole (footing pit) adjacent to the drainage stream. The hole was cleared of recent sand deposits and debris, and excavated another 10 cm.into the floor of the pit, exposing Stratum II clay with deep vertical pockets of Stratum I (similar to these two strata in Test Unit 2). No artifacts or midden were present, but there were small flecks of charcoal observed within the clay accumulations.

An additional 20x20 cm. column was then excavated off the northwest wall of the pit to 20 cmbs. where Stratum II was encountered.

Stratum I: 20+ cm. thick, interstitial below 20 cm.; consists of coralline sand with coral and shell inclusions; soil has a pale brown 10YR6/2 cast due to clay particle inclusions. No artifacts were present, although some cement bits were observed. No midden or charcoal were present.

Stratum II: 10YR3/2 very dark grayish brown clay with less than 10% coralline sand grains; moderate, medium, subangular, blocky structure, friable, slightly plastic. No artifacts, midden or charcoal were present.

State Site: 50-60-01-1617
Site Type: Lithic Scatter
Function: Stone tool manufacturing
Features (#): 1

Description: Site 50-60-01-1617 (Figure 8) is a lithic scatter comprising high-quality basalt flakes and several basalt core fragments scattered over the surface of a recently disturbed (bulldozed) area. The scatter is located on a flat soil plain approx. 20.0 m. *makai* of the base of the cliff. Point E1 on the fenceline is located within the southeast

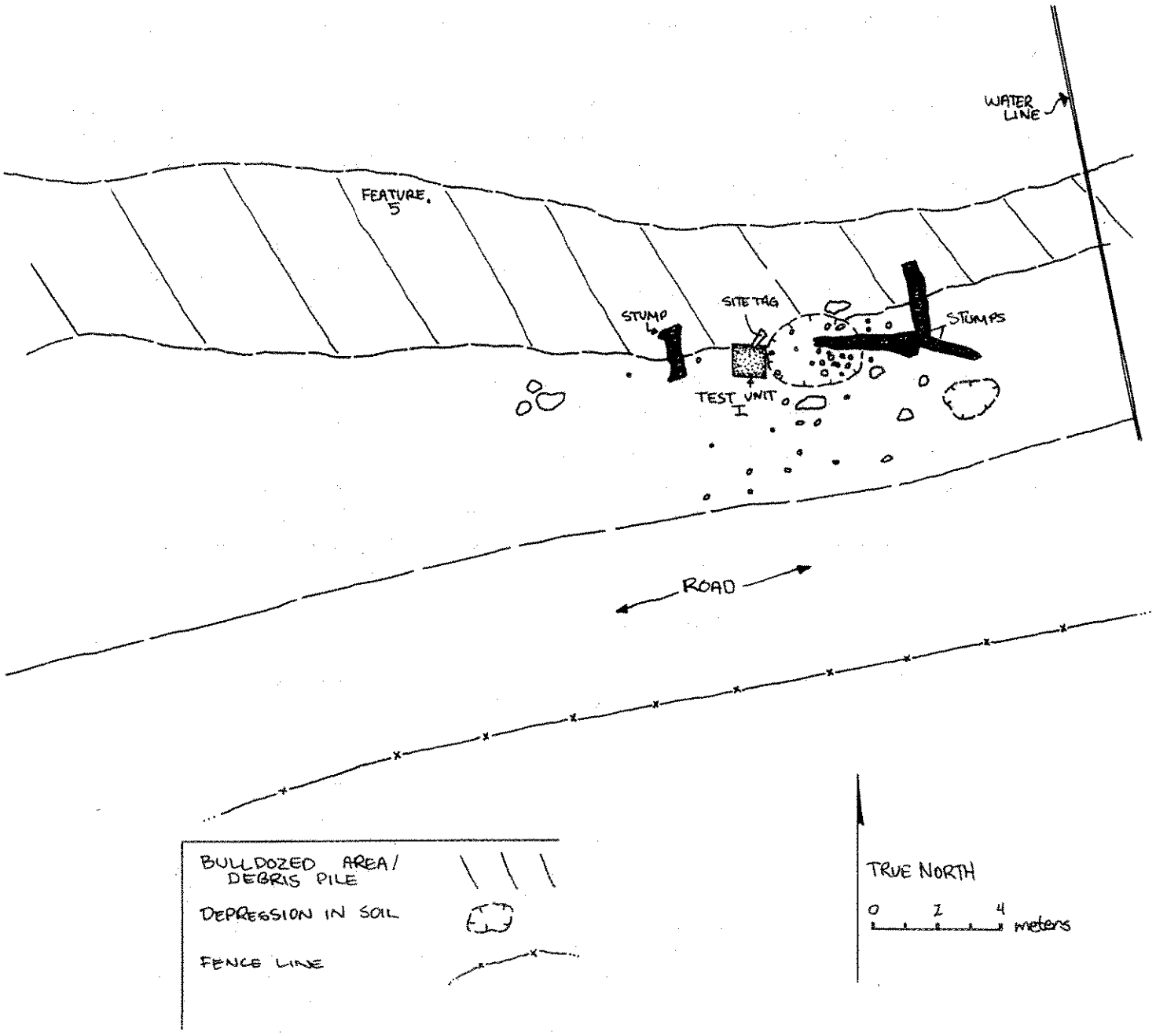


Figure 8 Site 50-60-01-1617 Plan View. Lithic Scatter

portion of the site. Vegetation has mostly been cleared but includes *kiawe* trees and various small shrubs and grasses.

The site extends approx. 15.0 m. N/S by 10.0 m. E/W at its northern end and 15.0 m. E/W at its southern end. The flakes are concentrated in the northeastern portion of the site, in and around a recently excavated shallow depression (likely from the bulldozer) just *makai* of the bulldozer push line.

At least 45 basalt flakes were observed within the site, but no other cultural material was present. All the artifacts were observed within bulldozed area and it is likely their current distribution on the surface is a result of recent surface disturbance.

Testing Results: Subsurface testing was conducted at Site -1617 to determine the depth of the cultural layer and to look for evidence of additional cultural activities.

A 50 x 50 cm. unit, designated *Test Unit 1* (Figure 9), was placed along the western edge of the shallow depression in the northern portion of the site within the area exhibiting the largest concentration of surface artifacts. Excavation extended to a depth of 45 cm. below surface (cmbs); with an additional 30 cm. depth excavated from a 20 x 20 cm. column in the center of the test unit.

The following stratigraphy was noted:

Stratum IA: 5 cm. thick, consists of a dark gray (10YR 4/1) loose sandy clay. This level was disturbed by recent bulldozer activity. No midden, artifacts, or charcoal were present.

Stratum I: 40 cm. thick, consists of a very dark grayish brown (10YR 3/2) clay; soil structure is strong, coarse to medium angular, blocky, very firm, very plastic, very few clay films; soil color grades to very dark gray (10YR 3/1) with increasing depth, and contains minute charcoal bits. Historic artifacts recovered include: one modern flat head screw (Acc. # H-1) and one clear glass fragment (Acc. # H-2). Indigenous artifacts recovered include 72 basalt flakes. Midden collected include: 1.0 grams (gms.) snakehead cowry or *lehokupu* (Cypraea caputserpentis); 0.2 gms. unidentified shell; 17.0 gms. pig bone (sus scrofa). Also 13.5 gms. of coral and 2.6 gms. charcoal were collected.

Stratum II: 30+cm. thick, consists of moist very dark brown (10YR 2/2) clay. Soil structure is moderate, medium angular blocky, firm, very plastic, few mottles of coralline sand grains and few clay films. No midden, artifacts or charcoal were present in from Stratum II.

The subsurface testing (see unit profile) confirmed that there was some historic use of this area, although the historic artifacts present were limited to the top 10 cm. of soil. Prehistoric use of this area was also confirmed by the presence of basalt flakes which extended from the surface to the bottom of Stratum I. The flakes increased in quantity

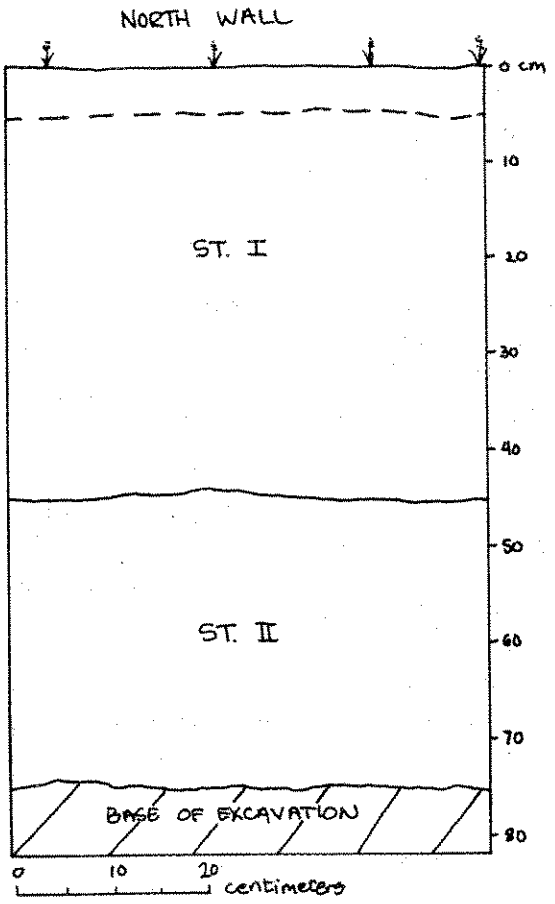


Figure 9 Site 50-60-01-1617. Test Unit 1, North Profile

through the top 204 cmbs. then decreased dramatically through the following 20 cm., below which they were absent. Midden and coral were also limited to the top 20 cm. All artifacts, midden, coral and charcoal were within Stratum I.

State Site #: 50-60-01-1618
Site Type: Water supply system complex
Function: Collecting and supplying water
Features (#): 6

Description: Site 50-60-01-618 is a site complex comprising six features (designated A-F) which are associated with either the historic or modern system through which water was collected and subsequently supplied to the area for cattle and/or human use (henceforth referred to as the water supplying system). The features are distributed along the *mauka* end of the level plain, where the plain and the base of the sea cliff meet, and on the top of the cliff itself.

