Draft Environmental Assessment

PROPOSED 1.907-ACRE EXPANSION AND IMPROVEMENTS AT PA`ANI MAI PARK, HANA, HAWAI`I

Prepared for:

County of Maui,
Department of Parks and Recreation

April 2008

MUNEKIYO HIRAGA, INC.

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Executive Summary

Project Name:	Proposed 1.907-acre Expansion and Improvements to Pa`ani Mai Park
Type of Document:	Draft Environmental Assessment
Legal Authority:	Chapter 343, Hawai`i Revised Statutes
Agency Determination:	Anticipated Finding of No Significant Impact
Applicable Environmental Assessment Review "Trigger":	Community Plan Amendment and use of County lands and funds
Location:	Maui Island Hana TMK (2)1-4-006:025 and 001 (por.)
Applicant:	County of Maui Department of Parks and Recreation 700 Hali`a Nakoa Street, Unit 2 Wailuku, Hawai`i 96793
Approving Agency:	Department of Parks and Recreation 700 Hali`a Nakoa Street, Unit 2 Wailuku, Hawai`i 96793
Consultant:	Munekiyo & Hiraga, Inc. 305 High Street, Suite 104 Wailuku, Hawai`i 96793 Contact: Mich Hirano Telephone: (808) 244-2015
Project Summary:	The Maui Department of Parks and Recreation is processing this environmental assessment for the proposed expansion of and improvements to Pa`ani Mai Park. The existing 1.039-acre park will be expanded by approximately 1.907 acres to the northwest and northeast. Proposed improvements include restroom and pavilion building, picnic areas, skateboard area and related onsite and offsite improvements. Onsite improvements include grading, asphaltic concrete parking lot

and jogging path, concrete sidewalks and ramps, expansion of playground, overflow parking area, landscape plantings and site utilities. Site utilities consist of water, wastewater, electrical, and drainage systems. The drainage system includes provisions for onsite mitigation. Offsite improvements include extension of Noenoe Place subdivision road and widening of Hana Highway along the expansion area.

Preface

The County of Maui, Department of Parks and Recreation (DPR) proposes to expand Pa`ani Mai Park by approximately 1.907 acres to the northwest and northeast. The existing 1.039-acre park site, identified by TMK (2) 1-4-006:025 (Parcel 25), is located on Hana Highway approximately 1,700 feet southeast of the Uakea Road intersection. The expansion area is identified by TMK (2) 1-4-006:001 (por.) (Parcel 1).

In order to implement the project, a Community Plan Amendment (CPA) for Parcel 1 from "M-F, Multi-Family" use to "PK, Park" use will be required. Additionally, Parcels 1 and 25 will require a State Land Use District Boundary Amendment from "Agricultural" to "Urban, and Change in Zoning from "Interim" to "PK-2, Park". The project is also located within the County of Maui's Special Management Area. Further, the project will also involve the use of County lands and funds. The CPA and use of County lands and funds are triggers for Chapter 343, Hawai`i Revised Statutes (HRS). As such, an Environmental Assessment (EA) has been prepared pursuant to Chapter 343, HRS, and Chapter 200 of Title 11, Administrative Rules, Environmental Impact Statement Rules. The EA documents the project's technical characteristics and environmental impacts, and advance findings and conclusions relative to the significance of the project.

I. PROJECT OVERVIEW

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A. PROJECT BACKGROUND

The County of Maui, Department of Parks and Recreation (DPR) proposes to expand Pa`ani Mai Park by approximately 1.907 acres to the northwest and northeast. The existing 1.039-acre park site, identified by TMK (2)1-4-006:025 (Parcel 25), is located on Hana Highway approximately 1,700 feet southeast of the Uakea Road intersection. Parcel 25 is owned by the County of Maui, Department of Parks and Recreation (DPR). The expansion includes the addition and development of 1.907 acres of adjacent land currently owned by Hana Ranch Partners, LLC. The expanded park area, identified by TMK (2)1-4-006:001(por.) (Parcel 1) will be dedicated to the County of Maui. See **Figure 1** and **Figure 2**. The existing park property is designated PK, Park by the Hana Community Plan land use map and is County-zoned Interim. The proposed expansion property is designated MF, Multi-Family by the Hana Community Plan Land Use Map and is County-zoned Interim.

The lands surrounding Pa`ani Mai Park are designated for agricultural and urban uses.

B. EXISTING CONDITIONS

Improvements on the existing grassed and fenced 1.039-acre park site include a comfort station, driveway apron, walkways, grassed play area, and playground equipment. See **Figure 3**. Based on review of the County of Maui Kivanet land summary, a certificate of occupancy was issued for the comfort station located in the existing park site in March 2000. No violations were recorded on the Kivanet system for Parcel 25.

The 1.907-acre expansion area is undeveloped and vacant land which was formerly used by Hana Ranch for cattle grazing.

C. PROPOSED ACTIONS

Having found the existing 1.039-acre neighborhood park to have limited facilities and space, the DPR proposes to expand and improve Pa`ani Mai Park to provide additional recreational facilities for the Hana area. Towards meeting this objective, proposed improvements on the 1.907-acre expansion area will include a restroom and pavilion building, parking lot, picnic

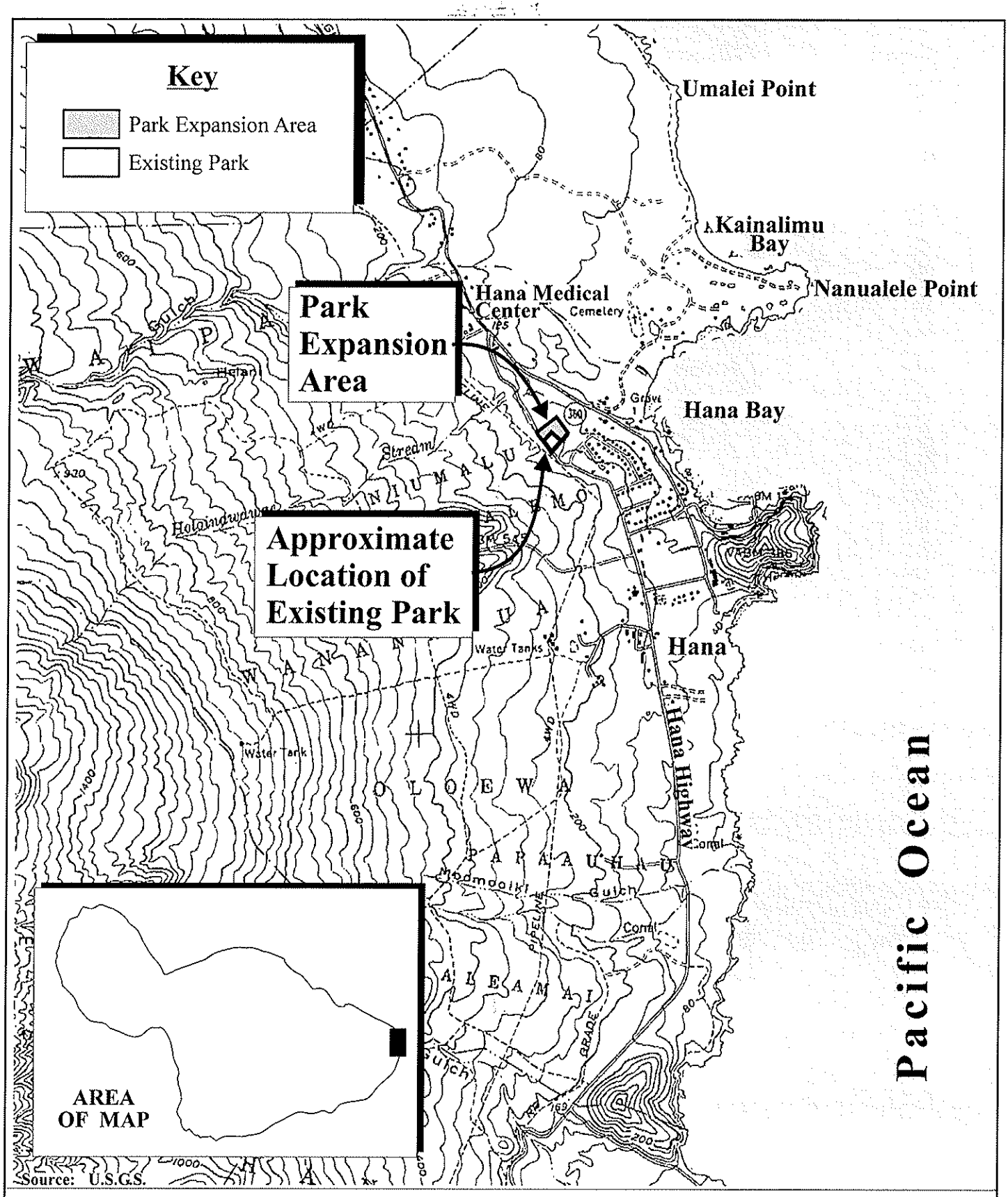


Figure 1 Proposed Pa`ani Mai Park Expansion

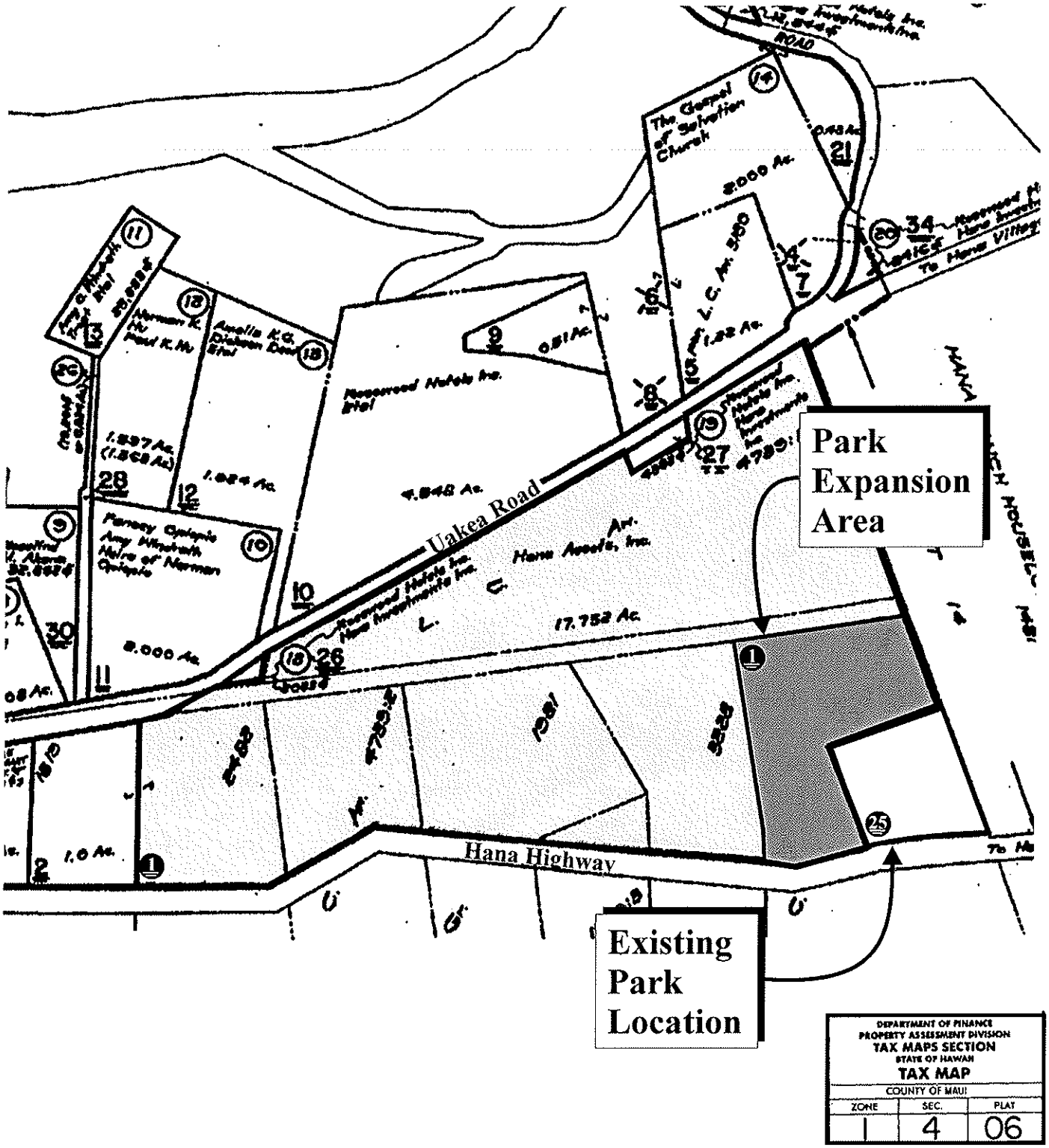
Regional Location Map

0 1000 Feet
500 2000

Prepared for: County of Maui, Department of Parks and Recreation

MUNEKIYO & HIRAGA, INC.

HHA\PaaniMai 1060\regional



Source: Realty Atlas

Figure 2 Proposed Pa`ani Mai Park Expansion

Project Site Location Map

NOT TO SCALE

Prepared for: County of Maui, Department of Parks and Recreation

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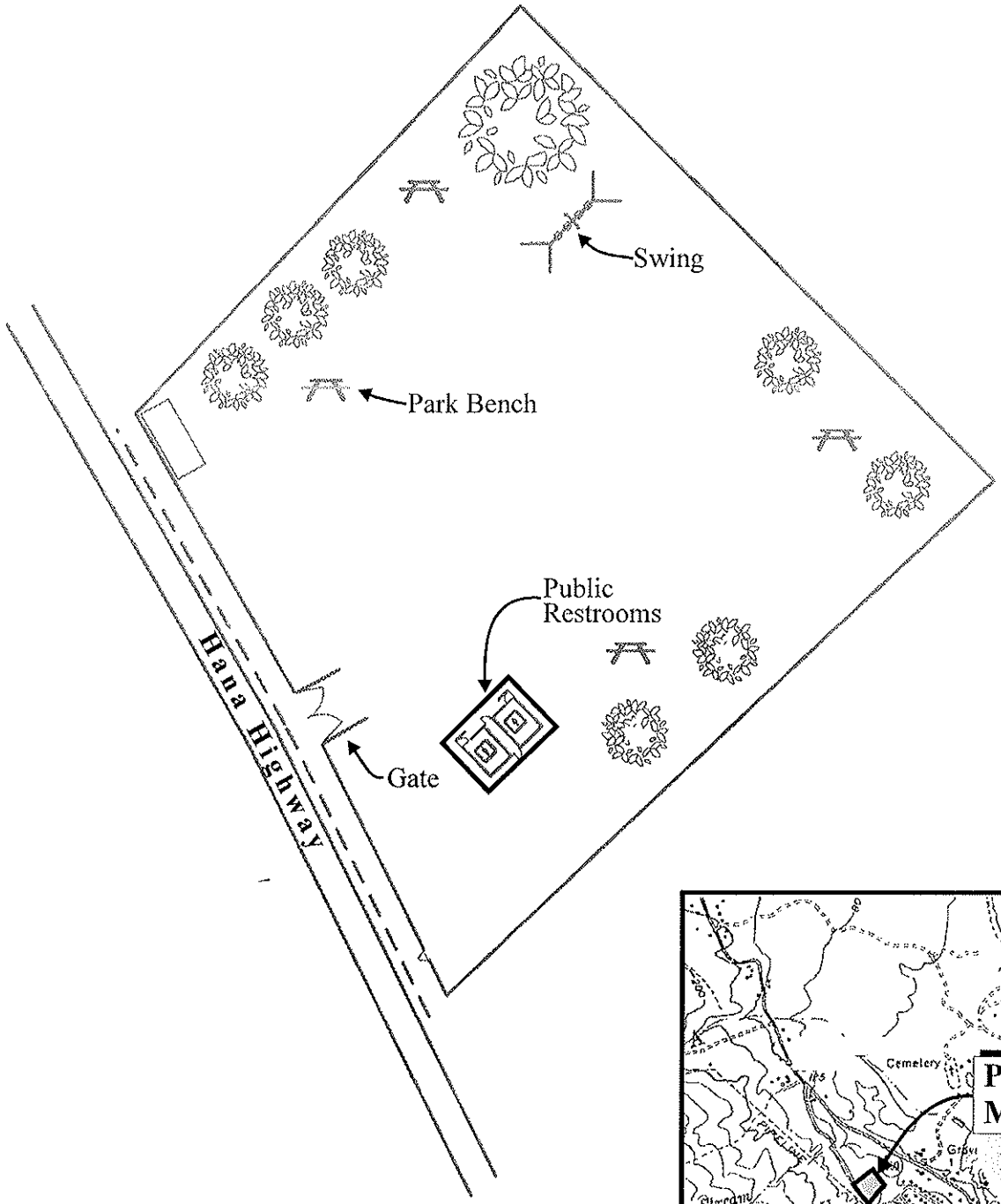

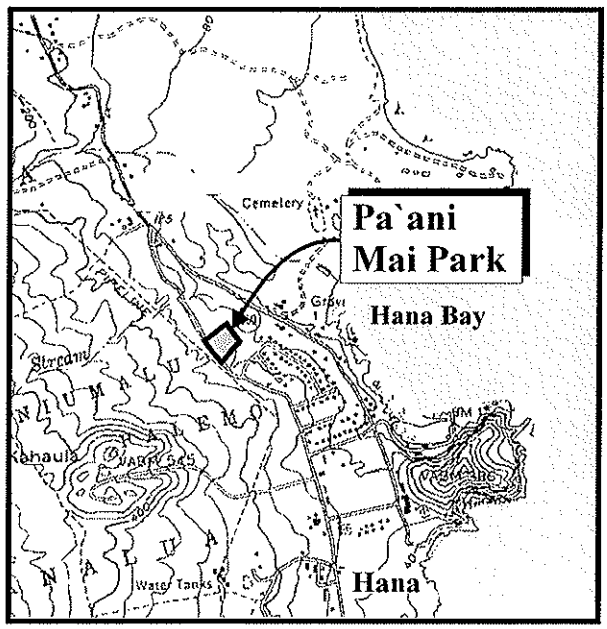

Source: Maui County Website

Figure 3 Proposed Pa`ani Mai Park Expansion

NOT TO SCALE

Existing Project Site

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HHA\Pa`aniMai\ExistingProjectSite

areas, skateboard area, pathways, play area expansion, and related onsite and offsite improvements. See **Figure 4** and **Figure 5**. Specific site improvements within the expansion area include grading, asphaltic concrete parking lot and jogging path, concrete sidewalks and ramps, expansion of playground, overflow parking area, landscaping, and site utilities. Site utilities consist of water, wastewater, electrical, and drainage systems. The drainage system improvements include swales, drain inlets, catch basins, manholes, drain pipes and subsurface detention/retention basins. Offsite improvements include an extension of the adjacent Noenoe Place subdivision road, to provide access to the northeastern portion of the park expansion and widening of Hana Highway to provide for a 5-foot shoulder along the expansion area.

The proposed project is intended to improve the Pa`ani Mai neighborhood park to provide additional recreational facilities for the Hana area and its community.

D. REGULATORY CONTEXT

1. Special Management Area (SMA)

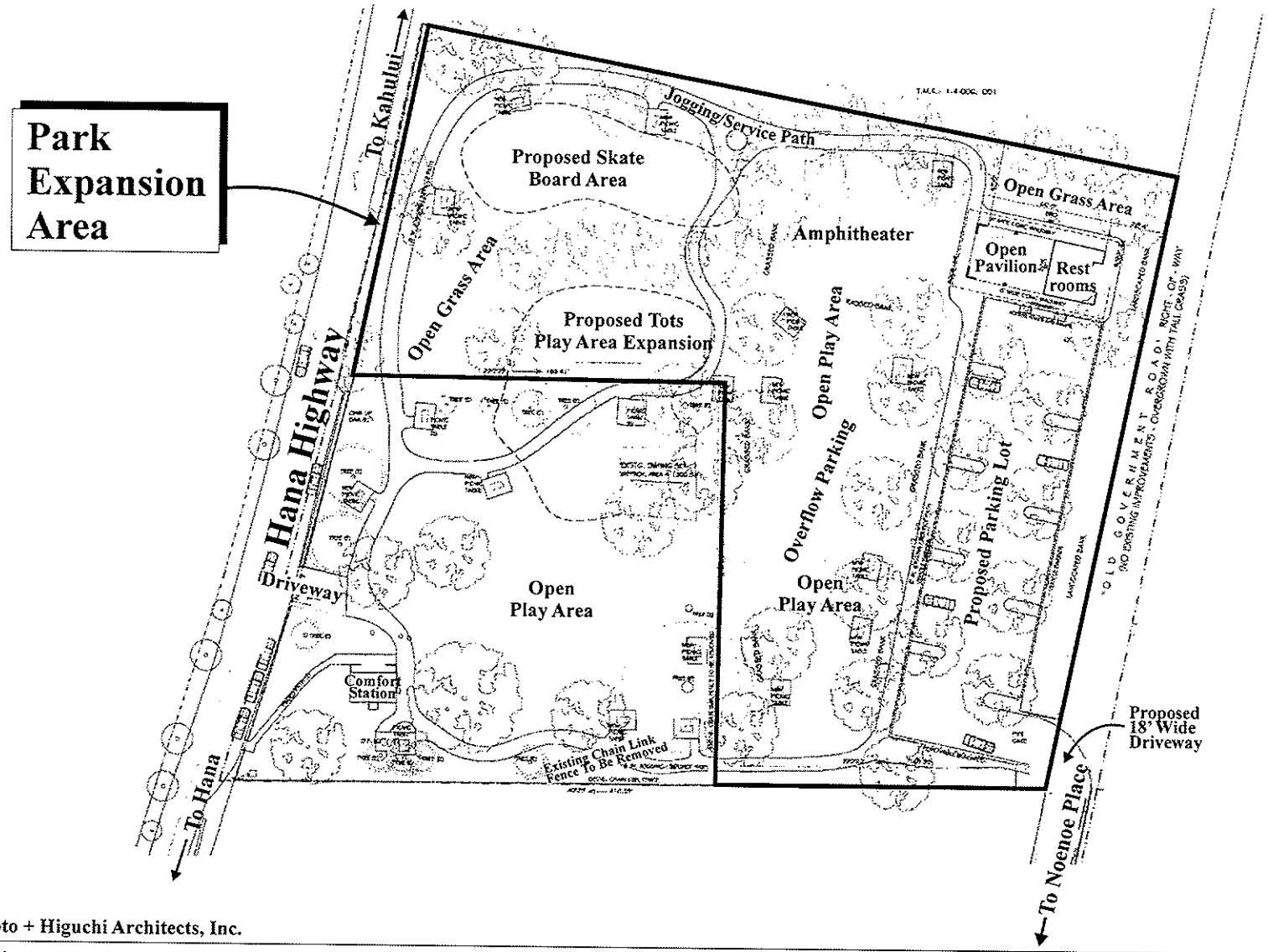
The subject property is located within the limits of the County of Maui's Special Management Area (SMA). Special Management Areas are a component of the State's Coastal Zone Management Program. The SMA in the vicinity of the project site is defined by Hana Highway. Regulatory control and authority over the SMA region of Maui are carried out pursuant to Hawai`i Revised Statutes (HRS), Chapter 205A, and the SMA Rules of the Maui Planning Commission.

Accordingly, an application for a SMA Use Permit has been prepared for review and action by the Hana Advisory Committee and Maui Planning Commission.

2. Land Use Entitlements

In order for project implementation, a State Land Use District Boundary Amendment, Community Plan Amendment, and Change in Zoning will be required. The aforementioned land use entitlements will be initiated by the Maui County Council.

The Maui County Council, on February 22, 2007, transmitted bills for ordinances to the Council Land Use Committee. The Council Land Use Committee, in turn, will forward the draft ordinances to the Maui Planning Commission for review and comment. Upon receipt of the Planning Commission's recommendations, the



Source: Hiyakumoto + Higuchi Architects, Inc.

Figure 4

Proposed Pa`ani Mai Park Expansion

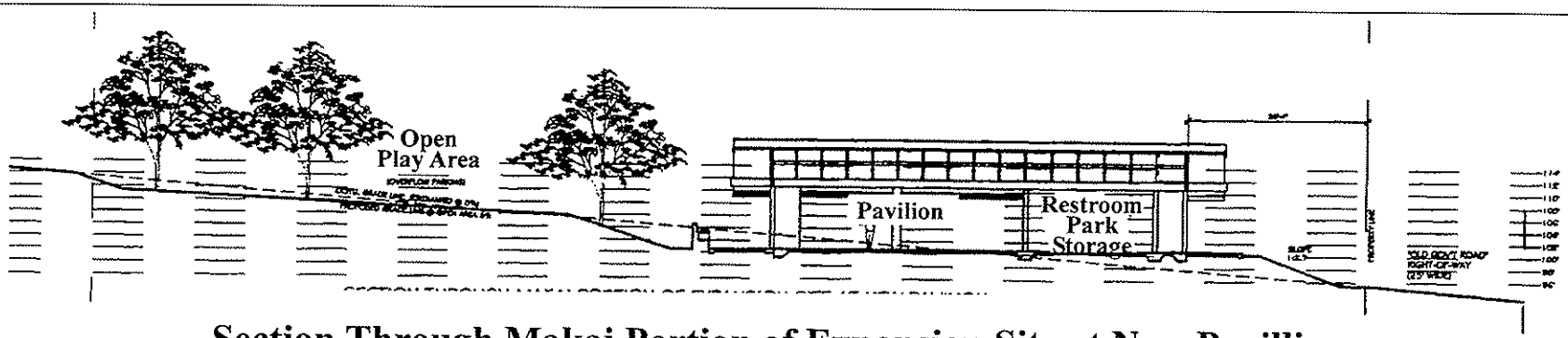
Conceptual Master Plan

NOT TO SCALE

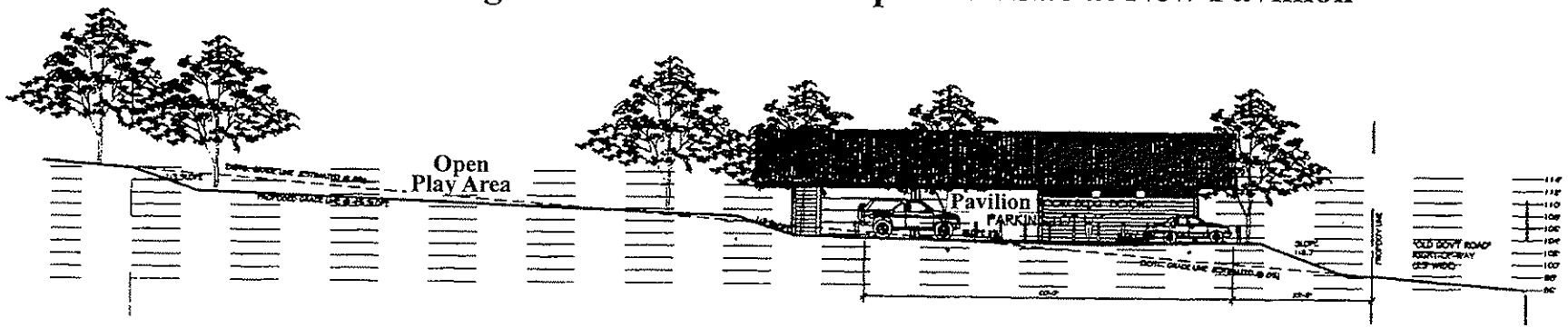
Prepared for: County of Maui, Department of Parks and Recreation

MUNEKIYO & HIRAGA, INC.

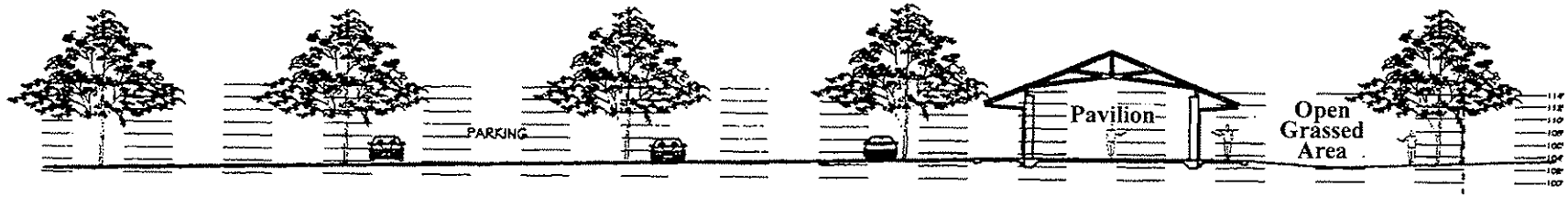
HHA\Pa`aniMai\ConceptualMasterPlan



Section Through Makai Portion of Expansion Site at New Pavillion



Section Through Makai Portion of Expansion Site at New Parking Lot



Section Through New Parking Lot 4 Pavilion at Expansion Site

Source: Hiyakumoto + Higuchi Architects, Inc.

Figure 5

Proposed Pa`ani Mai Park Expansion

Conceptual Master Plan Site Sections

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HHA\Pa`aniMai\ConceptualMasterPlan-SiteSections

Council Land Use Committee will further deliberate the proposals and advance the committee's recommendations to the full Council. The Council will then formally take action on the bills for ordinances.

a. State Land Use District Boundary Amendment

A State Land Use District Boundary Amendment from the Agricultural district to the Urban district for both Parcels 1 and 25 will be initiated by the Maui County Council as part of the entitlement application to bring consistency with the State Land Use District Boundaries for the expansion and improvements to Pa`ani Mai Park. Criteria considered in the reclassification of lands are set forth in the State Land Use Commission Rules (Chapter 15-15, Hawai`i Administrative Rules (HAR)). Assessment of the reclassification pursuant to Chapter 15-15, HAR is provided in Chapter III, Section A.

b. Community Plan Amendment

The existing park (Parcel 25) is designated "PK, Park" by the Hana Community Plan. The expansion area (Parcel 1) is designated for "MF, Multi-Family" use. The proposed improvements to the existing park are consistent with the underlying "Park" designation in the Hana Community Plan map. The Maui County Council will be processing a Council-initiated Community Plan Amendment for Parcel 1 to change the use from "MF, Multi-Family" to "PK, Park" for consistency and conformity with the land use designation.

c. Change in Zoning

In order to maintain consistency and conformity with land use designations within the SMA, a Council-initiated change-in-zoning (CIZ) from the current designation of "Interim" (Parcels 1 and 25) to "PK-2, Park" will be processed by the Maui County Council.

3. Chapter 343, Hawai`i Revised Statutes

The proposed project will involve the commitment of County land and funds and an amendment to the Hana Community Plan which are triggers to Chapter 343, Hawai`i Revised Statutes. As such, an environmental assessment is being prepared pursuant

to Chapter 200 of Title 11, Department of Health Administrative Rules, Environmental Impact Statement Rules. This document (prepared for the approving agency, the County of Maui, Department of Parks and Recreation) addresses the project's technical characteristics, environmental impacts and alternatives, and advances findings and conclusions relative to the significance of the proposed action.

E. PROJECT COSTS AND SCHEDULE

The estimated construction cost for the proposed improvements is approximately $2,400,000.00. Construction of the proposed improvements will commence upon the receipt of all necessary regulatory permits and approvals and upon project funding.

II. DESCRIPTION OF EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION MEASURES

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A. PHYSICAL ENVIRONMENT

1. Surrounding Land Uses

a. Existing Conditions

The existing project site encompasses an area of 1.039 acres on the makai side of Hana Highway, approximately 1,700 feet southeast of the Uakea Road intersection. Refer to **Figure 3**. The expansion includes the addition and development of 1.907 acres of fallow agricultural land to the northwest and northeast. Hana Highway adjoins the westerly side of the site, undeveloped land owned by the Hana Ranch Partners, LLC adjoins the northerly side of the site, and the Old Government Road right-of-way adjoins the easterly side of the site.

There are developed properties beyond the immediate properties to the south and north of the site. Properties on the makai side of the highway include the Hana Ranch Houselots Subdivision to the southeast and the County fire station, police station, and County Public Works baseyard to the northwest.

b. Potential Impacts and Mitigation Measures

The proposed expansion and improvements to Pa`ani Mai Park are not anticipated to result in adverse impacts to surrounding land uses. To the southeast of Pa`ani Mai Park are single-family residences. The proposed expansion and improvements to the park would provide an amenity to these single-family residences. Direct access to the park facilities from the subdivision is proposed by extending Noenoe Place. The proposed project will improve the existing neighborhood park with more facilities to better service the Hana area and its community.

2. Climate

a. Existing Conditions

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

Average temperatures in Hana range between 63 degrees and 84 degrees Fahrenheit. August is historically the warmest month, while January and February are the coolest.

Rainfall at Hana is highly seasonal, with most precipitation occurring between October and April when winter storms hit the area. This region receives most of its rainfall in late afternoon and early evening, after seabreezes take moisture upslope during the day. Precipitation data collected in the region indicate the project site receives approximately 77 inches of rain a year.

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

b. Potential Impacts and Mitigation Measures

The proposed expansion and improvements to Pa`ani Mai Park are not anticipated to result in adverse impacts to local microclimates as it relates to wind and precipitation patterns.

3. Topography and Soils

a. Existing Conditions

The U.S. Department of Agriculture Soil Conservation Service designates

various associations on the island of Maui and classifies the soil in its *Soil Survey of Islands of Kaua`i, O`ahu, Maui, Molokai, and Lana`i.* The project site is located within the Hana-Makaalae-Kailua association. See **Figure 6**. This area contains moderately deep and deep and gently sloping well-drained soils. The texture ranges from moderately fine to fine subsoils.

According to the Soil Conservation Service, the soil type specific to the project site is Hana silty clay loam at 3 to 15 percent slopes (HKNC). See **Figure 7**. The Hana series consist of well-drained, moderately deep variant soils on the intermediate uplands of East Maui. The survey characterizes the soil as having a thin, dark brown surface layer with moderate permeability. In this series the runoff is slow to medium and the erosion hazard is slight to moderate (U.S. Department of Agriculture Soil Conservation Service).

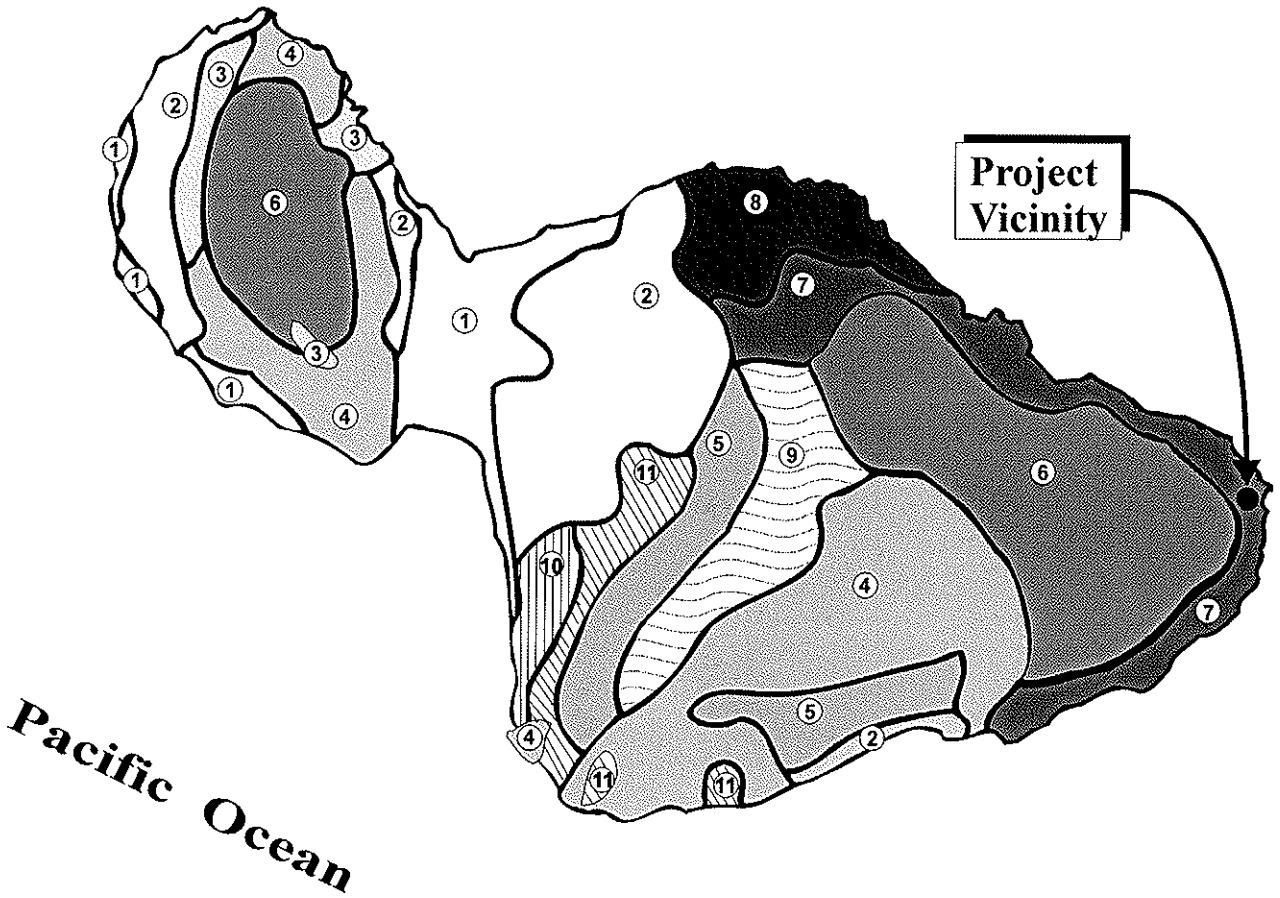
Elevations of the site range from about 90 feet to 130 feet above mean sea level. The site generally slopes in a southwesterly to northeasterly direction. The steepest slopes are at the northerly end of the site with slopes that range from about 10 to 12 percent and at the southeasterly portion of the site with slopes that range from 20 to 40 percent. The central portion of the site has moderate slopes that range from about 5 to 10 percent. The flattest areas are on the existing park site with slopes that range from about 2 to 5 percent.

b. Potential Impacts and Mitigation Measures

The proposed development of Pa`ani Mai Park is not anticipated to adversely impact topography and soils. The northeastern part of the site will be graded to create a level area for the parking lot, restroom, and pavilion area. The northwestern part of the site will be developed in accordance with the natural topography features to minimize site grading. Grading and excavation activities associated with the improvements will be completed in accordance with Chapter 20.08, Soil Erosion and Sedimentation Control of the Maui County Code and the permit requirements of the State of Hawai`i, Department of Health and the National Pollutant Discharge Elimination System (NPDES). Adverse impacts to topography and soil conditions in the vicinity of the project site are not anticipated as a result of project implementation.

LEGEND

- ① Pulehu-Ewa-Jaucas association
- ② Waiakoa-Keahua-Molokai association
- ③ Honolua-Olelo association
- ④ Rock land-Rough mountainous land association
- ⑤ Puu Pa-Kula-Pane association
- ⑥ Hydrandepts-Tropaquods association
- ⑦ Hana-Makaalae-Kailua association
- ⑧ Pauwela-Haiku association
- ⑨ Laumaia-Kaipoipoi-Olinda association
- ⑩ Keawakapu-Makena association
- ⑪ Kamaole-Oanapuka association



Map Source: U.S. Department of Agriculture, Soil Conservation Service

Figure 6 Proposed Pa`ani Mai Park Expansion

Soil Association Map

NOT TO SCALE

Prepared for: County of Maui, Dept. of Parks and Recreation

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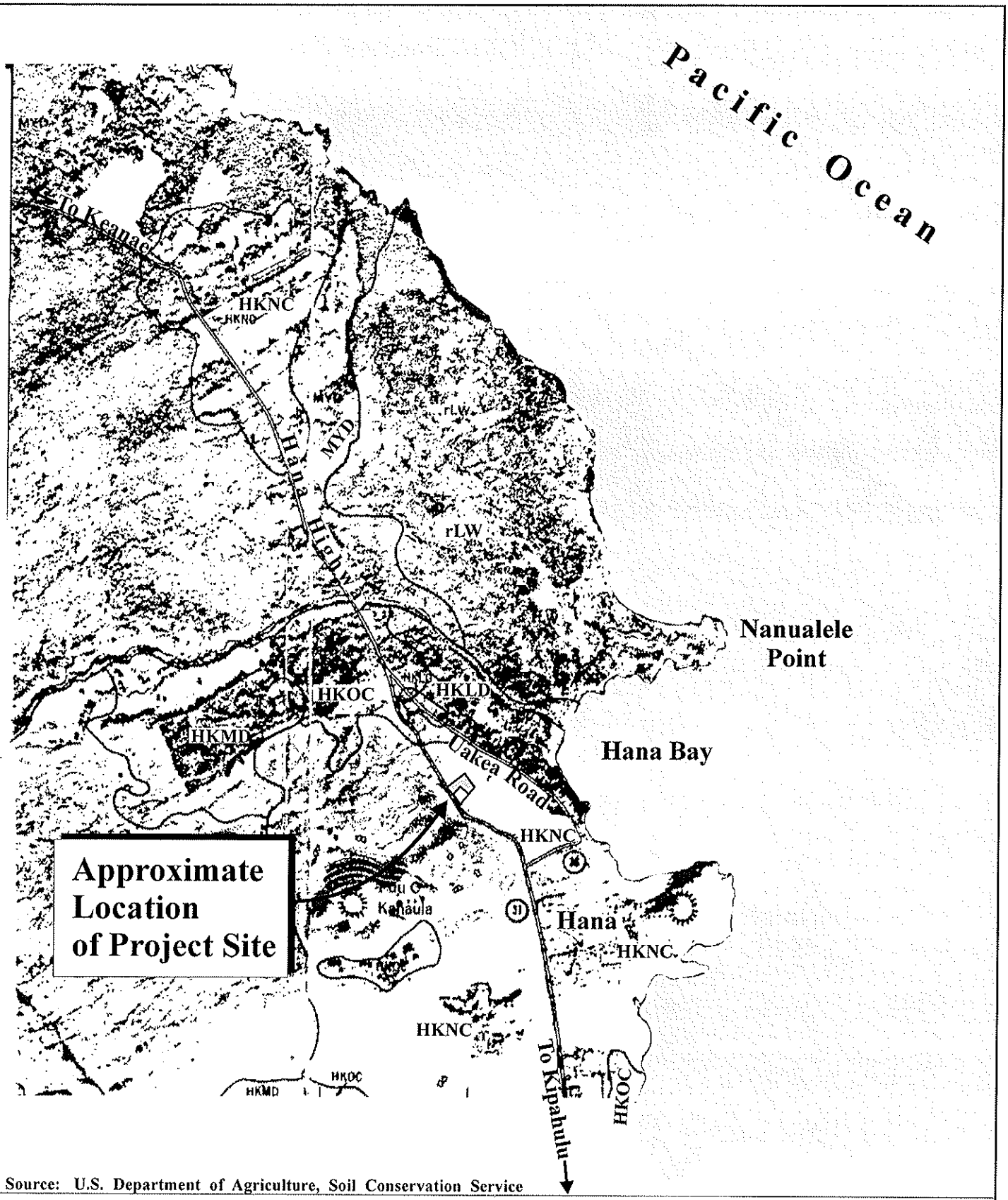
HHA/PaaniMai 1060/soils



Source: U.S. Department of Agriculture, Soil Conservation Service

Figure 7 Proposed Pa`ani Mai Park Expansion

Soil Classification Map

1000 Feet
0 500 2000

Prepared for: County of Maui, Dept. of Parks and Recreation

MUNEKIYO & HIRAGA, INC.

HHA/PaaniMai 1060/soil class

4. ALISH and Land Study Bureau Parameters

a. Existing Conditions

The State Department of Agriculture has established three (3) categories of Agricultural Lands of Importance to the State of Hawai`i (ALISH). "Prime" lands are those lands which possess the soil quality, growing season, and moisture supply needed to produce high yields of crops economically and when treated and managed according to modern farming techniques. "Unique" lands have similar crop specific characteristics, while lands rated "Other" are not classified as "Prime" or "Unique", but are of Statewide or local agricultural importance. Lands not rated "Prime", "Unique" or "Other", are "Unclassified". According to the ALISH map, the lands underlying the project site are designated "Other". See **Figure 8**.

The Land Study Bureau classifies lands with a productivity rating of "A" through "E", with "A" reflecting lands with the highest productivity and "E" the lowest. The lands underlying the project site have an overall productivity rating of "B" and reflects land types which are moderately suited for agricultural uses. According to the Land Study Bureau's Detailed Land Classification Map, the project site has been rated C16. The land type, C16 represents deep, nonstony to slightly stony, well-drained, fine-textured soils with slopes ranging from 11 to 20 percent and elevations ranging from sea level to 800 feet.

b. Potential Impacts and Mitigation Measures

The project site has a current State Land Use District Boundary designation of "Agricultural", zoned "Interim", and is also designated for Multi-Family (Parcel 1) and Park (Parcel 25) by the Hana Community Plan. The proposed action will involve the use of land which is no longer utilized for agricultural purposes. The Agricultural Lands of Importance to the State of Hawai`i (ALISH) map has classified the project area as "Other" lands. The use of this land for the proposed project is not anticipated to affect the inventory of lands available for agricultural cultivation, nor is it expected to affect the inventory of land available for diversified agricultural use.

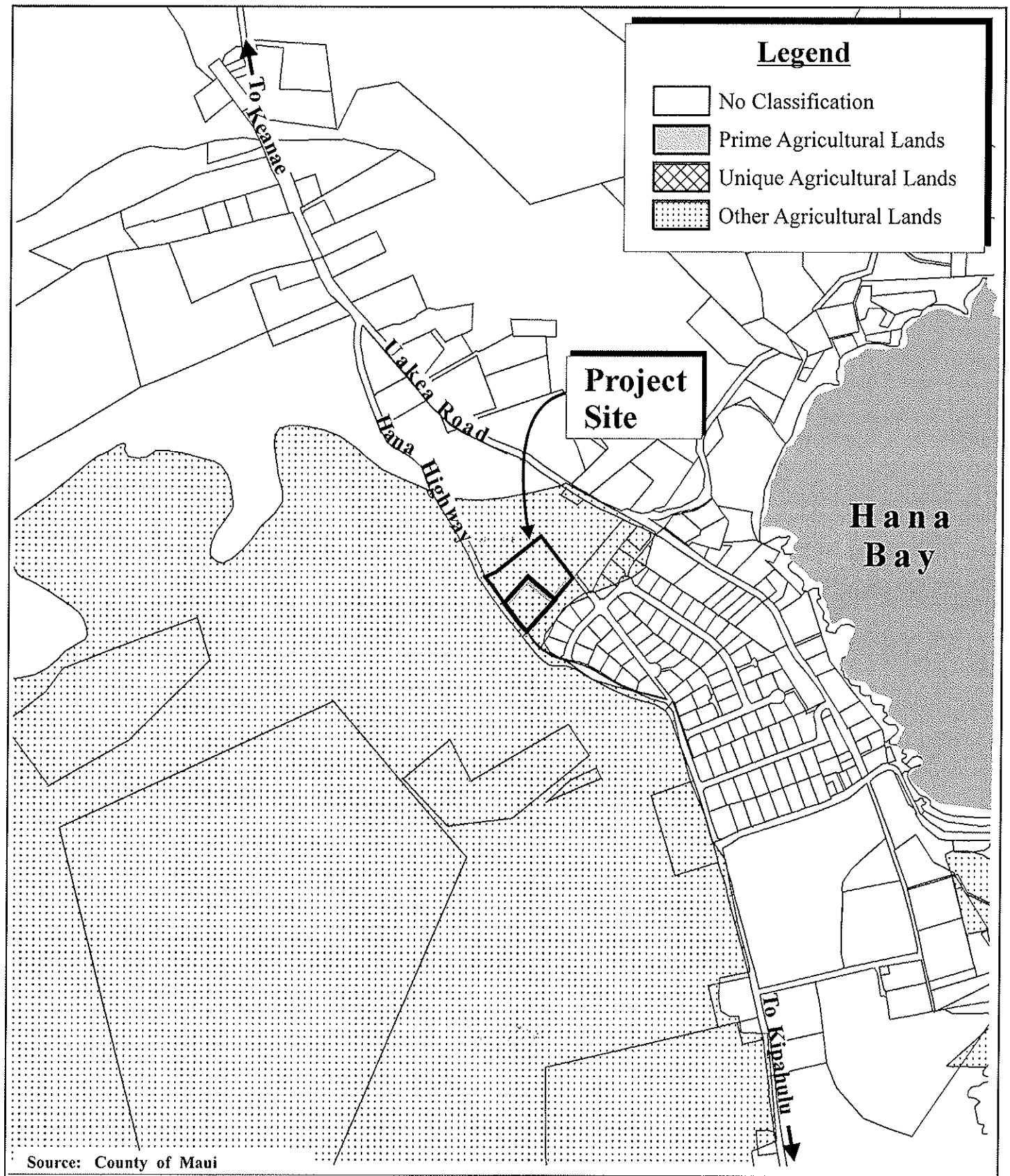


Figure 8 Proposed Pa`ani Mai Park Expansion

Agricultural Lands of Importance to the State of Hawai`i

NOT TO SCALE

Prepared for: County of Maui, Dept. of Parks and Recreation

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HHA/PaaniMai 1060/alish

5. Flood and Coastal Hazards

a. Existing Conditions

The Flood Insurance Rate Map (FIRM) for this region indicates that the subject site is located in Zone C, areas of minimal flooding. See **Figure 9**. In addition, the subject property is located beyond the reaches of the tsunami inundation zone.

b. Potential Impacts and Mitigation Measures

The subject property is located within Zone C, areas of minimal flooding, and located beyond the reaches of the tsunami inundation zone. Runoff from the project site will be channeled to the park drainage system. The expansion of the park is not anticipated to adversely impact flood and coastal conditions.

6. Streams and Wetlands

a. Existing Conditions

Holoinawawae Stream lies approximately 500 feet to the north of the site. There are no other water courses or wetlands in the immediate vicinity of the project site.

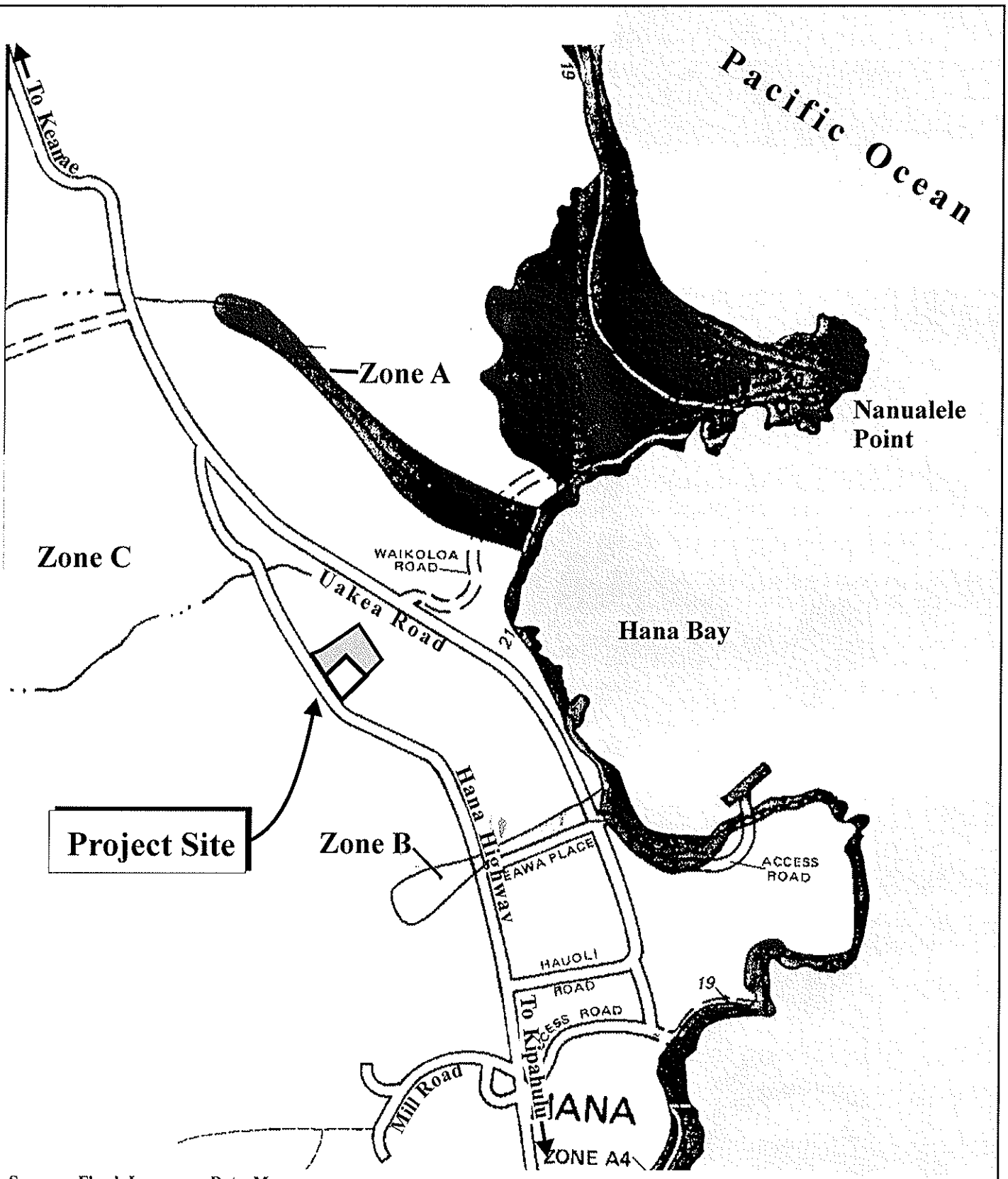
b. Potential Impacts and Mitigation Measures

Best Management Practices (BMPs) will be utilized during grading activities in order to prevent adverse impacts to downstream properties. There are no adverse impacts to streams or drainageways anticipated from the proposed action.

7. Flora, Fauna and Avifauna

a. Existing Conditions

The existing park site is landscaped and grassed. There are no rare, threatened, or endangered species within the site. The 1.907-acre expansion area was formerly used for cattle grazing by Hana Ranch Partners, LLC and is currently undeveloped fallow agricultural land. Similarly, there are no known rare, threatened, or endangered species within the park expansion area.



Source: Flood Insurance Rate Map

Figure 9 Proposed Pa`ani Mai Park Expansion

Flood Insurance Rate Map

0 500 Feet
250 1000

Prepared for: County of Maui, Dept. of Parks and Recreation

MUNEKIYO & HIRAGA, INC.

HHA/PaaniMai 1060/fim

Mammal species common to the area include mice, rats, cats, dogs, bufo toads and mongoose. Avifauna typical to the area include mynah, spotted doves, house sparrows, finches and cardinals.

There are no identified rare, threatened or endangered species located on the project site.

b. Potential Impacts and Mitigation Measures

There are no identified rare, threatened or endangered species located on the project site. No impacts to local flora, fauna or avifauna are anticipated as a result of the proposed project.

8. Archaeological Resources

a. Existing Conditions

In September of 2007, Xamanek Researches, LLC conducted an archaeological inventory survey of the proposed expansion area. See **Appendix "A"**. The inventory survey report, dated December 7, 2007, notes the discovery of three (3) new and one (1) previously identified archaeological sites in the project expansion area as well as outside its boundaries. The three (3) new sites consist of the remnants of a terrace and multiple earthen and rock mounds. The previously identified site consists of a portion of the Hana Belt Road. According to the report, the site consisting of a remnant of a terrace appears to have been heavily impacted during the post-contact era possibly for commercial agriculture, ranching and/or other purposes. The report interprets the site as a possible pre-contact habitation site remnant. Further, the portion of the Hana Belt Road consists of a section of dry-laid rock retaining wall, which supports the Hana Belt Road.

The sites have been assessed for significance based upon broad criteria established for the State and National Register of Historic Places. These criteria are as follows:

Criterion A: Site is associated with events that have made an important contribution to the broad patterns of our history.

Criterion B: Site is associated with the lives of persons important in our

past.

Criterion C: Site embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; or possesses high artistic value.

Criterion D: Site has yielded, or is likely to yield, important information for research on prehistory or history.

Criterion E: Site has an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events, or oral accounts.

The site, consisting of a remnant of a terrace, qualifies for significance under Criterion D. The site, consisting of a portion of Hana Belt Road, may qualify for significance under multiple criteria: Criterion A, B, C, D, and E.

b. Potential Impacts and Mitigation Measures

Recommendations on the treatment or mitigation of the historic features were noted in the Archaeological Inventory Survey Report. According to the report, the site consisting of a possible pre-contact habitation area is considered to be thoroughly documented and no further work is recommended at this time. The site is not recommended for preservation, as it has been heavily impacted by post-contact earthmoving activities. Further, as noted in the report, the site consisting of a portion of Hana Belt Road, is recommended for passive, "as is" preservation, if possible. However, the report also notes that in the event any section of the portion of the site is scheduled to be impacted during development activities, precautionary monitoring with data recovery recordation is recommended.

Archaeological monitoring will commence upon all subsurface earthmoving activities. An Archaeological Monitoring Plan has been prepared by Xamanek Researches, LLC. See **Appendix "A-1"**. Should human osteological material or other cultural remains be uncovered during construction activities, applicable procedures to ensure compliance with

Chapter 6E, Hawai`i Revised Statutes (HRS), will be followed.

9. Cultural Impact Assessment

a. Historical Overview

The subject property is located within the Niumalu ahupua'a, part of the larger moku or district of Hana, which extends from Ko'olau to Kaupo. The Hana moku was noted for bountiful production of upland taro, bananas, yams, wakue, olana and 'awa (Handy, 1940). The Hana district is also distinguished by its rich cultural history. Hana's closeness to the island of Hawai`i permitted frequent interaction between the two islands in times of war and peace. In pre-contact times, Hana was a desirable district to reside in due to its abundant agricultural resources and numerous coastal fishponds. The Hana district was also noted for its fine surfing, excellent supply of natural woods (used for crafting scaffolds and ladders) and having the best round, smooth stones used in slingshots.

Hana was also called "a land beloved by chiefs because of the fortress of Ka'uiki and the ease of living in that place". Ka'uiki, a *pu'u* located on the southern edge of Hana Bay, had a summit at a height of approximately 400 feet and was covered with a natural vegetative mat that provided the chiefs and chiefesses with a comfortable sleeping environment. Fishponds immediately below Ka'uiki provided unlimited fish supplies, while large quantities of awa root delighted the chiefs. Pi`ilani, who built the great road around Maui, was said to have dwelt at Ka'uiki.

Notable figures of old Hawai`i were known to have resided at Ka'uiki, including Kaahumanu, who was born and raised in the Kawaipapa ahupua'a. According to Handy, Pi`ilani and Kihapi`ilani resided at Ka'uiki. Pi`ilani was the older brother of Kihapi`ilani, who built the great road around Maui. Kihapi`ilani stayed at Ka'uiki with Pi`ilani until he apparently grew tired of his brother's continued insults. With the aid of a fleet of canoes sent by Umi from the island of Hawai`i, Kihapi`ilani defeated Pi`ilani and later extended his rule throughout the island of Maui.

As chief of Maui, Kihapi`ilani built the "Long Road", or Alaloa around the island of Maui, around 1516 (Handy, 1940). The trail was paved with flat hard beach stones, bordered in the open country by large boulders sunk into

the ground. Maui ali'i organized human chains to pass shoreline stones from the coast to the trail areas. The trail was useful during times of war, with runners carrying messages along the trails for the ali'i. The trail was also used during the Makahiki by tax collectors, the priests who released land from the kapu after the ho'okupu or taxes had been received and the bearers of the symbol of Lono. (Handy, Handy, 1972). Eventually, the Maui trail would come to be known as the King's Trail, the only island trail in Hawai`i to traverse the whole island.

b. <u>Geopolitical Organization</u>

Prior to Western contact in Hawai`i, land was divided into *moku*, or districts. Hana was one (1) of the 12 moku's of Maui. Some time between A.D. 1400 and 1500, the moku's had consolidated in East and West Maui. During this time, Hana became the ruling center of East Maui which included the moku's of Ko'olau, Kipahulu and Kaupo (Beckwith 1940). Each of these was further subdivided into units called *ahupua'a.* The subject property is located in the Kawaipapa ahupua'a. Ideally, each *ahupua'a* was self-sufficient, running from *mauka*, the mountain, to *makai*, the ocean (MacKenzie). These divisions served as both cultural and settlement systems as traditional Hawaiian life was tied intimately to the land. Hunting, gathering, cultivation, and habitation took place within three (3) zones which characterized the *ahupua'a*: the *Mauka* Zone, the Agricultural Zone, and the Coastal Zone. The *Mauka* Zone provided access to a variety of trees, plants, and herbs for various needs, customs and practices. Planting of yams, sweet potato, sugar cane, taro, and other foods took place in the Agricultural Zone, where gradual slopes of land allowed terraces to be constructed for more efficient irrigation. The Coastal Zone and low-lying areas was where most of the *kauhale*, group of houses, were found, as well as temples, fishing shrines, and fishponds (Minerbi).

Western contact brought changes to the Hawaiian land system along with the introduction of private ownership of land, a concept foreign to the Native Hawaiians. A Board of Land Commissioners was established in 1845 to uphold or reject all private land claims of both foreigners and Hawaiians. The Commission adopted rules pertaining to the proof of claims, right of tenants, and commutation to the government in attempts to achieve the goal of totally partitioning undivided lands. All lands not claimed by February

1848 were to be forfeited to the government (MacKenzie).

Following the enactment of these rules, the *Mahele* division of 1848 divided all lands of Hawai`i between the king and chiefs. Two (2) years later the *Kuleana* act completed the *Mahele* process by authorizing the Land Commission to award fee simple titles to native tenants for their land. These *kuleana* parcels, also known as Land Commission Awards (LCA), were generally among the richest and most fertile in the islands and came from the king, government, or chief's land. All claims and awards were numbered and recorded in the *Mahele* Book (MacKenzie). In addition, government lands were sold as "Royal Patent Grants" or "Grants" in order to meet the increasing costs of government. These grants differed from LCAs, as it was not necessary for the recipients to obtain an award for their land from the Land Commission (Chinen).

Hana was one of the many lands received by Victoria Kamamalu. The lands, however, were not kept, but given by Kamamalu to the government, which in turn, were parceled and awarded during the Mahele. Over 11,000 acres were awarded during the Mahele throughout the Hana District as either LCAs or land grants (Cleghorn and Rogers, 1978).

c. Traditional and Customary Rights

The traditional and customary rights of native Hawaiians can be broken down into access rights, gathering rights, burial rights, and religious rights.

Access

Native Hawaiians generally share the same access rights as the general public. However, they have the unique access rights to *kuleana* parcels and between *ahupua'a*. Access to *kuleana* parcels may involve access along ancient trails or expanded access not limited to any route. Additionally, the *Kuleana* Act granted unobstructed access within the *ahupua'a* to obtain items necessary to make the *kuleana* parcel productive. Access rights between *ahupua'a* involve access along ancient or well established trails (MacKenzie).

Gathering

In terms of gathering rights, the Hawai`i Supreme Court has upheld gathering rights within an *ahupua'a* for firewood, house-timber, *aho* cord, thatch, and

ki-leaf under three (3) conditions. The tenant must physically reside within the *ahupua'a*, the right to gather can only be exercised upon undeveloped lands within the *ahupua'a,* and the right must be exercised only for the purpose of practicing native Hawaiian customs and traditions (MacKenzie).

Burial

According to traditional Hawaiian burial beliefs, following death, the *'uhane,* or spirit, must remain near the *na iwi,* or bones. Burial sites are chosen by Hawaiians for symbolic purposes in places for safekeeping. Often, bones were hidden in caves, cliffs, sand dunes, or deposited in the ocean. Today, federal and state laws protect both unmarked and marked burial sites. Island Burial Councils assist the State Historic Preservation Division with inventory and identification of unmarked Hawaiian burial sites and determine the preservation or relocation of native Hawaiian burial sites (MacKenzie).

Religious

Hawaiian religion and beliefs were intimately tied to the land. While some practices and traditions were lost over the years, basic Hawaiian religious concepts remain. The terms *"aloha 'aina,"* love the land and *"malama 'aina,"* care for and protect the land, convey the unity of humans, nature, and the gods in Hawaiian philosophy (Minerbi). Furthermore, Hawaiians honored and worshiped *aumakua,* deities, and *akua*, gods. There were numerous *akua* of farming, fishing, tapa making, dancing, sports, and any other activity of Hawaiian life. The concept of *mana* or sacred attachment to places, people, or things also remains as a significant aspect of Hawaiian religion (MacKenzie).

d. Informant Interviews

In order to obtain a wider array of cultural perspectives, interviews were conducted with individuals knowledgeable of and familiar with the project area and its history. The Office of Hawaiian Affairs (OHA) was consulted in regards to obtaining candidates for the informant interviews. Summaries of the informant interviews are presented below:

(1) Sam Kalalau III

The interview with Sam Kalalau III was carried out on October 4, 2005 in Hana.

Mr. Kalalau was born in Hana in 1952, and currently works as a supervisor for the County of Maui's Highways Division in Hana. Mr.

Kalalau is currently Chair of the Maui Cultural Resources Commission. Mr. Kalalau's family was from the Waikaloa area, which is located along the northern extent of Hana Bay.

Mr. Kalalau is a native Hawaiian. His mother is Cecilia Manaois and his father is Sam Kalalau Jr. Mr. Kalalau's grandfather, Sam Kalalau I, was born in Kaupo. Mr. Kalalau III's grandfather was the founder and minister of the Gospel of Salvation Church. The church is located to the east of the park expansion area. Mr. Kalalau's uncle, Matthew Kalalau Sr., took over the ministry from his father. Presently, Matthew Kalalau Jr. is the residing minister of the church. This church has been under the ministry of the Kalalau family for three (3) generations. Although most of the Waikaloa area has been significantly altered, the area is noted for having a rich cultural history.

In recalling the history of the area, Mr. Kalalau mentioned that many Hawaiian families lived at Waikaloa Point. He remembers an old Hawaiian man who had a Portuguese oven and used to bake bread and sold it to the residents. Mr. Kalalau's father used to work for Hana Ranch and he used to take young Sam on the horse with him to inspect the fields. Mr. Kalalau also spent a lot of time around the church which is located across the street from the park expansion area. He mentioned the area was always a pasture since Hana Ranch owned the land. Prior to the Hana Ranch, the area was used to grow sugar cane, but, all Mr. Kalalau remembers is cattle grazing. The people lived on the makai (east) side of the church pre-plantation days. Now, there are only two (2) other lots besides the church on the makai side. These lots are presently used to raise pigs. Mr. Kalalau was not aware of any native Hawaiian cultural practices currently being carried out in vicinity of the park expansion area.

Mr. Kalalau mentioned the surrounding area, including the park expansion area, gradually slopes to the northwest and during heavy rains, storm water runoff flows into a stream. There is also a drainage easement catchment area to the east of the park. On the east side is a residential subdivision and the people plant their gardens in the drainage channel. There is also a Mormon Church to the southeast of the park expansion area.

In regards to traditional beach access and mountain trails in and around the park expansion area, Mr. Kalalau indicated that the only one he is aware of is the Kawaipapa trail near the bridge where native Hawaiians grew taro along the Kawaipapa Stream. Mr. Kalalau said the people in Waikaloa used the Kawaipapa trail and the shoreline

trail to get to the taro patches. This trail is some distance from the park expansion area and he believes the proposed action would not adversely impact any traditional beach access or mountain trails.

In general, Mr. Kalalau expressed no concerns with the proposed park expansion. He mentioned the area has been cleared many times when use for cattle grazing during the Hana Ranch period. There are no native plants in the area that are gathered by native Hawaiians.

Mr. Kalalau did mention that the park is used by many local church groups for small gatherings and by local families. Due to the use of the park and the current lack of parking, he indicated that a parking lot is needed because the only parking is along the State highway. Mr. Kalalau believes the expansion of the park is needed and it will be a beneficial project for the Hana community.

(2) **Terry Poaipuni**

The interview with Terry Poaipuni was carried out on June 30, 2006 in Hana.

Ms. Poaipuni was born and raised in Hana. Her mother's maiden name was Kalalau Mamoa and her father's name was Konohia. She is native Hawaiian. Ms. Poaipuni went to old Hana School.

In the Waikaloa ahupua`a, she said there are many cultural sites and heiaus that were destroyed when the cattle grazing by the ranch and later the subdivision next to the park was built. In the old days, voyagers coming into Hana Bay would navigate by looking at reference points on the land.

Ms. Poaipuni's connection to the project area is from an early age when she used to visit her relatives on the Kalalau side of the family. Her aunties, uncles and cousins used to live just below the Pa`ani Mai Park near the Gospel of Salvation Church. She also remembers stories told by her mom of her great-grandmother who used to walk from Koali in the southwest (past the Pa`ani Mai park site before it was a park) to Honokalani in the northeast when the ko was in bloom, to visit relatives. As a child, she remembers the area as a grazing pasture for Hana Ranch. She recalls the land overgrown with grass and mentioned there were ranch houses on the makai side next to the Mormon Church. The Ranch used to graze cattle there. The Ranch used to move the cattle from one area to another for grazing.

There may have been cultural sites in and around the area. However,

when the Ranch took over the lands and developed the Hana Hotel and surrounding area, the cultural sites may have been impacted.

Ms. Poaipuni mentioned a drainageway on the east side of the park. When it rains she said this drainageway over flows and sometimes closes the highway.

She said there are medicinal plants in the area, such as "ihi ihi" and "popolo", ha`u`i guava which is a food source and also used to help people with asthma or used as a laxative. She also said there are guava trees growing in the area. The guava was used as a poultice to heal open wounds. Although there are native plants in the area, she was not aware of any current cultural practices or cultural gathering in and around the project area. In regards to makai/mauka trails, she mentioned that on the east side of the park there is a trail from the subdivision to the beach.

Ms. Poaipuni mentioned that she, as well as several local families use the park regularly and said it provides a nice place for the children to play. A community group, which Ms. Poaipuni is a part of, is raising funds to help build a children's playground at the park. She also mentioned that the people living next to the park have gone in and helped clean the park.

Ms. Poaipuni's concern with the development of the park is in regards to traffic and safety issues for the children. She would like to see access to the park improved. Currently the property across the highway and on the Hana side of the park is heavily treed and the shoulder is very narrow in this area. Therefore, it is very unsafe for children to walk along the highway to the park. She would like to see the sight distance around the curve on Hana Highway improved so that drivers heading towards Hana will be able to see pedestrians. She thought if direct access to the park could be provided from the subdivision, it would be better for the children in the subdivision since they would not have to walk along the highway.

The other concern that Ms. Poaipuni had was regarding the future development around the park. She wondered what was planned for around the park expansion. Her concern was with the impact surrounding development would have on land taxes.

Ms. Poaipuni said the park will be a good thing for the community. She is generally supportive of the plans for expansion. She did not think the expansion would impact cultural practices or gathering rights.

(3) Annie Rahl

The interview with Annie Rahl was carried out on June 30, 2006 in Hana.

Ms. Rahl was born and raised in Hana. She is active in community affairs and is currently Vice-Chair of the Hana Community Association. Her father's sir name is Kahula and he is 89 years old (90 in November). Her mother's maiden name was Kan Hai. Ms. Rahl is of Hawaiian/Korean descent. Her father was the minister of the Congregational Church in Hana and used to own the Chevron gas station. Her family used to live in a Hana Ranch house, located makai of the pasture, which is currently the Pa`ani Mai Park site. Ms. Rahl said that Mr. Fagan fixed up the house for the family. Ms. Rahl grew up near the park and remembers playing in the area when she was a young child. She remembers the area as pasture land that the Ranch used for cattle grazing. Ms. Rahl left Hana to attend Kamehameha School on O`ahu.

Ms. Rahl said she was not aware of any cultural practices or gathering on or near the park site. She mentioned the park is well used by the people of Hana and especially by the people living in the subdivision next to the park. She said, "It would be wonderful if a path from the subdivision to the park can be established. That way, the children will not have to go onto the highway to get to the park". She said the highway is dangerous around the park. It is very narrow with very little room to walk on the side of the highway.

Ms. Rahl mentioned that drainage is very bad around the park. When it rains, she said water overflows the highway and floods the area. She hoped this would be improved when the park is expanded.

Ms. Rahl felt that Hana is the last Hawaiian place on Maui and many tourist visit the area. It is not easy on the local people dealing with the influx of tourists. She said that many tour groups use the parks in Hana for a rest stop and to have lunch. She hoped that the park expansion will be planned with the people of Hana in mind and the facilities would be developed accordingly, such as active play areas for the children.

Ms. Rahl believes expansion of the park will be a good thing for the community. In general she was pleased the park will be improved and is supportive of the expansion to the park.

(4) John "Boy" Hanchett

The interview with John "Boy" Hanchett was carried out on June 30, 2006 in Hana.

Mr. Hanchett has lived in Hana all his life. Mr. Hanchett's father was of Hawaiian/Chinese/Irish descent and his mother was of Hawaiian/English descent. Mr. Hanchett has 13 grandchildren, all of whom live in Hana. Mr. Hanchett's father was manager of Hana Ranch and worked for the Ranch for 31 years. Mr. Hanchett and his sister also managed Hana Ranch. She later left the Ranch and while Mr. Hanchett stayed on to manage the Ranch. He worked for the Ranch for 40 years. He got his early training with the Rose Wood Corporation in Texas. He retired from the Ranch in 2002. Mr Hanchett is active in many Hana organizations. He is on the boards of Hana Cultural Center and Hana Senior Center and is Associate Pastor of the Master's Touch ministry.

Mr. Hanchett lives on Alua Street in the subdivision next to the park. When he was growing up, he used to walk the path between the subdivision and park to go to the beach. Many people in the subdivision still use this path. The path is used everyday by kids to go surfing in Hana Bay and by a couple, who use their ATVs (all terrain vehicle) to tend to their pigs located makai of the park.

Mr. Hanchett's memories of the park area are in connection with using the area for grazing when he was with Hana Ranch. The area was good pasture land and relatively flat. They would herd approximately 1,250 head of cattle across the highway to graze an area which included the present park site and surrounding lands bounded by Hana Highway, Uakea Road and the subdivision. The cattle would graze overnight and would be moved to another grazing area. This system of rotating the grazing areas was called "multiple paddock". The Ranch lands were fenced off in 40 acre areas for multiple paddock grazing. It would help keep the soil in good shape and the grass in top quality for grazing. The Ranch used to close Hana Highway and route traffic along Uakea Road when they herded the cattle across the highway. Mr. Hanchett recalls keeping detailed records of the time and duration the multiple paddocks were used for grazing in order to keep the fields healthy, the cattle well fed and to get top dollar for the beef.

Mr. Hanchett recalled a portion of the Ranch lands in the vicinity of Pa`ani Mai Park went to the County for the baseyard, fire station and police station. Another portion of the land was to be used for the

"Ropes" operation which is like a large Jungle Gym. However, the program never got off the ground.

Mr. Hanchett uses the park regularly. He and his wife go the park in the evening to walk their dog. He mentioned again, that the kids use the trail beside the park to go to the beach. He was not aware of any cultural practices or gathering being actively pursued at the park site. He said a lot of kupuna used to live on the lower road, makai of the park and near the churches. He said the area was nice and flat land when it was used for cattle grazing. There used to be rock walls throughout the area when it was used for grazing. However, he believes the rock walls were all broken up. He said a lady has cleared an area to the north of the park and currently keeps her horse there.

Mr. Hanchett believes the project would not adversely impact beach access or mountain access. The Ranch no longer uses the area for agriculture and, therefore, he did not think the park expansion would adversely impact agricultural activities. He did not think the project would adversely impact cultural practices or gathering activities.

Mr. Hanchett commented that the park expansion would be beneficial to the people of Hana. He felt there should be access to the park from the subdivision. He mentioned it was dangerous to walk on the highway to get to the park. If the park expansion goes through, he also felt there has to be adequate parking at the park.

e. <u>Assessment</u>

The project area was used by Hana Ranch to graze cattle until its development as Pa`ani Mai Park. Prior to the Ranch use the area was used to grow sugar cane. It has been extensively disturbed and altered from both activities. There are no known traditional or cultural practices associated with the site. There are no adverse impacts to the cultural fabric of the project area associated with the proposed park expansion.

Cultural interviewees believed the park expansion would not adversely impact cultural resources. However, due to comments regarding rock walls, it is recommended that an archaeological investigation be undertaken, prior to ground altering activities. Comments by interviewees also suggest access from the subdivision to the park and improved parking be considered in the planning and design of the park expansion.

f. Compliance with Act 50, Hawai`i Revised Statutes (HRS)

The subject cultural impact assessment follows the methods and protocol set forth by the Office of Environmental Quality Control (OEQC), Guidelines for Assessing Cultural Impacts (November 19, 1997), pursuant to Act 50 of the HRS. Information obtained from this assessment was used to determine the levels of cultural use of the project area and subsequently applied towards assessing the potential impact of the proposed development to existing cultural practices and beliefs. The scope of work for this assessment included:

1. Conducting documentary research;
2. Identifying the resources, practices, and beliefs within the project area;
3. Identifying individuals with expertise regarding the cultural practices and beliefs of the area; and
4. Evaluating the impact of the proposed development on existing cultural practices and beliefs.

10. Air and Noise Quality

a. Existing Conditions

The project site is located in a rural area, absent of large developments and intensive air source contaminants. The Hana region is consistently exposed to trade winds, which contributes to excellent air quality in the region.

Ambient noise levels are also influenced by the region's rural atmosphere. Ambient noise in the area is largely attributed to traffic on Hana Highway.

b. Potential Impacts and Mitigation Measures

Short-term construction-related impacts associated with the grading of the park site will include dust and other air pollutant emissions. Appropriate BMPs will be utilized during grading activities in order to mitigate the potential for adverse impacts to air quality and ambient noise levels. The temporary effects associated with the proposed project are not anticipated to be significant or adverse.

Within the park expansion area, there may be noise associated with the skateboard area. This area is located in the northwestern portion of the park. However, noise from the skateboard activities are not anticipated to adversely impact ambient noise in the park area.

To help mitigate adverse impacts to noise associated with park use, Pa`ani Mai Park will be locked and gated from 7:00 pm to 8:00 am to limit hours of use and to prevent vandalism.

11. Traditional Beach and Mountain Access

a. Existing Conditions

The Pa`ani Mai Park, and expansion area are not located within known traditional mauka and makai routes, such as the Pi`ilani Trail. However, as mentioned during interviews of the cultural impact assessment, there are trails which were accessed by local residents. Kawaipapa trail is located near the bridge where native Hawaiians grew taro along the Kawaipapa Stream. The people in Waikaloa used the Kawaipapa trail and the shoreline trail to get to the taro patches. This trail, however, is located some distance from the park expansion area. Additionally, there is a trail on the east side of the park from the subdivision to the beach.

b. Potential Impacts and Mitigation Measures

The plan area is not located within traditionally settled areas or within the immediate vicinity of historic mauka/makai routes. The proposed development of the park site is not anticipated to adversely impact any traditional beach or mountain access routes. Public access through the park will continue to be available.

12. Use of Chemical Fertilizers

a. Existing Conditions

The proposed expansion area was formerly used for sugar cultivation and more recently cattle grazing by the Hana Ranch Partners LLC. During the cattle grazing period, from 1944 to 1990, the area was not heavily fertilized nor subject to pesticide sprays, since cattle would naturally fertilize the fields and eat the vegetation. The existing park area is landscaped. Based on

information provided by the DPR, chemicals and fertilizers are not used in the maintenance of the park grounds.

b. Potential Impacts and Mitigation Measures

The use of herbicides will be limited to the initial plant establishment periods for the landscaping within the plan area. Pesticides are expected to be used only as a treatment and not as a preventative measure. As a treatment, application will be minimal and will be conducted by a licensed commercial service provider, as required.

Nitrogen/Phosphorus/Potash mixed-fertilizers are not anticipated to be applied to landscaped areas. Therefore, leaching and runoff of fertilizers are not anticipated.

No adverse effects to surface, underground, and marine resources are anticipated.

B. SOCIO-ECONOMIC ENVIRONMENT

1. Population and Economy

a. Existing Conditions

The Hana region includes Hana Town and the neighboring coastal communities of Keanae, Kipahulu and Kaupo. Situated 55 miles east of the County seat in Wailuku, Hana Town serves as the major population center of the Hana area. The economy in Hana is primarily based on diversified agriculture, the visitor industry, government services and subsistence activities. Diversified agricultural activities include ranching, as well as the cultivation of taro and tropical fruits, flowers and foliage. Businesses, government services and visitor accommodations are centered in Hana Town.

In the 1990s, the population of Hana was 1,895, while the population for the year 2000 was approximately 1,867. By the year 2010, the baseline population of Hana is projected to increase to 2,018 (Socio-Economic Forecast: The Economic Projections for the Maui County General Plan 2030, June 2006).

In 1990, there were approximately 680 jobs in the Hana region, while in the year 2000, there were approximately 840. By the year 2010, the baseline number of jobs in Hana is anticipated to be approximately 893 (Socio-Economic Forecast: The Economic Projections for the Maui County General Plan 2030, June 2006).

b. Potential Impacts and Mitigation Measures

The proposed development of the park site is not considered to be a population generator. Therefore, it is not anticipated that development of the site will have an adverse effect on the population of the Hana region.

The proposed project will involve use of lands on and adjacent to the existing park site for the expansion and facilities improvements. The proposed project will include grading activities associated with the construction of the parking lot, pavilion, restroom, and drainage system. Construction of the project will have a positive short-term impact on the local economy as expenditures for construction and related support services are made. No short- or long-term adverse impacts to the region's economy and population are anticipated as a result of the proposed project.

C. PUBLIC SERVICES

1. Police and Fire Protection

a. Existing Conditions

Headquartered in Wailuku, police protection service for the island of Maui is provided by the Maui Police Department, which includes Wailuku, Lahaina and Hana patrol districts. The Hana patrol division covers the area from Kailua to Kaupo. The division is based out of the Hana substation, located near the intersection of Hana Highway and Uakea Road, northwest of the project site.

Fire prevention, suppression and protection services are provided for the County of Maui by the Department of Fire and Public Safety. The department maintains a fire station in Hana which is located on the same property as the Police substation.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely impact the existing level of police and fire protection services in the Hana area.

2. Medical Facilities

a. Existing Conditions

Maui Memorial Medical Center is the only major medical facility on the island. Acute, general and emergency care services are provided by the approximately 231-bed facility.

In Hana, the Hana Health Clinic is located approximately 2,500 feet northwest of the project site, providing general health care, dental services and 24-hour acute care services.

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely impact the existing level of medical services currently provided by Maui Memorial Medical Center and the Hana Health Clinic.

3. Schools

a. Existing Conditions

The State of Hawai`i, Department of Education operates two (2) public schools in the Hana region, Hana High and Elementary School and Keanae School. Hana High and Elementary School has a total enrollment of 357 students for the 2005-2006 school year (Department of Education School Enrollment, 2007).

b. Potential Impacts and Mitigation Measures

The proposed project is not anticipated to adversely affect the educational facilities in the Hana region.

4. Solid Waste

a. Existing Conditions

Solid waste at Pa`ani Mai Park is collected by the County of Maui, Highways Division for the Department of Environmental Management (DEM) and transported to the Hana landfill for disposal.

b. Potential Impacts and Mitigation Measures

No adverse impacts to the County's solid waste disposal capacity are anticipated as a result of project implementation. Solid waste generated by the proposed grubbing activities will be utilized as composting material. Solid waste disposed at the County's Hana Landfill facility will be minimal.

5. Recreational Resources

a. Existing Conditions

Major recreational resources in the Hana region include the County-maintained Hana Ball Park, Hana Bay Beach Park in Hana Town and Koki Beach Park near Hamoa. In addition, the State of Hawai`i maintains the Waianapanapa State Park approximately 1.0 mile north of the subject property. The National Park Service maintains the Oheo Gulch Recreational area, part of the larger Haleakala National Park.

Portions of the Pi`ilani Trail, also known as the King's Highway, traverse the shoreline area to the northeast of the project site and within the State Park boundaries.

b. Potential Impacts and Mitigation Measures

The proposed project involves the expansion and improvements to Pa`ani Mai Park which will, in turn, increase park capacity. Therefore, the proposed project will result in a beneficial impact to the recreational resources in the East Maui region.

6. Infrastructure

a. Roadways

(1) Existing Conditions

Hana Highway is a two-way, two-lane State Highway, serving as the main transportation arterial with rural collector road status for the Hana region. The Hana Highway is noted for its scenic beauty and historic nature, which includes 59 bridges and 8 culverts, all of which are over 50 years old.

Access to the existing Pa`ani Mai Park is off of Hana Highway.

(2) Potential Impacts and Mitigation Measures

A Traffic Assessment Letter has been prepared for the project by Phillip Rowell and Associates. See **Appendix "B".**

Adverse impacts to existing roadways and residences within the subdivision are not anticipated as a result of project implementation. Access to Pa`ani Mai Park would be on the northwestern portion of the subdivision, and not through the subdivision. Access is proposed to be provided via Kauiki Street and Noenoe Place.

Access to the Park along the Noenoe Place subdivision road is anticipated to help mitigate safety issues related to the existing access directly off of Hana Highway. Design capacity for site infrastructure is based on 250 people per day. Based on the traffic letter, the intersection of Kauiki Street and Hana Highway operates at Level of Service "A" or "B", which is considered the highest levels of service. Accordingly to the traffic letter, the increased traffic generated by the peak will not result in a lower level of service at the intersection. Anticipated park related traffic is not expected to conflict with peak hour traffic.

Additionally, widening of Hana Highway along the expansion area to provide a 5-foot paved shoulder will help mitigate adverse traffic

impacts as well as provide safer roadway conditions. According to the Traffic Assessment Letter prepared for the project, the proposed project will not have a significant adverse impact on traffic conditions along Hana Highway in the vicinity of the project.

b. Water

(1) Existing Conditions

A public water system and a private water system service this region in Hana. See **Appendix "C"**.

The public water system, which includes wells, pumping stations, and reservoirs at Hamoa and Wakiu, is owned and maintained by the County of Maui, Department of Water Supply (DWS). A series of pipelines carry water from these sources which in turn service the area of Hana Town. There is a 190,000-gallon reservoir that provides storage for the Hamoa wells to the south of the site, and a 500,000-gallon reservoir that provides storage for the Wakiu wells to the north of the site.

The private water system is owned and maintained by Hana Water Resources, Inc. (HWR), and operates in a similar way as the public water system. The private water system includes a 500,000-gallon reservoir located above the site, and a series of pipelines located within the adjoining residential subdivision.

The existing park site is served by a 1-inch water meter through the County water system. This meter connects to small water lines in the area which include 1.5-inch, 2-inch, and 2.5- inch lines along a 3,400-foot section of Hana Highway between the Keawa Place intersection and the Uakea Road intersection. These small water lines connect to larger 12-inch lines at those intersections.

The adjoining Hana Ranch Houselots No. 2 residential subdivision is served by the private water system. This water system includes 8-inch water lines, fire hydrants, and water laterals.

(2) Potential Impacts and Mitigation Measures

The proposed water system improvements for this project include a fire protection water line, fire hydrant, and water service for the pavilion and restroom. The water service consists of a water lateral with a 1-inch meter, a backflow preventer, and a 2-inch line from the meter to the building. Refer to **Appendix "C"**.

Because there are two (2) water systems in the area, preliminary discussions for water service were carried out with the DWS and Hana Water Resources, Inc. (HWR). The DWS indicated that the nearest point-of-adequacy for fire protection purposes was located at the Hana Highway and Keawa Place intersection or at the Hana Highway and Uakea Road intersection. The distance between the project site and both points-of-adequacy are approximately equal. Therefore, connecting to the DWS system would require about 1,700 feet of new 8-inch water line. Alternatively, HWR indicated that the nearest point-of-adequacy for fire protection purposes is located within the residential subdivision. Connection to the HWR system would require about 300 feet of new 8-inch water line. HWR also indicated that the private water system has adequate capacity for the proposed pavilion and restrooms. Therefore, the private water system alternative, as indicated by HWR, will be implemented to minimize construction costs.

Conservation measures, such as utilization of low-flow fixture devices, regular maintenance and inspection schedule of water improvements to prevent leaks and the use of climate adapted plans in site landscaping, will be employed as appropriate to minimize water use. Project implementation is not anticipated to adversely impact the County of Maui's water service capacity in the vicinity of the project site.

c. Wastewater

(1) Existing Conditions

There are no County wastewater collection or treatment facilities

currently servicing the Hana region. Individual properties are generally serviced by individual wastewater systems (IWS), including septic tanks, cesspools and packaged treatment plants. An individual wastewater system consisting of a septic tank and absorption field serves the existing comfort station. The individual wastewater system will remain in place and continue to serve the existing comfort station.

(2) Potential Impacts and Mitigation Measures

Wastewater improvements for the project include installation of a new traffic-rated individual wastewater system to service the proposed restroom and pavilion building. The estimated use of the building is 250 persons per day. Therefore, according to the estimated use of the building per day and the wastewater rate of 5 gallons per person per day, the new individual wastewater system will have a 1,800-gallon septic tank and a 1,600 square foot absorption area. The system will be designed and constructed in accordance with State Department of Health criteria.

d. Drainage System

(1) Existing Conditions

There are no drainage improvements on the existing park site. Runoff from the existing park site and expansion area generally flows in various directions onto adjoining properties, enters drainageways, and discharges into Hana Bay, approximately 1,200 feet to the east of the project site. Refer to **Appendix "C"**.

Runoff from the site splits in two drainage areas: (1) about two-thirds of the runoff drains toward the north; and (2) runoff from the remaining one-third of the site drains toward the southeast. Additionally, offsite runoff from about 1.60 acres of pasture land on the mauka side of Hana Highway contributes to the larger drainage area. This runoff flows across the highway, enters the site, and flows north.

Holoinawawae Stream, a small stream approximately 500 feet to the north of the site, receives runoff from the larger drainage area. Holoinawawae Stream continues downstream beyond the site, flattens out, and discharges into Hana Bay. A small, unnamed drainageway adjoins the southeasterly side of the project site and receives runoff from the smaller drainage area. This drainageway also continues downstream beyond the site, flattens out, and discharges into Hana Bay. Refer to **Appendix "C"**.

(2) **Potential Impacts and Mitigation Measures**

Proposed drainage improvements include culverts, swales, drain inlets, catch basins, manholes, drain pipes and subsurface detention/retention basins to mitigate the increase in runoff due to the project.

The drainage standards for the County require the use of a 50-year, 1-hour rainfall for calculating volumes and rates of flow. The increase in runoff due to the proposed improvements based on a 50-year storm is 2.89 cfs. The County of Maui's drainage standards require that the increase in runoff be detained to limit the runoff to pre-construction levels. The proposed project drainage plans are designed to maintain existing drainage patterns and retain increases in runoff onsite. Measures for mitigating increases in runoff include subsurface detention/retention basins, drain inlets with flow restrictors, grassed swales, and shallow drainage retention areas. Subsurface detention/retention basins consist of a perforated drain pipe in a gravel bed, a flow control manhole, and an outlet pipe. These basins will collect runoff, regulate the outflow of runoff, and retain a portion of the collected runoff. The capacity of the retention volume will be 1,514 cubic feet. Refer to **Appendix "C"**.

To help mitigate increased runoff between the subdivision and the park during heavy rains, two (2) 48-inch diameter drainage pipe culverts are proposed under the Noenoe Place road extension.

There will be no increase in storm water runoff resulting from the project. Therefore, no adverse impacts to downstream environment

or to natural drainage patterns surrounding the project site are anticipated as a result of the project.

e. Electric, Telephone and Cable Television Systems

(1) Existing Conditions

Electrical, telephone and cable television services for the Hana region of Maui are provided by Maui Electric Company, Ltd., Hawaiian Telcom, and Oceanic Time Warner Cable, respectively. Existing overhead lines run adjacent to the site along the Old Government Road right-of-way.

(2) Potential Impacts and Mitigation Measures

Electrical improvements for the project include an overhead connection to the new building. However, there are no provisions for telephone or cable television services for the new building. The proposed project is not anticipated to adversely impact the existing level of electrical, telephone or cable television services in the East Maui region.

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

III. RELATIONSHIP TO GOVERNMENTAL PLANS, POLICIES AND CONTROLS

A. STATE LAND USE DISTRICT

Chapter 205, Hawai`i Revised Statutes (HRS), relating to the Land Use Commission, establishes the four (4) major land use districts in which all lands in the State are placed. These districts are designated "Urban", "Rural", "Agricultural" and "Conservation". Parcels 25 and 1 are located within the "Agricultural" district. See **Figure 10**. Although the proposed expansion and improvements to Pa`ani Mai Park are permitted within the "Agricultural" district pursuant to Section 205-4.5(6), HRS, due to the requirement to change the zoning from "Interim" to "P-1, Public/Quasi-Public", a State Land Use District Boundary Amendment to the "Urban" district will be initiated by the Maui County Council.