Feature A is a square cement water reservoir; Feature B is a cement water trough remnant; Feature C is a stone water well (or cistern); and Feature D is a windmill base. Features A through D are considered to be contemporaneous, dated to 1911 era, and components of the historic water supplying system.

Feature E is a modern metal water tank and Feature F is a modern cement water trough. Features E and F are considered to be contemporaneous and part of the water supplying system presently in use.

Feature A (Figure 10) is a cement water-holding reservoir constructed on moderately sloping soil terrain at the base of the cliff. It is located 87 ft. from Point E1 on the fenceline at 341°TN. Vegetation in the area includes *kiawe* trees and other small shrubs and grasses.

The reservoir exterior is 3.5 m. by 3.5 m. wide and ranges from 1.1 5 m. high on the northwestern corner to 2.5 m. high in the southeastern corner (conforming to the slope upon which it was built). Interior dimensions are 3.1 m. by 3.1 m. wide (wall thickness is 0.2 m.), with an interior depth of 2.25 m. The reservoir is constructed of concrete mixed with a'a pebbles (available from the cliff face just *mauka* of the feature) and has iron strap reinforcements in the interior. The structure exterior has a 0.2 to 0.4 m. thick cement mortar finish. The floor of the structure is level soil and organic material with historic trash scattered on the surface.

Two of the exterior walls of the reservoir have names and dates lightly incised into the cement mortar finish. On the *makai* side it reads: "Sept. 14, 1911; Manuel Joas; Kuapuu Leua; Moses Lukela; Jos. Mawae; Akes Minamina." On the east side it reads: "Mah[?]ng by Moses Lukela; Sept. 14, 1911." The *makai* side also has "13 Bags Cement" painted along the top of the wall.

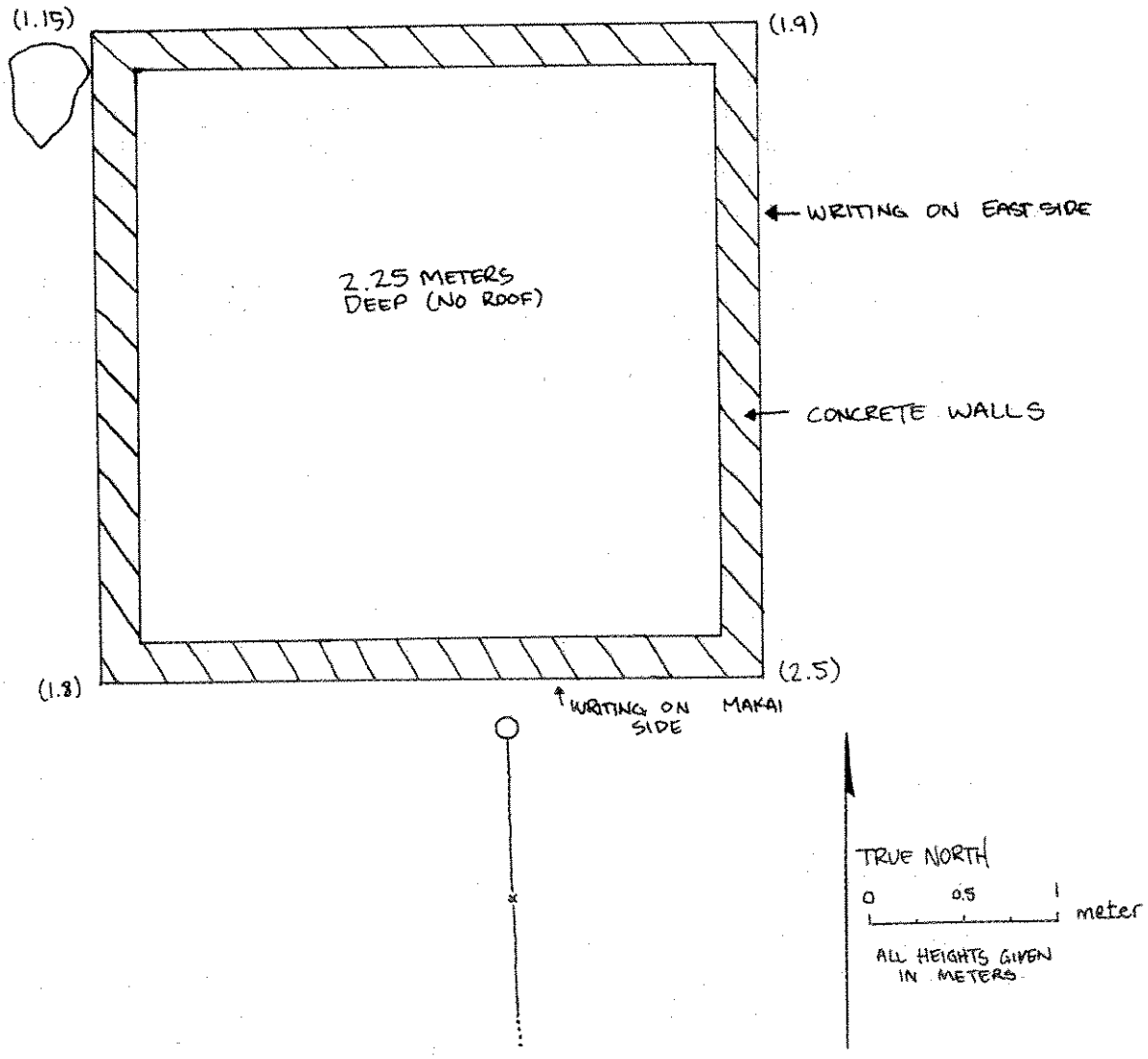


Figure 10 Site 50-60-01-1618 Feature A, Plan View. Concrete Water Tank

Feature A is considered to be a part of the historic water supplying system that includes Features B, C, & D.

The condition of the reservoir is fair, but it is crumbling and flaking along the top edge and upper sides and corner, exposing the iron strap reinforcements.

Feature B (Figure 11) is an elongated cement water trough remnant located at the base of the cliff on the *mauka* end of the level soil plain. It is situated approx. 20.0 m. southwest of Feature A and 2 8 m. from Point E on the fenceline at 274°TN. This feature is also on the *mauka* end of the recently bulldozed area and was partially covered by bulldozer tailings.

The interior dimensions of the structure are 6.0 m. long by 0.9 m. wide. The upper portion of the trough has been bulldozed leaving the exterior roughly level with the ground surface. The interior is 0.2 to 0.4 m. deep. Based on the size of the wall pieces strewn about in the vicinity, it is likely the wall exteriors extended some 0.4 m. above the ground surface before bulldozing.

The trough is constructed of concrete mixed with a'a pebbles (available in the cliff just *mauka* of the feature) and reinforced with an iron strap 0.13 m. thick. The concrete is also coated on the trough's interior and exterior with a 0.03 m. thick cement mortar finish. Sand in the concrete appears to be from a local source; it is not well-sorted, but fine coralline beach sand.

The condition of the trough is poor as it has been bulldozed to level with the ground surface and that portion of the structure which used to extend above the ground has been broken into pieces and scattered over the ground surface.

The trough exhibits the same construction materials and style as the reservoir (Feature A) and is considered to be a part of the historic water supplying system (Features A-D)

Feature C (Figure 12) is a roughly square, stone-lined depression situated on the *mauka* end of the soil plain on gently sloping terrain. It is located approx. 15.0 m. *makai* of the base of the sea cliff and 6.0 m. southeast of the reservoir (Feature A). Feature C is located 19 m. from Point E on the fenceline at 344°TN.

The exterior dimensions are approx. 2.4 m. N/S by 2.4 m. E/W and the edges are roughly level with the ground surface. The depression is situated within the southern end, measuring 1.7 m. by 1.7 m. The depth of the feature is unknown as it has been filled with boulders, 4"x6" lumber pieces, cement chunks, galvanized pipe fragments and fence wire.

The feature is constructed out of small to medium sized boulders; the interior edges appearing lined with small boulders.

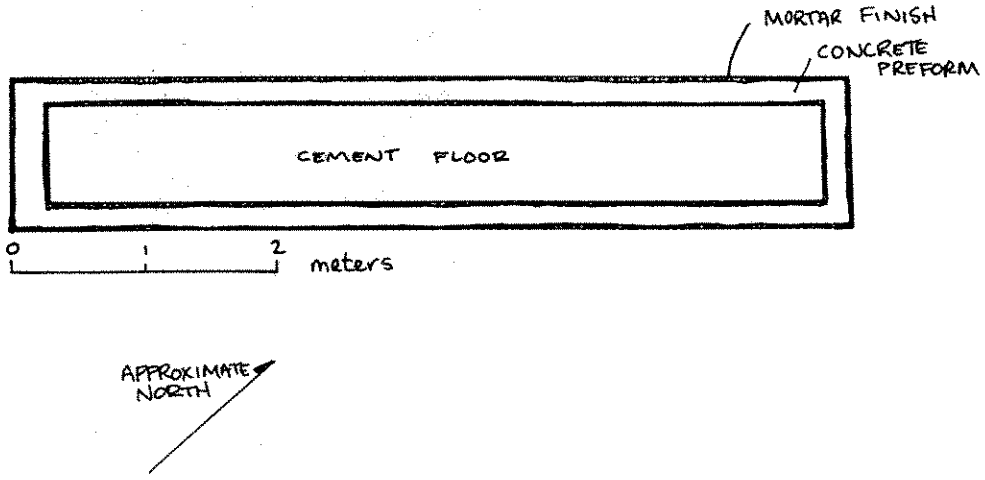


Figure 11 Site 50-60-01-1618 Feature B, Plan View. Water Trough

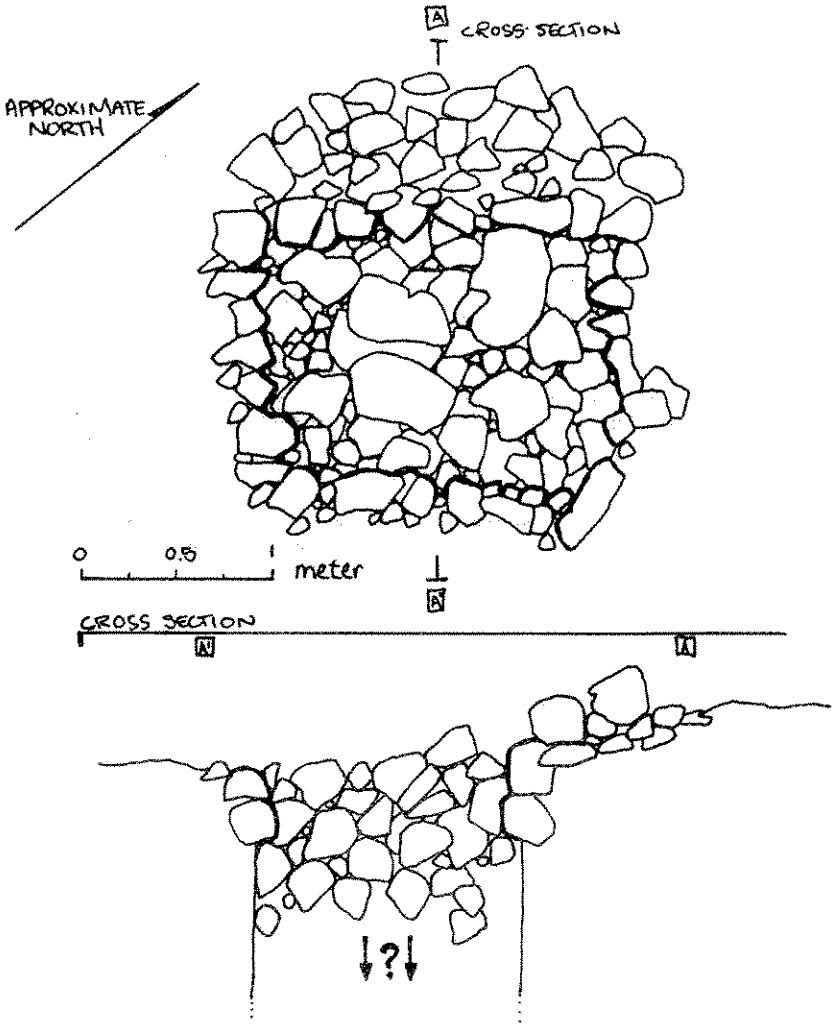


Figure 12 Site 50-60-01-1618 Feature C, Plan View and Cross Section. Well

Because of its proximity to the reservoir Feature A and its probable function as a water well, this feature is considered to be a part of the historic water supplying system (Features A-D).

Feature C is in fair condition; it has been filled with historic trash and rubble and has likely suffered from collapse on both the interior and exterior.

Feature D is the wooden support base and internal workings of an historic windmill situated on a bedrock ledge on the top of the sea cliff, approx. 25 m. due south of the water tank (Feature E).

There are four vertical support posts - 1.7 m. apart - which are constructed of 4"x6" lumber. The frame is constructed of lumber, 3 1/2" square. Square nails and wire nails are present, suggesting the frame has been rebuilt or reinforced since its original construction. Within the frame is a metal gear-like mechanism with chains attached that runs down the slope in the direction of Feature A.

Based on probable function, construction style and materials, Feature D likely dates to the 1911 era and is considered to be a part of the historic water supplying system.

Feature E is a modern water tank resting on a stone foundation and situated on the top of the sea cliff. It is located approx. 150 ft. northeast of Site 50-60-10-987. The tank is presently functioning and, based on construction style and material, is deemed less than fifty years old.

An access roadway leads to the water tank from the north. Construction and current use activity does not appear to extend beyond the immediate vicinity of the tank.

Feature F is a modern water trough built on the level soil plain approx. 33 m. *makai* of the base of the sea cliff. The feature is located 12.0 m. from point E1 on the fenceline at 170°TN.

The trough measures 6.3 m. long by 1.17 m. wide; it stands 0.8 m. high on the outside and the walls are 0.1 m. thick. It is constructed of cement and has no mortar finish. The form impressions are still visible, revealing lumber construction with boards 11 5/8" wide.

Feature F appears fully functional, although at the time of the field survey it did not contain water. Based on lumber impressions and condition, construction it is considered to post-date 1950.

State Site #: 50-60-01-1619
Site Type: Religious shrine; *ko'a*
Function: Worship
Features (#): 1

Description: Site 50-60-01-1619 (Figure 13) appears to be a religious shrine, or *ko'a*, located on a small terrace at the base of the sea cliff. The apparent shrine consists of a small cleared area against the cliff face along the central *mauka* portion of the terrace, with branch coral heads embedded in soil, and with coral pieces and basalt flakes scattered on top of, and immediately below, the terrace. The cliff face adjacent to the feature is located 58 ft. from Point F on the fenceline at 326°TN.

The terrace measures approx. 2.5 m. N/S by 3.0 m. E/W and is generally 1.0 m. above the flat plain. The *mauka* edge of the terrace is defined by the sea cliff, while the *makai* edge is a mixture of basalt boulders (probably part of the original terrace wall) and bulldozer tailings.

Coral heads are mostly branch coral and are embedded in the soil where the sea cliff wall meets the terrace. Just *makai* of the terrace, broken coral pieces were observed and 1.5 m. to the east several basalt flakes were observed; these materials were within the bulldozer push line.

Approx. 2.5 m. above the terrace is a small cave (measuring 1.0 m. by 1.0 m. and 0.8 m. high) within the cliff face which may have been associated with the site.

Site -1610 has been impacted by recent bulldozer activity and its original dimensions are no longer discernible. That portion of the site which remains intact is in fair condition.

State Site #: 50-60-01-1620
Site Type: Overhang Shelter
Function: Temporary habitation
Features (#): 1

Description: Site 50-60-01-1620 (Figure 14) is an overhang shelter built into the sea cliff face. The shelter opening is located approx. 8.0 m. *mauka* of and 7.0 m. above the flat plain. The shelter is separated from the plain by a gently sloping soil-covered outcrop which extends 5.0 m. *makai* of the overhang and is 12.0 m. wide. The area seems to have been impacted by trails leading to the plain below. The site is located 27.0 m. from the 550 ft. point on the fenceline at 330°TN.

The shelter dimensions are 8.0 m. long (E/W) by 3.0 m. wide (N/S) (2.3 m. wide from the back of the overhang to the dripline). The maximum ceiling height is 0.8 m. The shelter floor has a level soil deposit 0.1 to 0.15 m. in depth, with several small boulders on the surface.