1. LAND USE COMMISSION RULES, CHAPTER 15-15, HAWAI`I ADMINISTRATIVE RULES

The proposed reclassification of Parcel 25 and Parcel 1 is in conformance with the following standards of the Urban District set forth in Chapter 15-18, Hawai`i Administrative Rules:

Chapter 15-15-18

(1) It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level of services and other related land uses.

Comment: The existing park and expansion area are situated within the immediate proximity of the single-family residential subdivision to the east and the Maui Police Department's Hana substation, the Hana Fire Station, as well as the County of Maui's baseyard to the west. The proposed park use is consistent with the surrounding land uses which provide public services to the Hana region.

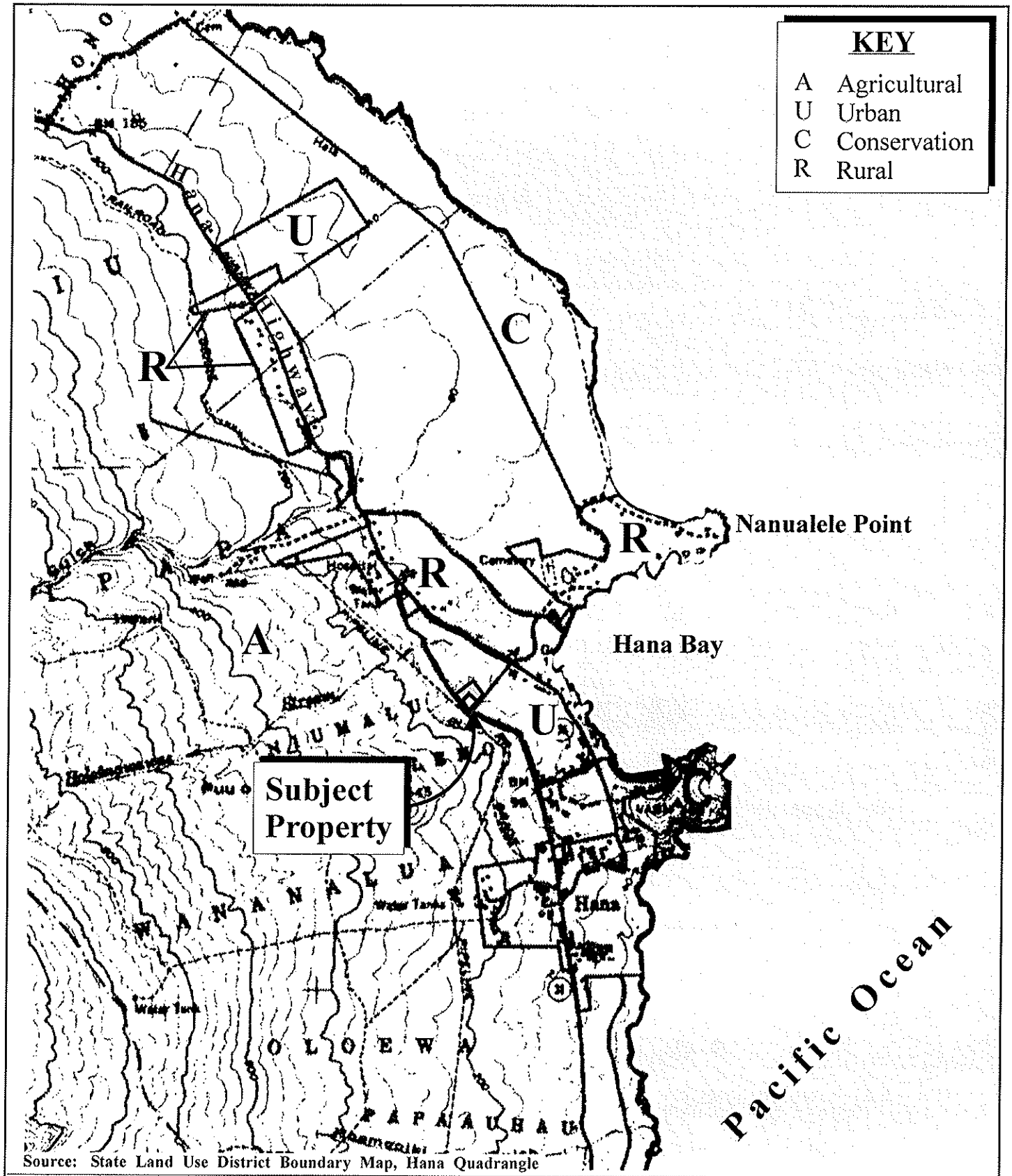


Figure 10 Proposed Pa`ani Mai Park Expansion

State Land Use District Boundaries

1000 Feet
0 500 2000

Prepared for: County of Maui, Department of Parks and Recreation

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(2) It shall take into consideration the following specific factors:

A. Proximity to centers of trading and employment except where the development would generate new centers of trading and employment.

B. Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police and fire protection.

C. Sufficient reserve areas for foreseeable urban growth.

Comment: The project site is located adjacent to the Hana Town urban area. The property is adjacent to existing and designated residential uses along Hana Highway, as well as in close proximity to the Hana Police Station and the Hana Fire Station. Basic infrastructural and public services are found in proximity to the property. The proposed expansion of Pa`ani Mai Park is not anticipated to affect reserve areas for urban growth.

(3) It shall include lands with satisfactory topography, drainage and reasonably free from the danger of any flood, tsunami, unstable soil condition, and other adverse environmental effects.

Comment: The topography and physical condition of the subject property does not render it susceptible to unusual dangers from flood, tsunami, unstable soil conditions or other environmental effects.

(4) Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans.

Comment: The project site is centrally located within Hana, situated within the immediate vicinity of police, fire and public services. Further, the Hana Community Plan designates Parcel 25 for "PK, Park" use and Parcel 1 for "Multi-Family" use.

(5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans.

Comment: The project site is appropriate for urban land use, given the Hana region's need for increased recreational services and its central location in the Hana area. Further, the Hana Community Plan designates the existing park site for "PK", Park use and the expansion area for "MF", Multi-Family use.

(6) It may include lands which do not conform to the standards in paragraphs (1) to (5):

A. When surrounded by or adjacent to existing urban development; and

B. Only when those lands represent a minor portion of this district

Comment: The proposed park improvements are in conformance with the standards of paragraphs (1) to (5). Further, it is noted that the project site is adjacent to urban land uses to the east and represents a minor portion of lands located within the Agricultural district in the Hana region.

(7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services.

Comment: The proposed development will not constitute spot development. Further, the land use entitlement request will increase the public recreational services for the Hana region.

(8) It may include lands with a general slope of twenty percent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state or county agency, are adequate to protect the public health, welfare and safety, and the public's interest in the aesthetic quality of the landscape.

Comment: A small southeasterly portion of the project site has slopes in the range of 20 to 40 percent. This area is in the existing park boundaries. These lands are both suitable and desirable aesthetic features to the park landscape.

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 general plan shall indicate desired population and physical development patterns for each island and region within the county; shall address the unique problems and needs of each island and region; shall explain the opportunities and the social, economic, and environmental consequences related to potential developments; and shall set forth the desired sequence, patterns and characteristics of future developments. The general plan shall identify objectives to be achieved, and priorities, policies, and implementing actions to be pursued with respect to population density, land use maps, land use regulations, transportation systems, public and community facility locations, water and sewage systems, visitor destinations, urban design, and other matters related to development.*

The proposed action is in keeping with the following objectives and policies of the Maui County General Plan.

Objective: To provide high-quality recreational facilities to meet the present and future needs of our residents of all ages and physical ability.

Policies:

a. Maintain and upgrade existing recreational facilities to meet the community needs.

b. Maintain recreational facilities for both active and passive pursuits.

c. Develop facilities that will meet the different recreational needs of the various communities.

e. Develop multipurpose recreational facilities.

* * *

g. Expand, improve and create new beach rights-of-way, parks, campsites, and other facilities designated for family use.

* * *

C. HANA COMMUNITY PLAN

The existing park (Parcel 25) is designated by the Hana Community Plan for "PK, Park" land use. The expansion area (Parcel 1) is designated for "MF, Multi-Family" use. See **Figure 11**. The proposed improvements to the existing park are consistent with the underlying "Park" use designation in the Hana Community Plan map. The Maui County Council will be initiating a Community Plan Amendment for Parcel 1 to change the use from "MF, Multi-Family" to "PK, Park" for consistency and conformity with the land use designation.

In addition, the proposed project is consistent with the following Goal, Objectives and Policies for the Social Infrastructure component of the Hana Community Plan.

Goal

An efficient and responsive system of people-oriented public services which enable residents to live a safe, healthy and enjoyable lifestyle, and offer the youth and adults of the region opportunities and choices for self and community improvement.

Objectives and Policies

Recreation

1. Encourage recreational programs for all age groups, and provide opportunities for passive recreation.

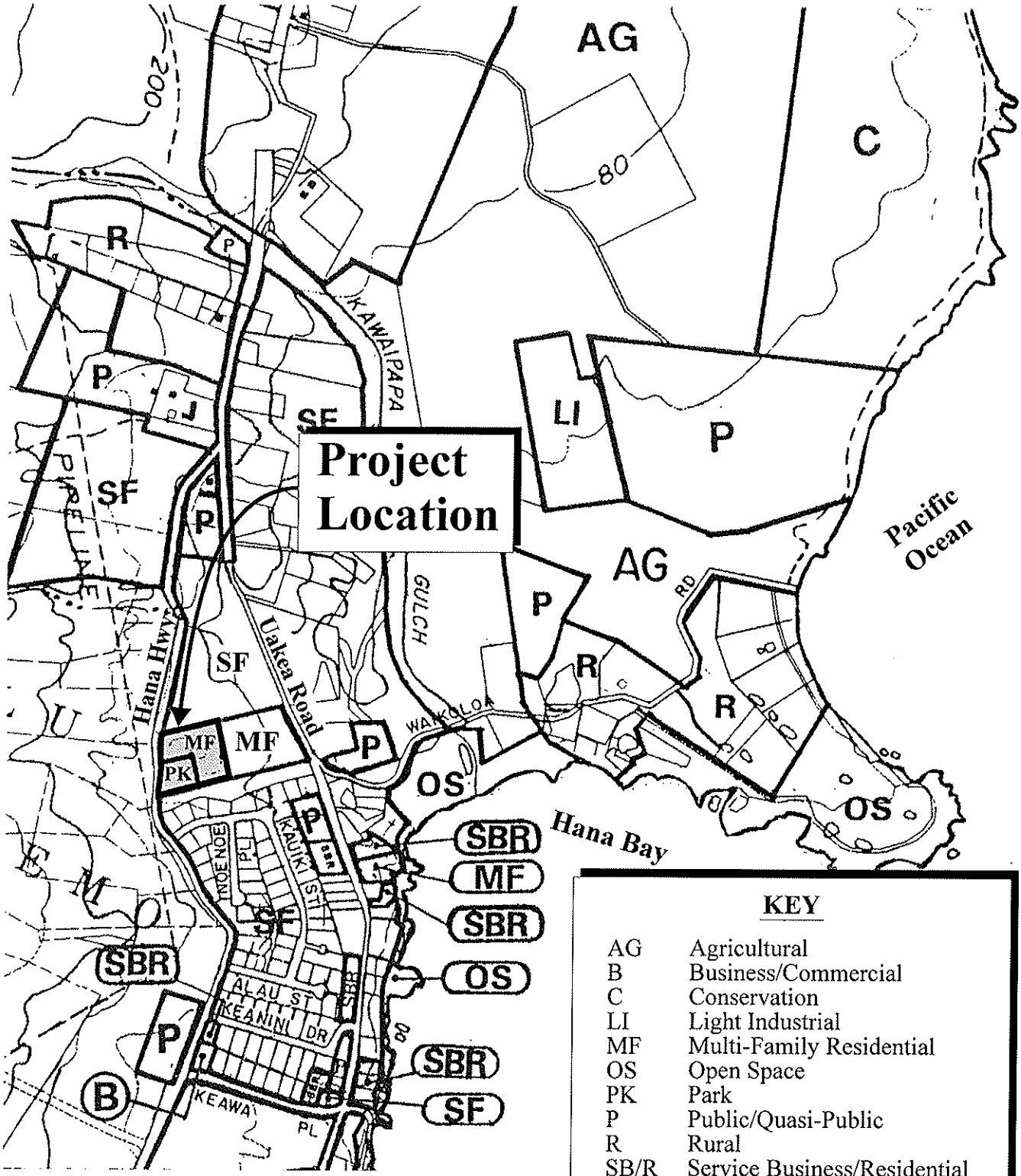
2. Improve regulation of commercial activities with public recreational areas in collaboration with community-based organizations.

3. Recognize and respect the recreational values and pristine character of Hana's natural land and water resources.

D. ZONING

Permitted uses and performance standards are set forth by Title 19 of the Maui County Code relating to zoning.

The existing Pa`ani Mai Park site is County zoned Interim. The expansion area parcel is also zoned Interim. Pursuant to Section 19.030.030 (7) of the Maui County Code, permitted property uses within the Interim zone include, *"The expansion of existing parks, playground, or community centers consisting of such open spaces developed with no buildings or minimum buildings, owned or operated by either private or governmental agencies."* The



Source: County of Maui Hana Community Plan

Figure 11 Proposed Pa`ani Mai Park Expansion

Community Plan Designations

NOT TO SCALE

Prepared for: County of Maui, Department of Parks and Recreation

MUNEKIYO & HIRAGA, INC.

HHA\Pa`aniMai\CommunityPlanDesignation

expansion of the park, as proposed, is permitted in the Interim district.

In order to maintain consistency and conformity with land use designations within the SMA, the Maui County Council will initiate a change-in-zoning from "Interim" district to the "PK-2, Park" district.

E. SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

The proposed project site is located within the County of Maui's Special Management Area (SMA). Pursuant to Chapter 205A, Hawai`i Revised Statutes, and the SMA Rules and Regulations for the Maui Planning Commission, actions proposed within the SMA are evaluated with respect to SMA objectives, policies and guidelines. This section addresses the proposed action as related to applicable coastal zone management considerations, as set forth in Chapter 205A and the Rules and Regulations of the Maui Planning Commission.

1. Recreational Resources

Objective: Provide coastal recreational opportunities accessible to the public.

Policies:

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

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

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

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

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

(iv) Providing an adequate supply of shoreline parks and other

recreational facilities suitable for public recreation;

(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

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

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

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

Response: The subject property is located approximately 1,200 feet from the shoreline. Construction of the proposed improvements will not result in adverse impacts to coastal recreational resources. Further, access to and along the shoreline environment will not be impeded by the proposed project. Although the project is not directly located on the shoreline, the park improvements will provide recreational opportunities accessible to the public.

2. **Historic Resources**

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

Policies:

(A) Identify and analyze significant archeological resources;

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

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

Response: An archaeological inventory survey was carried out for the proposed expansion of Pa`ani Mai Park. Further, an archaeological monitoring plan has been prepared in order to identify, protect and preserve historic resources during ground altering activities. Refer to **Appendix "A"** and **Appendix "A-1"**.

3. **Scenic and Open Space Resources**

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

Policies:

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

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

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

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

Response: The proposed park expansion and improvements will preserve open space resources in the Hana region.

4. **Coastal Ecosystems**

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

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

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

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

(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water

uses, recognizing competing water needs; and

(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Response: During project construction, BMPs will be utilized to ensure that grading activities do not adversely impact coastal ecosystems. All project generated runoff will be retained onsite and handled by the project drainage system.

5. **Economic Uses**

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

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

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

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

(i) Use of presently designated locations is not feasible;

(ii) Adverse environmental effects are minimized; and

(iii) The development is important to the State's economy.

Response: Pa`ani Mai Park is located to provide an accessible site to serve the East Maui region. The proposed improvements to the park facilities will provide for long-term balance in the development of recreational resources in Maui County.

6. **Coastal Hazards**

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

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;

(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint pollution hazards;

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

(D) Prevent coastal flooding from inland projects.

Response: According to the Flood Insurance Rate Map for the area, the subject property is located within Zone C, an area of minimal flooding. The proposed improvements are not anticipated to increase the region's susceptibility to coastal hazards.

7. **Managing Development**

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

Policies:

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

(B) Facilitate timely processing of applications for development permits and resolve overlapping of conflicting permit requirements; and

(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Response: In compliance with the requirements of Chapter 343, Hawai`i Revised Statutes, this Environmental Assessment has been prepared to facilitate public understanding and involvement with the proposed project. Compliance with applicable regulatory requirements, including the SMA permit, DBA, CPA and CIZ processes, advances the objective and policies for Managing Development.

8. **Public Participation**

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

Policies:

(A) Promote public involvement in coastal zone management processes;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

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

Response: As previously noted, public awareness of the project is being promoted through the Environmental Assessment, SMA permit process, and land use entitlement processes. The proposed project is not contrary to the objectives of public awareness, education and participation.

9. **Beach Protection**

Objective: Protect beaches for public use and recreation.

Policies:

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

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

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

Response: During grading activities associated with the proposed improvements, appropriate BMPs will be utilized to ensure the downstream coastal environment is not adversely impacted. The subject property is approximately 1,200 feet from the shoreline. Beach access and beach processes will not be impacted by the proposed

action.

10. Marine Resources

Objective: Promote the protection, use, and development of marine and coastal resources to assure their sustainability.

Policies:

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Response: The proposed actions will not adversely impact coastal marine resources. The proposed improvements to Pa`ani Mai Park are not located in proximity to shoreline areas.

In addition to the foregoing objectives and policies, SMA permit review criteria pursuant to Act 224 (2005) provides that:

> No Special Management Area Use Permit or Special Management Area Minor Permit shall be granted for structures that allow artificial light from floodlights, uplights, or spotlights used for decorative or aesthetic purposes when the light:
>
> (1) Directly illuminates the shoreline and ocean waters; or
>
> (2) Is directed to travel across property boundaries toward the

shoreline and ocean waters.

The proposed project lighting design will specify the shielding of all lights and directional down lighting. The design considerations should mitigate light pollution and prevent lighting from traveling across property boundaries toward the shoreline and ocean.

IV. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

IV. SUMMARY OF ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The proposed expansion and improvements to Pa`ani Mai Park will result in certain unavoidable construction-related impacts as described in Chapter II, Existing Conditions, Potential Impacts and Mitigation Measures, including noise-generated impacts and air quality impacts associated with the operation of construction equipment. Air quality will also be impacted by dust generated from site work. However, all construction-related impacts will be temporary and mitigated through the implementation of appropriate BMPs. The proposed project is not anticipated to create any long-term, adverse environmental impacts.

V. ALTERNATIVES TO THE PROPOSED ACTION

V. ALTERNATIVES TO THE PROPOSED ACTION

A. NO ACTION ALTERNATIVE

The "no action" or "no build" alternative calls for retaining the project site in its current condition. Currently, the existing 1.907-acre expansion area is undeveloped and vacant land. The existing 1.039-acre park site includes a comfort station, driveway apron, walkways, grassed play area, and playground equipment to serve the needs of a growing Hana community. The "no action" alternative would involve a continuation of the underutilized and unmaintained nature of the expansion property, as well as the limited facilities provided by the existing park. In addition, this alternative is not considered a viable scenario in the context of the community's need for additional recreational resources.

B. SITE DEVELOPMENT ALTERNATIVE

In terms of site design alternatives, the Department of Parks and Recreation considered functional and spatial layout requirements in defining the most appropriate site plan for the park expansion. The skateboard park was located in the northwestern portion of the park expansion farthest away from the existing residential subdivision. The pavilion and parking area were located in the flatter areas of the site, to take advantage of the natural topography in order to limit site grading and excavation. The current roadway along Hana Highway in front of the park is narrow with a narrow shoulder for parking. Therefore, a new access from the subdivision was planned to provide a safer access to the park. The proposed park plan as presented herein, is deemed to be an optimum layout in terms of addressing the functional and spatial layout requirements of the proposed park facilities.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The proposed action will involve the commitment of additional lands, fuel, labor, funding and material resources. Given the need to expand and improve the park facilities in the Hana region, the commitment of resources is justified based on the eventual benefits to be realized through project implementation.

VII. FINDINGS AND CONCLUSIONS

VII. FINDINGS AND CONCLUSIONS

The "Significance Criteria", Section 12 of the Administrative Rules, Title 11, Chapter 200, Environmental Impact Statement Rules, were reviewed and analyzed to determine whether the proposed project will have significant impacts to the environment. The following criteria and preliminary analysis are provided.

1. **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.**

   An archaeological inventory survey and archaeological monitoring plan have been completed for the proposed improvements. Implementation of the project is not anticipated to result in adverse impacts to archaeological resources. No identified rare, endangered or threatened species of flora, fauna or avifauna have been identified within the vicinity of the project site. The proposed project is not anticipated to result in destruction of natural or cultural resources.

2. **Curtails the range of beneficial uses of the environment.**

   The proposed project involves recreational facility improvements to Pa`ani Mai Park. The proposed project is not anticipated to curtail the range of beneficial uses of the environment.

3. **Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.**

   The State Environmental Policy and Guidelines are set forth in Chapter 344, Hawai`i Revised Statutes (HRS). The proposed action is not contrary to the policies and guidelines set forth in Chapter 344, HRS.

4. **Substantially affects the economic welfare, social welfare, and cultural practices of the community or State.**

   There are no adverse long-term economic or social welfare impacts anticipated as a result of project implementation.

5. **Substantially affects public health.**

The proposed project will not adversely impact public health. No negative impacts to the public's health and welfare are anticipated as a result of the proposed action.

6. **Involves substantial secondary impacts, such as population changes or effects on public facilities.**

The proposed project is not anticipated to result in secondary impacts, such as population changes or increased demands on regional public facilities.

7. **Involves a substantial degradation of environmental quality.**

During grading operations associated with the construction of the proposed improvements, appropriate BMPs will be utilized to ensure that potential adverse environmental effects are mitigated. No substantial degradation of environmental quality is anticipated as a result of project implementation.

8. **Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.**

The proposed project does not represent a commitment to larger actions. The proposed project is not anticipated to create or contribute to any significant long-term environmental effects.

9. **Substantially affects a rare, threatened, or endangered species, or its habitat.**

There are no known or identified habitats of rare, threatened or endangered species of flora or fauna in the vicinity of the project site. Given the scale and location of the proposed improvements, no habitats or natural environments are anticipated to be adversely affected by the proposed project.

10. **Detrimentally affects air or water quality or ambient noise levels.**

Appropriate BMPs will be implemented during grading operations to ensure that adverse environmental impacts on air quality and ambient noise levels are mitigated.

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

11. **Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.**

The lands utilized for the proposed improvements are not considered to be erosion prone or geologically hazardous. There are no estuaries or coastal waters which are adversely impacted by the proposed project. The proposed improvements are not anticipated to adversely impact environmentally sensitive areas.

12. **Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.**

The proposed project site is not identified as a scenic vista or viewplane. The proposed improvements will not adversely affect scenic corridors and coastal scenic and open space resources.

13. **Requires substantial energy consumption.**

The proposed project will result in the short-term commitment of fuel for equipment, vehicles and machinery during grading activities. However, the short-term energy demand is not considered substantive or excessive within the context of the region's overall energy consumption. In the long term, the project is not anticipated to create significant demands for energy consumption.

Based on the foregoing findings, it is anticipated that the proposed action will result in a finding of no significant impacts (FONSI).

VIII. LIST OF PERMITS AND APPROVALS

VIII. LIST OF PERMITS AND APPROVALS

The following permits and approvals will be required prior to the implementation of the project.

State of Hawai`i

1. National Pollutant Discharge Elimination System (NPDES) Permit (as applicable, for stormwater discharge associated with construction activities)

2. Approval for work within State Highway right-of-way

3. Community Noise Permit (as applicable)

County of Maui

1. County Special Management Area Use Permit

2. State Land Use District Boundary Amendment approved by County (less than 15 acres)

3. Community Plan Amendment

4. Change in Zoning

5. Approval for work within County right-of-way

6. Construction Permits (Grubbing, Grading, Building, Electrical, Plumbing, Driveway)

IX. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

IX. AGENCIES CONSULTED DURING THE PREPARATION OF THE DRAFT ENVIRONMENTAL ASSESSMENT; LETTERS RECEIVED AND RESPONSES TO SUBSTANTIVE COMMENTS

The following agencies were contacted prior to the preparation of the Draft Environmental Assessment. Letters received and responses to substantive comments are included in this section.

1. Ranae Ganske-Cerizo,
Soil Conservationist
Natural Resources Conservation Service
U.S. Department of Agriculture
210 Imi Kala Street, Suite 209
Wailuku, Hawai`i 96793-2100

2. George Young
Chief, Regulatory Branch
U.S. Department of the Army
U.S. Army Engineer District, Honolulu
Regulatory Branch
Building 230
Fort Shafter, Hawai`i 96858-5440

3. Patrick Leonard
Field Supervisor
U. S. Fish and Wildlife Service
300 Ala Moana Blvd., Rm. 3-122
Box 50088
Honolulu, Hawai`i 96813

4. Russ K. Saito, State Comptroller
Department of Accounting and General Services
1151 Punchbowl Street, #426
Honolulu, Hawai`i 96813

5. Sandra Lee Kunimoto, Chair
Department of Agriculture
1428 South King Street
Honolulu, Hawai`i 96814-2512

6. Theodore E. Liu, Director
State of Hawai`i
Department of Business, Economic Development & Tourism
P. O. Box 2359
Honolulu, Hawai`i 96804

7. Patricia Hamamoto, Superintendent
State of Hawai`i
Department of Education
P.O. Box 2360
Honolulu, Hawai`i 96804

8. Micah Kane, Chairman
Department of Hawaiian Home Lands
P. O. Box 1879
Honolulu, Hawai`i 96805

9. Chiyome Fukino, M.D., Director
State of Hawai`i
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawai`i 96814

10. Alec Wong, P.E., Acting Chief
Clean Water Branch
State of Hawai`i
Department of Health
919 Ala Moana Blvd., Room 300
Honolulu, Hawai`i 96814

11. Herbert Matsubayashi, District Environmental Health Program Chief
State of Hawai`i
Department of Health
54 High Street
Wailuku, Hawai`i 96793

12. Allan A. Smith, Interim Chairperson
State of Hawai`i
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawai`i 96809

13. Melanie Chinen, Administrator
State of Hawai`i
Department of Land and Natural Resources
State Historic Preservation Division
601 Kamokila Blvd., Room 555
Kapolei, Hawai`i 96707

14. Barry Fukunaga, Director
State of Hawai`i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai`i 96813

cc: Fred Cajigal

15. Genevieve Salmonson, Director
Office Of Environmental Quality Control
235 S. Beretania Street, Suite 702
Honolulu, Hawai`i 96813

16. Clyde Namu`o, Administrator
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai`i 96813

17. Laura Thielen, Director
State of Hawai`i
Office of Planning
P.O. Box 2359
Honolulu, Hawai`i 96804

18. Carl Kaupololo, Chief
County of Maui
Department of Fire and Public Safety
200 Dairy Road
Kahului, Hawai`i 96732

19. Vanessa Medeiros, Director
County of Maui
Department of Housing and Human Concerns
200 S. High Street
Wailuku, Hawai`i 96793

20. Tamara Horcajo, Director
County of Maui
Department of Parks and Recreation
700 Halia Nakoa Street, Unit 2
Wailuku, Hawai`i 96793

21. Jeffrey Hunt, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawai`i 96793

22. Thomas Phillips, Chief
County of Maui
Police Department
55 Mahalani Street
Wailuku, Hawai`i 96793

23. Milton Arakawa, Director
County of Maui
Department of Public Works
200 South High Street
Wailuku, Hawai`i 96793

24. Cheryl Okuma, Director
County of Maui
Department of Environmental Management
2200 Main Street, Suite 175
Wailuku, Hawai`i 96793

25. Donald Medeiros, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawai`i 96793

26. Jeffrey Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai`i 96793

27. **Hawaiian Telcom**
60 South Church Street
Wailuku, Hawai`i 96793

28. Neal Shinyama, Manager – Engineering
Maui Electric Company, Ltd.
P.O. Box 398
Kahului, Hawai`i 96733

29. John Kahalehoe, President
Hana Community Association
P.O. Box 202
Hana, Hawai`i 96713

JUL 0 9 2007

LINDA LINGLE
GOVERNOR

RUSS K. SAITO
COMPTROLLER

BARBARA A. ANNIS
DEPUTY COMPTROLLER

(P)1154.7

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

JUL - 6 2007

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: Early Consultation Request for Proposed Pa'ani Mai Park Expansion, Hana, Maui

Thank you for the opportunity to review the subject project. This project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer.

If you have any questions, please call me at 586-0400 or have your staff call Mr. Clarence Kubo of the Public Works Division at 586-0488.

Sincerely,

RUSS K. SAITO
State Comptroller

LINDA LINGLE
GOVERNOR

JUN 2 6 2007
PATRICIA HAMAMOTO
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

June 25, 2007

Mr. Mich Hirano, Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Mr. Hirano:

Subject: Early Consultation for Expansion of Pa`ani Park, Hana, Maui

The Department of Education has no comment or concern.

Thank you for the opportunity to comment. If you have any questions, please call Heidi Meeker of the Facilities Development Branch at (808) 733-4862.

Very truly yours,

Patricia Hamamoto
Superintendent

PH:jmb

c: Randolph Moore, Assistant Superintendent, OBS
Duane Kashiwai, Public Works Administrator, FDB

2

JUL 16 2007

PHONE (808) 594-1888 FAX (808) 594-1865

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

July 10, 2007 HRD07_3095

Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Hirano:

Re: Early Consultation for Proposed Pa'ani Mai Park Expansion
Hana, Maui

The Office of Hawaiian Affairs (OHA) is in receipt of your June 14, 2007 letter initiating consultation for an Environmental Assessment (EA) for the subject project, a proposed 3-acre expansion of the Pa'ani Mai Park by the County of Maui, Department of Parks and Recreation.

Based on the information contained within your letter, the proposed expansion area is undeveloped and fallow agricultural land which was formerly used for cattle grazing.

While OHA has no specific comments at this time, we request the opportunity to review the draft EA when it is completed and to be continued to be included in any future consultation.

Thank you for the opportunity to provide comments at this early stage in the draft EA process. Should you have any questions, please contact Keola Lindsey, Lead Advocate- Culture at (808) 594-1904 or keolal@oha.org.

'O wau iho nō,

Clyde W. Nāmu'o
Administrator

C: Thelma Shimaoka, OHA- Community Resource Coordinator
140 Ho'ohana Street, Suite 206, Kahului, Hawai'i 96732

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Clyde W. Nāmu`o
State of Hawai`i
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawai`i 96813

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Nāmu`o:

Thank you for your letter dated July 10, 2007 regarding the proposed expansion of Pa`ani Mai Park.

As requested, a copy of the Draft Environmental Assessment will be sent to you.

Again, thank you for your participation in the early consultation review.

Very truly yours,

Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
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305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

LINDA LINGLE
GOVERNOR OF HAWAII

JUL 11 2007

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / CWB

07023PKP.07

July 9, 2007

Mr. Mich Hirano, AICP
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: Early Consultation for Proposed Pa'ani Mai Park Expansion, Hana, Maui

The Department of Health, Clean Water Branch (CWB), has reviewed the subject document and offers these comments on your project. Please note that our review is based solely on the information provided in the subject document and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

1. Any project and its potential impacts to State waters must meet the following criteria:

    a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.

    b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.

    c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. Please call the Army Corps of Engineers at (808) 438-9258 to see if this project requires a Department of the Army (DA) permit. Permits may be required for work performed in, over, and under navigable waters of the United States. Projects requiring a DA permit also require a Section 401 Water Quality Certification (WQC) from our office.

3. You are required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

   a. Storm water associated with construction activities, including clearing, grading, and excavation, that result in the disturbance of equal to or greater than one (1) acre of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. **An NPDES permit is required before the start of the construction activities.**

   b. Treated effluent from leaking underground storage tank remedial activities.

   c. Hydrotesting water.

   d. Construction dewatering effluent.

   You must submit a separate NOI form for each type of discharge at least 30 calendar days prior to the start of the discharge activity, except when applying for coverage for discharges of storm water associated with construction activity. For this type of discharge, the NOI must be submitted 30 calendar days before to the start of construction activities. The NOI forms may be picked up at our office or downloaded from our website at: http://www.hawaii.gov/health/environmental/water/cleanwater/forms/genl-index.html.

4. For types of wastewater not listed in Item 3 above or wastewater discharging into Class 1 or Class AA waters, you must obtain an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

5. You must also submit a copy of the NOI or NPDES permit application to the State Department of Land and Natural Resources, State Historic Preservation Division (SHPD), or demonstrate to the satisfaction of the CWB that SHPD has or is in the process of evaluating your project. Please submit a copy of your request for review by SHPD or SHPD's determination letter for the project along with your NOI or NPDES permit application, as applicable.

6. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of $25,000 per day per violation.

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html,or contact the Engineering Section, CWB, at 586-4309.

Sincerely,

ALEC WONG, P.E., CHIEF
Clean Water Branch

KP:np

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Alec Wong, P.E., Chief
State of Hawai`i
Department of Health
Clean Water Branch
P. O. Box 3378
Honolulu, Hawai`i 96801

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Wong:

Thank you for your letter dated July 9, 2007 providing comments on the subject project. We wish to provide the following responses to your comments.

Response to Comment No. 1

We note the requirements of Chapters 11-54 and 11-55, Hawai`i Administrative Rules (HAR). The applicant will submit an application for a National Pollutant Discharge Elimination System (NPDES) permit and the water impact criteria will be addressed, as appropriate, through the NPDES permit.

Response to Comment No. 2

Coordination will be carried out with the Corps of Engineers to determine if a Department of Army permit will be required for the proposed project.

Response to Comment No. 3

Your comments regarding the NPDES and its relation to HAR, Chapter 11-55 are acknowledged. The project engineer will be applying for the NPDES permit for discharges of water, including storm water runoff into State surface waters.

Response to Comment No. 4

Further coordination with the Department of Health will be carried out by the project engineer to determine the applicable NPDES requirements.

Response to Comment No. 5

Coordination with the Department of Land and Natural Resources (DLNR) and the State Historic Preservation Division (SHPD) will be carried out, as applicable.

Response to Comment No. 6

Your comment regarding compliance with State's Water Quality Standards is acknowledged and appreciated.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
Ronald Fukumoto, Ronald M. Fukumoto Engineering Inc.
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JUL 2 4 2007

LINDA LINGLE
GOVERNOR OF HAWAII

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EPO-07-133

July 18, 2007

Mr. Mich Hirano
Munekiyo & Hiraga, Inc
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

SUBJECT: Pre-Assessment Consultation for Pa'ani Mai Park Expansion
Hana, Maui, Hawaii
TMK: (2) 1-4-006: 001 (portion)

Thank you for allowing us to review and comment on the subject documents. The documents were routed to the various branches of the Department of Health (DOH) Environmental Health Administration. We have the following Wastewater Branch and General comments. Also, our Clean Water Branch indicated that they have sent their comments to you.

Wastewater Branch

The project is located in the Critical Wastewater Disposal Area (CWDA) where no new cesspools will be allowed. As there is no County sewer system in the area, we concur with the use of treatment individual wastewater systems (IWSs) such as septic system and aerobic units for the park improvements.

All wastewater plans must meet Department's Rules, HAR Chapter 11-62, "Wastewater Systems." We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. If you have any questions, please contact the Planning & Design Section of the Wastewater Branch at 586-4294.

General

We strongly recommend that you review all of the Standard Comments on our website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html. Any comments specifically applicable to this application should be adhered to.

If there are any questions about these comments please contact Jiacai Liu with the Environmental Planning Office at 586-4346.

Sincerely,

KELVIN H. SUNADA, MANAGER
Environmental Planning Office

c: EPO
WWB
EH- Maui

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Kelvin H. Sunada, Manager
State of Hawai`i
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, Hawai`i 96801

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Sunada:

Thank you for your letter dated July 18, 2007 providing comments on the subject project. We wish to provide the following responses to your comments in the same order as your letter.

Response to Wastewater Branch

Your comment regarding the location of the project site in the Critical Wastewater Disposal Area (CWDA) is noted. The applicant proposes to treat wastewater with an individual wastewater system. Plans and specifications will be in compliance with the Department of Health's Rules, HAR Chapter 11-62, "Wastewater Systems."

Response to General

We acknowledge your recommendation to review all of the Standard Comments on your website, and will adhere to any comments specifically applicable to this application.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
F:\DATA\HHA\PaaniMai 1060\DOHplanningec.tr.wpd

LINDA LINGLE
GOVERNOR OF HAWAII

JUL 0 3 2007

CHIYOME L. FUKINO, M. D.
DIRECTOR OF HEALTH

LORRIN W. PANG, M. D., M. P. H.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2102

July 3, 2007

Mr. Mich Hirano
Munekiyo & Hiraga, Inc.
305 South High Street, Suite 104
Wailuku, Hawai`i 96793

Dear Mr. Hirano:

Subject: **Proposed Pa`ani Mai Park Expansion**
TMK: (2) 1-4-06: 025

Thank you for the opportunity to participate in the early consultation process for the environmental assessment preparation process. The following comments are offered:

1. The noise created during the construction phase of the project may exceed the maximum allowable levels as set forth in Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control". A noise permit may be required and should be obtained before the commencement of work.

2. National Pollutant Discharge Elimination System (NPDES) permit coverage is required for this project. The Clean Water Branch should be contacted at 808 586-4309.

It is strongly recommended that the Standard Comments found at the Department's website: www.state.hi.us/health/environmental/env-planning/landuse/landuse.html be reviewed, and any comments specifically applicable to this project should be adhered to.

Should you have any questions, please call me at 808 984-8230.

Sincerely,

Herbert S. Matsubayashi
District Environmental Health Program Chief

c: EPO

14

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRASA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Herbert S. Matsubayashi
State of Hawai`i
Department of Health
Maui District Health Office
54 High Street
Wailuku, Hawai`i 96793

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Matsubayashi:

Thank you for your letter dated July 3, 2007 in response to the request for early consultation on the subject project. We would like to provide the following information in response to your comments.

Response to Comment No. 1

The proposed project will conform to Hawai`i Administrative Rules, Chapter 11-46 "Community Noise Control." An application for a noise permit, as appropriate, will be submitted to the Department of Health prior to construction.

Response to Comment No. 2

Your comment regarding the National Pollutant Discharge Elimination System (NPDES) permit is acknowledged. The project engineer will be in contact with the Department of Health, Clean Water Branch during the NPDES application process.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
Ronald Fukumoto, Ronald M. Fukumoto Engineering Inc.
F:\DATA\HHA\PaaniMai 1060\DOHMauiecresp.ltr.wpd

16

JUN 2 7 2007

LINDA LINGLE
GOVERNOR OF HAWAII

ALLAN A. SMITH
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

June 20, 2007

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

Attention: Mr. Mich Hirano

Gentlemen:

Subject: Early Consultation for Proposed Pa'ani Mai Park Expansion, Hana, Maui, Tax Map Key: (2) 1-4-6:portion 1

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources has no comment to offer on the subject matter. Should you have any questions, please feel free to call our office at 587-0433. Thank you.

Sincerely,

Russell Y. Tsuji
Administrator

17

JUL 0 5 2007

LINDA LINGLE
GOVERNOR OF HAWAI'I

LAURENCE K. LAU
INTERIM DIRECTOR

STATE OF HAWAI'I
DEPARTMENT OF HEALTH
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
LEIOPAPA A KAMEHAMEHA, SUITE 702
HONOLULU, HAWAI'I 96813
Telephone (808) 586-4185
Facsimile (808) 586-4186
Electronic Mail: OEQC@doh.hawaii.gov

July 2, 2007

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawai'i 96793

Dear Mr. Hirano:

Subject: Early Consultation for the Proposed Pa'ani Mai Park Expansion, Hana, Maui

This letter is in response to your request for early consultation. Please address the following issues in the EA:

1. Has the approximately three acres of land to be acquired for the park been in cultivation for sugar, pineapple or other crops in the past? If so, discuss potential impacts from fertilizer or pesticide contamination.

2. Safety issues related to the design and use of the skateboard and tots play areas.

3. Noise impacts to other park users from skateboard use.

4. The number of people projected to use the park as it relates to wastewater load.

5. Impacts to traffic flow on Hana Highway and other arterial roads.

6. Noise and traffic impacts to adjacent residences from increased traffic on the Noenoe Place access road extension.

7. A description of adjacent property uses, including the use of the parcels to the east directly across Hana Highway.

8. Potential archaeological resources or burials.

9. A detailed description of the current drainage conditions and the proposed drainage system.

10. The fact that potential impacts to the existing park from the Hana Highway widening element of the project would trigger involvement of Section 4 (f) of the Transportation Act of 1966.

Should you have any questions, please call George Casen or Les Segundo at 586-4185.

Yours truly,

LAURENCE K. LAU
Deputy Director for Environmental Health

c: File

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Laurence Lau, Deputy Director
State of Hawai`i
Department of Health
Office of Environmental Quality Control
235 South Beretania Street
Leiopapa A Kamehameha, Suite 702
Honolulu, Hawai`i 96813

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Lau:

Thank you for your department's letter dated July 2, 2007 providing comments to the early consultation request on the subject project. We wish to provide the following information in response to your comments.

Response to Comment No.1

Prior uses of the park expansion area include cattle grazing by Hana Ranch, LLC and previous to that, sugar cultivation. Potential impacts from fertilizer and pesticide contamination is addressed in the Draft Environmental Assessment (DEA) in Chapter II, Physical Environment, Section 11.

Response to Comment No. 2

Your comment concerning safety issues related to the design and use of the skateboard and tots play area is noted. The proposed project will comply with all regulations pertaining to safety standards.

Response to Comment No. 3

The skateboard area is located in the westerly corner of the project site, approximately 250 feet from the existing comfort station and 180 feet from the proposed pavilion area. The Department of Parks and Recreation has not had a problem in other parks where noise generated from skateboard use has adversely affected other park users.

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

Response to Comment No. 4

The project's projected wastewater flow is addressed in the Draft Environmental Assessment and Preliminary Engineering Report. It is projected that the estimated use of the proposed restroom and pavilion building is 250 persons per day. Therefore, according to the estimated daily use of the building and the wastewater rate of 5 gallons per person per day, the new individual wastewater system will have a 1,800-gallon septic tank and a 1,600 square foot absorption field. The system will be designed and constructed in accordance with State Department of Health criteria.

Response to Comment No. 5

Impacts to traffic flow are addressed in the DEA, Chapter II, Public Services, as well as the Traffic Assessment Letter provided by Phillip Rowell.

Response to Comment No. 6

Adverse noise and traffic impacts are not anticipated as a result of the proposed project. Additionally, the projected use of the park and nearby road facilities is not anticipated to conflict with peak hours traffic flows.

Response to Comment No. 7

A description of adjacent property uses can be found in Chapter II of the DEA.

Response to Comment No. 8

Your comment regarding potential archaeological resources or burials is acknowledged. An archaeological survey was carried out in September 2007 by Xamanek Researches, LLC. Further, an Archaeological Inventory Survey Report and Monitoring Plan have been prepared by Xamanek Researches, LLC and can be found within the DEA.

Response to Comment No. 9

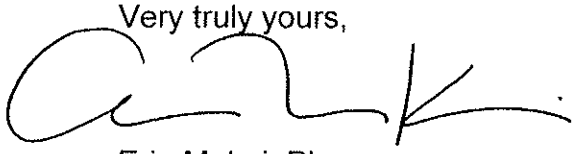
Your comment concerning a detailed description of the current drainage conditions and the proposed drainage system is acknowledged. Details of the proposed drainage improvements will be included in the DEA document and detailed in the Preliminary Engineering Report.

Response to Comment No. 10

Section 4 (f) of the Transportation Act of 1966 is triggered by the use of Federal funds. It is anticipated that no federal funds will be used for the widening of Hana Highway.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,



Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
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AUG 0 6 2007

LINDA LINGLE
GOVERNOR

BARRY FUKUNAGA
DIRECTOR

Deputy Directors
FRANCIS PAUL KEENO
BRENNON T. MORIOKA
BRIAN H. SEKIGUCHI

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

IN REPLY REFER TO:

HWY-PS
2.5118

JUL 3 1 2007

Mr. Mich Hirano, AICP
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Subject: Early Consultation for Proposed Paani Mai Park Expansion, Maui, Hana,
TMK: 1-4-06:25 and 1-4-06:01

Thank you for consulting us regarding the subject project. We have the following recommendations:

1. Applicant shall prepare a Traffic Assessment Report (TIAR) for our review. The TIAR shall include a traffic analysis of the impact of the park expansion project at the intersection of the park access with Hana Highway, and the mitigation measures taken to mitigate any traffic impact generated by the said project.

2. This project shall be coordinated with our proposed future (a) bikepath and (b) shared bikeway fronting the park.

3. Developer should reserve adequate rights of way (roadway setbacks) fronting the park for the future implementation of these bikeway facilities.

4. Construction plans must be submitted for our review and approval.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division at (808) 587-1830.

Very truly yours,

BRENNON T. MORIOKA, Ph.D., P.E.
Deputy Director – Highways

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Brennon Morioka
Deputy Director-Highways
State of Hawai`i
Department of Transportation
869 Punchbowl Street
Honolulu, Hawai`i 96813

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Morioka:

Thank you for your letter dated July 31, 2007 providing comments on the subject project. We wish to provide the following responses to your comments.

Response to Comment No.1

A Traffic Assessment Letter has been prepared by Phillip Rowell for the proposed project. The assessment letter can be found in the DEA.

Response to Comment No. 2

Your comment concerning the coordination with the State of Hawaii, Department of Transportation regarding proposed future (a) bike path and (b) shared bikeway fronting the park is acknowledged. Coordination will be carried out as appropriate.

Response to Comment No. 3

We acknowledge your comment concerning the reservation of adequate rights of way (roadway setbacks) fronting the park for future implementation of these bikeway facilities. Further coordination will be carried as appropriate by the Department of Parks and Recreation.

Response to Comment No. 4

As requested, a copy of the construction plans will be submitted to your office for review and approval.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:lh
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
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JUN 2 7 2007

LINDA LINGLE
GOVERNOR
STATE OF HAWAII

MICAH A. KANE
CHAIRMAN
HAWAIIAN HOMES COMMISSION

BEN HENDERSON
DEPUTY TO THE CHAIRMAN

KAULANA H. PARK
EXECUTIVE ASSISTANT

STATE OF HAWAII

DEPARTMENT OF HAWAIIAN HOME LANDS

P.O. BOX 1879

HONOLULU, HAWAII 96805

June 26, 2007

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

Thank you for the opportunity to participate in the early consultation process of a draft Environmental Assessment report for the Proposed Pa'ani Mai Park Extension project in Hana, Maui. The Department of Hawaiian Home Lands has no comments.