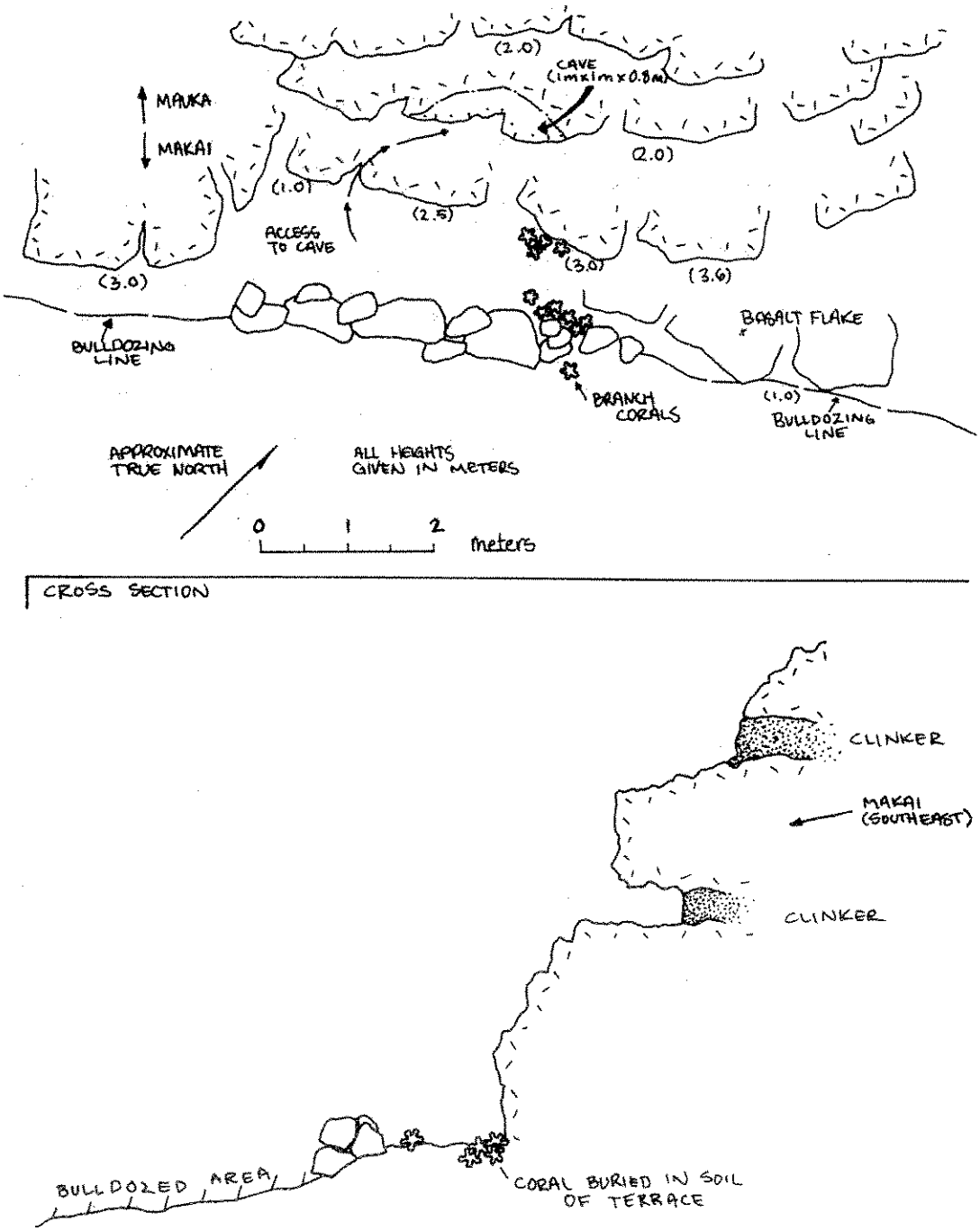


Figure 13 Site 50-60-01-1619 Plan View and Cross Section. *ko'a*, or Shrine

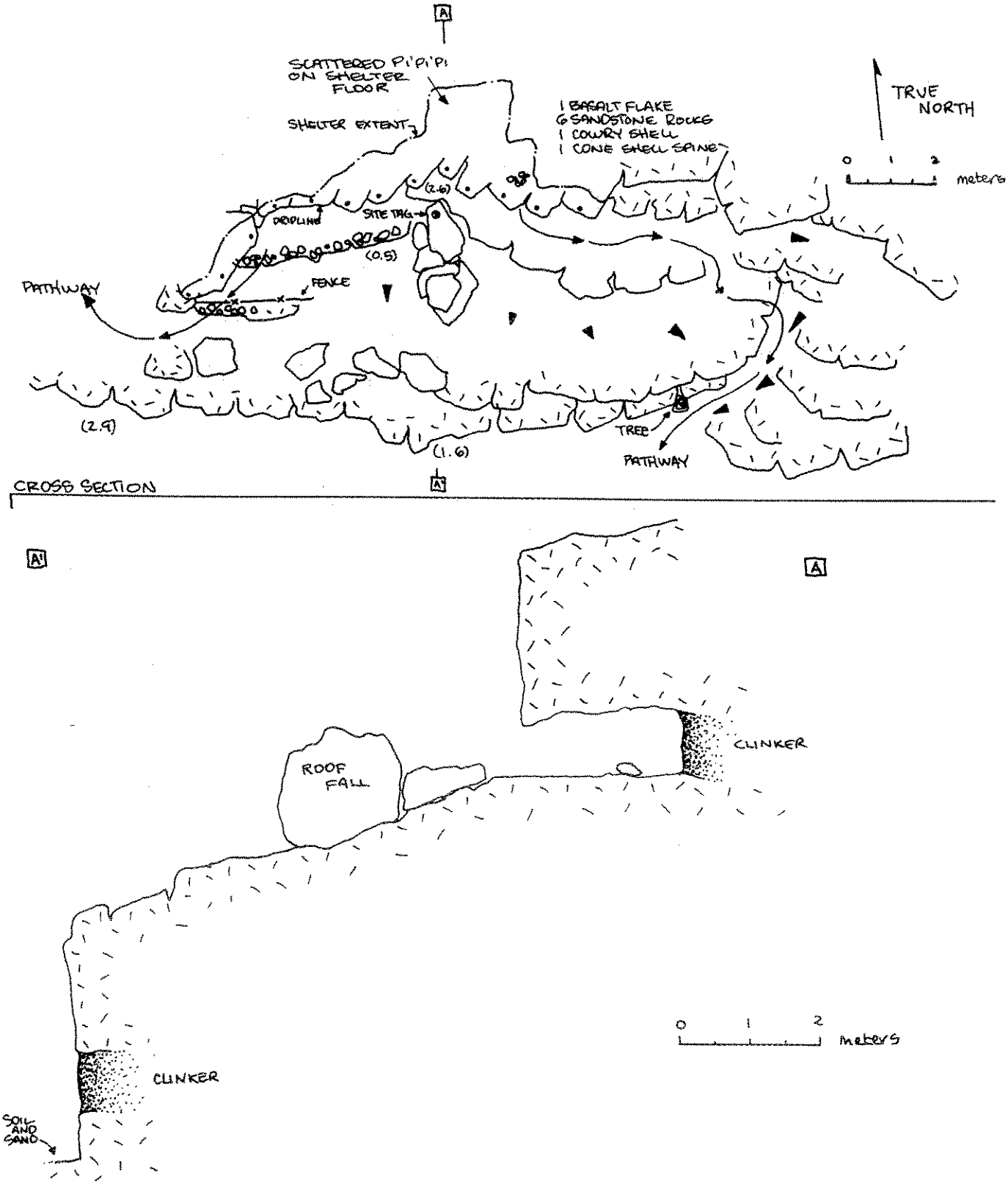


Figure 14 Site 50-60-01-1620 Plan View and Cross Section. Overhang Shelter

Artifacts observed on the surface include: one basalt flake and five pieces of water-rounded limestone, some of which show signs of prehistoric use. Midden observed on the surface include: cowrie, *pipipi* and helmet shell fragments. Artifacts and midden are piled in the eastern corner of the overhang, probably by previous surveyors.

There was also a small amount of midden observed on the gently sloping area just in front of the shelter and on the plain directly below, but artifacts and midden do not appear to extend farther out onto the plain as they do in Site 50-60-10-1621 (described below).

State Site #: 50-60-01-1621
Site Type: Overhang Shelter
Function: Temporary habitation
Features (#): 1

Description: Site 50-80-10-1621 (Figure 15) is an overhang shelter located on the sea cliff face. The shelter appears to have been created by the erosion of a soft layer within the a'a flow. It stands 3-5 m. above a soil and rocky slope which drops 6.0 m. *makai* of the cave to the level soil plain. The center of the rock shelter is 70 ft. from Point B on the fenceline at 335°TN.

The shelter opening is 6.0 m. long E/W by 2.0 m. wide N/S (1.5 m. wide from the back of the shelter to the dripline). Ceiling height is 1.4 m. in the center but decreases to 1.0 m. or less at either end. The floor of the shelter is bare rock which has been heavily impacted by goats. No soil deposit was observed.

A midden and flake scatter extends 18.0 to 25.0 m. *makai* of the shelter and is distributed on both the slope and the level plain. Artifacts observed include: flakes of high quality basalt, one polished flake from a finished adze and several cobble-sized basalt cores. Midden observed include: cowrie, *opihi*, conis and mammal bone. Generally midden is spread farther onto the flats while the flakes are concentrated closer to the base of the slope, indicating the present distribution of midden and artifacts was caused by erosion from the rock shelter.

The site is considered to be in good condition.

Testing Results: Subsurface testing was conducted at Site -1621 to determine if cultural activity represented by surface artifacts continued below the surface, and to determine what kind of activities were taking place.

A 50 x 50 cm. unit, designated *Test Unit 2*, was placed on the level plain *makai* of the shelter, approx. 10 m. from the base of the sea cliff. Excavation extended to 50 cmbs. where Stratum I becomes completely absent, and Stratum II predominates.

The stratigraphic units are as follows:

Stratum I 47 cm. thick, began 3 cm. below a weak "A" horizon and was a moist very dark gray to black (10YR 2.5/1) sandy clay. (Below 20 cmbs. it

was interstitial sediment within contraction cracks of Stratum II.) Strong, medium, columnar structure. Slightly sticky, very plastic with few clay films. Indigenous artifacts recovered include 38 basalt flakes. Midden collected includes: 2.6 gms. limpets or opihi (Cellana sp.); 27.8 gms. reticulate cowry or leho (Cypraea maculifera); 5.3 gms. pitchy sea snail or pipihi (Nerita picea); .2 gms. periwinkles or pipipi akolea (Littorina sp.); 3.3 gms. dry shells or papua (Thaididae sp.); 2.9 gms unidentified shell and .1 gms. misc. bone. 13.6 gms coral and 5.3 gms. charcoal.

Stratum II — 40+ cm. thick, is very dark grayish brown (10YR 3/2) clay with less than 10% coralline sand grains. Moderate, medium, subangular, blocky structure. Pliable, slightly plastic. No artifacts, midden or charcoal was recovered from Stratum II.

State Site #: 50-60-01-1622
Site Type: Cairn
Function: Marker
Features (#): 0

Description: Site 50-60-01-1622 is a cairn consisting of six small boulders stacked on top of a ledge along the lower slope of the sea cliff. It is located 50 ft. from Point G + 250 ft. at 325°TN.

The cairn is deemed of modern construction.

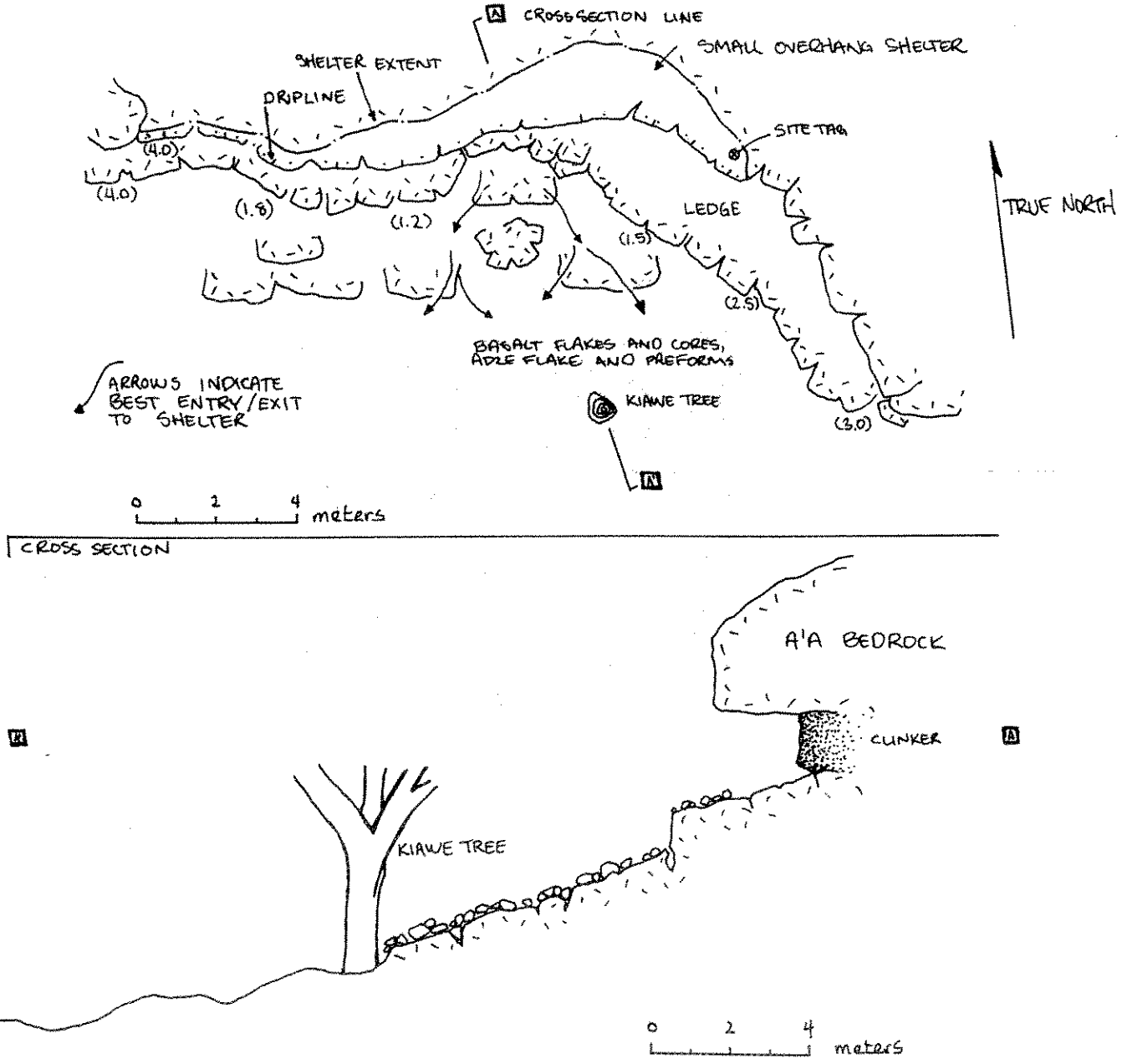


Figure 15 Site 50-60-01-1621 Plan View and Cross Section. Overhang Shelter

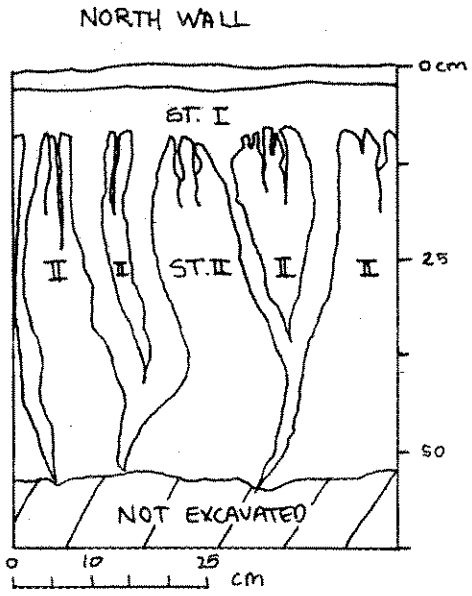


Figure 16 Site 50-60-01-1621. Test Unit 2, North Profile

SITE SIGNIFICANCE

The archaeological sites at Hālena are divided into three groups to address significance for cultural and historic information. The first group, consisting of site 50-60-01-1622 - cairn, and site 50-60-01-988 - lithic scatter, is significant for the information provided by the sites; they document, partially, the nature and physical range of modern disturbance in the study area of Halena Camp. No further work is recommended for these two sites.

The second group includes the four sites 50-60-01-1617 - lithic scatter, 50-60-01-1618 - water system, 50-60-01-1620 - overhang shelter, and 50-60-01-1621 - also an overhang shelter. These sites are likely to yield information important to the knowledge of the prehistory of the locality (National Register of Historic Places significance criteria D), for example: where the tool quality basalt at Hālena was quarried from; what type of lithic tools were being made or what phase of lithic reduction in tool making processes were being carried out here; how important a role Hālena played in fishing expeditions on the Penguin Banks; the degree of permanency of habitation here; etc.

The third group includes two sites, 50-60-01-987 - habitation enclosure and 50-60-01-1619 - *ko'a*, assigned more than one criteria of significance. The habitation enclosure is likely to yield important information on the prehistory of Hālena for those reasons cited for sites in group 2 above; it is also significant for its type and method of construction. The site has integrated internal elements of pavements, hearth, and household altar, and evidence of human habitation, especially stone tool making and the leaving of food refuse. Describing these physical aspects of site 50-60-01-987, in combination with its location on a prominent ridge overlooking the sand beach and the offshore fishing grounds far out on the banks, brings to mind another of the most important sites of West Moloka'i, even, of Hawai'i; site 50-60-01-38. Thus site 50-60-01-987 also displays architectural features that

may be significant in the architectural development of the locality (West Moloka'i); the site's contents have also, the potential to identify the person with whom the property was associated, and his importance in Hālena's history, as occurred with site 50-60-01-38 at Kawākiu Nui, Moloka'i. (Hammatt 1979; Folk and Hammatt 1993).

The second site in this multiple criteria group is the *ko'a* site 50-60-01-1619, assigned United States Department of the Interior, National Register of Historic Places significance criteria C and D, and Hawaii State Historic Preservation Division draft significance criteria E. *Ko'a* are varied in form from island to island, and within any single island. The range of this variation is not yet sufficiently documented as to assign any particular *ko'a* to a particular type or to compare methods of construction from one *ko'a* to the next. Thus every *ko'a*, including site 50-60-01-1619, represents a special property that will contribute to studies of the architectural development of this type of site throughout the Hawaiian islands. Information which site 50-60-01-1619 is likely to yield is important in understanding the kinds and periodicity of fishing activities that took place at Hālena in prehistoric and early historic time periods, and may provide data to support the continuity of these activities from the past to the present, as we suggest exists in the natural and Historic Setting section of this report. In addition to these National Register criteria, the *ko'a* at Hālena - site 50-60-01-1619, because it is a shrine of religious purpose, is considered significant according to the Hawaii Department of Land and Natural Resources, Historic Preservation Division draft administrative rules significance criteria E, that is, the site possesses additional cultural importance.

Table I SITE SIGNIFICANCE

State Site #	Description	Function	Significance Criteria*	Recommendations
50-60-01-987	Enclosure	Temporary or recurrent habitation	C,D	Avoidance
50-60-01-1617	Lithic Scatter	Stone tool manufacturing area	D	Avoidance
50-60-01-1618	Water System Complex	Provide water to area	D	Avoidance
50-60-01-1619	Religious Shrine; *Ko'a*	Religious worship	C,D,E**	Avoidance
50-60-01-1620	Overhang Shelter	Temporary habitation	D	Avoidance
50-60-01-1621	Overhang shelter	Temporary habitation	D	Avoidance
50-60-01-1622	Cairn	Marker	D	No further work
50-60-01-988	Lithic Scatter	None - Area disturbed by bulldozer	D	No further work

* United States National Register of Historic Places criteria for evaluating significance; National Register Bulletin 16, U.S. Department of the Interior, National Park Service

** Hawaii State Historic Preservation Division draft criteria for evaluating significance; Department of Natural Resources, State of Hawaii

DEFINITION OF SIGNIFICANCE CRITERIA CODES

A Site reflects major trends or events in the history of the state or nation.

B Site is associated with the lives of persons significant in our past.

C Site is an excellent example of a site type.

D Site may be likely to yield information important in prehistory or history.

E Site has cultural significance; probable religious structures (shrines, heiau) and/or burials present.

RECOMMENDATIONS

The archaeological sites of continuing significance that remain in the study area at Hālena, Kaluakoʻi, Molokaʻi, also known as Hālena Camp, include two overhang rockshelters (50-60-01-1620 and 50-60-01-1621), a lithic scatter (50-60-01-1617), a water system (50-60-01-1618), the *koʻa* (50-60-01-1619), and the habitation enclosure (50-60-01-987). All of these sites are situated along the edge of the ancient sea cliffs that are the *mauka*, or inland, boundary of the study area, beyond - and thus protected by - a new straight-wire perimeter fence, bounding the area proposed for renewed use as Hālena Camp from this year forward.

The proposed boundaries of land use at Hālena Camp, that exclude the significant archaeological sites in need of future study, allows us to recommend that the sites simply be avoided and left as they are for the present. It would be advisable to reevaluate the condition of the sites,say after 6 months to 1 year, to assure the Historic Preservation Division and the community on Molokaʻi of a non-impact condition by the renewed use of Hālena Camp. However, should expansion of the Camp be planned or implemented, or should the Camp's presently proposed level of usage be increased, then the present passive site treatment should be reevaluated in consultation with Molokai Ranch and the Historic Preservation Division of the DLNR, and it may be necessary to carry out extensive archaeological data recovery work for the habitation enclosure, shelters and lithic scatter; and to formulate preservation plans for the habitation enclosure's structure and the *koʻa*.

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APPENDIX A

Table II MASTER ARTIFACT CATALOGUE

INDIGENOUS ARTIFACT CATALOG

CULTURAL SURVEYS HAWAII

Project: Molokai Ranch Halena Camp

Acc #	State Site #	Test Unit	Stratum	Depth	# pieces	Length	Width	Thickness	Weight	Material	Function	Comments
	50-60-01-			(cm.)		(cm.)	(cm.)	(cm.)	(gms.)			
*1	Halena	--	--	Surface	1	10.3	3.8	3.1	133.2	Basalt	flake	water-rounded cobble frag.
*2	Halena	--	--	Surface	1	5.7	4.6	2.6	93.8	Basalt	manuport	water-rounded pebble
3	988	4	1A	0-10	3	5.0/1.9	3.2/1.5	1.6/0.3	22.2	Basalt	flakes	
4	1617	1	I	0-10	19	5.1/0.5	4.1/0.4	1.5/0.1	92.5	Basalt	flakes	
5	1617	1	I	10-20	37	3.5/0.2	2.8/0.2	0.8/0.1	41.1	Basalt	flakes	
6	1617	1	I	20-30	9	6.0/0.7	3.5/0.3	1.6/0.1	37.5	Basalt	flakes	
7	1617	1	I	30-40	7	3.0/0.7	1.8/0.4	0.5/0.1	6.8	Basalt	flakes	
8	1621	2		Surface	1	1.8	0.9	0.2	0.6	Basalt	flake	
9	1621	2	I	0-10	7	3.7/0.9	0.9/0.5	0.5/0.1	8.9	Basalt	flakes	
10	1621	2	I	10-20	6	4.7/1.1	2.0/0.7	1.0/0.3	24.0	Basalt	flakes	
11	1621	2	I	20-30	19	5.1/0.6	3.7/0.4	1.1/0.1	25.0	Basalt	flakes	
12	1621	2	I	30-40	3	2.1/1.0	1.8/0.7	0.5/0.1	2.7	Basalt	flakes	
13	1621	2	I	40-50	2	2.0/1.7	1.3/1.3	0.8/0.3	3.0	Basalt	flakes	