Should you have any questions, please call the Planning Office at (808) 586-3836.

Aloha and mahalo,

Micah A. Kane, Chairman
Hawaiian Homes Commission

JUN 2 6 2007

CHARMAINE TAVARES
Mayor

JEFFREY K. ENG
Director

ERIC H. YAMASHIGE, P.E., L.S.
Deputy Director

DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793-2155
www.mauiwater.org

June 20, 2007

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, HI 96793

SUBJECT: Early Consultation for Proposed Paani Mai Park Expansion, Hana
TMK: (2) 1-4-006:001 (por)

Dear Mr. Hirano:

Thank you for the opportunity to comment on this application.

Source Availability and Consumption
The project site is served by the Hana system. The existing park is served by 5/8-inch water meter. Should larger meter or additional meters be required, water availability will be determined at the time of meter application or reservation. EA should include the estimated potable demand for the proposed expansion.

System Infrastructure
The subject property is served by a 2-inch waterline along Hana Highway. Domestic, irrigation and fire flow calculations will be required in the building permit process

Conservation
We ask the applicant to consider the following water conservation measures:

Utilize Low-Flow Fixtures and Devices: Maui County Code Subsection 16.20A.680 requires the use of low-flow water fixtures and devices in faucets, showerheads, urinals, water closets, and hose bibs. Water conserving washing machines, ice-makers and other units are also available.

Use Climate -adapted Plants: The project is located in the Maui County Planting Plan - Plant Zones 1 and 5. In the event of any future landscape renovation, we encourage the applicant to utilize appropriate native and non invasive species and avoid the use of potentially invasive plants. Native plants adapted to the area, conserve water and protect the watershed from degradation due to invasive alien species. Attached is a list of appropriate plants for the zones as well as potentially invasive plants to avoid.

Maintain Fixtures to Prevent Leaks: A simple, regular program of repair and maintenance can prevent the loss of hundreds or even thousands of gallons a day. Refer to the attached handout, "The Costly Drip". The applicant should establish a regular maintenance program.

Prevent Over-Watering By Automated Systems: Provide rain-sensors on all automated irrigation controllers. Check and reset controllers at least once a month to reflect the monthly changes in evapo-transpiration rates at the site. As an alternative, provide the more automated, soil moisture sensors on controllers.

Should you have any questions, please call our Water Resources and Planning Division at 244-8550.

Sincerely,

Jeffrey K. Eng
Director
eam

c: engineering division
applicant, with attachments:
The Costly Drip
Maui County Planting Plan - Saving Water in the Yard - What and How to Plant in your Area
Ordinance No. 2108 - A Bill for an Ordinance Amending Chapter 16.20 of the Maui County Code, Pertaining to the Plumbing Code

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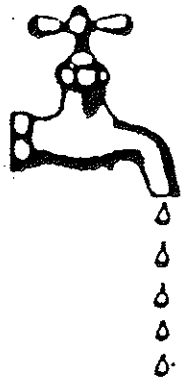
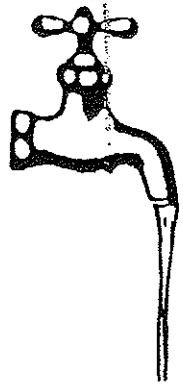
"THE COSTLY DRIP"

Slowly Dripping
Spigot Wastes
15 Gallons a day.



1/32" Leak Wastes
25 Gallons a day.

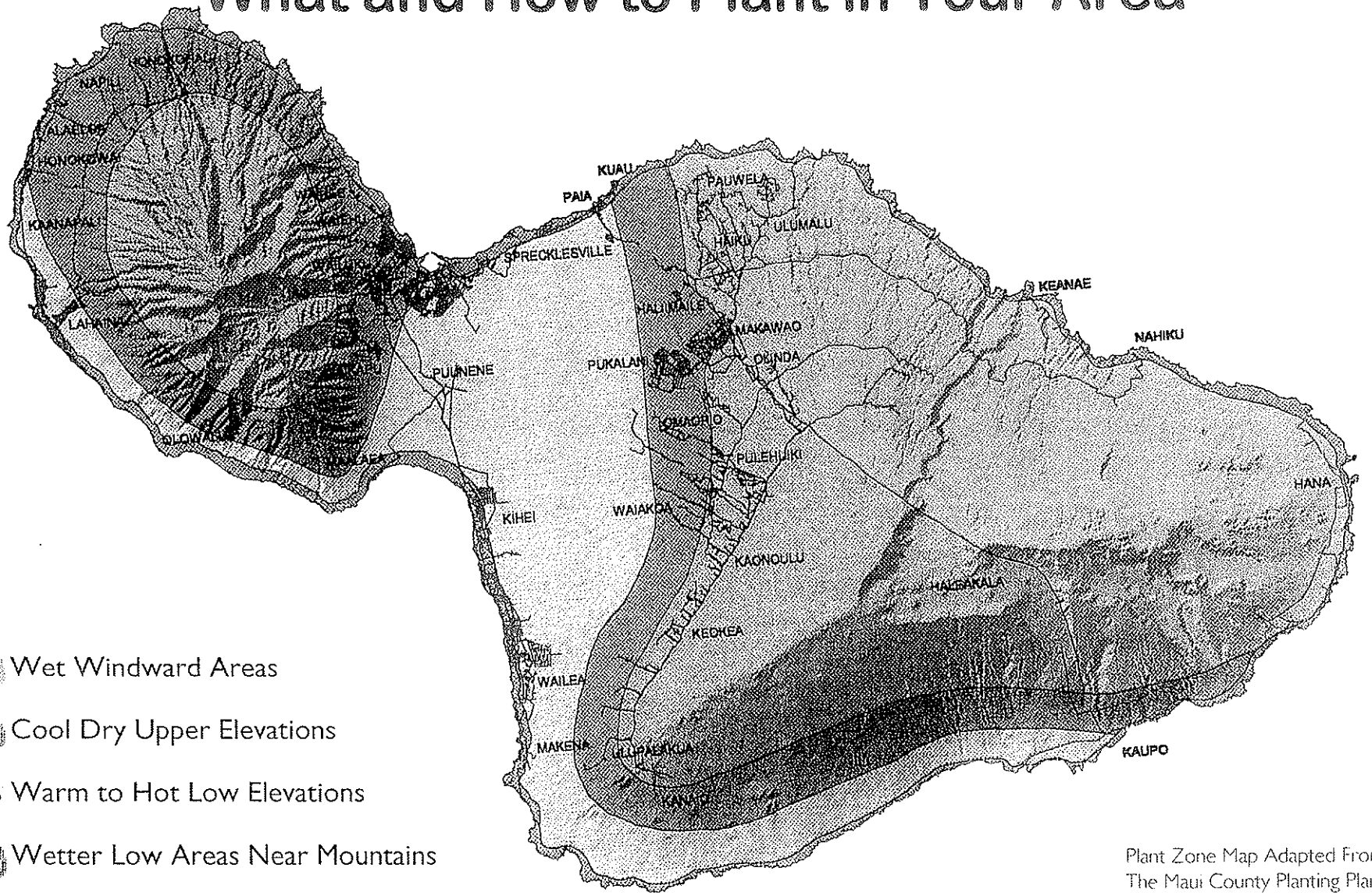
1/16" Stream Wastes
100 Gallons a Day.



1/8" Stream Wastes
400 Gallons a day.

Saving Water in The Yard

What and How to Plant in Your Area



1 Wet Windward Areas

2 Cool Dry Upper Elevations

3 Warm to Hot Low Elevations

4 Wetter Low Areas Near Mountains

5 Windward Coastal Salt Spray Zones

Plant Zone Map Adapted From
The Maui County Planting Plan

Tips From The Maui County Department of Water Supply

By Water All Things Find Life

Zone-specific Native and Polynesian plants for Maui County

Zone 1

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	Sadleria cyatheoides	'ama'u, ama'uma'u				
Gr - Sh	Lipochaeta succulenta	nehe	2'	5'	sea to 1,000'	Dry to Wet
P	Cocos nucifera	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia arecina	lo'ulu, hawane	40'	10'	1,000' to 3,000'	Dry to Wet
P	Pritchardia forbesiana	lo'ulu	15'			
P	Pritchardia hillebrandii	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	Mariscus javanicus	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium
Sh	Bidens hillebrandiana ssp. hillebrandiana	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet
Sh	Cordyline fruticosa	ti, ki	6			
Sh	Hedyotis spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh - Tr	Broussonetia papyrifera	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Tr	Acacia koa	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	Charpentiera obovata		15'			
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Hibiscus furcellatus	'akiohala, hau-hele	8'			
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
V	Alyxia oliviformis	maile	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 2

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	Sadleria cyatheoides	'ama'u, ama'uma'u				
G	Eragrostis monticola	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
Gr	Ipomoea tuboides	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	Peperomia leptostachya	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	Plumbago zeylanica	'ilie'e	1'			
Gr - Sh	Hibiscus calyphyllus	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta rockii	nehe	2'	2'	sea to 3,000'	Dry to Medium
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Artemisia mauiensis var. diffusa	Maui wormwood, 'ahinahina	2'	3'	1,000' to higher	Dry to Medium
Sh	Chenopodium oahuense	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	Dianella sandwicensis	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	Lipochaeta lavarum	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllidifolia	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	Senna gaudichaudii	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	Styphelia tameiameiae	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	Vitex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh - Tr	Myoporum sandwicense	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	Nototrichium sandwicense	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	Dodonaea viscosa	'a'ali'i	6'	8'	sea to higher	Dry to Medium
Tr	Acacia koa	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	Charpentiera obovata		15'			
Tr	Erythrina sandwicensis	wiliwili	20'	20'	sea to 1,000'	Dry
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 2

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Nestegis sandwicensis	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauvolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Sophora chrysophylla	mamane	15'	15'	1,000' to 3,000'	Medium
V	Alyxia oliviformis	maile	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 3

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
G	Colubrina asiatica	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	Eragrostis monticola	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
G	Eragrostis variabilis	'emo-loa	1'	2'	sea to 3,000'	Dry to Medium
G	Fimbristylis cymosa ssp. spathacea	mau'u'aki'aki fimbristylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Boerhavia repens	alena	0.5'	4'	sea to 1,000'	Dry to Medium
Gr	Chamaesyce celastroides var. laehiensis	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	Cressa truxillensis	cressa	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Heliotropium anomalum var. argenteum	hinahina ku kahakai	1'	2'	sea to 1,000'	Dry to Medium
Gr	Ipomoea tuboides	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	Jacquemontia ovalifolia ssp. sandwicensis	pa'u o hi'iaka	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	Lipochaeta integrifolia	nehe	1'	5'	sea to 1,00'	Dry to Medium
Gr	Peperomia leptostachya	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	Plumbago zeylanica	'ilie'e	1'			
Gr	Sesuvium portulacastrum	'akulikuli, sea-purslane	0.5'	2'	sea to 1,000'	Dry to Wet
Gr	Sida fallax	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	Tephrosia purpurea var. purpurea	'auhuhu	2'	2'	sea to 1,000'	Dry to Medium
Gr - Sh	Hibiscus calyphyllus	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta rockii	nehe	2'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta succulenta	nehe	2'	5'	sea to 1,000'	Dry to Wet
Gr - Sh	Lycium sandwicense	'ohelo-kai, 'ae'ae	2'	2'	sea to 1,000'	Dry to Medium
P	Cocos nucifera	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia hillebrandii	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	Mariscus javanicus	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium

Zone-specific Native and Polynesian plants for Maui County

Zone 3

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Bidens mauiensis	ko'oko'olau	1'	3'	sea to 1,000'	Dry to Medium
Sh	Bidens menziesii ssp. menziesii	ko'oko'olau	1'	3'		
Sh	Bidens micrantha ssp. micrantha	ko'oko'olau	1'	3'		
Sh	Chenopodium oahuense	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	Dianella sandwicensis	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	Gossypium tomentosum	mao, Hawaiian cotton	5'	8'	sea to 1,000'	Dry to Medium
Sh	Hedyotis spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh	Lipochaeta lavarum	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllidifolia	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	Scaevola sericea	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	Senna gaudichaudii	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	Solanum nelsonii	'akia, beach solanum	3'	3'	sea to 1,00'	Dry to Medium
Sh	Styphelia tameiameiae	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	Vitex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	Wikstroemia uva-ursi kauaiensis kauaiensis	'akia, Molokai osmanthus				
Sh - Tr	Broussonetia papyrifera	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Sh - Tr	Myoporum sandwicense	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	Nototrichium sandwicense	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	Dodonaea viscosa	'a'ali'i	6'	8'	sea to higher	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	Canthium odoratum	Alahe'e, 'ohe'e, walahe'e	12'	8'	sea to 3,000'	Dry to Medium
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Diospyros sandwicensis	lama	12'	15'	sea to 3,000'	Dry to Medium
Tr	Erythrina sandwicensis	wiliwili	20'	20'	sea to 1,000'	Dry
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 3

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Nesoluma polynesicum	keahi	15'	15'	sea to 3,00'	Dry
Tr	Nestegis sandwicensis	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauvolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Reynoldsia sandwicensis	'ohe makai	20'	20'	1,000' to 3,000'	Dry
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 4

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
F	Psilotum nudum	moa, moa kula	1'	1'	sea to 3,000'	Dry to Wet
F	Sadleria cyatheoides	'ama'u, ama'uma'u				
G	Colubrina asiatica	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	Eragrostis monticola	kalamalo	1'	2'	sea to 3,000'	Dry to Medium
G	Eragrostis variabilis	'emo-loa	1'	2'	sea to 3,000'	Dry to Medium
G	Fimbristylis cymosa ssp. spathacea	mau'u'aki'aki fimbristylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Chamaesyce celastroides var. laehiensis	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	Ipomoea tuboides	Hawaiian moon flower, 'uala	1'	10'	sea to 3,000'	Dry to Medium
Gr	Jacquemontia ovalifolia ssp. sandwicensis	pa'u o hi'iaka	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	Lipochaeta integrifolia	nehe	1'	5'	sea to 1,00'	Dry to Medium
Gr	Peperomia leptostachya	'ala'ala-wai-nui	1'	1'	sea to 3,000'	Dry to Medium
Gr	Plumbago zeylanica	'ilie'e	1'			
Gr	Sida fallax	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	Tephrosia purpurea var. purpurea	'auhuhu	2'	2'	sea to 1,000'	Dry to Medium
Gr - Sh	Hibiscus calyphyllus	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta rockii	nehe	2'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lipochaeta succulenta	nehe	2'	5'	sea to 1,000'	Dry to Wet
P	Cocos nucifera	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia arecina	lo'ulu, hawane	40'	10'	1,000' to 3,000'	Dry to Wet
P	Pritchardia forbesiana	lo'ulu	15'			
P	Pritchardia hillebrandii	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	Mariscus javanicus	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Artemisia australis	'ahinahina	2'	3'	sea to 3,000'	Dry to Medium

Zone-specific Native and Polynesian plants for Maui County

Zone 4

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	Artemisia mauiensis var. diffusa	Maui wormwood, 'ahinahina	2'	3'	1,000' to higher	Dry to Medium
Sh	Bidens hillebrandiana ssp. hillebrandiana	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet
Sh	Bidens menziesii ssp. menziesii	ko'oko'olau	1'	3'		
Sh	Bidens micrantha ssp. micrantha	ko'oko'olau	1'	3'		
Sh	Cordyline fruticosa	ti, ki	6			
Sh	Dianella sandwicensis	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	Lipochaeta lavarum	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllidifolia	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	Scaevola sericea	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	Solanum nelsonii	'akia, beach solanum	3'	3'	sea to 1,00'	Dry to Medium
Sh	Styphelia tameiameiae	pukiawe	6'	6'	1,000' to higher	Dry to Medium
Sh	Vitex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	Wikstroemia uva-ursi kauaiensis kauaiensis	'akia, Molokai osmanthus				
Sh - Tr	Broussonetia papyrifera	wauke, paper mulberry	8'	6'	sea to 1,000'	Dry to Medium
Sh - Tr	Myoporum sandwicense	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh - Tr	Nototrichium sandwicense	kulu'i	8'	8'	sea to 3,000'	Dry to Medium
Sh-Tr	Dodonaea viscosa	'a'ali'i	6'	8'	sea to higher	Dry to Medium
Tr	Acacia koa	koa	50' - 100'	40' - 80'	1,500' to 4,000'	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	Canthium odoratum	Alahe'e, 'ohe'e, walahe'e	12'	8'	sea to 3,000'	Dry to Medium
Tr	Charpentiera obovata		15'			
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Diospyros sandwicensis	lama	12'	15'	sea to 3,000'	Dry to Medium
Tr	Hibiscus furcellatus	'akiohala, hau-hele	8'			
Tr	Metrosideros polymorpha var. macrophylla	ohi'a lehua	25'	25'	sea to 1,000'	Dry to Wet
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 4

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Tr	Nestegis sandwicensis	olopua	15'	15'	1,000' to 3,000'	Dry to Medium
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Pleomele auwahiensis	halapepe	20'			
Tr	Rauvolfia sandwicensis	hao	20'	15'	sea to 3,000'	Dry to Medium
Tr	Santalum ellipticum	coastal sandalwood, 'ili-ahi	8'	8'	sea to 3,000'	Dry to Medium
Tr	Sophora chrysophylla	mamane	15'	15'	1,000' to 3,000'	Medium
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet
V	Alyxia oliviformis	maile	Vine		sea to 6,000'	Medium to Wet

Zone-specific Native and Polynesian plants for Maui County

Zone 5

TYPE: **F** Fern **G** Grass **Gr** Ground Cover **Sh** Shrub **P** Palm **S** Sedge **Tr** Tree **V** Vine

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
G	Colubrina asiatica	'anapanapa	3'	10'	sea to 1,000'	Dry to Wet
G	Eragrostis variabilis	'emo-loa	1'	2'	sea to 3,000'	Dry to Medium
G	Fimbristylis cymosa ssp. spathacea	mau'u'aki'aki fimbristylis	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Boerhavia repens	alena	0.5'	4'	sea to 1,000'	Dry to Medium
Gr	Chamaesyce celastroides var. laehiensis	'akoko	2'	3'	sea to 1,000'	Dry to Medium
Gr	Cressa truxillensis	cressa	0.5'	1'	sea to 1,000'	Dry to Medium
Gr	Heliotropium anomalum var. argenteum	hinahina ku kahakai	1'	2'	sea to 1,000'	Dry to Medium
Gr	Jacquemontia ovalifolia ssp. sandwicensis	pa'u o hi'iaka	0.5'	6'	sea to 1,000'	Dry to Medium
Gr	Lipochaeta integrifolia	nehe	1'	5'	sea to 1,00'	Dry to Medium
Gr	Sesuvium portulacastrum	'akulikuli, sea-purslane	0.5'	2'	sea to 1,000'	Dry to Wet
Gr	Sida fallax	'ilima	0.5'	3'	sea to 1,000'	Dry to Medium
Gr	Tephrosia purpurea var. purpurea	'auhuhu	2'	2'	sea to 1,000'	Dry to Medium
Gr - Sh	Hibiscus calyphyllus	ma'o hau hele, Rock's hibiscus	3'	2'	sea to 3,000'	Dry to Medium
Gr - Sh	Lycium sandwicense	'ohelo-kai, 'ae'ae	2'	2'	sea to 1,000'	Dry to Medium
P	Cocos nucifera	coconut, niu	100'	30'	sea to 1,000'	Dry to Wet
P	Pritchardia hillebrandii	lo'ulu, fan palm	25'	15'	sea to 1,000'	Dry to Wet
S	Mariscus javanicus	marsh cypress, 'ahu'awa	0.5'	0.5'	sea to 1,000'	Dry to Medium
Sh	Argemone glauca var. decipiens	pua kala	3'	2'	sea to 3,000'	Dry to Medium
Sh	Artemisia australis	'ahinahina	2'	3'	sea to 3,000'	Dry to Medium
Sh	Bidens hillebrandiana ssp. hillebrandiana	ko'oko'olau	1'	2'	sea to 1,000'	Dry to Wet
Sh	Bidens mauiensis	ko'oko'olau	1'	3'	sea to 1,000'	Dry to Medium
Sh	Chenopodium oahuense	'aheahea, 'aweoweo	6'		sea to higher	Dry to Medium
Sh	Dianella sandwicensis	'uki	2'	2'	1,000' to higher	Dry to Medium
Sh	Gossypium tomentosum	mao, Hawaiian cotton	5'	8'	sea to 1,000'	Dry to Medium

Zone-specific Native and Polynesian plants for Maui County

Zone 5

Type	Scientific Name	Common Name	Height	Spread	Elevation	Water req.
Sh	Hedyotis spp.	au, pilo	3'	2'	1,000' to 3,000'	Dry to Wet
Sh	Lipochaeta lavarum	nehe	3'	3'	sea to 3,000'	Dry to Medium
Sh	Osteomeles anthyllidifolia	'ulei, eluehe	4'	6'	sea to 3,000'	Dry to Medium
Sh	Scaevola sericea	naupaka, naupaka-kahakai	6'	8'	sea to 1,000'	Dry to Medium
Sh	Senna gaudichaudii	kolomana	5'	5'	sea to 3,000'	Dry to Medium
Sh	Solanum nelsonii	'akia, beach solanum	3'	3'	sea to 1,00'	Dry to Medium
Sh	Vitex rotundifolia	pohinahina	3'	4'	sea to 1,000'	Dry to Medium
Sh	Wikstroemia uva-ursi kauaiensis kauaiensis	'akia, Molokai osmanthus				
Sh - Tr	Myoporum sandwicense	naio, false sandalwood	10'	10'	sea to higher	Dry to Medium
Sh-Tr	Dodonaea viscosa	'a'ali'i	6'	8'	sea to higher	Dry to Medium
Tr	Aleurites moluccana	candlenut, kukui	50'	50'	sea to 3,000'	Medium to Wet
Tr	Calophyllum inophyllum	kamani, alexandrian laurel	60'	40'	sea to 3,000'	Medium to Wet
Tr	Cordia subcordata	kou	30'	25'	sea to 1,000'	Dry to Wet
Tr	Hibiscus furcellatus	'akiohala, hau-hele	8'			
Tr	Morinda citrifolia	indian mulberry, noni	20'	15'	sea to 1,000'	Dry to Wet
Tr	Pandanus tectorius	hala, puhala (HALELIST)	35'	25'	sea to 1,000'	Dry to Wet
Tr	Thespesia populnea	milo	30'	30'	sea to 3,000'	Dry to Wet
V	Ipomoea pes-caprae	beach morning glory, pohuehue	1			

DO NOT PLANT THESE PLANTS !!!

Common name	Scientific name	Plant family
black wattle	Acacia mearnsii	Mimosaceae
blackberry	Rubus argutus	Rosaceae
blue gum	Eucalyptus globulus	Myrtaceae
bocconia	Bocconia frutescens	Papaveraceae
broad-leaved cordia	Cordia glabra	Boraginaceae
broomsedge, yellow bluestem	Andropogon virginicus	Poaceae
buffelgrass	Cenchrus ciliaris	Poaceae
butterfly bush, smoke bush	Buddleja madagascariensis	Buddlejaceae
cats claw, Mysore thorn, wait-a-bit	Caesalpinia decapetala	Caesalpiniaceae
common ironwood	Casuarina equisetifolia	Casuarinaceae
common velvet grass, Yorkshire fog	Holcus lanatus	Poaceae
fiddlewood	Citharexylum spinosum	Verbenaceae
fire tree, faya tree	Myrica faya	Myricaceae
glorybower	Clerodendrum laponicum	Verbenaceae
hairy cat's ear, gosmore	Hypochoeris radicata	Asteraceae
haole koa	Leucaena leucocephala	Fabaceae
ivy gourd, scarlet-fruited gourd	Coccinia grandis	Cucurbitaceae
juniper berry	Citharexylum caudatum	Verbenaceae
kahili flower	Grevillea banksii	Proteaceae
klu, popinac	Acacia farnesiana	Mimosaceae
logwood, bloodwood tree	Haematoxylon campechianum	Caesalpiniaceae
loquat	Eriobotrya japonica	Rosaceae
meadow ricegrass	Ehrharta stipoides	Poaceae
melaleuca	Melaleuca quinquenervia	Myrtaceae
miconia, velvet leaf	Miconia calvescens	Melastomataceae
narrow-leaved carpetgrass	Axonopus fissifolius	Poaceae
oleaster	Elaeagnus umbellata	Elaeagnaceae
oriental mangrove	Bruguiera gymnorrhiza	Rhizophoraceae
padang cassia	Cinnamomum burmanii	Lauraceae
palmgrass	Setaria palmifolia	Poaceae
pearl flower	Heterocentron subtriplinervium	Melastomataceae
quinine tree	Cinchona pubesens	Rubiaceae
satin leaf, caimitillo	Chrysophyllum oliviforme	Sapotaceae
silkwood, Queensland maple	Flindersia brayleyana	Rutaceae
silky oak, silver oak	Grevillea robusta	Proteaceae
strawberry guava	Psidium cattleianum	Myrtaceae
swamp oak, saltmarsh, longleaf ironwood	Casuarina glauca	Casuarinaceae
sweet vernalgrass	Anthoxanthum odoratum	Poaceae
tree of heaven	Ailanthus altissima	Simaroubaceae
trumpet tree, guarumo	Cecropia obtusifolia	Cecropiaceae
white ginger	Hedychium coronarium	Zingiberaceae
white moho	Heliocarpus popayanensis	Tiliaceae
yellow ginger	Hedychium flavescens	Zingiberaceae

DO NOT PLANT THESE PLANTS !!!

Common name	Scientific name	Plant family
	Jasminum fluminense	Oleaceae
	Arthrostema ciliatum	Melastomataceae
	Dissotis rotundifolia	Melastomataceae
	Erigeron karvinskianus	Asteraceae
	Eucalyptus robusta	Myrtaceae
	Hedychium gardnerianum	Zingiberaceae
	Juncus planifolius	Juncaceae
	Lophostemon confertus	Myrtaceae
	Medinilla cumingii	Melastomataceae
	Medinilla magnifica	Melastomataceae
	Medinilla venosa	Melastomataceae
	Melastoma candidum	Melastomataceae
	Melinis minutiflora	Poaceae
	Olea europaea	
	Oxyspora paniculata	Melastomataceae
	Panicum maximum	Poaceae
	Paspalum urvillei	Poaceae
	Passiflora edulis	Passifloraceae
	Phormium tenax	Agavaceae
	Pinus taeda	Pinaceae
	Prosopis pallida	Fabaceae
	Pterolepis glomerata	Melastomataceae
	Rhodomyrtus tomentosa	Myrtaceae
	Schefflera actinophylla	Araliaceae
	Syzygium jambos	Myrtaceae
Australian blackwood	Acacia melanoxylon	Mimosaceae
Australian tree fern	Cyathea cooperi	Cyatheaceae
Australian tree fern	Sphaeropteris cooperi	Cyatheaceae
Beggar's tick, Spanish needle	Bidens pilosa	Asteraceae
California grass	Brachiaria mutica	Poaceae
Chinese banyon, Maylayan banyon	Ficus mirocarpa	Moraceae
Chinese violet	Asystasia gangetica	Acanthaceae
Christmasberry, Brazilian pepper	Schinus terebinthifolius	Anacardiaceae
Formosan koa	Acacia confusa	Mimosaceae
German ivy	Senecio mikanioides	Asteraceae
Japanese honeysuckle	Lonicera japonica	Caprifoliaceae
Koster's curse	Clidemia hirta	Melastomataceae
Lantana	Lantana camara	Verbenaceae
Mauritius hemp	Furcraea foetida	Agavaceae
Mexican ash, tropical ash	Fraxinus uhdei	Oleaceae
Mexican tulip poppy	Hunnemannia fumariifolia	Papaveraceae
Mules foot, Madagascar tree fern	Angiopteris evecta	Marattiaceae
New Zealand laurel, karakaranut	Corynocarpus laevigatus	Corynocarpaceae
New Zealand tea	Leptospermum scoparium	Myrtaceae
Pampas grass	Cortaderia jubata	Poaceae
Panama rubber tree, Mexican rubber tree	Castilloa elastica	Moraceae
Shoebutton ardisia	Ardisia elliptica	Myrsinaceae
banana poka	Passiflora mollissima	Passifloraceae

Selection

As a general rule, it is best to select the largest and healthiest specimens. However, be sure to note that they are not pot-bound. Smaller, younger plants may result in a low rate of plant survival.[1] When selecting native species, consider the site they are to be planted in, and the space that you have to plant. For example: Mountain species such as koa and maile will not grow well in hot coastal areas exposed to strong ocean breezes. Lowland and coastal species such as wiliwili and Kou require abundant sunshine and porus soil. They will not grow well with frequent cloud cover, high rainfall and heavy soil.

Consider too, the size that the species will grow to be. It is not wise to plant trees that will grow too large.[2] Overplanting tends to be a big problem in the landscape due to the underestimation of a species' height, width or spread.

A large, dense canopied tree such as the kukui is a good shade tree for a lawn. However, it's canopy size and density of shade will limit what can be planted in the surrounding area. Shade cast by a koa and ohia lehua is relatively light and will not inhibit growth beneath it.

Keep seasons in mind when you are selecting your plants. Not all plants look good year round, some plants such as ilima will look scraggly after they have flowered and formed seeds. Avoid planting large areas with only one native plant. Mixing plants which naturally grow together will ensure the garden will look good all year round.[3] Looking at natural habitats helps to show how plants grow naturally in the landscape.

When planting an area with a mixed-ecosystem, keep in mind the size and ecological requirements of each plant. Start with the hardiest and most easily grown species, but allow space for fragile ones in subsequent plantings.

Acquiring natives

Plants in their wild habitat must be protected and maintained. It is best and easiest to get your plants from nurseries (see list), or friend's gardens. Obtain proper permits from landowners and make sure you follow a few common sense rules:

- collect sparingly from each plant or area.
- some plants are on the state or Federal Endangered Species list. Make sure you get permits (see app. A,B)

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[1] K. Nagata, P.6

[2] K. Nagata, P.9

[3] Nagata, P.9

Soil

Once you have selected your site and the plants you wish to establish there, you must look at the soil conditions on the site. Proper soil is necessary for the successful growth of most native plants, which preform poorly in hard pan, clay or adobe soils. If natives are to be planted in these types of soil, it would be wise to dig planting holes several times the size of the rootball and backfill with 50-75% compost.[4] A large planting hole ensures the development of a strong root system. The plant will have a headstart before the roots penetrate the surrounding poor soil.[5]

It is recommended that native plants not be planted in ground that is more dense than potting soil. If there is no alternative, dig a hole in a mound of soil mixed with volcanic cinder which encourages maximum root development. Fill the hole with water, if the water tends to puddle or drain too slowly, dig a deeper hole until the water does not puddle longer than 1 or 2 minutes.[6] Well-drained soil is one of the most important things when planting natives as you will see in the next section.

Irrigation

Most natives do very poorly in waterlogged conditions. Do not water if the soil is damp. Water when the soil is dry and the plants are wilting. Once established, a good soaking twice a week should suffice. Deep soaking encourages the development of stronger, and deeper root systems. This is better than frequent and shallow watering which encourage weaker, more shallow root systems.

The following is a watering schedule from Kenneth Nagata's Booklet, *How To Plant A Native Hawaiian Garden*:

WATER REQUIREMENT	WATERING FREQUENCY
Heavy	3x / week
Moderate	2x / week
Light	1x / week

Red clay soils hold more water for a longer period of time than sandy soils do. If your area is very sunny or near a beach, things will dry out faster. Even in the area of one garden, there are parts that will need more or less water. Soils can vary and amount of shade and wind differ. After plants are established (a month or two for most plants, up to a year for some trees), you can back off watering.

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[4] Nagata, p. 6

[5] Nagata, p. 8

[6] Nagata, p. 8

Automatic sprinkler systems are expensive to install and must be checked and adjusted regularly. Above-ground systems allow you to monitor how much water is being put out, but you lose a lot due to malfunctioning of sprinkler heads and wind. The most efficient way to save water and make sure your plants get enough water, is to hand-water. This way you are getting our precious water to the right places in the right amounts.[7]

Fertilizer

An all-purpose fertilizer 10-10-10 is adequate for most species. They should be applied at planting time, 3 months later, and 6 months thereafter. Use half the dosage recommended for ornamentals and pay special attention to native ferns which are sensitive to strong fertilizers. Use of organic composts and aged animal manures is suggested instead of chemical fertilizers. In addition, use of cinders for providing trace minerals is strongly recommended.[8]

Natives are plants which were here hundreds of years before the polynesians inhabited the Hawaiian Islands. They were brought here by birds, or survived the harsh ocean conditions to float here. They are well-adapted to Hawaii's varying soil and environmental conditions. This is why they make prime specimens for a xeriscape garden. However, natives will not thrive on their own, especially under harsh conditions. On the other hand, like any other plant, if you over-water and over-fertilize them, they will die. Follow the instructions given to you by the nursery you buy the plant from, or from this booklet. Better yet, buy a book (suggested readings can be found in the bibliography in the back of this pamphlet), read it, and learn more about native plants. I guarantee that you will be pleased with the results.

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[7] Bornhorst, p. 19-20

[8] Nagata, p. 6

Propagation

There are many ways to propagate and plant-out native Hawaiian species. One of the most thourough and helpful book is Heidi Bornhorst's book, *Growing Native Hawaiian Plants.* The easiest, and best way to obtain natives for the novice gardener is to get them from a reputable nursery (see appendix c). That way all you will have to do is know how to transplant (if necessary) and plant-out when you are ready. These are the two methods I have listed here.

Transplanting

1. Use pots that are one size bigger than the potted plant is in
2. Get your potting medium ready

Good potting medium is a ½, ½ mixture of peat moss and perlite. If the plant is from a dry or coastal area, add chunks of cinder or extra perlite. If it is a wet forest species, add more peat moss or compost. Be aware that peat moss is very acidic and certain plants react severely to acidity.

If the plant is to eventually be planted into the ground, make a mix of equal parts peat moss, perlite, and soil from the area in which the plant is to be planted. Slow-release fertilizer can be mixed into the potting medium.

3. Once pots, potting medium, fertilizer and water are ready, you can begin re-potting. Keep the plant stem at the same depth it was in the original pot. Avoid putting the plant in too large a pot, as the plant may not be able to soak up all the water in the soil and the roots may drown and rot.

Mix potting medium and add slow-release fertilizer at this time. Pre-wet the medium to keep dust down and lessen shock to the plant. Put medium in bottom of pot. Measure for the correct depth in the new pot. Make sure there is from ½ to 2 inches from the top of the pot so the plant can get adequate water. Try to stand the plant upright and center the stem in the middle of the pot.

Water the plant thoroughly after transplanting. A vitamin B-1 transplanting solution can help to lessen the transplant shock. Keep the plant in the same type of environment as it was before, sun or shade. If roots were broken, trimm off some of the leaves to compensate for the loss.[9]

Planting out

1. Plant most native Hawaiian plants in a sunny location in soil that is well-drained.
2. Make the planting hole twice as wide as the root ball or present pot, and just as deep.

If the soil is clay-like, and drains slowly, mix in some coarse red or bland cinder, coarse perlite or

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[9] Bornhorst, p.20-21

coarse compost. Place some slow-release fertilizer at the bottom of the hole.

3. Carefully remove the plant from the container and place it in the hole.

The top of the soil should be at the same level as the top of the hole, if it is too high or too low, adjust the soil level so that the plant is at the right depth.

4. Water thoroughly after you transplant.

Mulch

Most natives cannot compete with weeds, and therefore must be weeded around constantly in order to thrive. Mulch is a practical alternative, which discourages and prevents weeds from growing.

Hawaii's hot, humid climate leads to the breaking down of organic mulches. Thick organic mulches such as wood chips and leaves, may also be hiding places for pests.

Stone mulches are attractive, permanent and can help to improve soil quality. Red or black cinder, blue rock chips, smooth river rocks and coral chips are some natural choices.[10] Macadamia nut hulls are also easy to find and can make a nice mulch.[11]

Never pile up mulch right next to the stem or trunk of a plant, keep it a few inches away.

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[10] Bornhorst, p. 24

[11] Nagata, p. 7

ZONES

The Maui County Planting Plan has compiled a system of 5 zones of plant growth for Maui County. The descriptions of zones and maps for these zones are as follows:

Zone 1:

Wet areas on the windward side of the island. More than 40 inches of rain per year. Higher than 3,000 feet.

Zone 2:

Cool, dry areas in higher elevations (above 1,000 feet). 20 to 40 inches of rain per year.

Zone 3:

Low, drier areas, warm to hot. Less than 20 inches of rain per year. Sea level to 1,000 feet.

Zone 4:

Lower elevations which are wetter due to proximity of mountains. 1,000 to 3,000 feet.

Zone 5:

Salt spray zones in coastal areas on the windward side.

These zones are to be used as a general guide to planting for Maui County. In addition to looking at the maps, read the descriptions of the zones and decide which zone best fits your area. Plants can be listed in more than one zone and can be planted in a variety of conditions. For best results, take notes on the rainfall, wind, sun and salt conditions of your site. Use the zones as a general guide for selection and read about the plants to decide which best fits your needs as far as care and or function.

PLACES TO SEE NATIVES ON MAUI:

The following places propagate native Hawaiian plants from seeds and/or cuttings. Their purpose is to protect and preserve these native plants. Please contact them before going to view the sites, they can provide valuable information and referral to other sources.

1.	Hoolawa Farms P O Box 731 Haiku HI 96708	575-5099
2.	The Hawaiian Collection 1127 Manu Street Kula HI 96790	878-1701
3.	Kula Botanical Gardens RR4, Box 228 Kula HI 96790	878-1715
4.	Maui Botanical Gardens Kanaloa Avenue, Kahului across from stadium	249-2798
5.	Kula Forest Reserve access road at the end of Waipoli Rd Call the Maui District Office	984-8100
6.	Wailea Point, Private Condominium residence 4000 Wailea Alanui, Kihei public access points at Four Seasons Resort or Polo Beach	875-9557
7.	Kahanu Gardens, National Tropical Botanical Garden Alau Place, Hana HI 96713	248-8912
8.	Kahului Library Courtyard 20 School Street Kahului HI 96732	873-3097

PLACES TO BUY NATIVE PLANTS ON MAUI

1. Ho'olawa Farms
   Anna Palomino
   P O Box 731
   Haiku HI 96708
   575-5099

   * The largest and best collection of natives in the state. They will deliver, but worth the drive to go and see! Will propagate upon request

2. Kahanu Gardens
   National Tropical Botanical Garden
   Alau Place, Hana
   248-8912

3. Kihana Nursery
   1708 South Kihei Road
   Kihei HI 96753
   879-1165

4. Kihei Garden and Landscape
   Waiko Road, Wailuku
   P O Box 1058
   Puunene HI 96784
   244-3804

5. Kula Ace Hardware and Nursery
   3600 Lower Kula Road
   Kula HI 96790
   876-0734
   * many natives in stock
   * get most of their plants from Ho'olawa Farms
   * they take special requests

6. Kulamanu Farms - Ann Carter
   Kula HI 96790
   878-1801

7. Maui Nui Botanical Gardens
   Kanaloa Avenue
   (Across from stadium)
   Kahului HI 96732
   249-2798

8. Native Gardenscapes
   Robin McMillan
   1330 Lower Kimo Drive
   Kula HI 96790
   870-1421

   * grows native plants and installs landscapes including irrigation.

9. Native Hawaiian Tree Source
   1630 Piiholo Road
   Makawao HI 96768
   572-6180

10. Native Nursery, LLC
    Jonathan Keyser
    250-3341

11. New Moon Enterprises - Pat Bily
    47 Kahoea Place
    Kula HI 96790
    878-2441

12. Waiakoa Tree Farm - Kua Rogoff
    Pukalani HI 96768
    Cell - 264-4166

ORDINANCE NO. 2108

BILL NO. 6 (1992)

Draft 1

A BILL FOR AN ORDINANCE AMENDING CHAPTER 16.20 OF THE MAUI COUNTY CODE, PERTAINING TO THE PLUMBING CODE

BE IT ORDAINED BY THE PEOPLE OF THE COUNTY OF MAUI:

SECTION 1. Title 16 of the Maui County Code is amended by adding a new section to Chapter 10 of the Uniform Plumbing Code to be designated and to read as follows:

"16.20.675 Section 1050 added. Chapter 10 of the Uniform Plumbing Code is amended by adding a new section, pertaining to low-flow water fixtures and devices, to be designated and to read as follows:

Sec. 1050 Low-flow water fixtures and devices. (a) This section establishes maximum rates of water flow or discharge for plumbing fixtures and devices in order to promote water conservation.

(b) For the plumbing fixtures and devices covered in this section, manufacturers or their local distributors shall provide proof of compliance with the performance requirements established by the American National Standards Institute (ANSI) and such other proof as may be required by the director of public works. There shall be no charge for this registration process.

(c) Effective December 31, 1992, only plumbing fixtures and devices specified in this section shall be offered for sale or installed in the County of Maui, unless otherwise indicated in this section. All plumbing fixtures and devices which were installed before December 31, 1992, shall be allowed to be used, repaired or replaced after December 31, 1992.

(1) Faucets (kitchen): All kitchen and bar sink faucets shall be designed, manufactured, installed or equipped with a flow control device or aerator which will prevent a water flow rate in excess of two and two-tenths gallons per minute at sixty pounds per square inch of water pressure.

(2) Faucets (lavatory): All lavatory faucets shall be designed, manufactured, installed or equipped with a flow control device or aerator which will prevent a water flow rate in excess of two and two tenths gallons per minute at sixty pounds per square inch of water

pressure.

(3) Faucets (public rest rooms): In addition to the lavatory requirements set forth in paragraph (2), lavatory faucets located in rest rooms intended for use by the general public shall be of the metering or self-closing types.

(4) Hose bibbs: Water supply faucets or valves shall be provided with approved flow control devices which limit flow to a maximum three gallons per minute.

EXCEPTIONS: (A) Hose bibbs or valves not used for fixtures or equipment designated by the director of public works.

(B) Hose bibbs, faucets, or valves serving fixed demand, timing, or water level control appliances, and equipment or holding structures such as water closets, pools, automatic washers, and other similar equipment.

(5) Showerheads: Showerheads, except where provided for safety or emergency reasons, shall be designed, manufactured, or installed with a flow limitation device which will prevent a water flow rate in excess of two and one-half gallons per minute at eighty pounds per square inch of water pressure. The flow limitation device must be a permanent and integral part of the showerhead and must not be removable to allow flow rates in excess of two and one-half gallons per minute or must be mechanically retained requiring force in excess of eight pounds to remove.

(6) Urinals: Urinals shall be designed, manufactured, or installed so that the maximum flush will not exceed one gallon of water. Adjustable type flushometer valves may be used provided they are adjusted so the maximum flush will not exceed one and six tenths gallons of water.

(7) Water closets (toilets): Water closets shall be designed, manufactured, or installed so that the maximum flush will not exceed one and six tenths gallons of water.

(d) Beginning December 31, 1992, it is unlawful to sell or install any plumbing fixtures or devices not specified in this section, except as permitted under this section.

(e) The director of public works may exempt the use of low-flow water fixtures and devices if there is a finding that the use of such fixtures and devices would not be consistent with accepted engineering practices and would be detrimental to the public health, safety and welfare.

WE HEREBY CERTIFY that the foregoing BILL NO. 6 (1992), Draft 1

1. Passed FINAL READING at the meeting of the Council of the County of Maui, State of Hawaii, held on the 1st day of May, 1992, by the following votes:

Howard S. KIHUNE Chair	Patrick S. KAWANO Vice-Chair	Vince G. BAGOYO, Jr.	Goro HOKAMA	Alice L. LEE	Ricardo MEDINA	Wayne K. NISHIKI	Joe S. TANAKA	Lainanla TERUYA DRUMMOND
Aye	Aye	Excused	Excused	Aye	Aye	Aye	Aye	Aye

2. Was transmitted to the Mayor of the County of Maui, State of Hawaii, on the 1st day of May, 1992.

DATED AT WAILUKU, MAUI, HAWAII, this 1st day of May, 1992.

HOWARD S. KIHUNE, CHAIR
Council of the County of Maui

DARYL T. YAMAMOTO, COUNTY CLERK
County of Maui

THE FOREGOING BILL IS HEREBY APPROVED THIS 5th DAY OF MAY, 1992.

LINDA CROCKETT LINGLE, MAYOR
County of Maui

I HEREBY CERTIFY that upon approval of the foregoing BILL by the Mayor of the County of Maui, the said BILL was designated as ORDINANCE NO. 2108 of the County of Maui, State of Hawaii.

DARYL T. YAMAMOTO, COUNTY CLERK
County of Maui

Passed First Reading on January 17, 1992.
Effective date of Ordinance May 5, 1992.

I HEREBY CERTIFY that the foregoing is a true and correct copy of Ordinance No. 2108, the original of which is on file in the Office of the County Clerk, County of Maui, State of Hawaii.

Dated at Wailuku, Hawaii, on

County Clerk, County of Maui

(f) Any person violating this section shall be fined $250 for each violation and shall correct all instances of non-compliance for which a citation is issued. Violation of this section shall constitute a violation as defined in section 701-107 Hawaii Revised Statutes and shall be enforceable by employees of the department of public works. The foregoing fine may also be imposed in a civil, administrative proceeding pursuant to Rules and Regulations adopted by the department of public works in accordance with chapter 91 Hawaii Revised Statutes."

SECTION 2. New material is underscored. In printing this bill, the County Clerk need not include the underscoring.

SECTION 3. This ordinance shall take effect upon its approval.

APPROVED AS TO FORM
AND LEGALITY:

HOWARD M. FUKUSHIMA
Deputy Corporation Counsel
County of Maui
c:\wp51\ords\flows4\pk

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRAGA
KAREYNN FUKUDA

MARK ALEXANDER ROY
KYLE GROOT

April 8, 2008

Jeffrey K. Eng, Director
County of Maui
Department of Water Supply
200 South High Street
Wailuku, Hawai`i 96793

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 & 01 (por.)

Dear Mr. Eng:

Thank you for your department's letter dated June 20, 2007 providing comments on the early consultation request for the subject project. We would like to provide the following information in response to your comments.

Source Availability and Consumption

The estimated potable demand for the proposed expansion of Pa`ani Mai Park is covered in the Preliminary Engineering Report. Due to the cost of extending the County system to service the park site, it is anticipated that the project site will be serviced by the private system operated by Hana Water Resources, Inc.

System Infrastructure

The applicant acknowledges your comment regarding the existing infrastructure and confirms domestic, irrigation and fire flow calculations will be provided during the building permit process.

Conservation

Your comments regarding conservation are noted and conservation measures will be implemented as applicable. The proposed project will utilize low-flow fixtures and devices, climate-adapted plants, and County Department of Parks and Recreation maintenance staff will maintain fixtures to prevent leaks. Additionally, because of the ample rainfall in the Hana region, irrigation will only be used during initial plant establishment of the landscaping plan.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
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CHARMAINE TAVARES
Mayor

JEFFREY S. HUNT
Director

COLLEEN M. SUYAMA
Deputy Director

JUL 27 2007

COUNTY OF MAUI
DEPARTMENT OF PLANNING

July 23, 2007

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

RE: Pre-Consultation Comments in Preparation of a Draft Environmental Assessment for the Proposed Pa'ani Mai Park Expansion, Located at TMK(s): 1-4-006:001 (por) and 025, Hana, Island of Maui, Hawaii (EAC 2007/0020)

The Maui Department of Planning (Department) is in receipt of your request for pre-consultation comments regarding the proposed 3 acre expansion of the existing 1.039 acre Pa'ani Mai Park in Hana Town. Proposed improvements included a pathway, tots' play area, new picnic tables, a skateboard area, an open pavilion and restrooms, a large open play area, a parking area, and an overflow parking area. Additionally, offsite roadway improvements are proposed which include an extension of the adjacent Noenoe Place subdivision road (to provide access to the northeast portion of the park expansion), and widening of Hana Highway along the expansion area. Underground drainage system and septic system improvements are also proposed.

Based on the foregoing, the Department provides the following comments:

1. The existing park parcel (TMK: 1-4-006:025) has a State Land Use District designation of Agricultural, Community Plan designation of Park, and a Zoning District designation of Interim. The proposed park expansion parcel (TMK: 1-4-006:001 por.) has a State Land Use District designation of Agricultural, Community Plan designation of Multi-Family Residential, and a Zoning District designation of Interim;

2. Both parcels are located within the State Special Management Area (SMA); as such, the project is subject to the provisions of the SMA Rules of the Maui Planning Commission;

3. Pursuant to Chapter 205A-26(2)(C), Hawaii Revised Statutes, and Chapter 12-202-12(f)(5), SMA Rules of the Maui Planning Commission, consistency between land use designations must be obtained. As such, the Department recommends the applicant file for the following land use amendments for the subject parcels:

   Existing Park Parcel (TMK: 1-4-006:025)
   State Land Use: Agricultural to Urban
   Community Plan: <no change>
   County Zoning: Interim to Park

   Proposed Park Expansion Parcel (TMK: 1-4-006:001, por)
   State Land Use: Agricultural to Urban
   Community Plan: Multi-Family Residential to Park
   County Zoning: Interim to Park

4. The Maui Department of Parks and Recreation should be the accepting authority for Chapter 343, Hawaii Revised Statutes compliance;

5. Discuss how the proposed park improvements conform with the Objectives, Policies, and Implementing Actions of the Hana Community Plan; and

6. Discuss what measures will be taken to mitigate construction-related impacts on the residential areas adjacent to the subject parcels, as well as Hana Bay.

Thank you for the opportunity to comment. Please include the Department on the distribution list for the Draft EA. Should you require further clarification, please contact Clayton Yoshida, Planning Program Manager, by email at clayton.yoshida@mauicounty.gov or at 270-7517.

Sincerely,

JEFFREY S. HUNT, AICP
Planning Director

JSH:DBS:nst
c: Clayton I. Yoshida, AICP, Planning Program Administrator
Dan B. Shupack, Staff Planner
General File

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MICHAEL T. MUNEKIYO
GWEN OHASHI HIRASA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Jeffrey S. Hunt, AICP, Director
County of Maui
Department of Planning
250 South High Street
Wailuku, Hawai`i 96793

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 and 01 (por.)

Dear Mr. Hunt:

Thank you for your department's letter dated July 23, 2007, providing comments on the early consultation request for the subject project. We wish to provide the following information in response to your comments.

1. We note the land use designations of the subject parcels.

2. We also note the subject parcels are located within the Special Management Area (SMA) for the island of Maui and the proposed project has been evaluated pursuant to the SMA rules of the Maui Planning Commission.

3. We note your comment regarding consistency between the land use designations within the SMA and will be identifying the land entitlements required for consistency in the EA document, as noted in your letter.

4. We confirm the Department of Parks and Recreations has been identified as the approving agency for the processing of the EA document, pursuant to Chapter 343, Hawai`i Revised Statutes.

5. We confirm the EA will include discussion on how the proposed park improvements conform with the Objectives, Policies, and Implementing Actions for the Hana Community Plan.

6. We confirm the EA document includes discussion on measures to mitigate construction-related impacts on the residential areas adjacent to the subject parcels and Hana Bay.

Again, thank you for your comments.

Very truly yours,

Erin Mukai, Planner

EM:lh
cc: Tamara Horcajo, Department of Parks and Recreation
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DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

JUL 0 9 2007

CHARMAINE TAVARES
Mayor

VANESSA A. MEDEIROS
Director

LORI TSUHAKO
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165 • EMAIL director.hhc@mauicounty.gov

July 3, 2007

Mr. Mich Hirano, AICP
Project Manager
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

SUBJECT: Early Consultation for Proposed Pa'ani Mai Park Expansion, Hana, Maui

We have had each of our Divisions review your June 14, 2007 early consultation letter for the subject project and the only comment offered was by our Office on Aging. They suggest that the proposed improvements be in compliance with ADA access requirements.

Thank you for the opportunity to comment.

Sincerely,

Vanessa A Medeiros

VANESSA A. MEDEIROS
Director of Housing and Human Concerns

xc: John Tomoso, Office on Aging

MUNEKIYO & HIRAGA, INC.

MICHAEL T. MUNEKIYO
GWEN OHASHI HIRAGA
MITSURU "MICH" HIRANO
KARLYNN FUKUDA

MARK ALEXANDER ROY
KYLE GINOZA

April 8, 2008

Vanessa A. Medeiros, Director
County of Maui
Department of Housing and Human Concerns
200 South High Street
Wailuku, Hawai`i 96793

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 and 01 (por.)

Dear Ms. Medeiros:

Thank you for your letter dated July 3, 2007, providing comments on the early consultation request for the subject project.

The Department of Parks and Recreation confirms the proposed expansion and improvements to Pa`ani Mai Park will be in compliance with Americans with Disabilities Act (ADA) access requirements.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:tn
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
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JUN 2 6 2007

CHARMAINE TAVARES
MAYOR

DON A. MEDEIROS
Director
WAYNE A. BOTEILHO
Deputy Director
Telephone (808) 270-7511
Facsimile (808) 270-7505

DEPARTMENT OF TRANSPORTATION

COUNTY OF MAUI
200 South High Street
Wailuku, Hawaii, USA 96793-2155

June 21, 2007

Mr. Mich Hirano, AICP
Munekiyo and Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

SUBJECT: PROPOSED PA'ANI MAI PARK EXPANSION, HANA

Dear Mr. Hirano:

Thank you for the opportunity to comment. The County Department of Transportation suggests that a designated area for a bus stop be considered.

Please do not hesitate to contact me at 270-7511 if I can be of any assistance or clarification.

Sincerely,

DON MEDEIROS
Director of Transportation

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MUNEKIYO HIRAGA, INC.

Michael T. Munekiyo
Gwen Ohashi Hiraga
Mitsuru "Mich" Hiraga
Karlynn Fukuda

Mark A. [illegible]
Kyle [illegible]

April 8, 2008

Don Medeiros, Director
County of Maui
Department of Transportation
200 South High Street
Wailuku, Hawai`i 96793

SUBJECT: Pre-Consultation on the Draft Environmental Assessment (EA) for the Proposed Pa`ani Mai Park Expansion, Hana, Hawai`i, TMK (2) 1-4-06:25 and 01 (por.)

Dear Mr. Medeiros:

Thank you for your letter dated June 21, 2007, providing comments on the subject project. We wish to provide the following information in response to your comment.

We acknowledge your suggestion regarding the consideration of a designated area for a bus stop. Currently, there is no Maui Bus transit service operating in the Hana region. However, further coordination with the appropriate agencies will be carried if deemed necessary.

Again, thank you for your comments and participation in the early consultation process.

Very truly yours,

Erin Mukai, Planner

EM:lh
cc: Tamara Horcajo, Department of Parks and Recreation
Jeffrey S. Hunt, Department of Planning
F:\DATA\HHA\PaaniMai 1060\COMDOTresp.ltr.wpd

305 High Street, Suite 104 · Wailuku, Hawaii 96793 · ph: (808)244-2015 · fax: (808)244-8729 · planning@mhplanning.com · www.mhplanning.com

CHARMAINE TAVARES
Mayor

TAMARA HORCAJO
Director

ZACHARY Z. HELM
Deputy Director

(808) 270-7230
Fax (808) 270-7934

JUL 0 5 2007

DEPARTMENT OF PARKS & RECREATION

700 Hali'a Nakoa Street, Unit 2 , Wailuku, Hawaii 96793

June 28, 2007

Mr. Mich Hirano, AICP
Munekiyo & Hiraga, Inc.
305 High Street, Suite 104
Wailuku, Hawaii 96793

Dear Mr. Hirano:

SUBJECT: PA'ANI MAI PARK EXPANSION, HANA, MAUI

Thank you for the opportunity to review and comment on the pre-assessment consultation for the subject project. We are in full support of the Pa'ani Mai Park Expansion project.

Should there be any questions, please contact Mr. Patrick Matsui, Chief of Parks Planning and Development, at 270-7387.

Sincerely,

TAMARA HORCAJO
Director

c: Patrick Matsui, Chief of Parks Planning and Development

JUL 2 4 2007

Maui Electric Company, Ltd. • 210 West Kamehameha Avenue • PO Box 398 • Kahului, Maui, HI 96733-6898 • (808) 871-8461

July 23, 2007

Munekiyo & Hiraga, Inc.
Attn: Mich Hirano, AICP
305 High Street, Suite 104
Wailuku, HI 96793

Dear Mr. Hirano,

Subject: Proposed Pa'ani mai Park Expansion
Hana Highway, Hana, Maui
TMK: (2) 1-4-006:025

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

In reviewing our records and the information transmitted, Maui Electric Company (MECO) has no objections to the proposed project at this time.

If you have any questions or concerns, please call Ray Okazaki at 871-2340.

Sincerely,

Neal Shinyama
Manager, Engineering

NS/ro:lh

REFERENCES

REFERENCES

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APPENDIX A.

Archaeological Inventory Survey Report Prepared by Xamanek Researches, LLC

Archaeological Inventory Survey of a 2.162 Acre Parcel in Niumalu *Ahupua'a*, Hana District, Island of Maui (TMK: (2) 1-4-006: 001)

Prepared for:

County of Maui,
Department of Parks & Recreation

Prepared by

Xamanek Researches, LLC
Pukalani, Maui

Jonas K. Madeus
Erik M. Fredericksen

7 December 2007

ABSTRACT

Xamanek Researches, LLC conducted an archaeological inventory survey of a 2.162 acre portion of land in Hana, Maui during September 2007. The project area is located in Niumalu *ahupua`a*, Hana District, Maui (TMK (2) 1-4-006:001). The study area is bounded by the Hana Highway and the existing Pa`ani Mai Park on the southwest, by private property on the northwest, by the old government road on the northeast and by the proposed Hana Ranch House Lots and the existing County Park on the southeast. This parcel lies an estimated 300 m from the Hana Bay shoreline. This project was conducted on behalf of the County of Maui Department of Parks & Recreation.

Project plans call for the expansion of the existing Pa`ani Mai Park. When completed the overall park will include over 3 acres of land.

The archaeological inventory survey utilized a 100% pedestrian walk-over of the parcel, as well as backhoe and manual excavations to assess subsurface conditions. All manually excavated soil was screened through 1/8th inch wire mesh. One previously unrecorded cultural resource, SIHP No. 50-50-13-6361, was located during our survey of the proposed park expansion area. Site 6361 consists of a remnant of a possible precontact terrace. This site appears to have been heavily impacted during the post-contact era for commercial agriculture, ranching and/or other purposes. It is interpreted as a possible habitation site remnant. In addition, a portion of the previously identified Hana Belt Road (Site 1638) was documented. This portion of the Hana Belt Road consists of a section of road rock retaining wall.

Site 6361 is deemed significant for its information content under Criterion "d" of Federal and State historic preservation guidelines. Site 1638 qualifies for importance under multiple significance criteria because it is associated with the Hana Belt Road. No further work is recommended for Site 6361, which has been heavily impacted by previous bulldozing activities on the project area. Passive, "as is" preservation is recommended, if possible, for the Site 1638 retaining wall. In the event that it is determined that a section of this wall needs to be impacted, data recovery recordation, concurrent with monitoring is recommended. Precautionary monitoring is recommended for the overall parcel.

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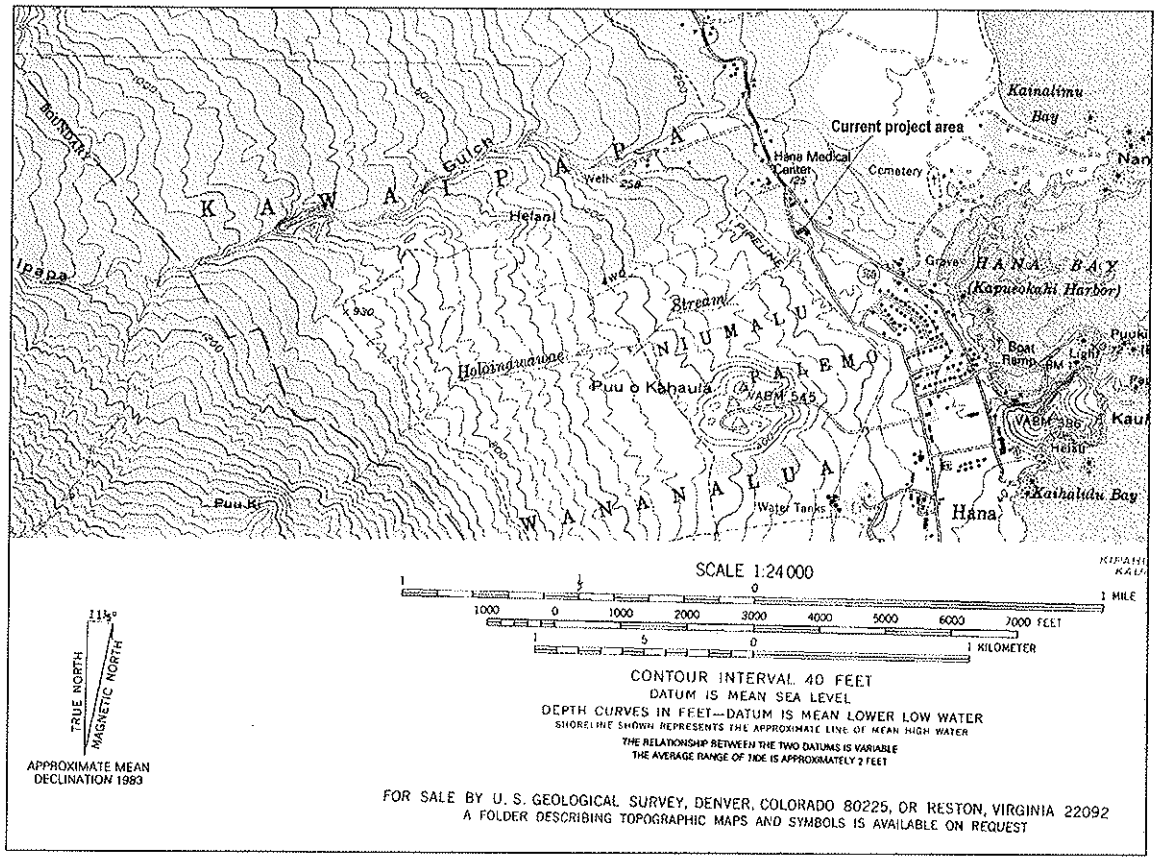

Figure 1. Portion of the U.S Geological Survey topographic map of Hana quad showing approximate location of the project area

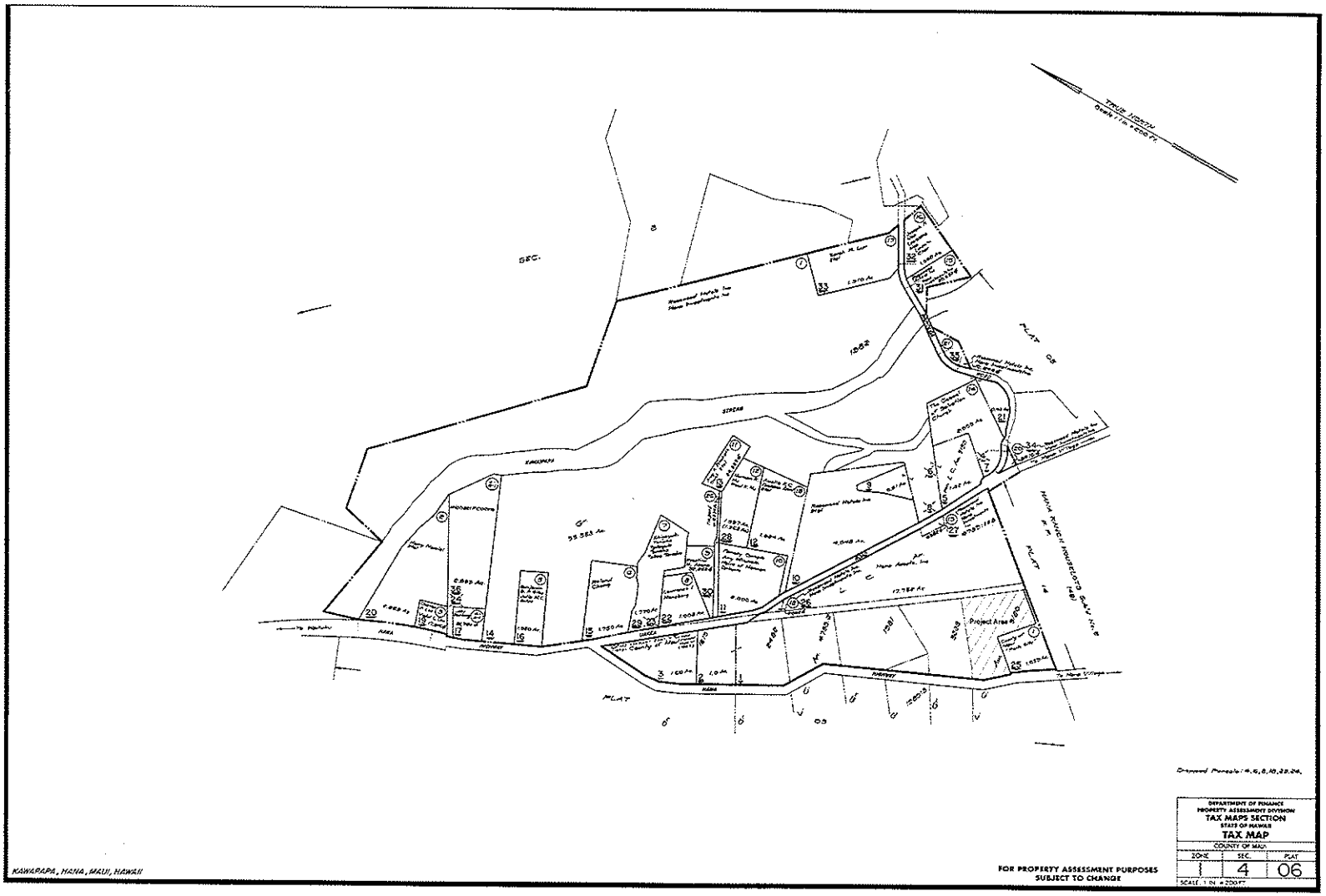

Figure 2. Tax Map Key showing location of current project area

INTRODUCTION

Ms. Karla Peters of the County of Maui Department of Parks & Recreation contacted Xamanek Researches, LLC about conducting an archaeological inventory survey on a parcel of land which is located Niumalu *ahupua'a,* Hana, Hana District, Maui (TMK (2) 1-4-006:001). Given the location of the subject parcel, we contacted Ms. Jenny Pickett, State Historic Preservation Division (SHPD) staff archaeologist for Maui about scope of work, etc. Given that the parcel was located near the coast, it was determined that it would be necessary to conduct an archaeological inventory/assessment level survey. We were asked to prepare and submit a cost proposal for the necessary work and were subsequently contracted to carry out the archaeological survey for this portion of land in Hana, Maui.

The County of Maui Department of Parks & Recreation plans to expand the existing Pa`ani Mai Park facility (presently c. 1.1 acres) with the addition of the proposed expansion area (c. 2.1 acres). The following report has been prepared on behalf of the property owner, the County of Maui.

STUDY AREA

The project area consists of a 2.162-acre parcel of land that lies in Niumalu *ahupua`a,* Hana, Hana District, Maui (TMK (2) 1-4-006:001). The project area is bounded by the Hana Highway and the existing Pa`ani Mai Park on the southwest, by private property on the northwest, by the old government road on the northeast and by the proposed Hana Ranch House Lots and the existing County Park on the southeast. This parcel lies an estimated 300 m from the Hana Bay shoreline. The gently sloping property is located in relatively close proximity to a portion of an intermittent stream.

The project area falls within the physiographic region, Hana Dissected Upland, and geologically is part of the post-erosional lavas (University of Hawaii, 1973, p. 30, 34). The major soil classification in this area includes Inceptisols, which typically have developed on a thin mantles of volcanic ash, overlying a`a lava (Ibid.., p. 41). The soils in this region are classified as part of the Hana series and are described as well-drained clayey loam with stony inclusions (Foote et al., 1972).

Elevations for the parcel range from 92-126 ft AMSL. Estimated average annual rainfall is c. 70 inches (University of Hawaii, 1973, p. 55-56).

The parcel is located in the Coastal Mesic Forest section of Hana, which has been heavily invaded by introduced species due to the actions of past human disturbances (Gagne and Cuddihy, 1990). The study area contains no mature trees, and appears to have been grubbed within the past 5-10 years or so. The majority of the project area is covered with *koa haole* (Leucaena leucocephela) trees and non-native grass and succulent weed species.

The southwestern corner of the proposed expansion area contains a wire fence gate, which appears to have been used for the several horses that were present on the parcel at the time of the inventory survey. A section of retaining wall associated with the Hana Belt Road may have been removed in the past, in order to access the parcel.

BACKGROUND RESEARCH

Legendary History

Hana is a place where the landscape was reportedly created by gods and goddesses, and a residence of many chiefs of Maui (Cleghorn and Rogers, 1987, p. 4). Myths are associated with 6 deities – Pele, Pu`uhele, Kana, Kanaloa, Maui, and Ku`ula. Pele was said to have been killed by her sister Namakaokaha`i, and her physical remains left to form the hill called Ka Iwi o Pele, located on the coast. Another version has Pele creating `Alau Island, just offshore of Ka Iwi o Pele (Ibid).

Pu`uhele, a sister of Pele, was said to have been brought to Hana as a child, but was left behind because she continually bit the breast as she was being fed. The place where she stayed was Pu`u Ka`uiki. In another version, she is not born as human, but as a bloody fetus, which was thrown away by Pele and another of her sisters. Pu`uhele landed at Nu`u, and was turned into a beautiful woman who traveled to Wananalu, where she was killed for trespassing. The hill, Ka`uiki rises from the spot where she was buried (Cleghorn and Rogers, p. 6).

Another legendary resident was Ku`ula, who introduced the octopus lure, the fishpond, and the fishhook to human beings. He lived with his wife Hina, and son Ai`ai at the foot of Ka Iwi o Pele, and constructed and filled with fish, the first fishpond for the chief of Hana. Ai`ai, taught the people of Maui and the other islands how to use the things his father had given them, and how to worship Ku`ula (Ibid., p. 7). Throughout the islands fishing shrines called *ko`a*, were built in the past, which contain Ku`ula stones, oblong water-worn stones, made into alters or houses. Here rituals were performed to assure fishermen an abundant catch from the sea (Kolb, Orr and Conte, 1993, p 11). He also erected the stone, Makakiloi`a, on Ka`uiki which fishermen have since used as a vantage point for finding schools of fish (Cleghorn and Rogers, p.7).

The deities Kane and Kanaloa were said to be residents of Maui in ancient times. Two rock pillars just off the base of *Pu`u* Ka`uiki, represent the coconut trees in their garden. Several legends of Maui are connected with Hana. One has him fishing in the fishing grounds known as Po`o, in the area of Ka Iwi o Pele. He tries to catch the fish Luehu on the night of Lono, an act which would unite all of the islands into one. As he hooked the fish and tried to bring it in, his brothers broke the spell by looking back, and the fish escaped, thus losing the chance to unite the islands. Maui is also said to have stood on Pu`u Ka`uiki, lifted the sky at Hana, so that people could stand upright. Hana is sometimes referred to as "Hana of the low sky" (Ibid.).

Precontact period

Hana was a favorite place home for many chiefs. One of the earliest was Hua, who lived in the 12th century and is credited with building 2 *heiau*, Honualua and Kaiawalu, on Pu`u Ka`uiki, neither of which are still in existence (Ibid.). It is said that a Protestant and a Catholic church are built on those sites today (Kolb, Orr and Conte, 1993, p. 12). Hua is said to have caused a 3 ½ year drought, by killing a high priest who criticized his wars. He reportedly died on Hawai`i, the victim of thirst and famine. A saying – "rattling are the bones of Hua in the sun" is used as an admonition to those who might be wicked (Ibid.).

During the 17th century, the districts of Maui were united by high chief Pi`ilani. At the same time, much of the island of Hawai`i was united under another chief, `Umi. While conditions of warfare often existed between the islands, a period of peace prevailed when `Umi married Pi`ilani's daughter, Pi`ikea (Cleghorn and Rogers, p. 9). Pi`ilani's sons, Kihapi`ilani and Lonopi`ilani fought for control of Maui. Kihapi`ilani killed his brother, with the aid of `Umi, who sent an invasion fleet to Hana. Kihapi`ilani's subsequent reign was a peaceful one. He is credited with building the paved roadway that goes around the island of Maui (Kolb, Orr, and Conte, p. 13).

Hana continued to remain under Maui chiefs until the middle of the 18th century when both Hana and the Kipahulu district fell to the Hawai`i Island chief, Kalani`opu`u. Maui chief Kamehamehanui tried in vain for twenty years to recapture the territory. Kalani`opu`u repeatedly tried to conquer Maui, but the younger brother of Kamehamehanui, Kahekili stubbornly resisted (Kolb, Orr, and Conte, p. 13). Kalani`opu`u died in 1782, and upon hearing of his death, Kahekili attacked his fortress which was located at Pu`u Ka`uiki. The defenders were able to hold out for more than a year because they possessed a source of fresh water. When Kahekili learned of this water supply, he cut it off and quickly defeated the Hawaiian warriors (Cleghorn and Rogers, p. 10). Kahekili once again ruled the island of Maui, and died of old age in 1794. The island of Maui then fell to another Hawai`i Island chief, Kamehameha, who eventually conquered the other islands as well and established the kingdom of Hawai`i (Ibid.).

Early post-contact period

In November of 1778, the ship Resolution, under the leadership of Captain James Cook, made landfall on Maui. While anchored off Hana, Captain Cook entertained Kalani`opu`u and Kamehameha aboard ship and Captain Clerke, aboard the sister ship Discovery, entertained Kahekili while anchored off Wailuku. Neither Cook nor Clerke knew of the rivalry between these chiefs (Ibid.). In fact, Cook thought that Kalani`opu`u and Kamehameha were chiefs of the Hana region.

Traditions and early 19th century records add information about this period. Pu`u Ka`uiki is known as the birthplace of Ka`ahumanu, the favorite wife of Kamehameha I. Hana was the land (*`aina*) of her father, *ali`i nui* Ke`eaumoku Papaiaheahe. When he died in 1804, it passed to Ka`ahumanu's brother, Kahekili Ke`eaumoku and then to

Ka`ahumanu in 1824. Upon her death in 1832, her *`aina* and title passed to her niece Elizabeth Kaho`anoku Kina`u, daughter of her sister, Kaheiheimalie and Kamehameha I (Kolb, Orr and Conte, p. 14).

Kina`u died of mumps in 1839, and her *`aina* went to her 4 month old daughter, Victoria Kamamalu. John Papa `I`i acted as her executor. Her older brothers Alexander Liholiho and Lota Kapuaiwa Kamehameha became kings Kamehameha IV and V, respectively (Ibid.). Kamamalu was forced to turn over most of her land to the government during the Great Mahele of 1848.

The process of land grants is discussed by Chinen (1958). Native Hawaiians wishing to claim lands on which they had been living were required to appear before the Board of Commissioners to Quiet Land Titles and present testimony. When a claim was accepted, a Land Commission Award was granted. The new owner must then pay one third the value of the land to the government in cash or unused land. When this was done, a Royal Patent was then issued, giving the tenant full title to the land (Ibid., pp. 12 – 14). By 1850, the government began selling lands to Native Hawaiians and foreigners, and these lands were noted as Royal Patent Grants, or simply – Grants (Ibid., p. 27).

The subject parcel is part of Grant 1982, to Kahananui, et al., which was awarded in 1856. The parcel is located near the boundary with Niumalu *ahupua`a*, but lies in the *ahupua`a* of Kawaipapa, Hana District, Maui, Hawaii. The study area is listed as TMK 1-4-06:021, and was formerly owned by Hana Ranch Keola, Hana, Maui.

Handy and Handy (1972, p. 505) state that subsistence in this area depended mainly on sweet potatoes and fish. Land Commission Award records for parcels in the area indicate that the land was used for taro production (both wet and dry), sweet potatoes, coconuts and sugar cane. Pigs were also likely raised. A portion of Kawaipapa Stream passes to the northwest of the parcel, and it seems likely that sufficient amounts of water were available to produce wet taro in this area.

Post-1850 period

The latter part of the 19th century saw the rise of sugar production as an increasingly important economic activity in the Hana area. Begun in 1851 by a sea captain, George W. Wilfong, the Hana Plantation was one of the earliest commercial ventures in the islands (Kolb, Orr and Conte, p. 16). He did not work well with native Hawaiians, who found his methods intolerable. He sought labor elsewhere, and imported Chinese workers to Hana in 1852. The Chinese were much more accustomed to long hours of tedious contract labor, but left the plantation after their three-year labor contracts had been fulfilled. They then went into business for themselves, or obtained land to farm (Youngblood, 1992, pp. 44-45). Wilfong's sugar mill burned to the ground in the early 1850's. Two Danish brothers, August and Oscar Unna re-established Hana Plantation in 1862 (Ibid.). Their plantation agents were C. Brewer and Co., a trade company founded by sea captain James Hunnewell in 1826, and taken over by yet another sea captain, Charles Brewer in 1843 (Kolb, Orr, and Conte, p. 17).

By 1868 a new source of immigrant labor had to be found, and Japanese laborers were imported to Hana. By 1876 a Reciprocity Treaty had been negotiated between King Kalakaua and the United States, which did away with the 2 cent per pound tariff on Hawaiian sugar. In 1883, there were 6 separate sugar plantations arrayed along the rocky Hana Coast; Kaeleku Sugar Co., Hamoa Agricultural Co., Kawaipapa Agricultural Co., Hana Sugar Co., Reciprocity Sugar Co., and Haneo`o Agricultural Co. (Youngblood, pp. 46-47).

August Unna and his Danish engineer, Christian Hedemann, modernized the Hana Plantation, replacing the mule-driven carts with locomotives, and 3-roller mills in the early 1880's. Labor shortages plagued the Hana operation, however, and additional laborers were recruited from the New Hebrides and Gilbert Islands (Kolb, Orr, and Conte, p. 18). All of these expenses left Unna heavily in debt, and upon his death in 1885, the Hana Plantation was placed in receivership and sold in 1889 to M. S. Grinbaum & Company, its major creditor. The holdings of Hana Plantation (founded 1851) and the old Reciprocity Sugar Company[1] (founded 1883) were combined to establish the Hana Plantation Company (Ibid.).

In 1905 the company was reorganized and its name changed to Ka`eleku Sugar Company. Plantation agents T. H. Davies & Co. assumed ownership in 1908, and the sugar plantation continued operation. In 1933 the company changed owners yet again, to the estate of W. G. Irwin and C. Brewer & Co., both previous owners at one time. Records from the Hawaii Sugar Planters Association show that on December 31, 1945, Ka`eleku Sugar Company was liquidated (Kolb, Orr and Conte, p. 20). Sugar workers were becoming unionized, and C. Brewer & Co. feared that the Hana operation could not pay the higher wages that would be demanded. Rather than risk antagonizing the union, which might put their other sugar operations in jeopardy, they closed Ka`eleku, leaving hundreds of plantation workers unemployed (Youngblood, p. 67).

Paul I. Fagan had purchased the Hana Sugar Company from the Unna brothers in the 1930's, and had left his investment alone until the mid 1940's, when he decided to retire in Hana. He saw that sugar did not have a bright future in Hana, and decided to undertake cattle ranching. He closed his cattle ranch on the east end of Moloka`i, acquired 14,000 acres of land in and around Hana, and shipped his white-faced Herefords to Maui (Ibid., p. 70). Sugarcane land was planted with pangola range grass to feed the cattle. Ranch lands were cleared in the 1960's with bulldozers, resulting in numerous piles of wood and dirt, which are still apparent in some areas today. In addition, alien plant species, such as lantana and Christmasberry have come to dominate many previously disturbed areas.

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[1] Both Hana Plantation and Reciprocity Sugar Company had their own mills and piers. Reciprocity Sugar Company closed down in 1902. Much of its land was leased to Ka`eleku Sugar Company, which had about 15,000 acres in the Hana area by 1913, about one-fifth of which was cultivated. In 1940, Ka`eleku produced 8,000 tons of sugar, although the mill was capable of an output 4 times as great (Cleghorn and Rogers, pp. 11-12).

Not only did the shift from sugar to cattle take place, but a new industry – the visitor industry of Hana began. Fagan saw tourism as a way to produce jobs and money for the people of Hana, and built the first resort hotel, the Ka`uiki Inn in 1946 (later renamed the Hotel Hana-Maui). This facility was designed as a first-class accommodation for first-class travelers (Ibid., p. 73). Hana was eventually connected to the rest of Maui when the State paved the Hana Highway in 1962, with additional improvements in 1982. More and more tourists find their way to the Hana Coast, but the town still maintains the sort of isolation it has always had (Ibid., p. 81).

Oral History

On July 19, 1996 a telephone interview was conducted with Mrs. Lucy Phillips, whose name had been given to Xamanek Researches by Mr. Carl Lindquist, a long time resident and realtor based in Hana. A parcel to the southeast of the current project area was formerly owned by Mrs. Phillips. She sold this parcel in about 1994. It had belonged to her husband's family for many generations, and the individual buried in a post-contact grave was a relative of her husband. She did not know the name or when the person died. However, she remembered that the grave had been there for a very long time. She related that her husband, Soloman was born in 1913, and lived with his grandfather in a house that was located in the center of the property, near the grave site. They kept animals and grew vegetables, primarily sweet potatoes. Lucy and Soloman were married in the early 1930s, and lived on the property for a number of years. Mrs. Phillips said that there was another house to the east, and one to the west. The owners of these houses traded their lands to the Hana Ranch Company for lands on the *mauka* side of the road.[2] However, her husband's family, although asked to trade their land, did not move. The fact that their ancestor was buried on the land may have had some influence on their decision.

Her husband, Soloman, worked for the Ka`eleku Plantation. She said that they subsequently moved to the Kahului side in the 1930s[3] when the Hana mill closed. He was hired by H. C. & S. and they lived in the Pu`unene Camp. Mrs. Phillips said that many of the Hana plantation workers moved from Hana at this time, in order to take up jobs with H. C. & S.

[2] The lands surrounding this parcel are shown as being owned by Rosewood Hotels, Inc., who acquired them from Hana Ranch. More recently, Hana Ranch sold the lands to Keola Hana Maui Corp.

[3] According to records Ka`eleku closed in 1945. It has been reported that Paul Fagan personally went to Alexander and Baldwin and persuaded them to hire displaced Hana workers at their central Maui plantation (Youngblood, p. 70).

Mahele Awards[4]

The subject parcel is located within Niumalu *Ahupua`a*, but is near the boundary with Kawaipapa to the west. There are two Land Commission Awards present in Niumalu *Ahupua`a*. These awards include LCA 4739-1, 2, 3, 15.65 acres in 1 *apana* to Miki for taro (wet) and sweet potato; and LCA 5180, 17.17 acres in 1 *apana* to Kuamiohea. The project area is contained within a portion of the latter LCA.

A total of five Land Commission Awards for the nearby Kawaipapa *Ahupua`a* are listed in the Indices and in the Wai`hona `Aina database. These awards are: LCA 4534, 0.70 acres in 1 *apana* to Mose Ulunahele for *kihapai* and coconuts; LCA 4566, 5.19 acres 1 of 2 *apana* to Waihineaa (ND); LCA 4846, 7.00 acres in 1 of 3 *apana* to Kaholokai for *kihapai*; LCA 5149 claimed by Kahinawa, but not awarded; and LCA 5185B claimed by Kaholokai and awarded under LCA 4846.

While there are not many Land Commission Awards that were granted in Niumalu *Ahupua`a* as well as adjacent *ahupua`a*, it is interesting to note that available information indicates that awards were for garden plots, coconut, wet taro and house lots.

Current period

Presently, ranching activities continue as an important facet in the local Hana economy.[5] Tourism continues to grow; however, and plays an increasingly significant economic role in Hana. Finally, development of this area, as elsewhere on our island, continues to expand and place upward pressure on property values.

Historic agricultural land use in the Hana area has undoubtedly had an effect on surface and subsurface archaeological features that were formerly present. As Cleghorn states in one of the earlier reports on archaeological work in Hana (1988, p. 4):

> "...this area was extensively utilized in historic times, first for the commercial sugar production and later for cattle ranching. There is strong possibility that these activities obliterated evidence of earlier land use, leaving an extensively flattened and modified landscape with no remaining surface archaeological features."

[4] Refer to Table 4 in Appendix B for a listing of LCAs near the project area.
[5] The proposed expansion area was formerly owned by Hana Ranch.

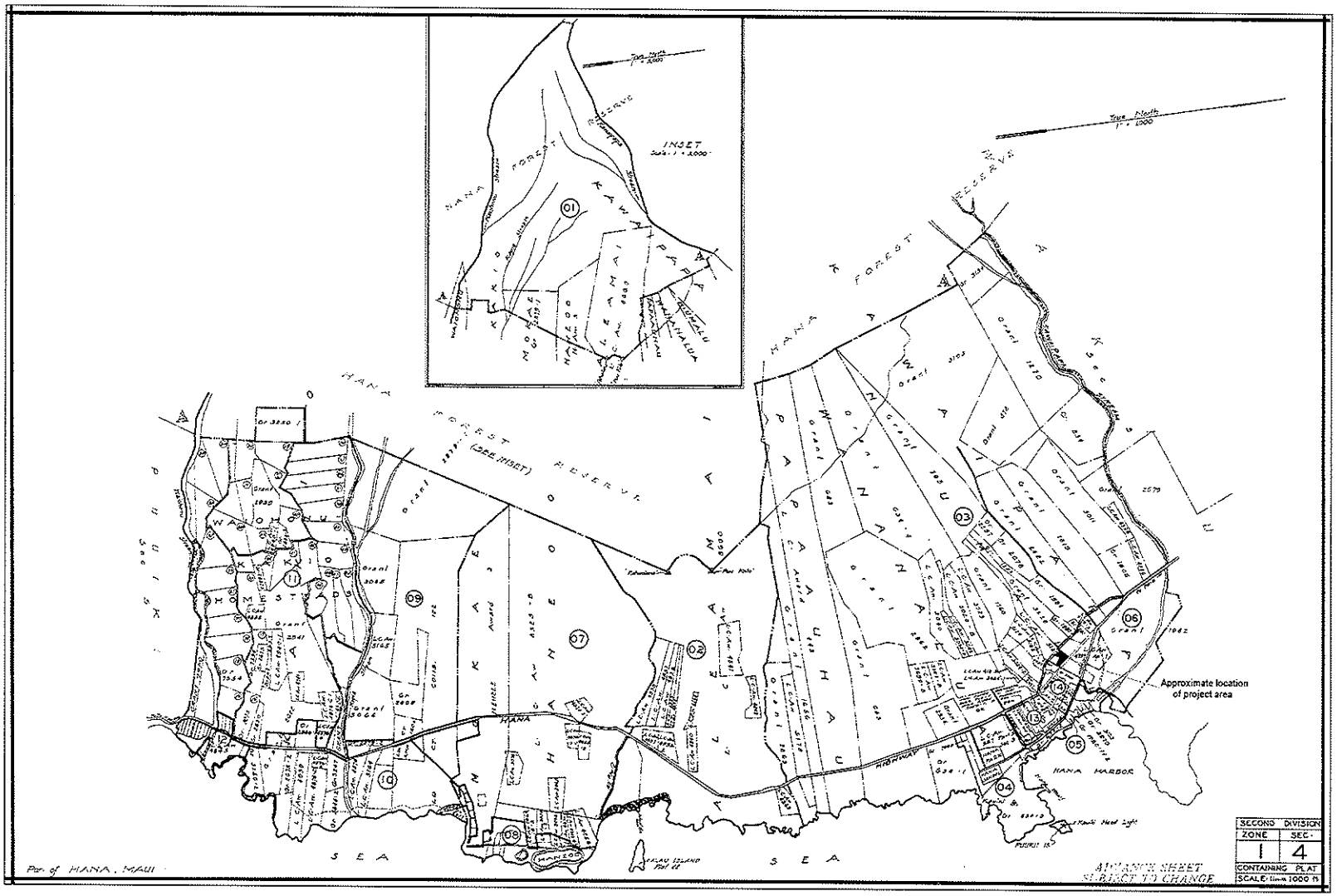

Figure 3. Tax Map Key showing approximate location of the project area and lands in section of Hana District area.

PREVIOUS ARCHAEOLOGICAL WORK

Previous Archaeology in the general area[6]

In his 1931 survey of *heiau* on Maui, Winslow Walker identified several ceremonial structures in this area of Hana District: Site 102, Pi`ilanihale Heiau on Kalahu Point; Site 103 - Kuakeali`i Heiau north of Wai`anapanapa Park; Site 104, Ohala Heiau on Pukaulua Point; Site 105 - Kaniomku Heiau *mauka* of Hana Highway, Site 106 - Kawaipapa Heiau *mauka* (southwest) of Hana Highway and the project area; Site 108 – an unnamed heiau on Keanini Point; Site 109 – Kauleiula Heiau on Nanualele Point; Site 110 – an unnamed *heiau* in Kainalimu to the north of Hana Bay; Site 111 - Honua`ula Heiau near the base of Pu`u Ka`uiki; and Site 112 – Kuawalu Heiau to the southwest of Pu`u Ka`uiki.

An archaeological survey was carried out by Lynn Nakkim, who lived in Hana for about 25 years. She visited several of the *heiau* that were reported by Walker, and added details not mentioned by him. She was unable to relocate Pakiokio Heiau[7] (Nakkim, 1969-70, in Kolb, Orr, and Conte, p. 27).

As part of the State Historical Sites Survey conducted in 1973, Hommon and Connolly mapped and surveyed sites in and near Niumalu *ahupua`a* some of which had been noted by Nakkim. A walled complex she referred to is called the Hamoa Complex and given the site number 50-50-13-1487. This complex consists of over 100 features, most of which appear to have agricultural functions. They fall in to 5 types – agricultural clearings (100); walls (6); terraces (3); a ditch with rubble walls, and 2 stone mounds (Hommon and Connolly, 1973, in Kolb, Orr and Conte, pp. 28-29). Again Pakiokio *heiau* could not be relocated, but Connolly surveyed and mapped Hale O Lono *heiau* (Site 50-50-13-123) and recommended that it be given "valuable status", because of its interpretive and research potential and close association with Kaluanui *heiau* (Ibid.). Kaluanui heiau (Site 50-50-13-120) was also surveyed, and its location "on a small knoll affording a very impressive view of Hawaii, the valleys between the site and the sea, and Alau Island" are noted. It was recommended for "valuable status" as Kaluanui Complex (Ibid., p. 30).

In 1987, the B. P. Bishop Museum conducted preliminary archaeological investigation of Hana Ranch Lands. The study consisted of 3 tasks – the review of literature, analysis of aerial photographs of Hana Ranch lands, and a brief field inspection

[6] Refer to Figure 4 for the locations of previous archaeological projects in the Hana area.
[7] Site 121 lies to the east of the *heiau* that are mentioned above.

to determine the potential of archaeological sites found on the photos. A search of Bishop Museum files revealed 32 archaeological sites on ranch lands, 20 of which were *heiau*, most of which are destroyed. Other sites include 5 fishponds, the fortress of Ka`uiki Hill, pictographs, and various habitation sites (Cleghorn and Rogers, 1987, i).

As a result of the aerial photo analysis and field inspection, an additional 16 sites have been minimally recorded, most of which are probably related to agriculture or habitation functions (Ibid., ii).

Sixteen sites were investigated in the 1987 survey, including C-shapes, *`ili`ili* pavements, terraced platforms, walls, lava tubes, a rock shelter, and various stone structures of undetermined function (Ibid., pp. 18-19). Most sites are associated with either agricultural activities or habitation. A total of 48 archaeological sites have been recorded on ranch lands. Of these, about 20 have been destroyed - most likely as a result of sugarcane cultivation. The remaining sites show various degrees of disturbance. It was noted that every vegetated area that showed up on the aerial photos and was inspected by the researchers contained archaeological site remains (Ibid., p. 26).

Former Maui SHPD staff archaeologist, Theresa Donham, recorded a site on Kaholaiki Beach, near Mokae Cove in Mokae *ahupua`a* (Site 50-50-13-2835). This appears to be a large habitation site which includes water-worn stone pavements containing pockets of bone and shell midden and charcoal concentrations. Human remains were found eroding from the beach cut, and were subsequently disinterred by Donham (1991, in Kolb, Orr and Conte, p. 32).