* Objects found on surface of soil plain within bulldozed area

HISTORIC ARTIFACT CATALOG

CULTURAL SURVEYS HAWAII

Project: Molokai Ranch Halena Camp

Acc #	State Site #	Test Unit	Stratum	Depth	# pieces	Length	Width	Thickness	Weight	Material	Function	Comments
	50-60-01-			(cm.)		(cm.)	(cm.)	(cm.)	(gms.)			
H-1	1617	1	I	0-10	1	4.3	1.0	1.0	7.7	Metal	screw	modern flat head
H-2	1617	1	I	0-10	1	1.8	0.8	0.4	0.7	Glass	fragment	clear

Table III MIDDEN CATALOGUE

CULTURAL SURVEYS HAWAII

Project: Molokai Ranch Halena Camp

State Site 50-60-01-	1617	1617	1621	1621	1621	1621	1621	1621	Project Totals
Test Unit	1	1	2	2	2	2	2	2	
Depth (cm.)/Stratum	0-10/I	10-20/I	Surface	0-10/I	10-20/I	20-30/I	30-40/I	40-50/I	
Cellana sp.				0.1	0.1	1.8	0.2	0.4	2.6
Cypraea caputserpentis	1								1
Cypraea maculifera			27.8						27.8
Nerita picea					0.7	0.8	0.9	2.9	5.3
Littorina sp.							0.2		0.2
Thaididae sp.			1.1			2.2			3.3
Misc./Unidentified shell	0.2		0.9	0.1	0.6	0.4	0.6	0.3	3.1
Pig bone	17								17
Misc. bone						0.1			0.1
Total midden	18.2	0	29.8	0.1	1.3	3.5	1.7	3.2	**57.8**
Coral	6.7	6.8	1.3	1.1	0.6	10.6			27.1

Table IV CHARCOAL CATALOGUE

CULTURAL SURVEYS HAWAII

Project: Molokai Ranch Halena Camp

Acc #	State Site #	Test Unit	Stratum	Depth	Weight	Comments
	50-60-01-			(cm.)	(gms.)	
C-1	Halena	Tree	II	--	1932	Clay/soil sample
C-2	988	4	I	0-10	2.7	small charcoal flecks
C-3	988	4	I	10-20	1.3	small charcoal flecks
C-4	1617	1	I	0-10	2.3	small charcoal flecks
C-5	1617	1	I	20-30	0.2	small charcoal flecks
C-6	1617	1	I	30-40	0.1	small charcoal flecks
C-7	1621	2	I	10-20	0.1	small charcoal fleck
C-8	1621	2	I	20-30	0.8	small charcoal flecks
*C-9	1621	2	I	30-40	3.2	small charcoal flecks
C-10	1621	2	I	40-50	1.2	small charcoal flecks