Four hundred acres of land in Haneo`o, Aleamai, and Papa`auhau were surveyed for a proposed country club by Cultural Surveys Hawaii. These lands were *mauka* of Hana Highway, south of Hana town. They found 51 archaeological sites, 13 of which were interpreted as habitation sites and the remainder as agricultural. Radiocarbon dates were obtained for 3 habitation sites – AD 1345-1650; AD 1425-1959 and AD 1640-1950 (Borthwick et al., 1992, Ibid.). The majority of the survey area had been heavily impacted by sugarcane cultivation and ranching activities, and the sites were found scattered in areas located on the fringes of the cane fields.

Hamoa

An archaeological survey of Hamoa *ahupua`a* to the southeast of Hana Town was inspired by the nomination of the Hamoa Archaeological complex to the Historic Sites Register in 1990. Community members felt that the boundaries were incomplete, and that many more sites existed *mauka* of Hana Highway as well. The Hana Cultural Center spearheaded a volunteer program to complete the survey at a minimum cost (Kolb, Orr and Conte, pp. 2-5).

A total of 51 acres were surveyed *mauka* of Hana highway, and 74 features were located and mapped. Pakiokio *Heiau* (Site 50-50-13-121), which had not been found by earlier surveys, was located during this survey. The various sites were classified by

feature types. These feature types included: Alignment (1=1.3%); Enclosure (8=10.7%); Modified Outcrop (2=2.7%); Mulch Pit (31=41.3%); Railroad grade (1-1.3%); Rock Shelter (4=5.4%); Terrace (19=25.6%); Wall (7=9.4%); and Walled Terrace (1-1.3%) [Ibid., p. 37].

Limited excavation was undertaken by volunteers at 10 features – 5 located *mauka* of Hana Highway and 5 on the *makai* side, which included Kaluanui and Hale O Lono *heiau*, the Hamoa Complex and Kaholaiki dune. Radiocarbon dates were obtained at Kaluanui *heiau* (AD 1659-1955); Hale O Lono *heiau* (AD 1440-1954, 1443-1953, 1419-1660); Kaholaiki Sand dune (AD 1173-1380); Site 50-50-13-3721 – a rectangular habitation enclosure (AD 1295-1955); and Site 50-50-13-3724 – a double-U shaped agricultural wall (AD 1459-1954) [Ibid., pp. 43-45].

Kolb discusses the settlement patterns in the general area (Ibid., pp. 96-97):

> "A number of models of Hawaiian cultural change currently exist (e.g. Cordy 1981, Kirch 1990), however most agree that colonizing settlements were first established on the windward portions of the Hawaiian chain ca. A.D. 300-600. As the population grew, permanent settlements in the agriculturally favorable, windward areas probably increased in size and number ca. 600-1100. In windward areas like Hamoa, residents intermittently exploited coastal resources such as ocean fish and shellfish, and used upland areas for dryland agricultural production. Permanent shelters by permanent residential ritual structures. [sic.] By 1650, permanent coastal settlements focused upon intensive exploitation of ocean resources while permanent upland settlements focused more upon agricultural production of dryland crops...
>
> At the height of traditional society ca. 1650-1820, Hawaiian society had reached its apex in terms of population growth and social complexity. No doubt the same existed in Hamoa as well. The regional chronology of Hamoa consists at present of only six age determinations for a concentration of two habitation sites, one agricultural site, and two heiau sites. All of these sites date to after the island was unified, and Hana district was already integrated to the rest of the island. The earliest date comes from Kaholaiki, the coastal site in Mokae at 67% confidence. The basal pavement dates to the thirteenth century, about the time of the paramount chief Hua, using 20 years per generation of the chiefly lineages... Hale O Lono and habitation Site #3271 date ca, 1400-1650, before island unification under Pi`ilani, when the independent line of chiefs Hana ruled [sic.]. The remaining two sites, the agricultural enclosure at #3724 and Kaluanui Heiau date after ca. 1650, the two centuries preceding contact which represent the peak of traditional Hawai`i social complexity. Thus it is no surprise that an upland agricultural site as well as the largest heiau in the area date to this period before contact, when complex society reached a peak, and agricultural output was at its peak to not only feed the populace but to provide adequate surplus for the chiefs and their retainers and warriors."...

Kolb concludes that the Hamoa archaeological landscape is "extremely complete and diverse, incorporating a mixture of habitation, agriculture, ritual and post-contact sites." While this represents a typical aboriginal pattern, Hamoa is unique in that so much remains in an area that had been extensively modified by bulldozing and cattle ranching (Ibid., pp. 104-105). One can only speculate on what has been destroyed in this

and other portions of Hana that have been impacted by post-contact commercial agricultural and ranching activities.

Other archaeological studies have been carried out in the nearby Wakiu *ahupua`a* to the north of Kawaipapa *ahupua`a*. These studies include a 1970 reconnaissance survey of Wai`anapanapa State Park, a 1975 walk through study of a portion of a large burial area to the northeast of the Hana High School campus, a 1984 reconnaissance of this burial area and cemetery, and a more recent 2002-2003 inventory survey of Wai`anapanapa State Park, a potion of which also lies in Kawaipapa *ahupua`a*.

Initial work was carried out around 1970 in Wai`anapanapa State Park, which is located to the northwest of the Pa`ani Mai project area. Richard Pearson (1970) originally carried out the first work in the park area—a reconnaissance level survey. He identified 34 archaeological features within the park during this earlier survey, including a *heiau*, a trail, a petroglyph, five shelter caves, six *ahu*, two U-shaped enclosures, three shelter walls, two *hale* platforms, and several walls and enclosures.

A recent inventory survey of Wai`anapanapa State Park (c. 111 acres) was conducted in 2002-2003 (Haun et al., 2004). This more intensive study documented a total of 59 sites with at least 119 features. Sites included walls, rock cairns, rock mounds, terraces, enclosures, U- and L-shaped enclosures, C-shapes, platforms, trails, stone uprights, overhangs, caves, alignments, cemeteries, and miscellaneous (modern) sites. Functional types included temporary and permanent habitation, ceremonial, agriculture, burial, marker, boundary, rock art, livestock containment, and transportation.

Archaeological studies at Wai`anapanapa State Park produced examples of unusual cultural adaptive strategies in the general area (Pearson, 1970, Haun et al., 2004). In terms of prehistoric settlement patterns, the Hana area exemplifies aspects of human ecology not as readily accessible anywhere else in Hawaii. Exploitation of the wet, exposed windward shores of the islands resulted in variations in settlement patterns which included scattered homesteads instead of the more typical nucleated villages found elsewhere (Pearson, 1970, pp. 25-26). Because of the dense undergrowth typical of the Hana areas, discovery of relevant features has been difficult in some areas (Ibid.). Also, agricultural and ranching activities, and more recently tourism construction, have undoubtedly destroyed many sites (Ibid., pp. 27-29).

Kawaipapa/Niumalu/ Wananalua *ahupua`a* area studies

A few archaeological investigations have been carried out in the general area in and near Kawaipapa/Niumalu *ahupua`a*. One of these projects consisted of a 1984 reconnaissance study of a c. 14-acre parcel of land to the northeast (Landrum, 1984). There were no significant precontact cultural resources located during this reconnaissance level investigation. A second reconnaissance survey was carried out by Kennedy in 1990. This study documented Kauleiula Heiau (Site 109). Xamanek Researches[8]

[8] Xamanek Researches was converted to Xamanek Researches, LLC, a Hawai`i-based Limited Liability Company, at the beginning of 2005.

conducted an archaeological assessment of a portion of the Hana Landfill that was slated to expand onto State land (Fredericksen, 2003). No significant cultural materials were located during this study.

The nearest archaeological inventory surveys conducted in the vicinity of the Pa`ani Mai Park project area in Kawaipapa and Niumalu *ahupua`a* consist of two parcels that lie within 500 m of the study area that were surveyed in 1993, and a survey that was carried out on a nearby parcel in 2006.

The Hana Medical Center inventory survey was conducted in 1993 (Henry and Graves, 1993). This archaeological study located four sites—two complexes (Site 3150 and Site 3153), and two boundary walls (Site 3151 and Site 3152). Sites 3150 and 3153 were interpreted as temporary habitation areas that appeared to have been utilized periodically, possibly during the plantation era. All sites were interpreted as post-contact features. Data recovery work was carried out on Site 3150 in 1996 (Wulzen et al., 1996). Material culture remains recovered during testing were associated with the latter 1800s.

Xamanek Researches conducted an inventory survey for the then planned County of Maui Hana Fire Station complex in 1993. This parcel of land lies to the northwest of the Pa`ani Mai Park expansion property. There were no significant material culture remains encountered during testing on this previously disturbed portion of land (Fredericksen et al., 1993).

Two parcels in the adjacent Kawaipapa *ahupua`a* to the NNE were surveyed in 2006. A total of three sites with five features were identified during the 2006 survey of a c. ½ acre parcel (Chun and Dillon, 2006). Site 6068 consists of a complex that includes a platform that is interpreted as a possible burial (Feature B). Site 6069, a post-contact era boundary wall, was found to have been heavily impacted by previous clearing activities on the parcel. Finally, Site 6070 consists of two sugar plantation era train cars, which are in generally poor condition.

Xamanek Researches, LLC carried out an inventory survey on a similarly sized parcel in 2006. One site complex with four features was identified and documented during the survey (Madeus and Fredericksen, 2006). Site 50-50-13-5946 consists of a total of four features (A-D), two of which are terraces, one is a depression and the other is a low platform. Features A through C of Site 5946 were recommended for passive, as-is preservation, because they may be associated with the Kawaipapa Complex (Site 1485 – see below), which is essentially adjacent to this newly identified site. In addition, archaeological monitoring was recommended in the event that future earthmoving activities on other portions of the parcel extend into the existing surface.

The Kawaipapa Complex (SIHP[9] 50-50-13-1485) is located essentially adjacent to Site 5946 (north), across Waikoloa Road. This complex has never been fully studied, but was documented during the State Inventory in 1973 (see Appendix A of Madeus and

[9] **SIHP** = State Inventory of Historic Places.

Fredericksen, 2006). This complex consists of a (now restored) fishpond[10] and two caves. This area has been extensively developed and contains several vacation rental units. As previously noted above, this interesting complex has never been fully investigated.

Other sites that are contained within Kawaipapa *ahupua`a* include Kauleilepo Heiau (SIHP 50-50-13-110), Kauleiula Heiau (Site 109), Waikoloa Platform (Site 107), and Kaianalimu habitation site (Site 1491). In addition, a post-contact cemetery lies about 1 km to the north of the study area on the southern side of Kawaipapa Gulch.

Erik Fredericksen of Xamanek Researches, LLC has previously noted what appears to be an undocumented subsurface site near the mouth of Kawaipapa Stream. This unrecorded site was noted during an inspection of the near coastal area for a project that has subsequently been abandoned. The presence of marine shell and charcoal flecking in an eroded section near the coast suggests that this undocumented site may be a near coastal habitation area.

Xamanek Researches carried out an archaeological monitoring program for the Hana Ballpark light installation project in 2002 (Fredericksen and Fredericksen, 2002). The ballpark lies an estimated 350 m to the southeast of the project area in the adjacent Wananalua *Ahupua`a*. One probable precontact burial was located during this project and designated Site 50-50-13-5190. In addition, three indigenous stone tools – a hammerstone, a hammerstone/chopper, and a pecking stone were located during the monitoring process. However, there were no intact cultural deposits encountered. The Site 5190 burial was preserved in place per the direction of and with the assistance of Mr. Mike Minn, Maui/Lana`i Islands Burial Council (MLIBC) representative for Hana

Two additional probable precontact burials were subsequently inadvertently disturbed during the course of separate ongoing improvement projects on the grounds of the Hotel Hana Maui, which is adjacent to portions of the Hana Ballpark. Xamanek Researches was called in to mitigate both finds. The first burial was encountered in 2003 in a previously disturbed area that was ultimately transformed into a spa for the Hotel Hana Maui (Fredericksen, 2003). This burial had been partially disturbed by the previous placement of a water line, as well as general landscaping actions. Three waterworn cobbles and 4 pieces of weathered coral were found associated with the burial pit. The burial was preserved in place and designated Site 5500. The second burial was located near the end of 2004 during excavation activities associated with the installation of underground utilities for the hotel (Fredericksen, 2004). This burial was essentially undisturbed and is interpreted as a probable precontact burial, based on the presence of weathered coral and a basalt chopper. Both sets of human remains were preserved in place per the direction of and with the assistance of Mr. Mike Minn, MLIBC representative for Hana.

[10] In the State Inventory data sheets (refer to Appendix A in Madeus and Fredericksen, 2007), the then dry pond was also interpreted as a possible wet taro field.

Settlement Patterns and Land Use

Previous archaeological work in the general vicinity of the current project area suggests that this portion of Maui was likely utilized in precontact times for permanent and temporary habitation, agriculture, coastal marine exploitation and ceremonial purposes (Fredericksen et al., 1993; Haun et al., 2004; Henry and Graves, 1993; Kirch, 1985; Pearson, 1970). It does not appear that much of the more rugged inland portion of the Hana coast was heavily utilized for post-contact commercial sugar and ranching activities in this area, because it contains little soil and is quite rocky. However, areas that were favorable for commercial agriculture and ranching activities have likely been impacted by activities associated with these post-contact activities.

Expected Findings

Given the location of the current study area, we expected to find remnants of precontact temporary and/or permanent habitation areas, and, possibly, agricultural activities. Given the location of the study area, there is a possibility that human burials may be located on the subject parcel. There was also a possibility that post-contact use of the area—particularly ranching—could have altered and/or modified any precontact features that might be located on the Pa`ani Mai Park project area. Post-contact site types could include ranch-era features such as walls, plantation era sites, and transportation features.

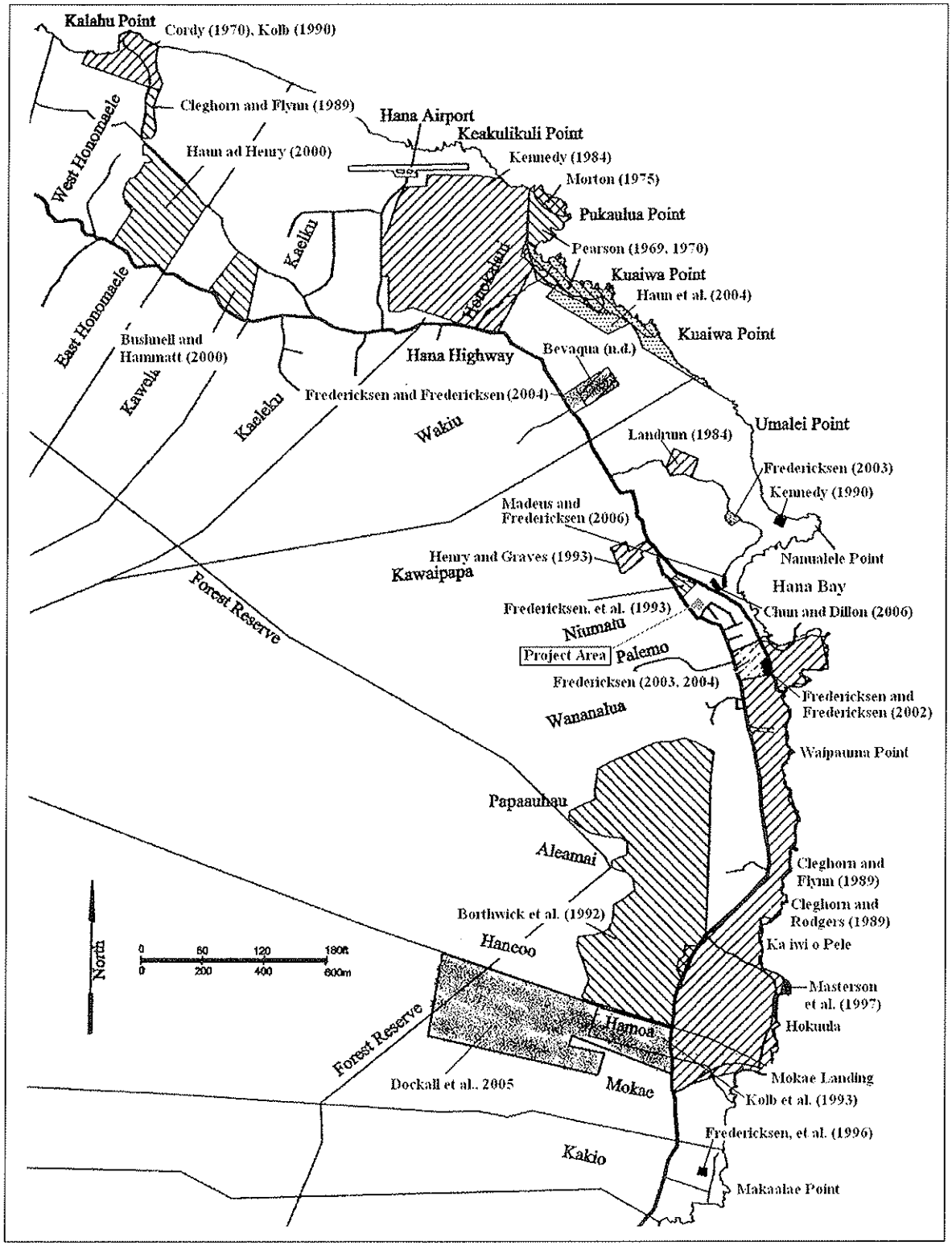

Figure 4. Previous archaeological work in the Hana area, including location of the Pa`ani Mai Park project area

FIELD METHODS

At the request of the Maui County Department of Parks & Recreation, Xamanek Researches LLC, conducted an archaeological inventory survey on a 2.162 acre parcel of land in Hana. The study area is located in Niumalu *Ahupua'a*, Hana District, Island of Maui (Figure 1 through Figure 3). The archaeological fieldwork was conducted by archaeologist Marco Molina B.A., and Supervising Archaeologist Jonas K. Madeus, B.A. Erik Fredericksen (SHPD Permit No 07-05) was the Field Director and Principal Investigator for the project. Our fieldwork was conducted from 26 to 28 September 2007.

The archaeological investigation consisted of a 100% of surface survey of the project area, and the controlled excavation of two 0.5 m square test units (TUs), three 0.3 to 0.4 m square shovel tests (STs) and nine backhoe trenches (BTs). The pedestrian inspection of the project area was accomplished through systematic sweeps oriented in northwest/southeast direction at 5-10 m intervals. The survey began in the northwest corner of the project area and moved to the southeast. All encountered sites were recorded and documented with a written site description, site maps, and photographs.

As noted above, the subsurface testing consisted of the manual excavation of two test units, three shovel tests, and the mechanical excavation of the nine backhoe trenches. The two test units were excavated on a terrace remnant, and a rock and earthen mound (Site 6361, and XR-2). The shovel tests were excavated on a flat area adjacent to the west side of Site XR-3. The backhoe trenches were systematically placed and excavated on what was interpreted as the entire project area.[11]

All excavated materials from the test units and the shovel tests were sifted through a 1/8 inch wire mesh screen. Recovered portable remains were placed in plastic bags, labeled with the appropriate provenience information, and sent to the lab for analysis. The mechanical excavation of the nine backhoe Trenches was closely monitored by the field team. Backdirt piles were spot-checked with rakes and 1/8 inch mesh screens.

Following the excavations, a representative wall from the various subsurface tests was hand scraped with trowel to aid in recording the soil stratigraphy. The wall profiles were mapped to scale and described using Munsell soil colors and U.S Soil Conservation Service terminology. The completed excavations were then photographed and backfilled.

[11] Our field team was inadvertently told by a County Parks & Recreation staff person that the project area extended to Uakea Road. As a result, an estimated 2 additional acres were surveyed. It was subsequently determined that this additional land was not part of the planned expansion area. The results for this additional area are included in Appendix A of this report for informational purposes only.

RESULTS OF FIELDWORK

This project was undertaken to document all historic properties on the 2.162 acre parcel before the County of Maui, Department of Parks & Recreation permit application for the expansion of the Pa`ani Mai Park. Results were to be included in a report designed to satisfy SHPD requirements prior to granting of the permit. Previous archaeological studies that were conducted in the vicinity are included in the background section (see background research section).

The inventory survey discovered three new and one previously identified archaeological sites in the project area and outside its boundaries. The three new sites consist of the remnants of a terrace and multiple earthen and rock mounds. The terrace remnant, Site 50-50-13-6361, consists of a single feature, and the multiple earthen and rock mounds are component features of XR-2 and XR-3. Site 6361 is situated in the northeastern quad of the project area. The previously identified site consists of a portion of the Hana Belt Road, SIHP 50-50-various quads-1638 and it is located on the northwestern boundary of the project area (Figure 5 and Table 1). Sites XR-2 and XR-3 are located outside the project area and are discussed in **Appendix A**. These two sites (Site XR-2 and XR-3) will not be assigned State Site numbers, because they are outside the project area and they are on private property. Site 6361 may date to the precontact era, but appears to have been heavily impacted and/or modified during plantation, ranching, and/or modern times.

Subsurface testing was undertaken in four locations during the inventory survey. The tested features consisted of the terrace remnant (Site 6361), the project area, and the multiple earthen and rock mounds. The subsurface testing results are discussed in the following site description and backhoe test results section.

The inadvertent relocation and documentation of sites beyond the present project area boundaries was a result of a ground truthing error with regard to the boundaries of the project area of potential effect (APE) while making an effort to account for all historic properties in the area. At the time that sites XR-2 and XR-3 were located, the field assumption was that all of the relocated sites were within the project area.[12] Due to time constraints and the number of sites that would be necessary to test, field operations proceeded with mapping, photography, and subsurface testing of two new sites that were presumed to lie within the project area. It was only after our fieldwork was completed, that it was determined that Sites XR-2 and XR-3 and some of our backhoe tests were outside the project area (see **Appendix A**).

[12] These sites (XR-2 and XR-3) have not been assigned permanent SIHP numbers, because they are located on a private parcel and off of the proposed expansion project area. At the time of our inventory survey, our field team was instructed that the project area was larger than indicated on the project map by a County of Maui representative. As a result, additional area was surveyed *makai* of the actual project area. This additional data is included in Appendix A for informational purposes only, but not in the main body of the inventory survey report.

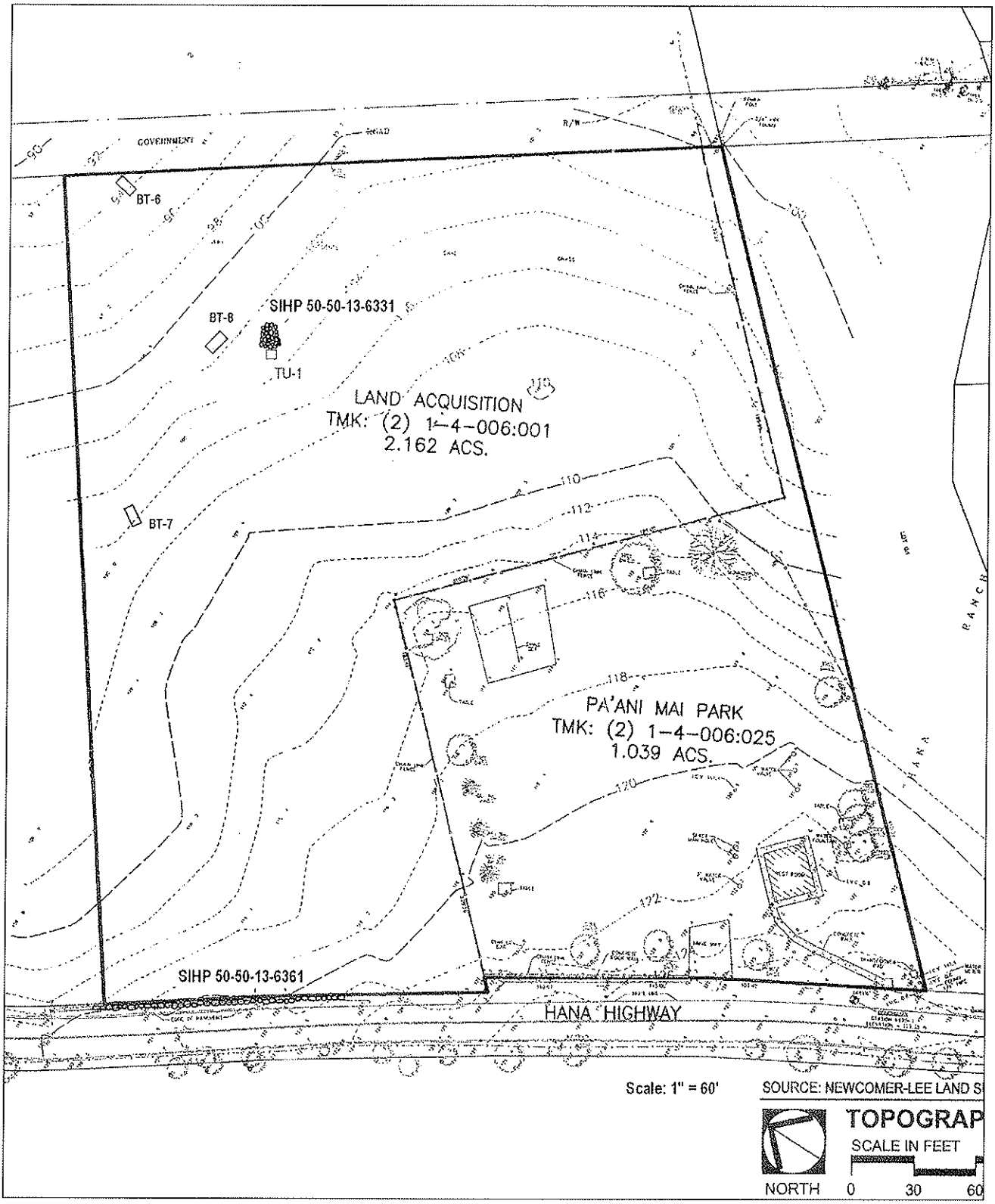

Figure 5. Plan view of the project area showing Site 6361, TU-1, SIHP 1638 and BT-6 through BT-8.

Table 1. Fieldwork results and tested Features

State Site #	Temporary Site #	Feature	Type	Function	Probable age	Signifi cance	Length	Width	Exterior height	Shape	Comments
50-50-13-6361	XR-1	*	Terrace remnant	Probable temporary habitation	Pre and post-contact	"d"	5.5 m	3.5	0.5-0.73 m	Irregular	This terrace remnant is likely to be a precontact feature, based on the presence of *ili`ili*.
50-50-various quads-1638			Retaining wall	Transportation	Post-contact	"d"	50.0 m	0.5-1.0 m	0.9-1.15 m	Linear	Only small section of the Hana Belt Road, SIHP 1638
	XR-2	*	Earthen and rock mounds	Probable agriculture	Pre and post-contact	"d"					
	XR-3	*	Earthen and rock mounds	Clearing piles/Agriculture	Post-contact	"d"					

* = Tested features and XR = Xamanek Researches, LLC

SIHP: **50-50-13-6361**
SITE TYPE: Terrace remnant
FUNCTION: Temporary habitation
PROBABLE AGE; Pre and post-contact
TOTAL FEATURES: One
DIMENSIONS: 5.5 m NW/SE by 3.5 m NE/SW
SIGNIFICANCE: Criterion "d"
DESCRIPTION: Complex 6361 is composed of a terrace remnant which is situated at the northeastern quad of the project area between the elevations of 102 to 104 ft. AMSL. This site remnant covers an area of approximately 5.5 m in length by 3.5 m in width (Figure 5). It appears that this site may be associated with precontact period, but was disturbed during the post-contact era.

State Site 6361 consists of a terrace remnant that is located at the northwestern quad of the project area at approximately 45.0 m and 29 degrees from the northeast corner of the existing Pa`ani Mai Park. This structure appears to be a remnant of one corner of a precontact terrace that was built against a natural outcrop or terrace. This site was pushed and damaged during the post-contact period. This terrace remnant measures 5.5 m in length by 3.5 m in width and it is constructed from small to medium subangular basalt boulders and cobbles stacked one to three courses high to a maximum height of 0.73 m. An earthen berm extends out from the east and west sides of the terrace remnant. This berm may have been pushed onto the terrace. The area behind this terrace and earthen berm is flat, and contains a concentration of *ili`ili* or waterworn pebbles on the surface and around this structure (Figure 6 and Photo # 1).

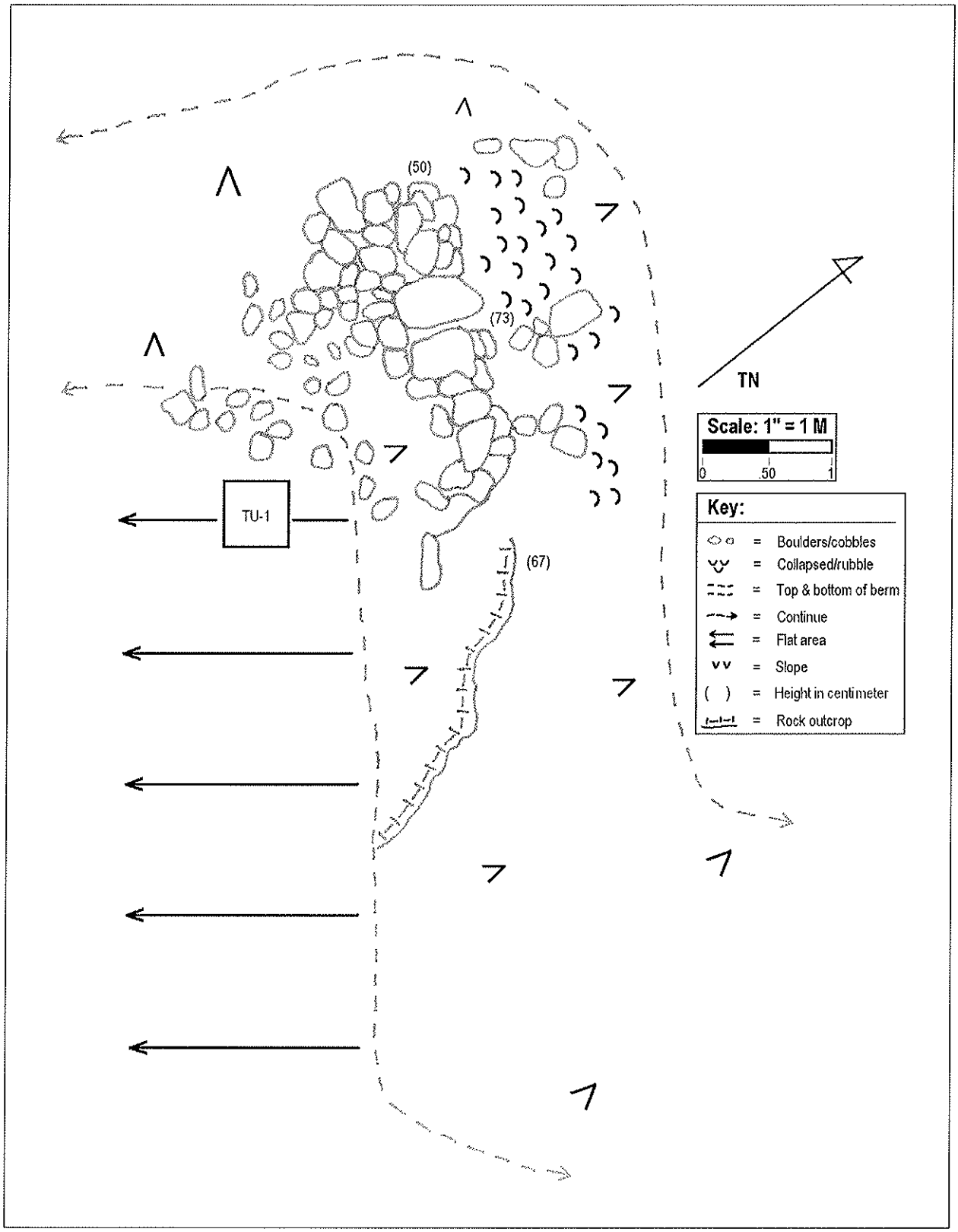

Figure 6. Plan view map of SIHP 6361 and TU-1

Photo # 1. Overview of SIHP 6361, view to the south southeast.

Testing Results

One test unit (TU-1) was excavated at Site 6361 to determine its function and probable age, as well as to test for the presence and absence of cultural deposits (Figure 6).

TU-1

A 0.5 square test unit, TU-1 was excavated behind what appears to be remnant corner of a terrace. The unit was excavated stratigraphically to a depth of 30 cmbs (Figure 6). There was only one stratigraphic layer present in this test unit (Figure 7 and Photo # 2).

Layer I (0 to 25 cmbs) — 10YR 4/2, very dark grayish brown; medium, loam clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, slightly sticky; plasticity, slightly plastic; boundary, n/a; topography, n/a; inclusions include roots and other organic materials, and 20% subangular basalt boulders/cobbles, and 10% waterworn cobbles/pebbles; contains no cultural material, other than *ili`ili*.

Layer I in TU-1 did not yield any cultural material other than the *ili`ili* or waterworn pebbles during the excavation of it. TU-1 was terminated because bedrock was encountered at its base.

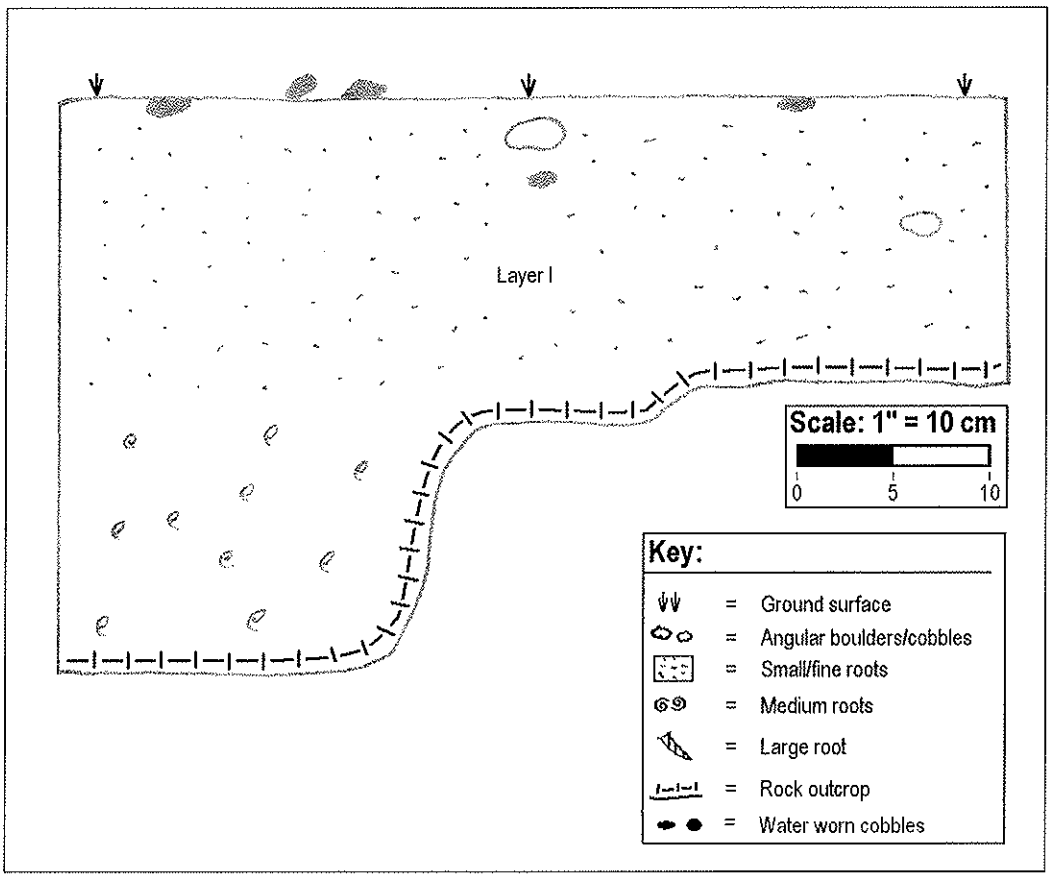

Figure 7. Northeast face profile of TU-1 at SIHP 6361.

Photo # 2. Overview of the northeast face profile of TU-1 at SIHP 6361, view to the northeast.

SIHP:	**50-50-various quads-1638**
SITE TYPE:	Road/retaining wall
FUNCTION:	Transportation
PROBABLE AGE;	Post-contact
TOTAL FEATURES:	One
DIMENSIONS:	50.0 m NW/SE by 0.5 to 1.0 m NE/SW
SIGNIFICANCE:	Criterion "a", "b", "c" and "d"

DESCRIPTION: SIHP 1638 consists of a section of the Hana Belt Road that is located near the coast in this eastern section of Maui. This road is listed on the National Register of Historic Properties. This site consists of the Hana Belt Road with many feature components, including bridges, culverts, retaining walls and guard walls. The retaining walls that are associated with the Hana Belt Road are in gulches and sometimes along side of moderate to steep slopes. SIHP 1638 as a whole runs through Quads 7, 12, 13, 16 and 17. The section that is covered in this current inventory survey is within Quad 13, the Hana Quad. The section of SIHP 1638 that was relocated during this current inventory survey consists of a section of retaining wall on the northeast side of the Hana Belt Road at Pa`ani Mai Park. This retaining wall is located at the northwest corner of the park and extends along the southwest boundary of the project area. This section of retaining wall measures c. 50 m in length by 0.5 to 1.0 m

in width and it is constructed from small to medium angular basalt boulders stacked two to eight courses high. The height ranges from 0.9 to 1.15 m (Figure 8 and Photo # 3 Photo # 4). This boulder faced retaining wall starts at about 10 m from the northwest corner of Pa`ani Mai Park.

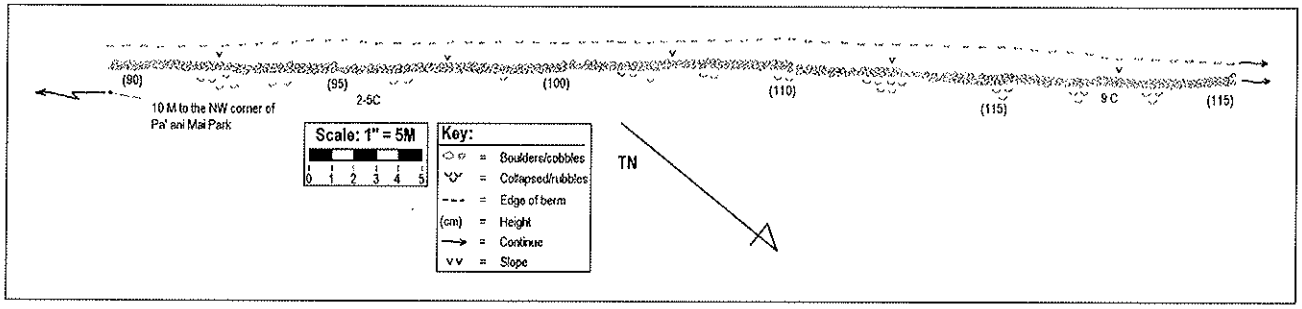

Figure 8. Plan view map of SIHP 1638

Photo # 3. Overview of a section of retaining wall of SIHP 1638, view to the southwest.

Photo # 4. Overview of section of the retaining wall of SIHP 1638.

Backhoe Testing Results

As previously mentioned above, a total of 9 backhoe tests (BTs) were systematically laid out and excavated on what was interpreted to be the project area. These tests were c. 3.0 m in length by 0.85 to 1.0 m in width by up to 1.45 m in depth (Figure 5). The nine BTs were excavated to determine the soil stratigraphy of the project area. The BTs yielded no cultural material. However, after reviewing the field data and per discussions with Karla Davis of the County of Maui Department of Parks & Recreation, Parks Planning and Development Division, it was subsequently determined that only three of the BTs were within the project area. Therefore, only these three backhoe trenches, BT-6 through BT-8, are discussed in this section of the report. The other six trenches, BT-1 through BT-5 and BT-9 are discussed in Appendix A of this report.

Table 2. Results and stratigraphic descriptions of BT-6 through BT-8

BT #	Length	Width	Wall profile	Layer	Depth	Layer descriptions	Cultural materials
BT-6	3.0 m	0.95 m	East face	Layer-I	0-80 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% of subangular basalt cobbles and pebbles; contains no cultural material but a few waterworn cobbles	Only few of waterworn cobbles were found in this layer.
				Layer II	30-125 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 15% of subangular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material
BT-7	3.0 m	1.0 m	SE face	Layer I	0-40 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% of subangular basalt cobbles and pebbles; contains no cultural material	No cultural material
				Layer II	30-120 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 40% of subangular basalt cobbles and pebbles; contains no cultural material	There is more basalt cobbles in this Layer II of this BT.
				Layer III	60-120 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include roots and other organic materials, and 90% of subangular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	Layer III is similar to Layer I but it has 90% of basalt cobbles.
BT-8	3.0	0.85 m	South face	Layer I	0-35 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% of subangular basalt cobbles and pebbles; contains waterworn pebbles and no other cultural material	There is abundant of waterworn pebbles or *ili`ili* in this Layer I It is more than any of the BTs. This BT is adjacent to Site 6361..
				Layer II	30-145	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 15% of subangular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material in this Layer

BT-6 through BT-8 were excavated at the northeast quad of the project area (Figure 5). Two common strata were located in BT-6 and BT-8 (see discussion below). BT-7 yielded three strata. These trenches have similar soil characteristics such as color, and consistency.

BT-6

BT-6 was placed and excavated near the eastern boundary line of the project area adjacent to the northeast corner stake and it yielded two stratigraphic layers. BT-6 was terminated at a depth of 1.25 m (Figure 9 and Photo # 5).

Layer I (0-40 cmbs)	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% of subangular basalt cobbles and pebbles; contains a few waterworn pebbles or *ili`ili* but no other cultural material
Layer II (30-125 cmbs)	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 15% of subangular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material

There were a few waterworn pebbles observed in Layer-I but there were no other cultural materials. Layer II did not yield any cultural material.

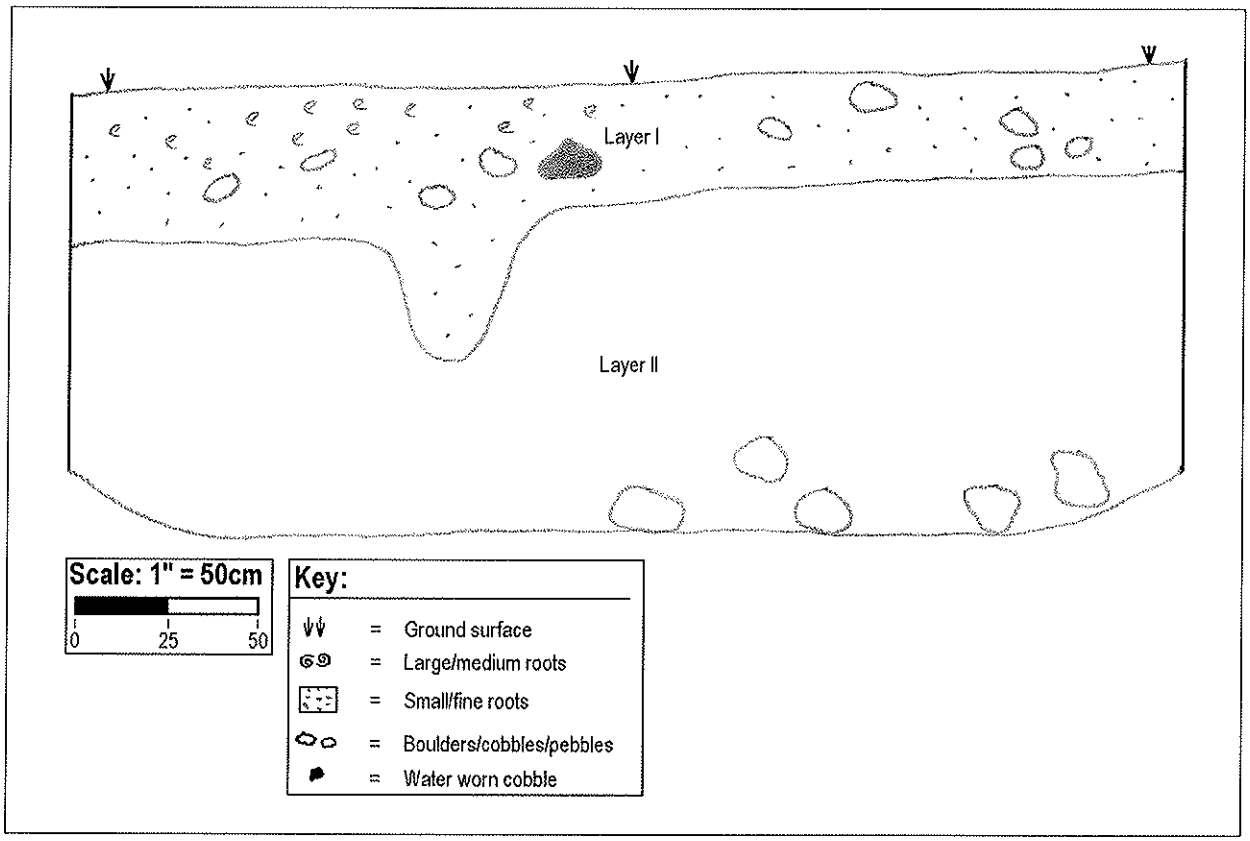

Figure 9. East face profile of BT-6.

Photo # 5. Overview of BT-6, view to the south southwest.

Backhoe Trench 8

BT-8 was placed and excavated at approximately 10.0 m northwest of Site 6361 and about 25.0 m south of BT-6 in the northeastern quad of the project area and it yielded two stratigraphic layers. BT-8 was terminated at a depth of 1.45 m (Figure 10 and Photo # 6).

Layer I (0-35 cmbs) — 10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% subangular basalt cobbles and pebbles; contains a few waterworn cobbles/pebbles and no other cultural material

Layer II (30-145 cmbs) — 10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a;

topography, n/a; inclusions include fine roots and 15% of subangular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material

Quantities of waterworn pebbles or *ili`ili* were observed in Layer-1 but there were no other cultural materials present. Layer II did not yield any cultural material.