* = Sample sent to Beta Analytic for dating analysis

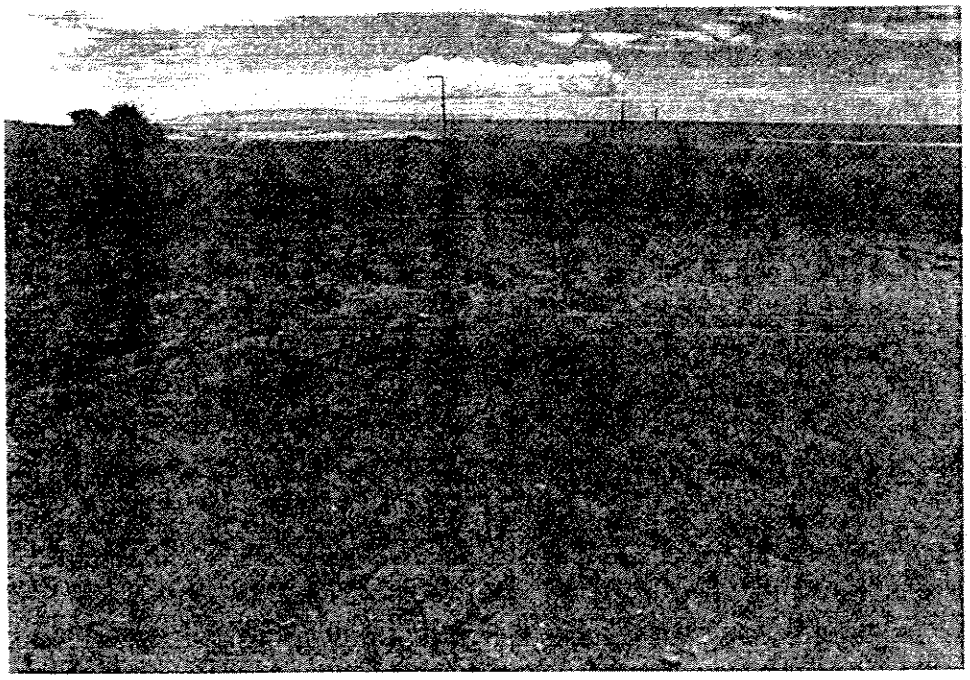
APPENDIX B - PHOTOGRAPHS

PHOTOGRAPHIC APPENDIX

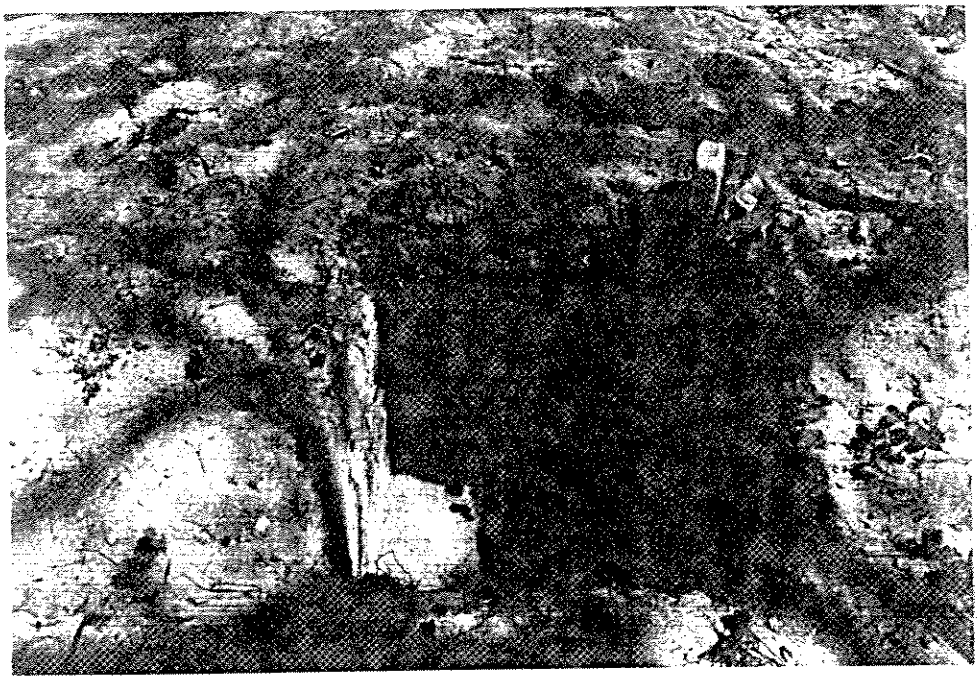
Project Area, East View

Project Area, South View

State site 50-60-01-987 Enclosure, West View

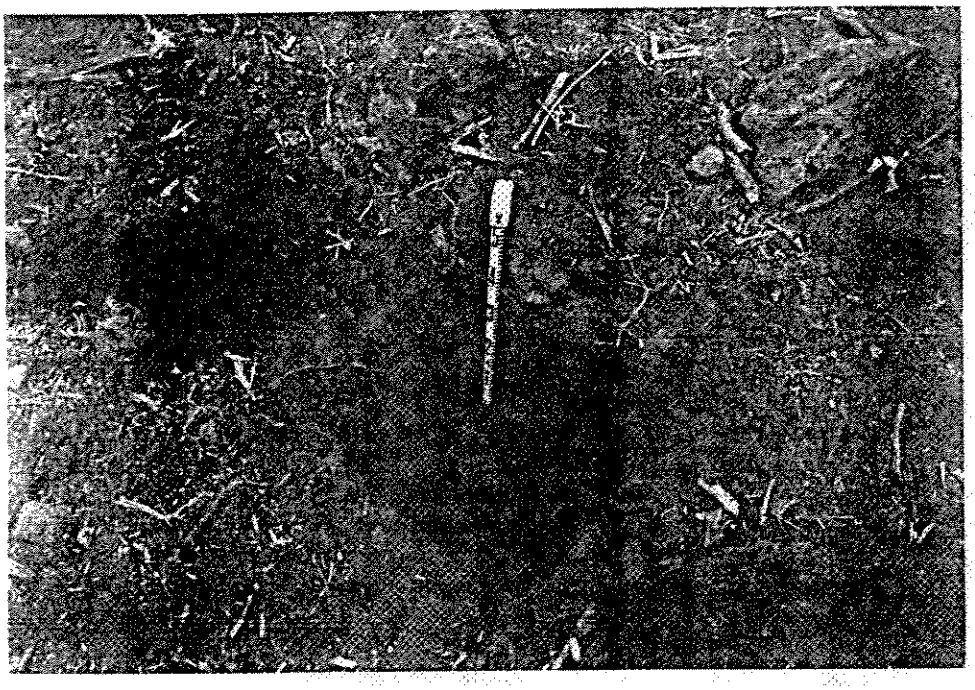


State site 50-60-01-988. Lithic scatter. View Southeast

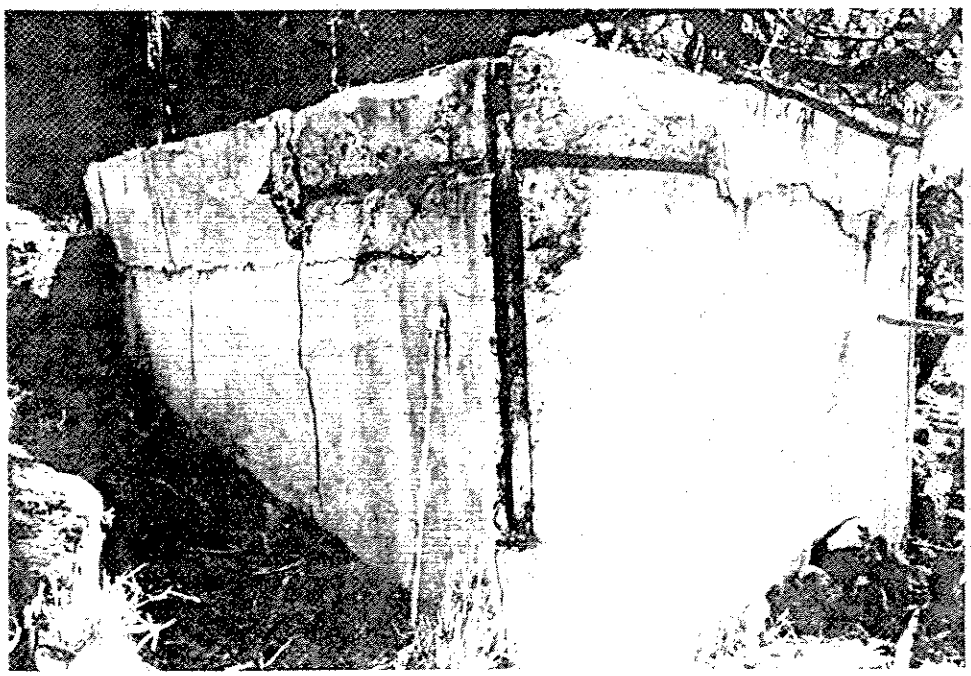


State site 50-60-01-988 Test Unit 4, View North

State site 50-60-01-1617, Lithic scatter, View North



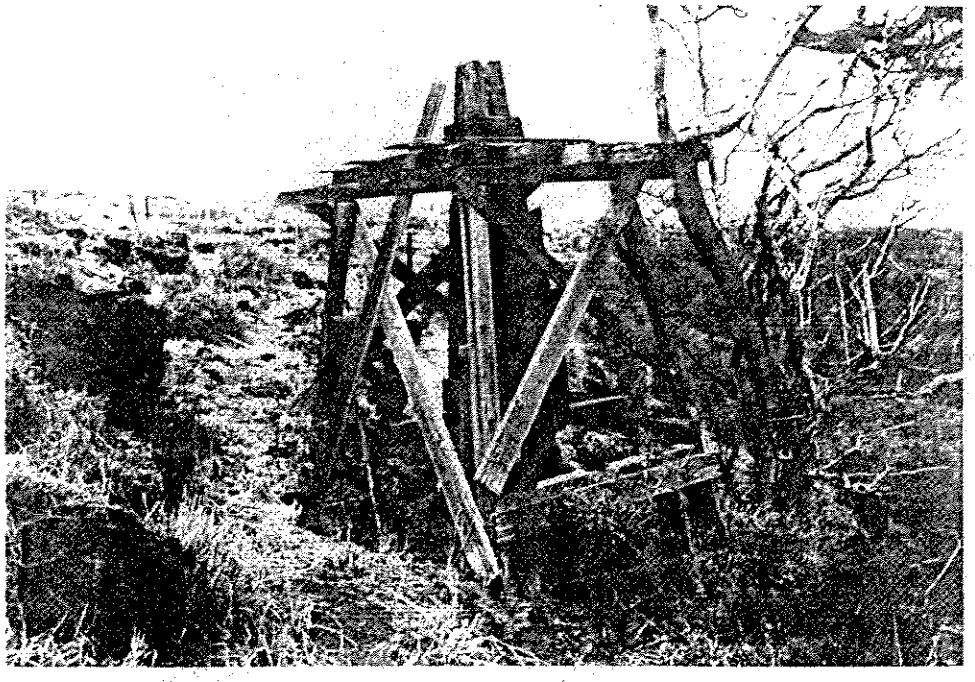
ate site 50-60-01-1617, Test Unit 1, View Northeast



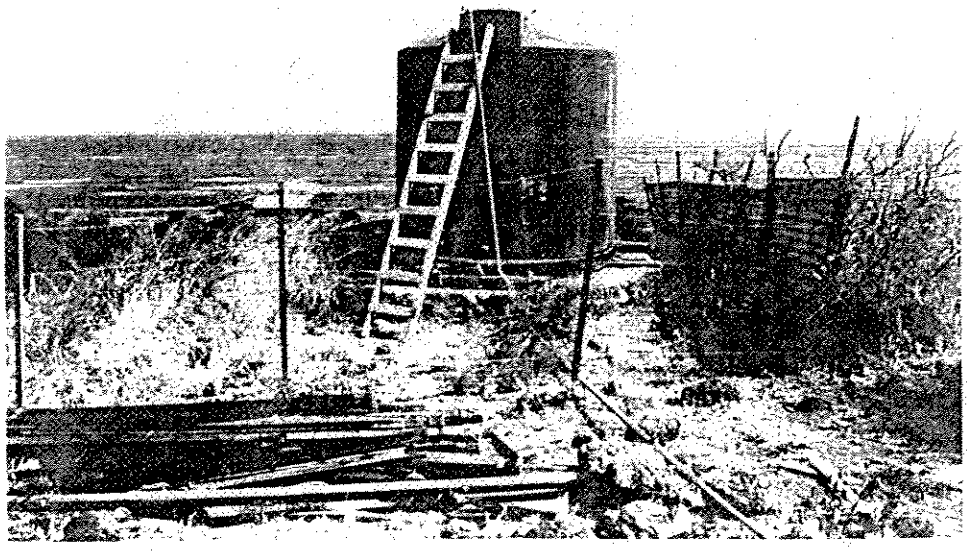
ate site 50-60-01-1618 Reservoir Feature A. View Northeast

State site 50-60-01-1618 Feature B Water trough, View East

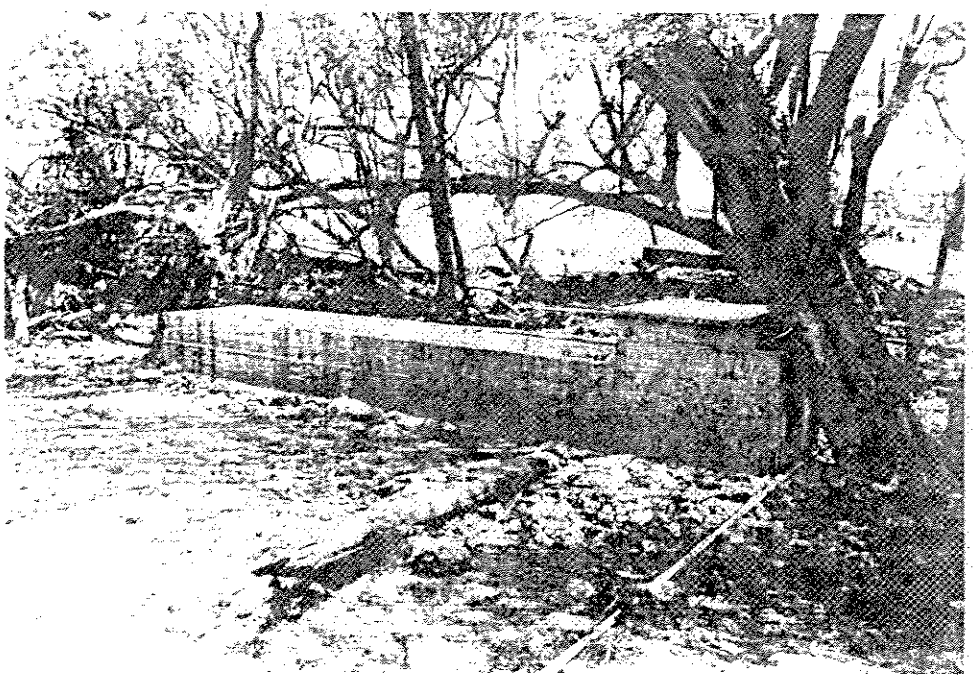
State Site 50-60-01-1618 Feature C Water well, View West



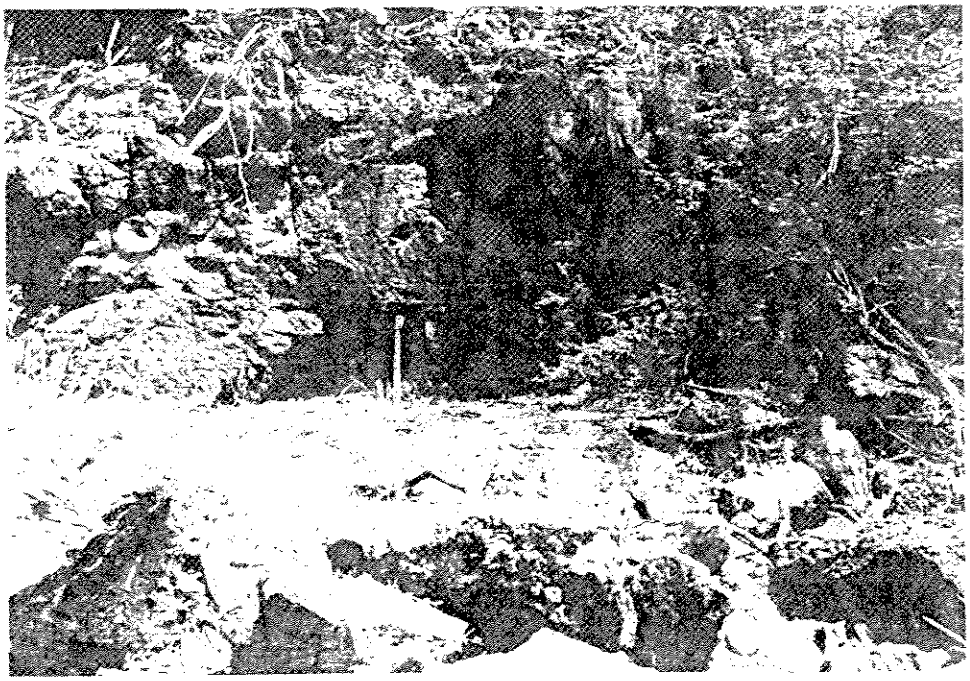
ate site 50-60-01-1618 Feature D Windmill base, View East