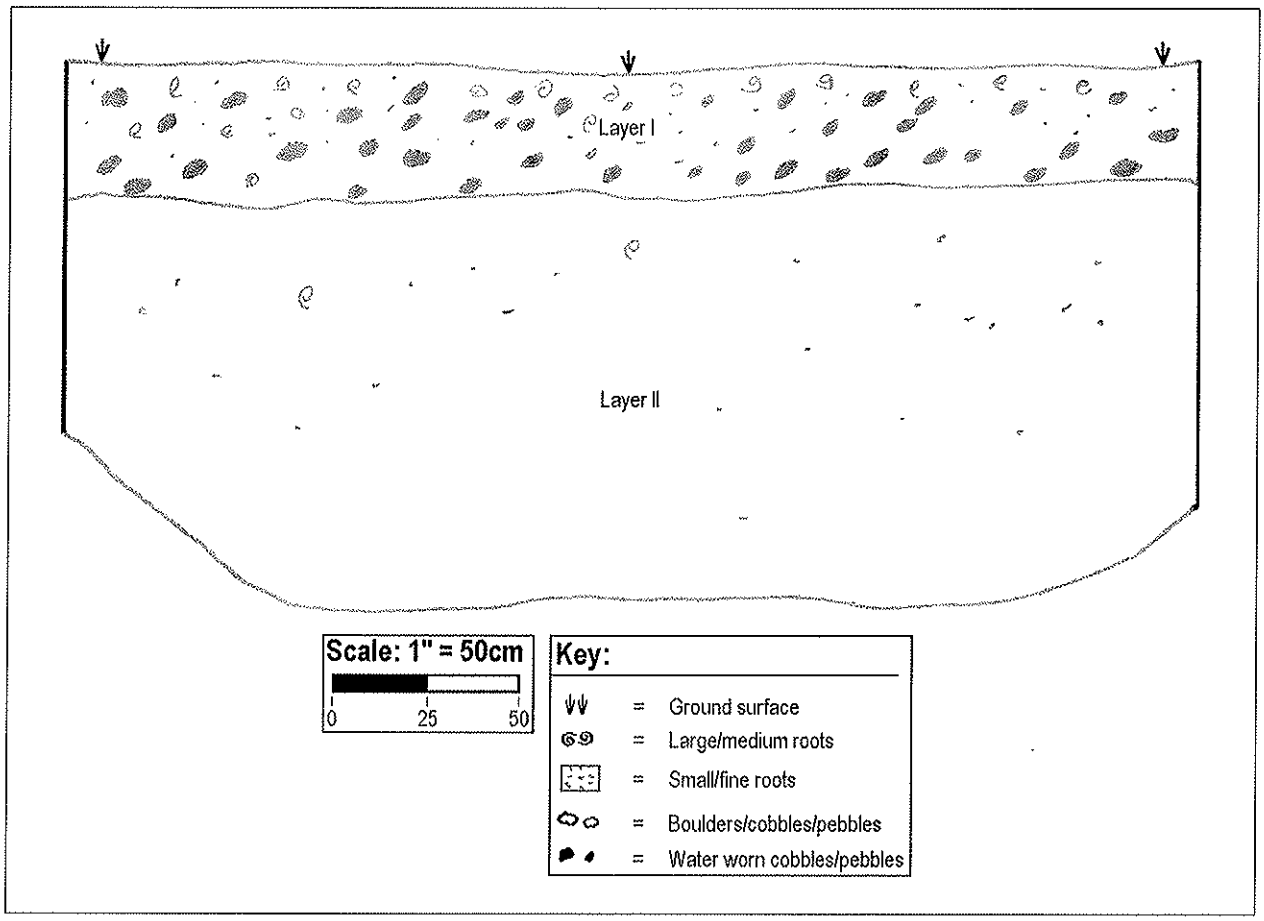

Figure 10. South face profile of BT-8

Photo # 6. Overview of the south face of BT-8, view to the south.

Backhoe Trench 7

BT-7 was placed and excavated adjacent to the middle of the northwest boundary of the project area at approximately 52.0 m southwest of BT-6. BT-7 yielded three stratigraphic layers. BT-7 was terminated at a depth of 1.2 m below surface (Figure 11 and Photo # 7).

Layer I (0-40 cmbs) — 10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% subangular basalt cobbles and pebbles; contains no cultural material

Layer II (30-120 cmbs) — 10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear;

topography, irregular; inclusions include fine roots and 40% of subangular basalt cobbles and pebbles; contains no cultural material

Layer III (60-120 cmbs) — 10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include roots and other organic materials, and 90% of subangular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material

All the three layers from BT-7 did not yield any cultural materials and there were more angular and subangular basalt cobbles in this BT, especially Layer III. It appears that c. 90% of Layer III represent saprolitic bedrock or decomposed rocks.

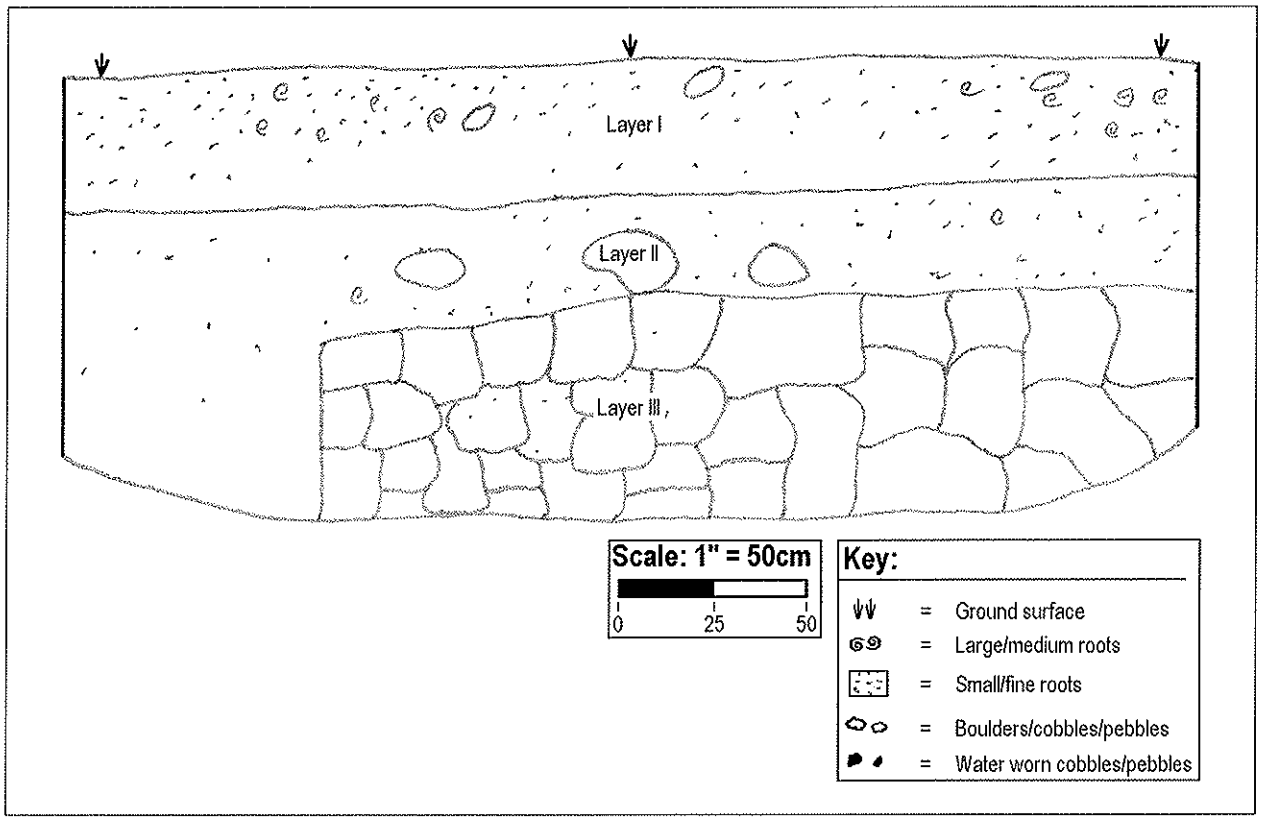

Figure 11. Southeast face profile of BT-7.

Photo # 7. Overview of BT-7, view to the southwest.

In general, similar stratigraphy was noted during the subsurface testing of the project area. Two common stratigraphic layers were present in the tested portions of the project area and adjacent to and outside of its northwest and northeast boundaries. See Appendix A for other trenches outside the project area.

SUMMARY AND CONCLUSIONS

Summary of Sites

One previously unrecorded cultural resource, SIHP No. 50-50-13-6361, was located during our survey of the proposed Pa`ani Mai Park expansion area. Site 6361 consists of a remnant of a possible precontact terrace. This site appears to have been heavily impacted during the post-contact era possibly for commercial agriculture, ranching and/or other purposes. It is tentatively interpreted as a possible precontact habitation site remnant. In addition, a portion of the previously identified Hana Belt Road (Site 50-50-13-1638) was documented. This portion of the Hana Belt Road consists of a section of dry-laid rock retaining wall, which supports Hana Belt Road.

Temporary Habitation Feature

The temporary habitation feature, Site 6361, consists of a terrace remnant. The construction of this structure, along with the presence of quantities of *ili`ili* on the top and around this feature suggest that it may be a precontact temporary habitation structure. However, the lack of traditional food remains does not strengthen this interpretation. This site remnant has been heavily altered by previous earthmoving activities.

Transportation Feature

SIHP 50-50-various quads-1638 consists of a retaining wall along the eastern side of the Hana Belt Road. The retaining walls that are associated with the Hana Belt Road are in gulches and sometimes along the sides of moderate to steep slopes. SIHP 1638 as a whole runs through Quads 7, 12, 13, 16 and 17. The section that is covered in this current inventory survey is in the Hana Quad (13). The section of SIHP 1638 that is discussed in the current inventory survey report is a section of retaining wall on the northeast side of the Hana Belt Road at Pa`ani Mai Park. This retaining wall is located at the northwest corner of existing park, and extends along the southwest boundary of the project area. The Hana Belt Road is assigned a transportation function in the nomination form of the National Register of Historic Places (D. Duensing, 2001).

Conclusions

The results of the current inventory survey of the project area generally conform to most of the expectations derived from the historical and archaeological background research. However, there were no permanent habitation features identified on the project

area. SIHP 6361 is probably a precontact temporary habitation site. As mentioned in the expected findings, there was a slight possibility that the survey would identify precontact or post-contact burials. There were no precontact and post-contact burials identified during the inventory survey.

The lack of recognizable precontact permanent habitation features is not necessarily surprising, given the limited amounts of cultural material that were recovered during our inventory survey walk-over and subsurface excavations, and the extent of previous earthmoving activities on the subject parcel. Predictions also included the identification of traditional Hawaiian agricultural sites as well as commercial and/or private post-contact agricultural and animal husbandry features. Given the proximity of the Hana Belt Road, it was not surprising to encounter a section of road retaining wall.

SITE SIGNIFICANCE AND RECOMMENDATIONS

Significance Evaluations

The following significance evaluations are based on the Rules Governing Procedures for Historic Preservation Review (DLNR 1996; Chapter 275). According to these rules, a site must possess integrity of location, design, setting, materials, workmanship, feeling and association and shall meet one or more of the following criteria:

Therefore, the one new archaeological sites assessed during the current inventory survey is subject to the broad criteria established for the State and National Register of Historic Places.

- Criterion "a"—Be associated with events that have made an important contribution to the broad patterns of our history;
- Criterion "b"—Be associated with the lives of persons important in our past;
- Criterion "c"—Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- Criterion "d"—Have yielded, or is likely to yield, important information for research on prehistory or history;
- Criterion "e"—Have an important traditional cultural value to the native Hawaiian people or to another ethnic group of the state due to associations with traditional cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts.

The archaeological inventory survey discussed in this report was designed and completed to meet DLNR-SHPD requirements for a permit for the expansion of the Pa`ani Mai Park. The significance assessment for each site recorded during the course of the current inventory survey within the project area retain the potential to yield additional information pertaining to the prehistory and history of Hawai`i and are thus significant according to Criterion "d".

SIHP 6361 qualifies for significance under Criterion "d" as it has yielded, and has a continued potential to yield information important in history and prehistory of Hana, Maui.

SIHP 1638 qualifies for significance under multiple Criteria. This section of the Hana Belt Road qualifies for importance under Criterion "a", because the overall road's construction in the c. mid-1920s helped to facilitate the growth of Hana, and reflects a major trend in the history of Hana, Maui. The overall Hana Belt Road is also deemed significant under Criterion "c", because it is generally an excellent and well preserved example of site type. The overall site is also significant under Criterion "d" as it continues to have the potential to yield information about the history of Hana, Maui. The Hana Belt Road may also qualify for significance under Criterion "b", because it was an engineering achievement of Territory of Hawaii and private engineers to build the road and associated bridge, culvert, retaining wall and guard wall features. Finally, the overall site may also be significant for its cultural value—Criterion "e".

Recommended Treatment and Mitigation

The archaeological inventory survey discussed in this report was designed and completed to meet DLNR-SHPD requirements for a permit for the expansion of the Pa`ani Mai Park onto the project area.

The following discussions are recommended treatment or mitigation of historic properties that are in the area of potential effect (APE). The APE within the project area is the entire 2.162 acre parcel. SIHP 6361 consists of a remnant of a possible precontact habitation area and it is considered to be thoroughly documented and no further work is recommended at this time. Site 6361 is not recommended for preservation, because it lacks integrity, and has been heavily impacted by post-contact earthmoving activities. However, precautionary archaeological monitoring is the recommended mitigation during any ground alteration in the future.

The retaining wall portion of SIHP 1638 is recommended for passive, "as is" preservation, if at all possible. However, in the event that any section(s) of this portion of Site 1638 are scheduled to be impacted during planned development activities of the Pa`ani Mai Park extension, then precautionary monitoring with data recovery recordation is recommended. A monitoring plan will be prepared in accordance with HAR Chapter 13-13 279 and HAR Chapter 13-13 278 and sent to the SHPD Maui staff archaeologist for review and approval.

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APPENDIXES

Appendix A. Site Descriptions of Additional Survey Area[13]

XR SITE: **XR-2**
SITE TYPE: Rock and earthen mounds
FUNCTION: Probable temporary habitation
PROBABLE AGE; Pre and post-contact
TOTAL FEATURES: Two
DIMENSIONS: 5.5 m NW/SE by 3.5 m NE/SW
SIGNIFICANCE: Criterion "d"
DESCRIPTION: Complex XR-2 consists of earthen and rock mounds, which are situated approximately 25 m outside the northeast boundary of the project area. This site was documented during this inventory survey. Site XR-2 consists of an earthen berm with two concentrations/possible mounds of subangular basalt boulders and cobbles on the two ends. The whole site measures 17.5 m in length by 7.5 m in width and it is constructed from a large earthen berm with two areas of concentrated subangular basalt boulders and cobbles or two crude rock mounds. The rock mounds are piled up three courses high with a maximum height of 0.77 m. It appears that the earthen berm might have been pushed against and over a section of the western rock mound. The eastern rock mound is likely to be part of the push, because the boulders did not appear to be formally arranged or placed. The earthen berm around the areas of concentrated boulders and cobbles might have been a result of later activity because it appeared in the results of the subsurface testing at the western rock mound. The subsurface excavation showed that the bottom of the rock mound was at 72 cm below surface, which suggests that the earthen berm was pushed against or covered part of this rock mound. There were scattered *ili`ili* or waterworn pebbles on the surface of this feature, which suggests that this area might have been used for temporary habitation because *ili`ili* pavement is likely to be associated with habitation and ceremonial structures (Figure 12 and Photo # 8). However, the *ili`ili* noted on the surface did not appear to represent an intact pavement, but may indicate post-contact disturbance associated with the plantation and/or ranching era.

[13] Note: the area discussed in this section was represented to our field team to be part of the proposed expansion area. The information is included in this report, for informational purposes only.

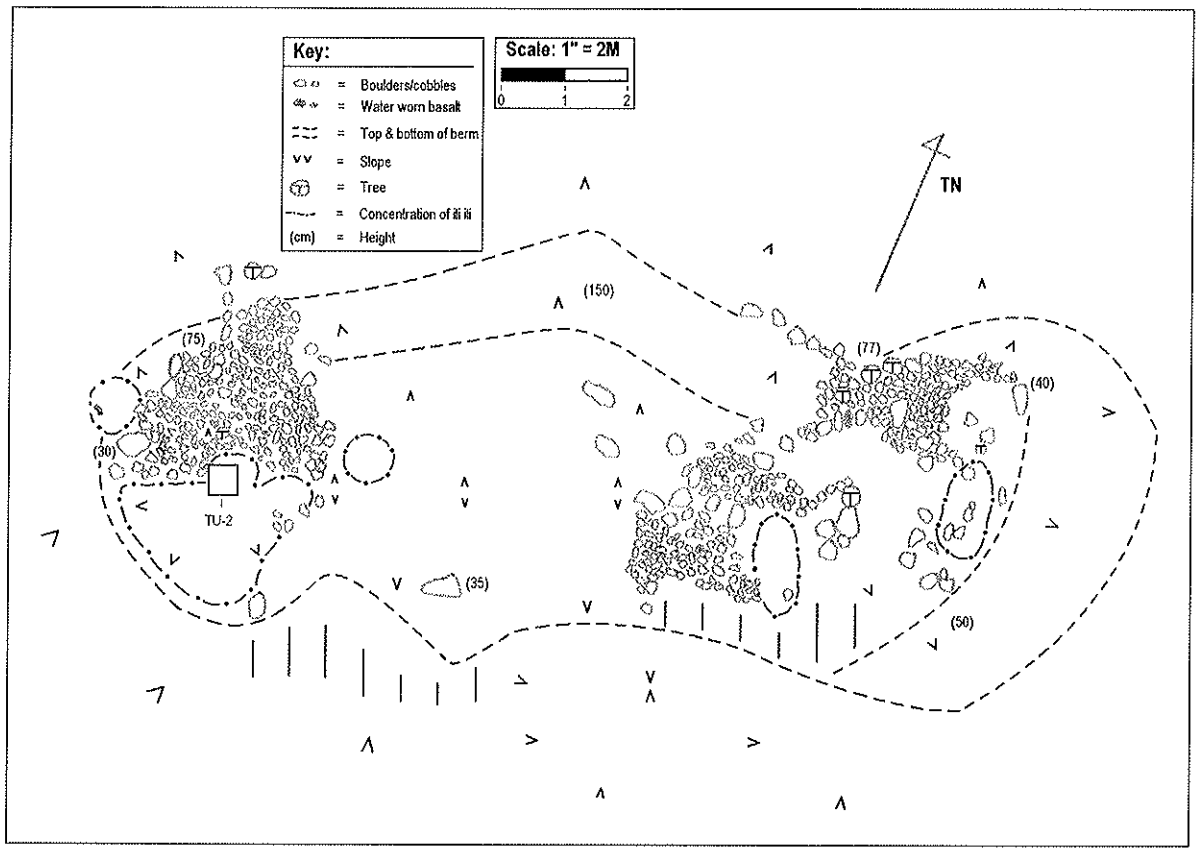


Figure 12. Plan view map of Site XR-2.

Photo # 8. Overview of the western side of Site XR-2, view to the east northeast.

Testing Results

TU-2

A 0.5 square test unit, TU-2 was excavated behind what appears to be a buried rock mound and it was excavated stratigraphically to a depth of 85 cmbs. There were two stratigraphic layers present in this test unit (Figure 13 and Photo # 9).

Layer I (0 to 72 cmbs) — 10YR 3/1, very dark gray; medium, clay loam, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 70% of subangular basalt cobbles and pebbles, and waterworn cobbles and pebbles; contains a hammer stone fragment

Layer II (72 to 85 cmbs) — 10YR 5/6, yellowish brown; fine, silty clay, texture; weak, medium, single grain, structure; dry consistency, loose;

moist consistency, friable; wet consistency, slightly sticky; plasticity, slightly plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 80% of subangular basalt cobbles and pebbles and weathered saprolitic rock or decomposed rock; contains no cultural material

A fragment of a hammer stone was recovered from Layer I. There were some waterworn boulder fragments with cobbles and pebbles observed but not collected from Layer I. Layer II of this unit does not yield any cultural material during the excavation. It appears that this western rock mound might have been partially buried under the earthen berm at a later period.

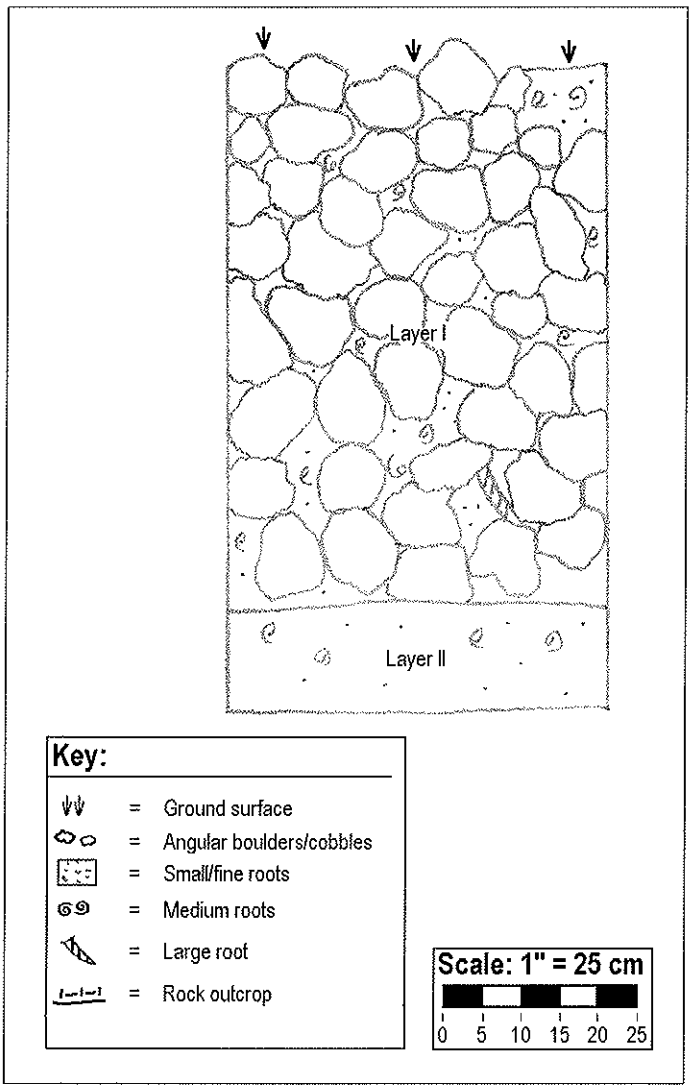


Figure 13. East face profile of TU-2 at XR-2

Photo # 9. Overview of east profile of TU-2 at XR-2, view to the east.

XR Site: **XR-3**
SITE TYPE: Rock mounds
FUNCTION: Probable agricultural clearing piles
PROBABLE AGE; post-contact
TOTAL FEATURES: Five
DIMENSIONS: 32.0 m NNE/SSW by 11.8 m NNW/SSE
SIGNIFICANCE: Criterion "d"
DESCRIPTION: Site XR-3 consists of multiple rock mounds that are located approximately 25 m east northeast outside of the southeastern corner stake of the project area on top of the western bank of Holoinawawae Stream. These multiple mounds cover an area of approximately 32 m in length by 11.8 m in width. These mounds may represent post-contact clearing piles because the boulders and cobbles in the rock mounds are not formally arranged or stacked and the mounds are up against an earthen berm. These rock mounds are stacked two and three courses high to a maximum height of 1.29 m (Figure 14 and Photo # 10). There were a few waterworn boulders observed among the angular boulders in the rock mounds.

Three shovel tests and a backhoe test were placed at these clearing piles. The shovel tests were excavated on a semi-flat area behind the western side of the earthen

berm which the rock mounds are against. Backhoe test number 9 (BT-9) was used to bisect the southern most of the rock piles.

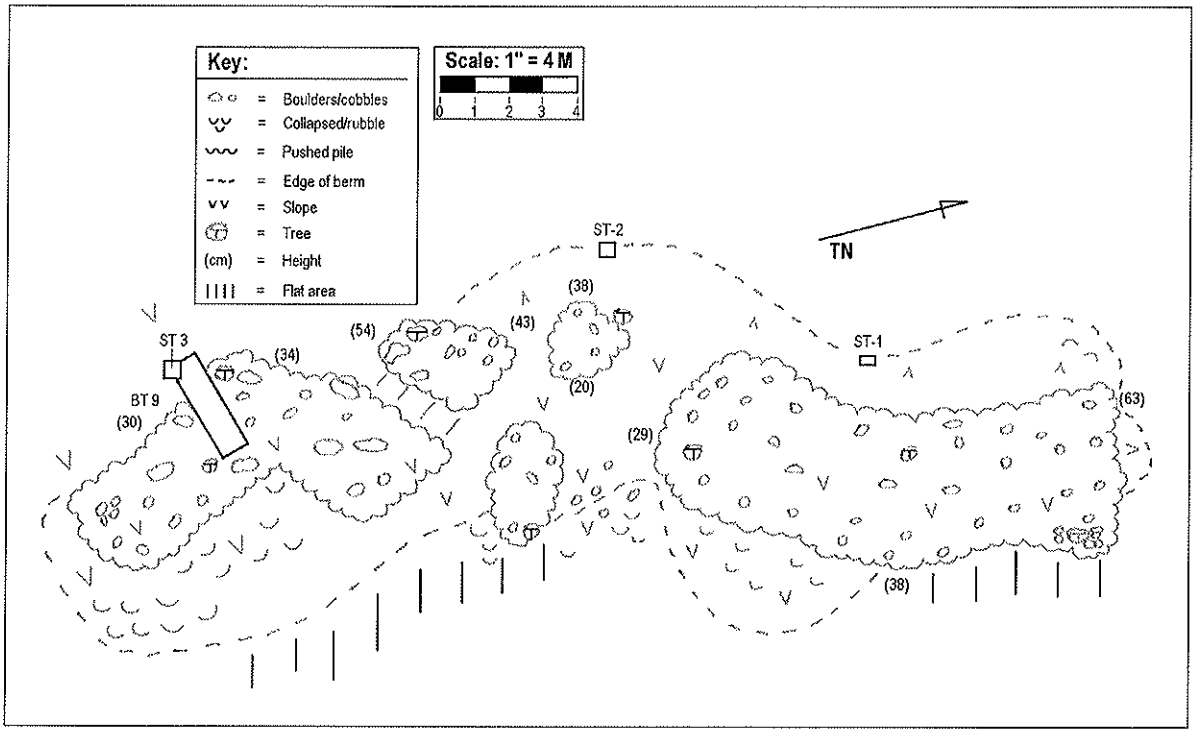


Figure 14. Plan view map of Site XR-3

Photo # 10. Overview of the southern section of Site XR-3 with BT-9, view to the northeast.

Testing Results

Three shovel teas (TS-1 through 3) and a backhoe test (BT-9) were excavated at these rock mounds in order to determine their function and possible age. An additional goal was to test for the presence and absence of cultural deposits at Site XR-3 (Figure 14).

ST-1

A 0.5 m by 0.25 m square unit, ST-1 was placed and excavated behind the northern most of the clearing piles and it was excavated stratigraphically to a depth of 50 cmbs. There was one stratigraphic layer present in this shovel test (Figure 15 and Photo # 11).

Layer I (0 to 50 cmbs) — 10YR 4/2, dark grayish brown; medium, loam clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, slightly sticky; plasticity, slightly plastic; boundary, n/a; topography, n/a; inclusions include roots

and other organic materials, and 20% subangular basalt cobbles and pebbles, and very few of waterworn cobbles and pebbles; contains no cultural material

Layer-I of ST-1 did not yield any cultural material however there are a very few of waterworn pebbles observed during the excavation.

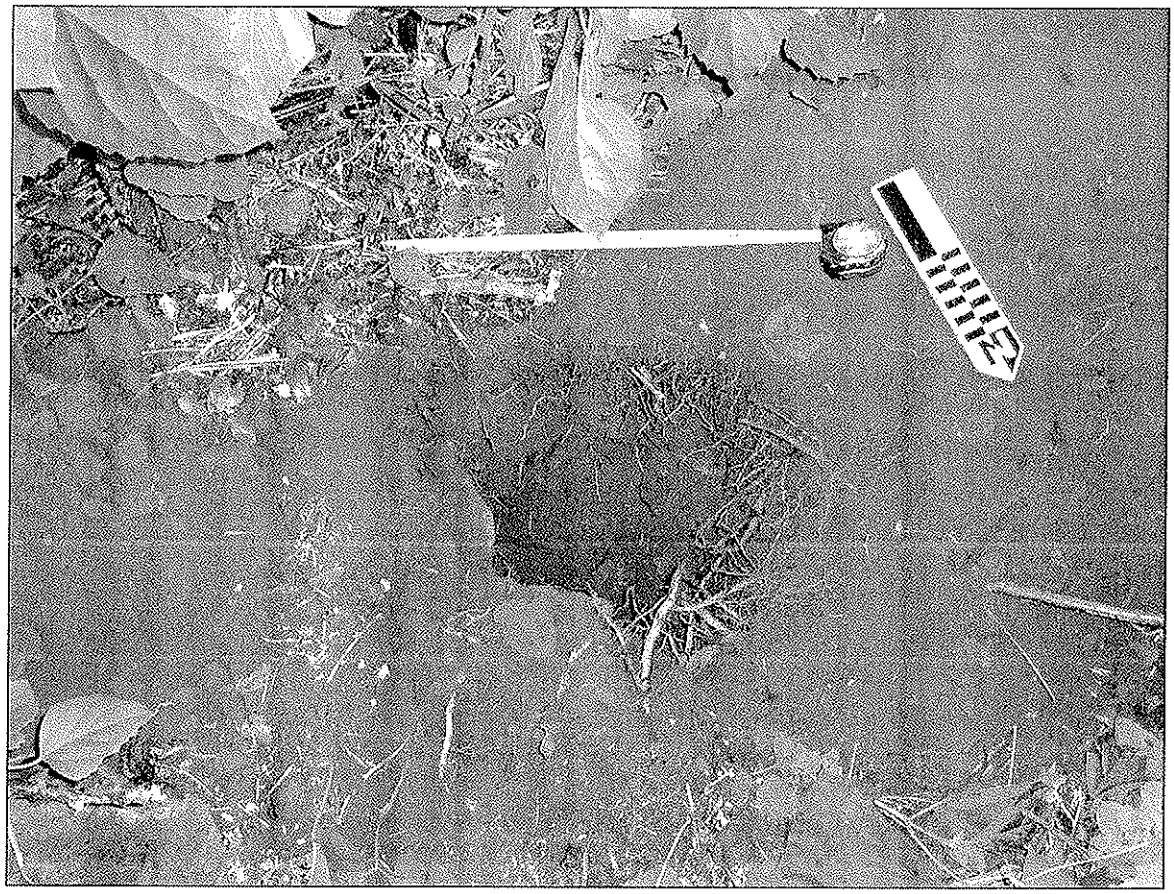


Photo # 11. Overview of ST-1, view to the south southwest

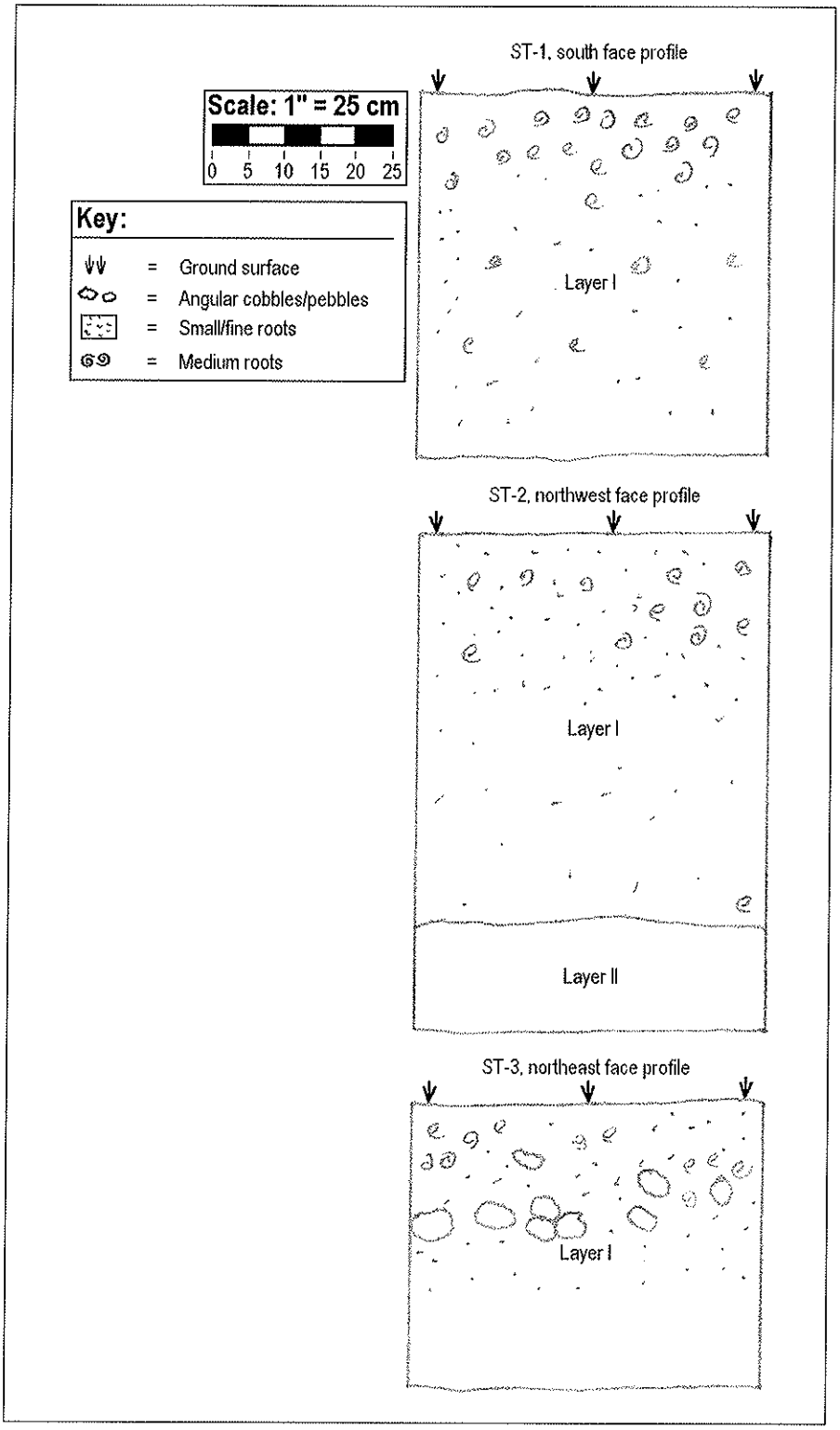


Figure 15. Profiles of ST-1 through ST-3 at Site XR-3.

ST-2

A 0.5 m by 0.4 m square unit, ST-2 was placed and excavated behind the middle of the pushed or clearing piles and it was excavated stratigraphically to a depth of 70 cmbs. There were two stratigraphic layers present in this shovel test (Figure 15 and Photo # 12).

Layer I (0 to 55 cmbs)	10YR 4/2, dark grayish brown; medium, loam clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, slightly sticky; plasticity, slightly plastic; boundary, n/a; topography, n/a; inclusions include roots and other organic materials, and 20% subangular basalt cobbles and pebbles, and very few of waterworn cobbles and pebbles; contains no cultural material
Layer II (55 to 70 cmbs)	10YR 4/4, dark yellowish brown; fine, silty clay, texture; weak, fine, single grain, structure; dry consistency, loose; moist consistency, friable; wet consistency, slightly sticky; plasticity, slightly plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 20% subangular basalt cobbles and pebbles; contains no cultural material

There were a few waterworn cobbles and pebbles observed but not collected from Layer I. Layer II of this shovel test did not yield any cultural material.

Photo # 12. Overview of ST-2 at Site XR-3, view to the northwest.

ST-3

A 0.5 m by 0.4 m square unit, ST-1 was placed and excavated behind the southern most of the clearing piles and it was excavated stratigraphically to a depth of 40 cmbs. There was one stratigraphic layer present in this shovel test (Figure 15 and Photo # 13).

Layer I (0 to 40 cmbs) — 10YR 4/2, dark grayish brown; medium, loamy clay, texture; moderate, medium, single grain, structure; dry consistency, compacted; moist consistency, firm; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 70% subangular basalt cobbles and pebbles, and waterworn cobbles and pebbles, and saprolitic rock or weathered rock outcrop; contains no cultural material

Layer I. did not yield any cultural material. Based on the results of this shovel test, it appears that this section of the pushed pile sits on weathered rock outcrop.

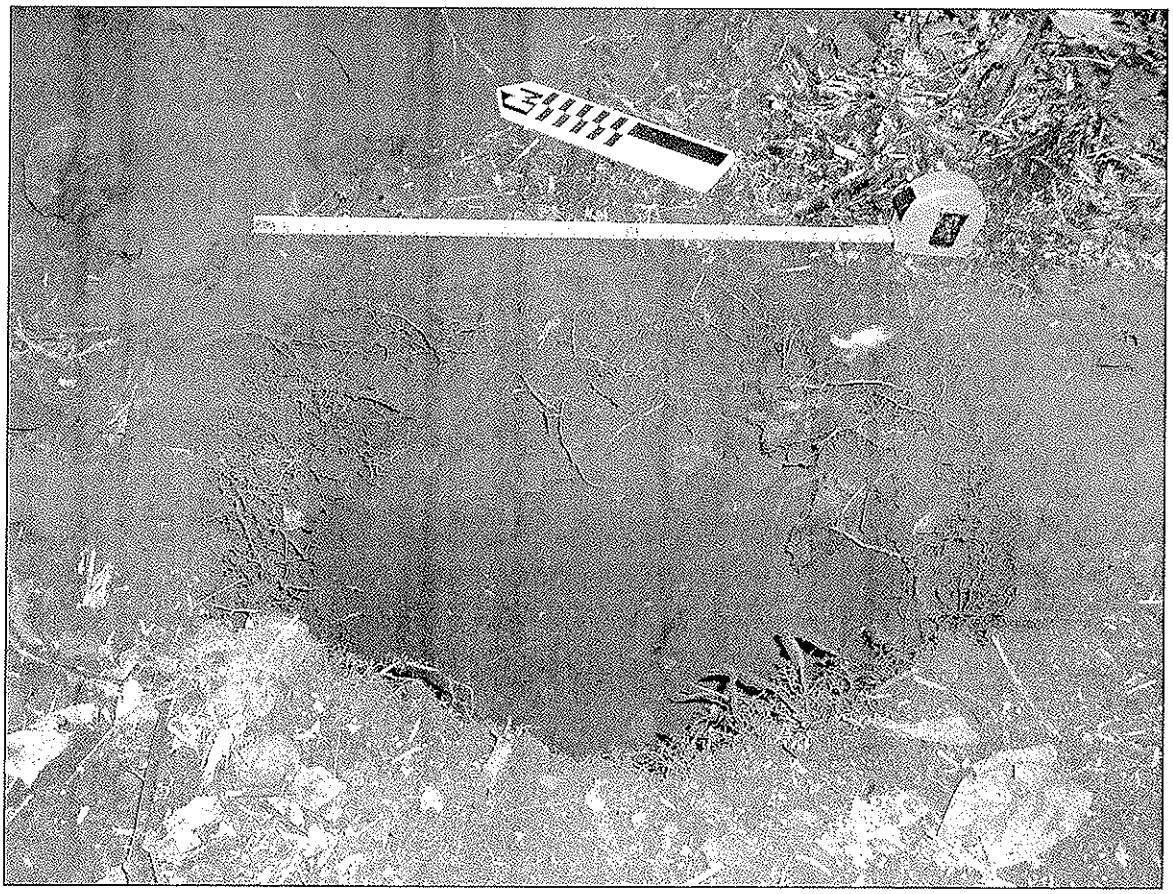


Photo # 13. Overview of ST-3 at Site XR-3, view to the east northeast.

BT-9

A 3.0 by 1.0 m backhoe trench (BT-9) was placed and excavated on the southern most of the rock mounds or pushed piles at Site XR-3 (Figure 14) to document the structure relationship with the underlying stratigraphy. The base of the excavation was at 1.1 meters below surface (mbs). There was one stratigraphic layer of soil present in the northwest face profile of BT-9 (:

Layer I (0-110 cmbs)	10YR3/3, dark brown, silty loam, medium, slightly weak, medium and single grain; loose, slightly sticky and slightly plastic consistency; smooth boundary; 20% of subangular and waterworn cobbles and pebbles as inclusions, contains no cultural material

There were no cultural materials encountered and collected from this BT during the excavation. It appears that these rock mounds represent clear piles associated with plantation, ranching and/or modern activities.

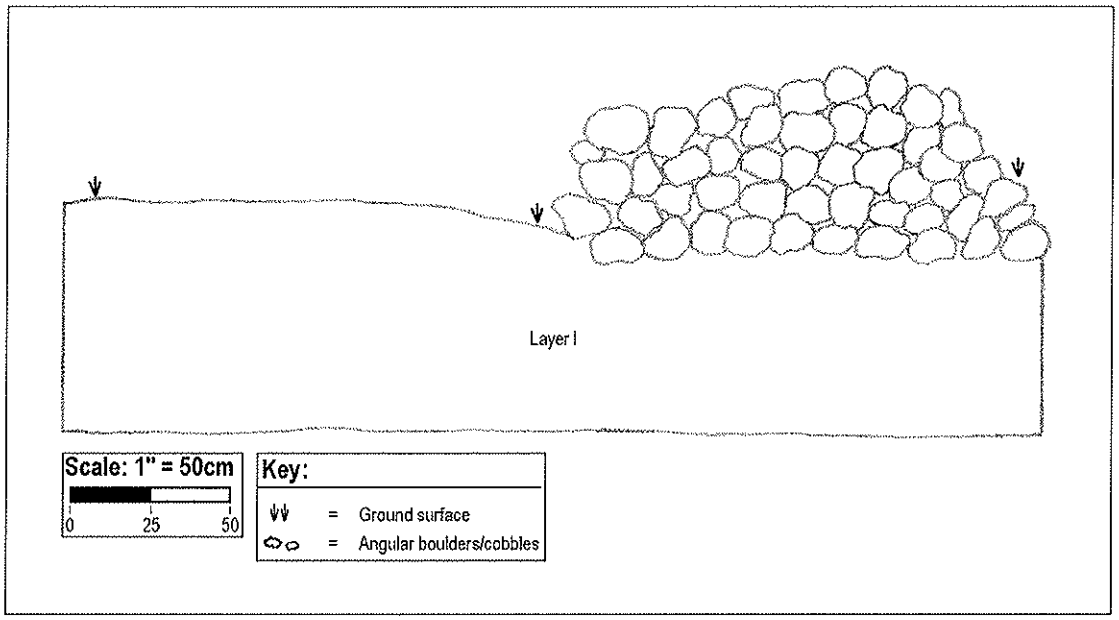


Figure 16. Northwest face profile of BT-9 at Site XT-3.

Photo # 14. Overview of the northwest face profile of BT-9 at Site XR-3, view to the northwest.

Other Backhoe Testing Results Outside the Project area

As previously mentioned above six backhoe tests (BTs) were excavated outside of the project area and therefore these six BTs, BT-1 through BT-5 and BT-9 are discussed in Appendix A (Table 3). BT-9 is discussed with the site descriptions of Site XR-3 above. BT-1 through BT-4 were located 25 meters east of the northeast boundary along c. 20 m intervals from north to south. BT-5 was located at 25 meters north from the middle of the northeast boundary of the project area. There was no map generated to show the locations of these BTs, because these BTs are outside of the project area and they are also on private property.

Table 3. Results and stratigraphic descriptions of BTs outside the project area.

BT #	Length	Width	Wall profile	Layer	Depth	Layer descriptions	Cultural materials
BT-1	3.0 m	0.9 m	South face	Layer-I	0-25 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 10% of angular basalt cobbles and pebbles; contains no cultural material	No cultural material
				Layer-II	25-80 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 4% of angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material
BT-2	3.0 m	1.0 m	East face	Layer-I	0-40 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 10% of angular basalt cobbles and pebbles; contains no cultural material	No cultural material
				Layer-II	22-75 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 75% of angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material

Table 3 continues.

BT-3	3.0	0.85	West face	Layer-I	0-25 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 10% of angular basalt cobbles and pebbles; contains no cultural material	No cultural material
				Layer-II	25-75 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 4% of angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material
BT-5	3.0 m	1.0 m	Southeast face	Layer-I	0-45 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 10% of angular basalt cobbles and pebbles; contains no cultural material	No cultural material
				Layer-II	20-100 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 4% of angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material
BT-4	3.0 m	1.0 m	North face	Layer-I	0-40 cmbs	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 10% of angular basalt cobbles and pebbles; contains no cultural material	No cultural material
				Layer-II	40-90 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include fine roots and 75% of angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material
				Layer-III	40-120 cmbs	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 75% of angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material	No cultural material

BT = backhoe test, m = meters, and cmbs = centi meter below surface

BT-1 through BT-5 were excavated adjacent and outside of the northeast and northwest boundaries of the project area. Most of these BTs yielded similar stratigraphy across the tested area with two common strata in BT-1 through BT-3 and BT-5, with the exception of BT-4 (see discussion below). BT-4 yielded three strata (Table 3).

Back Trench 1

BT-1 was placed and excavated c. 25 m directly east from the northeast corner stake of the project area and it yielded two stratigraphic layers. BT-1 was terminated at a depth of 80 cm (Figure 17 and Photo # 15).

Layer I (0-25 cmbs)	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% angular basalt cobbles and pebbles; contains no cultural material
Layer II (25-80 cmbs)	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 40% angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material

There were no cultural materials encountered in these layers in this trench.

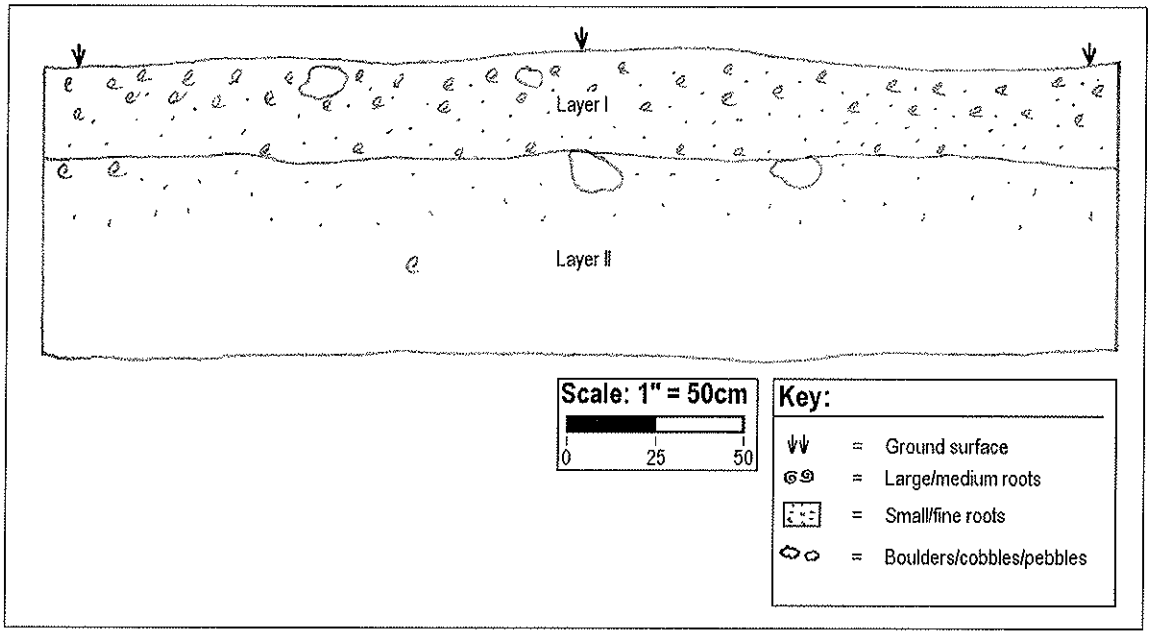


Figure 17. South face profile of BT-1,(representative sample of trenches with two strata).