ate site 50-60-01-1618 Feature E Water tank, View South

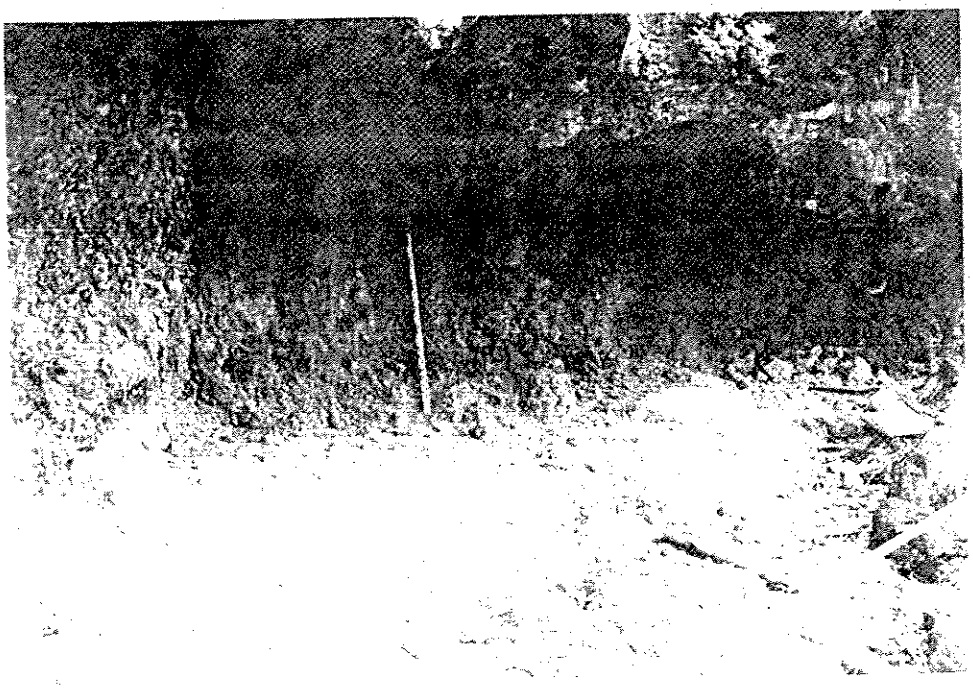


State site 60-60-01-1618 Feature F Water trough, View West

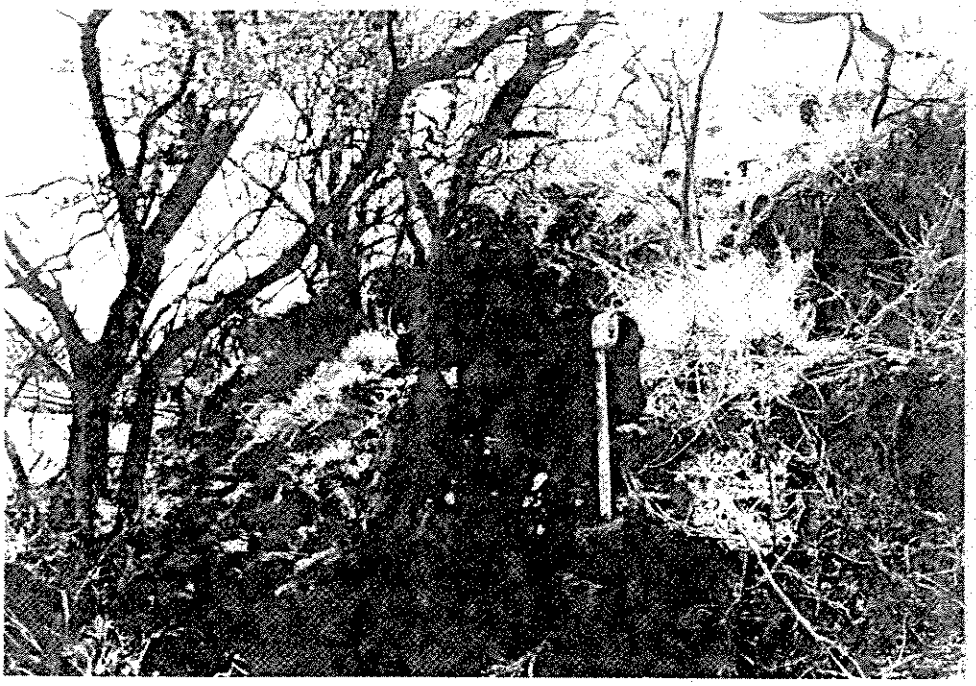


State site 50-60-01-1619 Shrine, View North

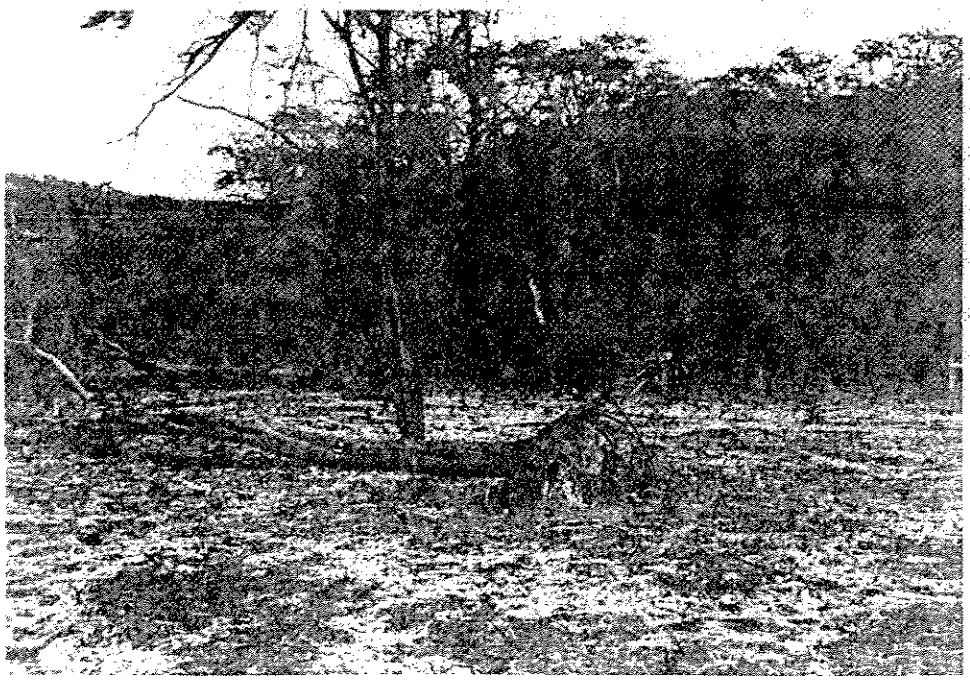
State site 50-60-01-1620 Overhang shelter, View Northeast



State site 50-60-01-1621 Overhang shelter, View Northeast



State site 50-60-01-1622 Cairn, View West



Overturned tree, source for soil sample (Acc. # C-1)

§13-2-12 Limited (L) subzone. (a) The objective of this subzone is to limit uses where natural conditions suggest constraints on human activities.

(b) The boundaries for the (L) subzone shall encompass:

(1) Land susceptible to floods and soil erosion, lands undergoing major erosion damage and requiring corrective attention by the county, state, or federal governments; and

(2) Lands necessary for the protection of the health and welfare of the public by reason of the land's susceptibility to inundation by tsunami and flooding or to volcanic activity and landslides which incorporate a general slope of 40% or more.

(c) The following uses are permitted in the (L) subzone:

(1) All permitted uses stated in the (P) subzone;

(2) Emergency warning systems or emergency telephone systems;

(3) Flood, erosion, or siltation control projects; and

(4) Growing and harvesting of forest products.

[Eff. JUN 22 1981] (Auth: HRS §183-41) (Imp: HRS §§183-41, 205-5)

§13-2-13 Resource (R) subzone. (a) The objective of this subzone is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas.

(b) The boundaries for the (R) subzone shall encompass:

(1) Lands necessary for providing future parkland and lands presently used for national, state, county, or private parks;

(2) Lands suitable for growing and harvesting of commercial timber or other forest products;

(3) Lands suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking;

(4) Offshore islands of the State of Hawaii, unless placed in a (P) or (L) subzone;

(5) Lands and territorial waters below the upper reaches of the wash of waves, usually evidenced by the edge of vegetation or by the debris left by the wash of waves, unless placed in a (P) or (L) subzone; and

§13-2-11 Protective (P) subzone. (a) The objective of this subzone is to protect valuable resources in such designated areas as restricted watersheds; marine, plant, and wildlife sanctuaries, significant historic, archaeological, geological, and volcano-logical features and sites; and other designated unique areas.

(b) The boundaries of the (P) subzone shall encompass:

(1) Lands and waters necessary for protecting watersheds, water sources, and water supplies;

(2) Lands and waters necessary for the preservation and enhancement of designated historic or archaeological sites and designated sites of unique physiographic significance;

(3) Areas necessary for preserving natural ecosystems of native plants, fish, and wildlife, particularly those which are endangered; and

(4) All land encompassing the Northwestern Hawaiian islands except Midway island.

(c) The following uses are permitted within the (P) subzone:

(1) Research, recreational, and educational use which require no physical facilities;

(2) Establishment and operation of marine, plant, and wildlife, sanctuaries and refuges, wilderness and scenic areas, including habitat improvements;

(3) Restoration or operation of significant historic and archaeological sites listed on the national or state register;

(4) Maintenance and protection of desired vegetation, including removal of dead, deteriorated and noxious plants;

(5) Programs for control of animal, plant, and marine population, to include fishing and hunting;

(6) Monitoring, observing, and measuring natural resources;

(7) Occasional use; and

(8) Governmental use not enumerated herein where public benefit outweighs any impact on the conservation district. [Eff. JUN 22 1981] (Auth: HRS §183-41) (Imp: HRS §§183-41, 205-5)