Photo # 15. Overview of the south face profile of BT-1, view to the south.

Back Trench 5

BT-5 was placed and excavated c. 25 m north from the middle of the northwest boundary of the project area and it yielded two stratigraphic layers. BT-5 was terminated at 1.0 mbs, because sterile matrix (weathered bedrock) was located (Figure 18 and Photo # 16).

Layer I (0-45 cmbs) — 10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, irregular; inclusions include roots and other organic materials, and 10% angular basalt cobbles and pebbles; contains no cultural material

Layer II (20-100 cmbs) — 10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include fine roots and 75% angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material

There were no cultural materials noted during the excavation of this trench.

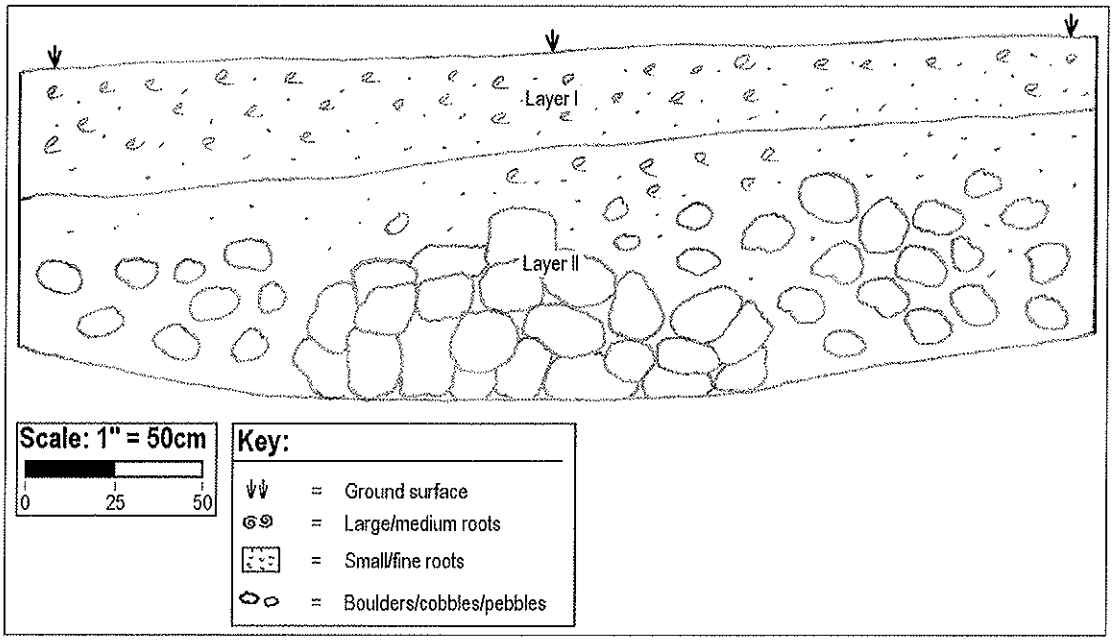


Figure 18. Southeast face profile of BT-5, (representative sample of trenches with two strata).

Photo # 16. Overview of the southeast face profile of BT-5, view to the southeast.

Back Trench 4

BT-4 was placed and excavated c. 25 m directly east from the southeast corner stake of the project area and it yielded three stratigraphic layers. BT-4 was terminated at 1.2 m, because of sterile subsurface conditions and the presence of weathered bedrock (Figure 19 and Photo # 17).

Layer I (0-40 cmbs)	10YR 4/2, dark grayish brown; medium, loamy clay, texture; weak, medium, single grain, structure; dry consistency, loose to semi-compacted; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography, smooth; inclusions include roots and other organic materials, and 10% angular basalt cobbles and pebbles; contains no cultural material
Layer II (40-90 cmbs)	10YR 4/4, dark yellowish brown; fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, clear; topography,

smooth; inclusions include fine roots and 75% angular basalt cobbles and pebbles and saprolitic bedrock or decomposed rocks; contains no cultural material

Layer III (40-120 cmbs) — 10YR5/2, grayish brown, fine, silty clay, texture; moderate, fine, single grain, structure; dry consistency, slightly hard; moist consistency, friable; wet consistency, sticky; plasticity, plastic; boundary, n/a; topography, n/a; inclusions include some roots and 85% angular basalt cobbles and saprolitic bedrock or decomposed rocks, contains no cultural material

There were no cultural materials encountered in any of the layers of this trench.

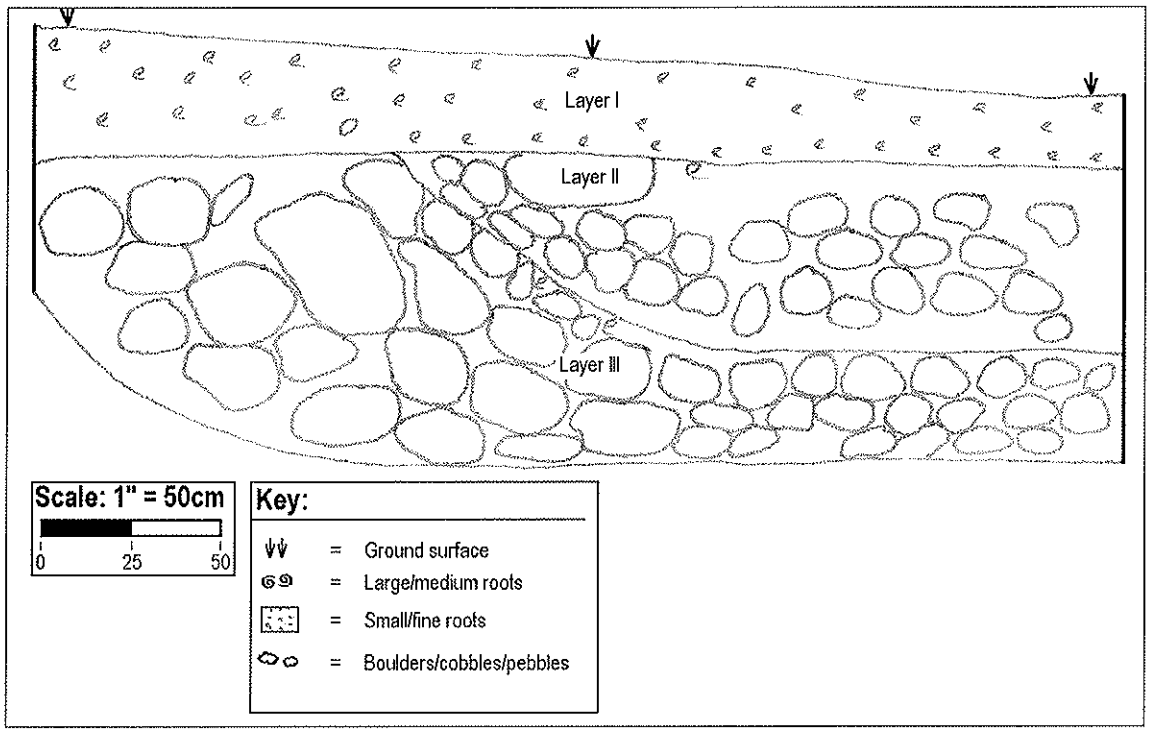


Figure 19. North face profile of BT-4, (three strata).

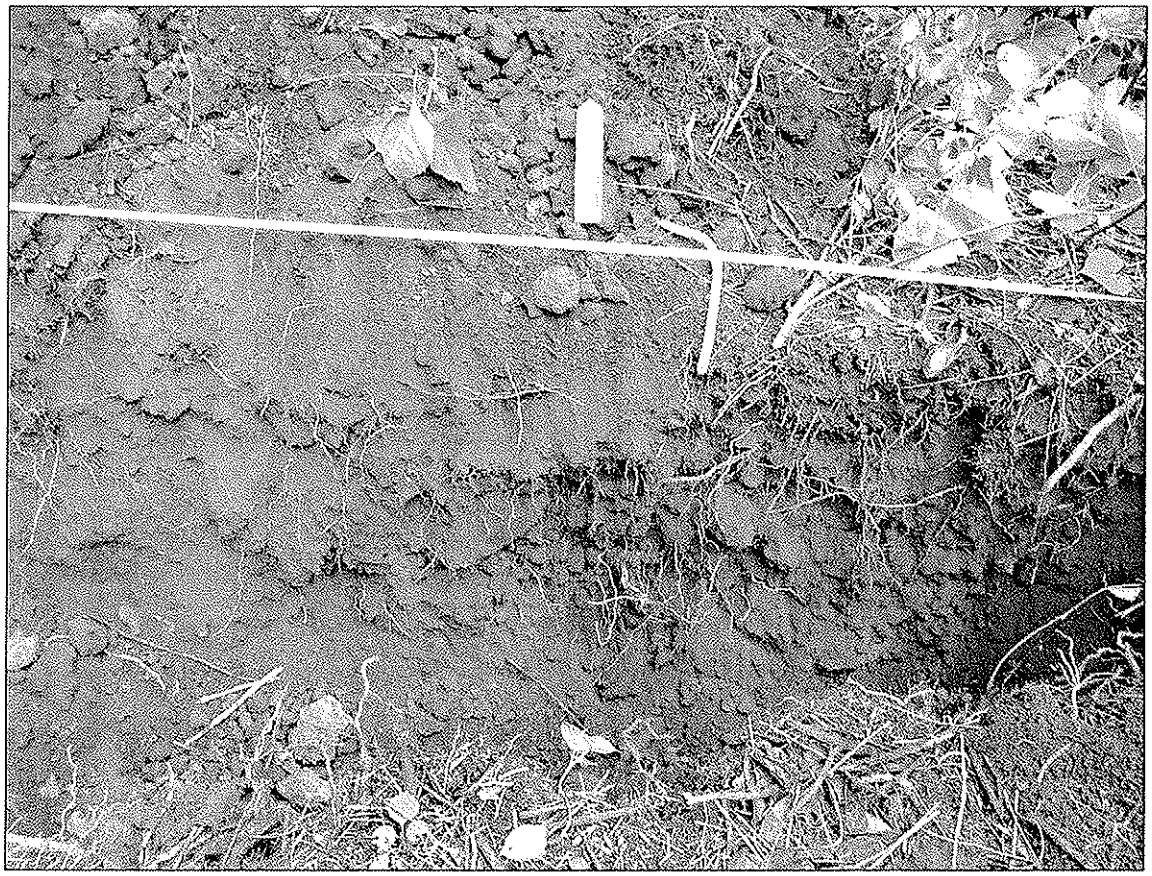


Photo # 17. Overview of the north face profile of BT-4, view to the north.

In general, these backhoe trenches outside the project area contained stratigraphy similar to the trenches that were excavated within the Pa`ani Mai Park expansion project area.

Appendix B. Land commission Awards

Table 4. Land Commission Awards near project area

LCA	TMK	*Ahupua`a*	Claimant	Land Use	Size [14]	Comments
4534	1-3-4	Kawaipapa	Ulunahele, Mose	Kihapai, coconuts	0.70	1 *apana*
4566	1-4-3	Kawaipapa	Waihineaa	ND	5.19	1 of 2 *apana* awarded
4846	ND[15]	Kawaipapa	Kaholokai	kihapai	7.00	1 of 3 *apana* awarded
5149	ND	Kawaipapa	Kahinawa	ND	-	No award
5185B	ND	Kawaipapa	Kaholokai	ND	-	Award under LCA 4846
4739-1, 2, 3	1-4-3, 1-4-5, 1-4-6	Niumalu	Miki	taro (wet), sweet potato	15.65	1 *apana*
5180	1-4-5, 1-4-6	Niumalu	Kumaiohea	ND	17.17	1 *apana*
4665	ND	Wakiu	Pua Lau	Gov't Road to east, potatoes	11.90	1 *apana* (?)
4666	ND	Wakiu	Puhake	ND	5.14	1 *apana*
4844	ND	Wakiu	Kuana	ND	-	No award
4931	ND	Wakiu	Kaahina	ND	5.00	House lot

[14] Size in acres
[15] ND = No data

APPENDIX A-1.

Archaeological Monitoring Plan Prepared by Xamanek Researches, LLC

A GENERAL ARCHAEOLOGIICAL MONITORING PLAN FOR THE PROPOSED PA`ANI MAI PARK EXPANSION PROJECT NIUMALU *AHUPUA`A*, HANA DISTRICT (TMK [2] 1-4-06: 001)

Prepared for:

Ms. Karla Peters
County of Maui
Department of Parks and Recreation
Wailuku, Maui

Prepared by:

Xamanek Researches, LLC
Pukalani, Maui

Erik Fredericksen

20 December 2007

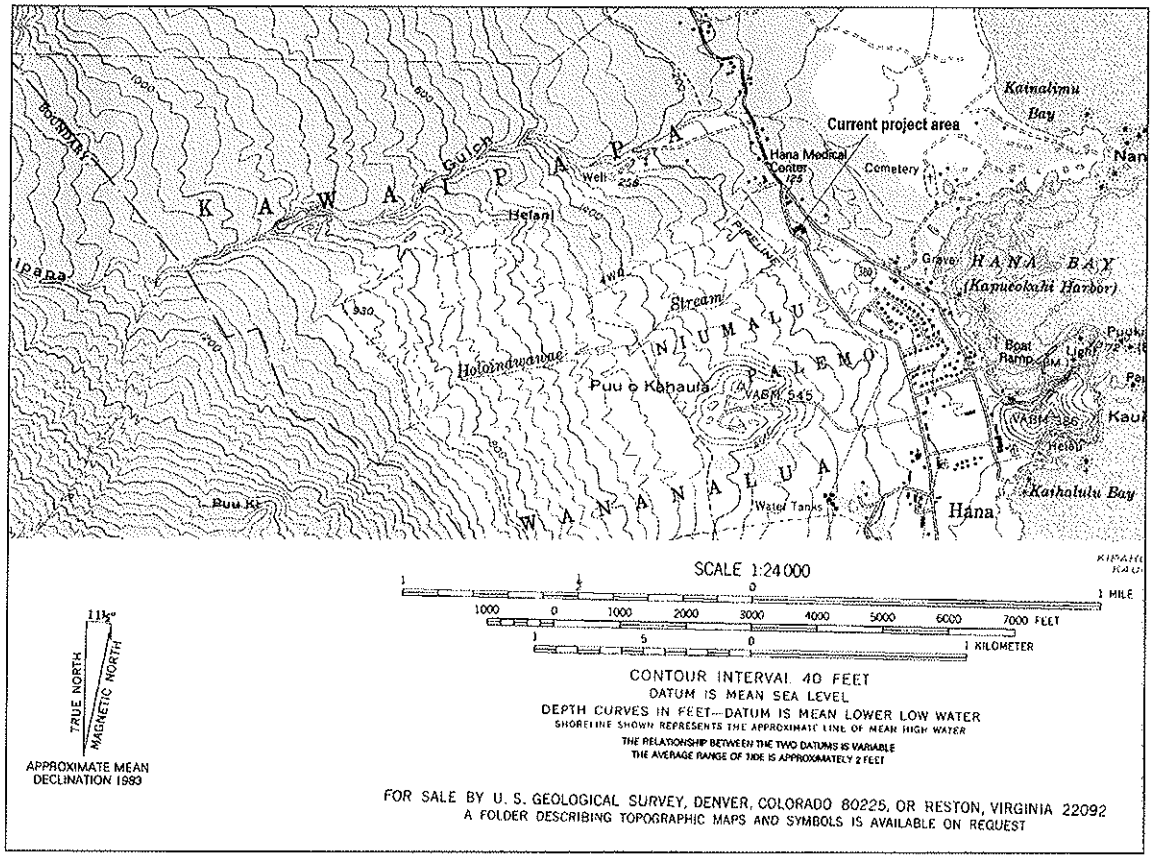


Figure 1. Portion of the U.S Geological Survey topographic map of the Hana quad showing the approximate location of the project area, Hana, Maui.

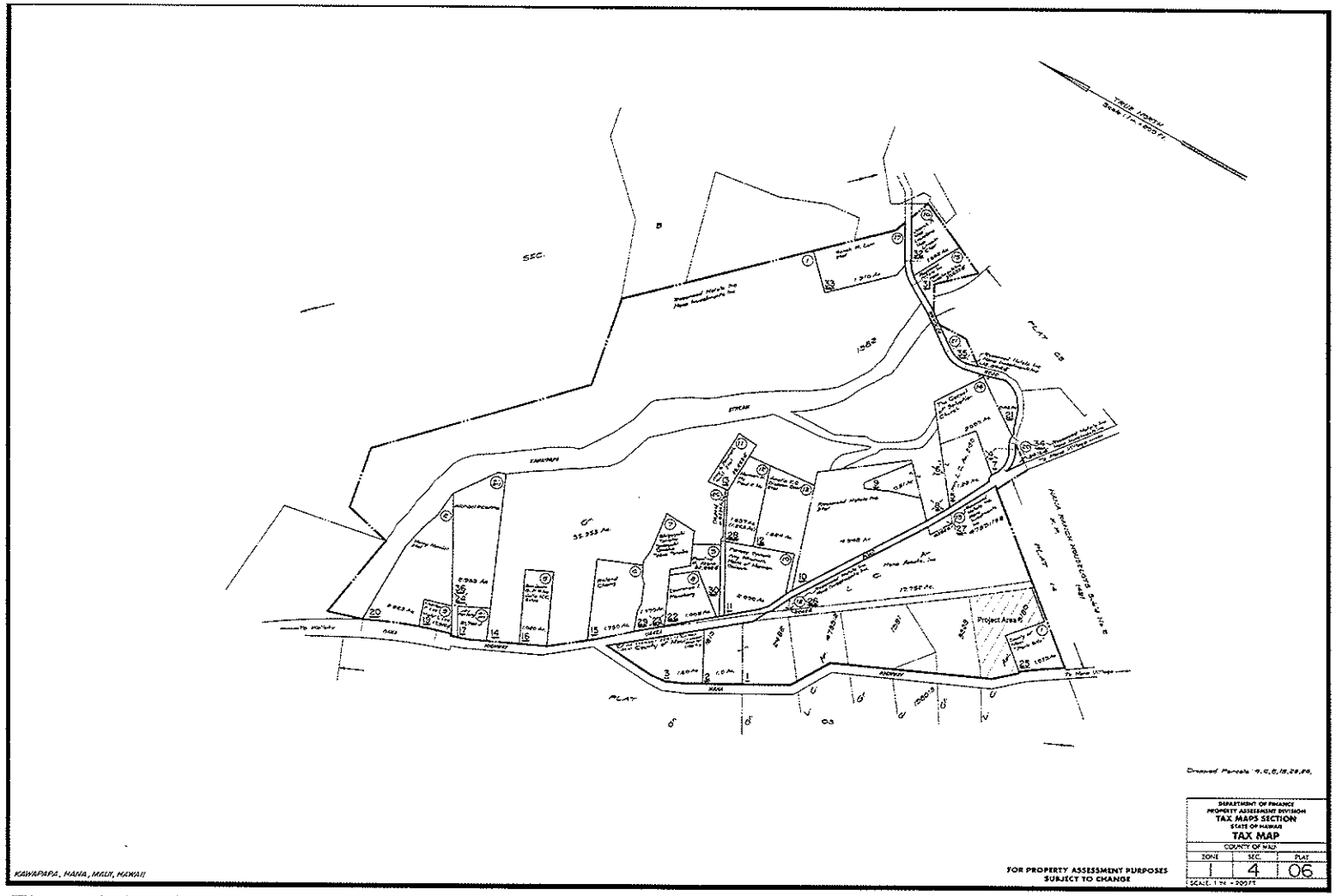


Figure 2. Tax Map Key showing the location of the Pa`ani Mai Park expansion area.

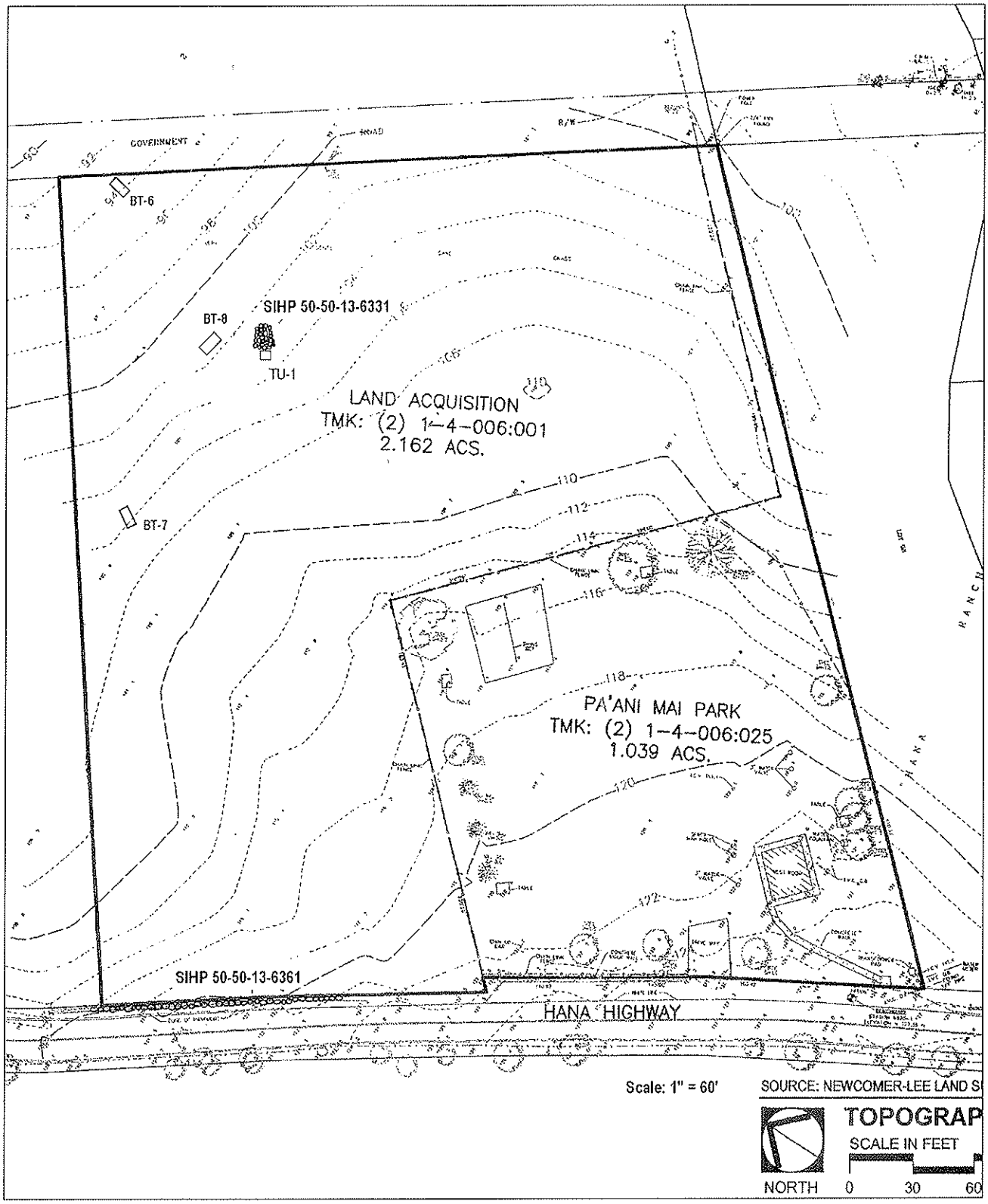


Figure 3. Plan view of the project area showing Sites 6361 and 1638.

INTRODUCTION

Ms. Karla Peters of the County of Maui Department of Parks & Recreation contacted Xamanek Researches, LLC about conducting an archaeological inventory survey on a parcel of land which is located Niumalu *ahupua'a,* Hana, Hana District, Maui (TMK (2) 1-4-006:001). The County of Maui Department of Parks & Recreation plans to expand the existing Pa`ani Mai Park facility (presently c. 1.1 acres) with the addition of the proposed expansion area (c. 2.1 acres). Given the location of the subject parcel, we contacted Ms. Jenny Pickett, State Historic Preservation Division (SHPD) staff archaeologist for Maui about scope of work, etc. Given that the parcel was located near the coast, it was determined that it would be necessary to conduct an archaeological inventory/assessment level survey.

Xamanek Researches, LLC conducted an archaeological inventory survey of the parcel during September 2007. The study area is bounded by the Hana Highway and the existing Pa`ani Mai Park on the southwest, by private property on the northwest, by the old government road on the northeast and by the proposed Hana Ranch House Lots and the existing County Park on the southeast. This parcel lies an estimated 300 m from the Hana Bay shoreline. This project was conducted on behalf of the County of Maui Department of Parks & Recreation.

The archaeological inventory survey identified one previously unrecorded cultural resource, SIHP No. 50-50-13-6361. Site 6361 consists of a remnant of a possible precontact terrace. This site appears to have been heavily impacted during the post-contact era for commercial agriculture, ranching and/or other purposes. It is interpreted as a possible habitation site remnant. In addition, a portion of the previously identified Hana Belt Road (Site 1638) was documented. This portion of the Hana Belt Road consists of a section of road rock retaining wall.

Site 6361 was deemed significant for its information content under Criterion "d" of Federal and State historic preservation guidelines. Site 1638 qualifies for importance under multiple significance criteria because it is associated with the Hana Belt Road. No further work was recommended for Site 6361, which has been heavily impacted by previous bulldozing activities on the project area. Passive, "as is" preservation is recommended, if possible, for the Site 1638 retaining wall. In the event that it is determined that a section of this wall needs to be impacted, data recovery recordation, concurrent with monitoring is recommended. Per discussions with Ms. Jenny Pickett, SHPD Maui acting staff archaeologist, it was agreed that an archaeological monitoring plan could be prepared after the submittal of the draft inventory survey report (Madeus and Fredericksen, December 2007 [draft]). The following plan has been prepared on behalf of the County of Maui Department of Parks and Recreation.

STUDY AREA

The project area consists of a 2.162-acre parcel of land that lies in Niumalu *ahupua`a,* Hana, Hana District, Maui (TMK (2) 1-4-006:001). The project area is bounded by the Hana Highway and the existing Pa`ani Mai Park on the southwest, by private property on the northwest, by the old government road on the northeast and by the proposed Hana Ranch House Lots and the existing County Park on the southeast. This parcel lies an estimated 300 m from the Hana Bay shoreline. The gently sloping property is located in relatively close proximity to a portion of an intermittent stream.

The project area falls within the physiographic region, Hana Dissected Upland, and geologically is part of the post-erosional lavas (University of Hawaii, 1973, p. 30, 34). The major soil classification in this area includes Inceptisols, which typically have developed on a thin mantles of volcanic ash, overlying *a`a* lava (Ibid.., p. 41). The soils in this region are classified as part of the Hana series and are described as well-drained clayey loam with stony inclusions (Foote et al., 1972).

Elevations for the parcel range from 92-126 ft AMSL. Estimated average annual rainfall is c. 70 inches (University of Hawaii, 1973, p. 55-56).

The parcel is located in the Coastal Mesic Forest section of Hana, which has been heavily invaded by introduced species due to the actions of past human disturbances (Gagne and Cuddihy, 1990). The study area contains no mature trees, and appears to have been grubbed within the past 5-10 years or so. The majority of the project area is covered with *koa haole* (Leucaena leucocephela) trees and non-native grass and succulent weed species.

The southwestern corner of the proposed Pa`ani Mai Park expansion area contains a wire fence gate, which appears to have been used for the several horses that were present on the parcel at the time of the inventory survey. A section of retaining wall associated with the Hana Belt Road may have been removed in the past, in order to access the parcel.

ARCHAEOLOGICAL MONITORING PLAN

Scope of monitoring

The scope of this monitoring plan includes having an archaeological monitor present during all subsurface earthmoving activities scheduled for the Pa`ani Mai Park expansion project. Actual on-site time and specific actions to be followed in the event of inadvertent discoveries will be discussed and agreed upon by the general contractor and the archaeological consultant at a pre-construction meeting held for this purpose. Additional meetings may be called, if either the monitoring archaeologist or contractor believes that other relevant information should be disseminated. As previously mentioned, this plan covers this current project as well as any future on-site or off-site improvements for the bridge replacement project (TMK (2) 1-4-006:001).

Monitoring methodology

Given the near coastal location of the project area, there is a possibility that significant material culture remains may be inadvertently disturbed during earthmoving activities in this portion of Hana, Maui. Site 6361 consists of a remnant of a possible precontact habitation area/terrace. While this site has been heavily impacted during the post-contact era, for commercial agriculture, ranching and/or other purposes, possible cultural materials could include subsurface habitation and/or agricultural deposits. In addition, there is a possibility that human burials and/or human skeletal remains could be present somewhere on the parcel.

Close cooperation between the monitoring archaeologist and construction personnel is important to a successful monitoring program. The monitoring program will follow the 12 conditions listed below:

1) The contractor shall be responsible for ensuring that the archaeological consultant is aware of all pertinent construction schedules and that the monitor is present for all subsurface excavation activities on this coastal parcel.

2) Both the archaeological consultant and the contractor are responsible for ensuring that on-site work is halted in an area of significant findings and to protect any such find from any further damage (i.e., construction fencing, protective covering, etc.). The State Historic Preservation Division will recommend appropriate mitigation actions. The SHPD Burial Sites Program, the SHPD Maui office, and the Maui/Lana`i Islands Burial Council (MLIBC)

will be consulted in the event that human remains are found. (Change work order)

3) In the event of the discovery of human remains, work shall cease in the immediate find area. The monitoring archaeologist will be responsible for notifying the SHPD Maui staff archaeologist and the cultural historian. The SHPD, in consultation with the Maui/Lana`i Islands Burial Council, will determine the appropriate mitigation measures. This notification will include accurate information regarding the context and composition of the find. (Change work order)

4) The archaeological consultant will work in compliance with Hawai`i Revised Statutes Chapter 6E (procedures Relating to Inadvertent Discoveries).

5) The monitoring archaeologist will have the authority to closedown construction activities in areas where potentially significant discoveries have been made until they have been properly evaluated. Normally, construction activities may continue in unaffected portions of the project area. (Change work order)

6) Field procedures to be followed for the documentation of discovered cultural features or human skeletal remains: a) standard field methods including recordation of profiles showing stratigraphy, cultural layers, etc.; b) mapping and photographing of finds other than human remains; c) and excavation of cultural materials and/or exposed features.

7) The SHPD Maui staff archaeologist shall be notified and consulted with regarding treatment of identified features such as cultural layers, artifact and/or midden concentrations, structural remains, etc., considered to be of significance under S13-279-2 (definitions).

8) The contractor should take into account the necessity for machine excavation at a speed slow enough to allow for reasonable visual inspection of the work. The monitoring archaeologist must make a "best effort" to search for significant material culture remains (i.e. artifacts, features, midden, skeletal remains, etc.). Machine excavation speed will need to be slowed in an area where significant material culture remains have been identified. (Change work order)

9) Significant archaeological discoveries, if they occur, shall be protected and identified by construction "caution" tape, fencing, or other reasonable means, until the SHPD Maui office and the archaeological consultant decide appropriate mitigation actions. All recovered material culture remains—with the possible exception of charcoal samples for radiometric analysis—will remain on Maui. Standard laboratory methods shall be utilized by the archaeological consultant, in the event that cultural materials are recovered

during monitoring and/or mitigation work. Cultural materials will be curated by the archaeological consultant (change work order)

10) One monitor in most instances will carry out the necessary fieldwork. Tasks will include observation of grubbing and earth-moving activities. However, the SHPD and the MLIBC require that one archaeological monitor be assigned to each piece of major earth-moving equipment in sand dune areas or other culturally sensitive locations. (Change work order if more than one piece of machinery is to be utilized)

11) In the event of night work, the general contractor shall supply adequate lighting for the onsite monitor.

12) Chapter 6E-11 (a) specifies the following "It shall be unlawful for any person or corporate, to take, appropriate, excavate, injure, destroy, or alter any historic property or aviation artifact located on the private lands of any owner thereof without the owner's written permission being first obtained. It shall be unlawful for any person, natural or corporate, to take, appropriate, excavate, injure, destroy, or alter any historic property located upon lands owned or controlled by the State or any of its political subdivisions, except as permitted by the department."

Field methods utilized shall include photographic recordation (where appropriate), artifact excavation (recovery and recordation), profile documentation of cultural layers and stratigraphy, excavation and recordation of exposed features, and mapping of all pertinent features on an appropriate site map. A daily log (field notes) of activities and findings will also be kept. Gathered information shall be utilized in the preparation of the monitoring report to be submitted to the SHPD.

In the event human skeletal remains are inadvertently disturbed, the SHPD Maui office, the HPDBSP and the Maui/Lana`i Islands Burial Council shall be notified, and appropriate mitigation actions determined (photographs of human skeletal remains will not be taken).

A supervisory archaeologist may periodically visit the monitoring site as often as is necessitated by the nature of the construction activities and archaeological findings. If significant discoveries are made, appropriate mitigation measures will be discussed with the SHPD Maui office.

The archaeological consultant shall curate all cultural materials recovered from this monitoring project in Hana, Maui, with the exception of human remains. When analysis is completed, recovered material culture remains will be turned over to the appropriate parties. Long-term curation arrangements of significant material culture remains will be approved by the SHPD and the landowner.

A draft monitoring report detailing the results of this monitoring program will be prepared. This draft report shall be submitted to the State Historic Preservation Division within 180 days of the completion of fieldwork, for comment and approval. Any recommended changes and/or corrections will be incorporated in the final monitoring report for this park expansion project. Any future on-site or off-site improvements for the County of Maui Pa`ani Mai Park expansion area (TMK (2) 1-4-006:001) will be covered by this monitoring plan, but will require separate monitoring reports.

APPENDIX B.

Traffic Assessment Letter Report, Prepared by Phillip Rowell and Associates

Phillip Rowell and Associates
47-273 'D' Hui Iwa Street Kaneohe, Hawaii 96744 Phone: (808) 239-8206 FAX: (808) 239-4175 Email:prowell@hawaiiantel.net

March 25, 2008

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

Attn: Erin Mukai

Re: Pa'ani Mai Park in Hana, Maui
TMK: (2) 1-4-006:025 and 001(por.)

Dear Erin:

Per your request, I have reviewed the Pa'ani Mai Park Expansion project relative to potential traffic impacts and the following information is provided for your use:

1. It is my understanding that the project is to expand the park from 1.039 acres to approximately four (4) acres and will have a capacity of 250 persons per day.

2. The Institute of Transportation Engineers' *Trip Generation* provides trip generation data for various types of parks, including county parks. The trip generation data for parks are summarized as Attachment A. The data indicates that a county park will generate 2.28 vehicle trips per acres per day. Therefore, the proposed four (4) acre park will generate less that ten (10) trips on a typical weekday.

3. An alternate method of estimating the amount of traffic that the park will generate is to base the trip generation calculations on the capacity of the park (250 persons per day) and standard assumptions of persons per vehicle, the percentage of daily traffic during the peak hour and directional distribution. For this project, the following assumptions are used:

    a. There are two persons per vehicle. This occupancy estimate is usually higher, but I am using a lower number to be conservative. This means that there are 250/2.0 = 125 trips to the park per day (125 inbound and 125 outbound), or 250 trip ends per day.

    b. Based on the trip generation data for county parks shown on Attachment A, 20% to 25% of the daily traffic into and out of a county park occurs during the peak hour. I used 25%. Therefore, there are 65 trips during either the morning or afternoon peak hour.

    c. As shown by the trip generation data for county parks, the greatest impact will be during the morning peak hour as the morning peak hour has the larger directional split. During the morning peak hour, 70% of the trips are inbound and 30% are outbound. Using this directional distribution, I estimated that there will be a maximum of 45 inbound and 20 outbound trips during the peak hour.

4. The Institute of Transportation Engineers standard for a traffic impact study is for the proposed project to generate 100 trips during the peak hour in the peak direction. The number of trips generated by this project does not satisfy this standard.

5. State of Hawaii Department of Transportation performed a 24-hour count along Hana Highway approximately one-quarter mile north of the park in November 2005. These are the most recent counts available. The data provides total weekday traffic volumes only. The total two-way, weekday traffic volume is 1985 vehicles per day.

6. The conclusion of the above analysis is that the number of trips will have a negligible impact on traffic conditions along Hana Highway in the vicinity of the project.

7. Traffic will access and egress the parking lot via Kauiki Street and Noenoe Place. Using the above traffic estimates, traffic along these streets will increase during the peak hour. It is estimated that there will be one additional inbound vehicle every one minute and 20 second and one additonal outbound vehicles every three minutes.

8. Based on my field observation, the intersection of Kauiki Street at Hana Highway operates at Level-of-Service A or B. This is considered the highest level-of-service and that the average vehicle delay is less than 10 seconds per vehicle. The increased traffic generated by the peak will not result is a lower level-of-service at this intersection.

If you have questions or require additional information, please call me at 808-239-8206 or 808-387-8206.

Very truly yours,
PHILLIP ROWELL AND ASSOCIATES

Phillip J. Rowell, P.E.
Principal

Attachment A
Summary of Trip Generation Rate for Park Uses

		Trip Generation Rates for:								
Land Use Category		City Park		County Park	State Park			Regional Park		
Land Use Code		411		412	413			417		
Trips Based On		Acres	Picnic Sites	Acres	Acres	Picnic Sites	Employees	Employees	Acres	Picnic Sites
Time Period	Direction	Trip Generation Rates								
Weekday	Total	1.79	5.87	2.28	0.65	***9.95***		79.77	4.57	61.82
AM Peak Hour	Total			0.52				7.23	0.15	
	% In			71%				57%	57%	
	% Out			29%				43%	43%	
PM Peak Hour	Total			0.59				12.77	0.26	
	% In			35%				44%	44%	
	% Out			65%				56%	56%	
Saturday	Total			12.14	0.61	6.42	42.55	128.04	5.65	70.39
Saturday Peak Hour	Total			2.24	0.02	0.60	4.83	16.54	0.34	
	% In			59%	50%	50%	50%	48%	48%	
	% Out			41%	50%	50%	50%	52%	52%	
Sunday	Total			4.13	1.10	14.51		162.81	6.44	76.06
Sunday Peak Hour	Total			3.60	0.03	0.95	7.59	20.46	0.42	
	% In			47%	48%	48%	48%	34%	34%	
	% Out			53%	52%	52%	52%	66%	66%	

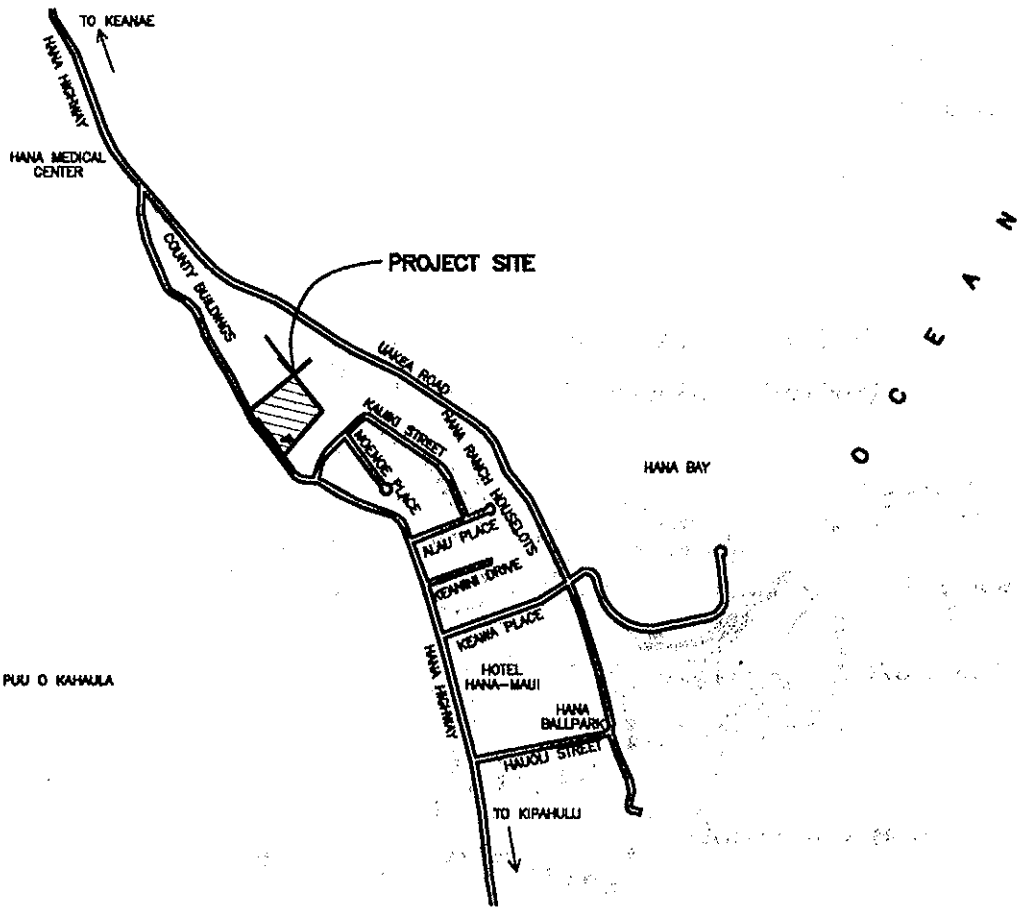
Notes:
(1) na = not available

APPENDIX C.

Preliminary Engineering Report Prepared by Ronald M. Fukumoto Engineering, Inc.

PRELIMINARY ENGINEERING REPORT
For Pa'ani Mai Park Expansion

Hana, Maui, Hawaii
Tax Map Key (2) 1-4-006:025



Owner:

Department of Parks & Recreation
County of Maui
700 Hali'a Nakoa Street, Unit 2
Wailuku, Hawaii 96793
Phone: (808) 270-7931
Fax: (808) 270-7162

Date:

September 10, 2007

Client:

Hiyakumoto + Higuchi Architects, Inc.
1860 Main Street
Wailuku, Hawaii 96793
Phone: (808) 242-9705
Fax: (808) 242-2898

Consultant:

Ronald M. Fukumoto Engineering, Inc.
1721 Wili Pa Loop, Suite 203
Wailuku, Hawaii 96793
Phone: (808) 242-8611
Fax: (808) 244-7510
E-Mail: office@rfemaui.com

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Appendices

I. PURPOSE

The purpose of this report is to evaluate the effects of the project on existing infrastructure. This report will review the water system, wastewater system, and electrical, telephone, and cable television systems serving the project. This report will also provide an analysis of existing and proposed drainage systems. The drainage analysis will describe existing drainage conditions, present preliminary grading and drainage plans, and provide drainage design information for incorporation into the final designs.

II. PROJECT DESCRIPTION

A. General Location

The project involves expansion of the existing Pa'ani Mai Park in Hana, Maui. The existing site encompasses an area of 1.039 acres on the makai side of Hana Highway approximately 1,700 feet southeast of the Uakea Road intersection. The expansion includes the addition and development of 2.162 acres of adjacent land. Hana Highway adjoins the westerly side of the site, undeveloped land owned by the Hana Ranch Partners LLC adjoins the northerly side of the site, the Old Government Road adjoins the easterly side of the site, and undeveloped land owned by the Hana Ranch Partners LLC adjoins the southerly side of the site.

There are few developed properties in the immediate vicinity of the site. Properties on the mauka side of the highway are all owned by the Hana Ranch Partners LLC. Properties on the makai side of the highway include the Hana Ranch Houselots subdivision to the South and the Fire Station, Police Station, and other County facilities to the North.

The tax map designates the existing County owned parcel as Tax Map Key (2) 1-4-006:025 and the Hana Ranch Partners LLC owned parcel as Tax Map Key (2) 1-4-006:001. (See Figure 1 - Location Map (USGS Map), page 8; Figure 2 - Vicinity Map (Tax Map), page 9; and Figure 5 - Regional Topographic Map, page 12.)

B. Project Components

Improvements on the existing 1.039-acre site include a comfort station, driveway apron, walkways, grassed play area, and playground equipment.

Proposed improvements include a restroom and pavilion building, picnic areas, and related on-site and off-site improvements. On-site improvements include grading, asphaltic concrete parking lot and jogging path, concrete sidewalks and ramps, an open play and overflow parking area, landscape plantings, and site utilities. Site utilities consist of water, wastewater, electrical, and drainage systems. The drainage system includes provisions for on-site mitigation. Off-site improvements include an extension of the adjacent Noenoe Place subdivision road to provide access to the northeastern portion of the park expansion, drainage improvements along this driveway, and widening of Hana Highway

along the expansion area.

III. WATER SYSTEM

A public water system and a separate private water system serve this area in Hana Town. The public water system, owned and maintained by the County of Maui Department of Water Supply (DWS), consists of wells, pumping stations, and reservoirs at Hamoa and Wakiu, and distribution lines which convey water from the sources to the town. A 190,000-gallon reservoir provides storage for the Hamoa wells to the south of the site and a 500,000-gallon reservoir provides storage for the Wakiu wells to the north of the site. The private water system, owned and maintained by Hana Water Resources, Inc. (HWR), has similar components as the public water system. The private water system includes a 500,000-gallon reservoir above the site and distribution lines within the adjoining residential subdivision.

A 1-inch water meter on the public water system serves the current park site. This meter connects to small distribution lines in the area. These small distribution lines include 1½-inch, 2-inch, and 2½-inch lines along a 3,400-foot segment of Hana Highway between the Keawa Place intersection and the Uakea Road intersection. These small distribution lines connect to larger 12-inch lines at those intersections.

The private water system serves the adjoining Hana Ranch Houselots No. 2 residential subdivision. The water system within the subdivision includes 8-inch distribution lines, fire hydrants, and water laterals.

Water system improvements for this project include a fire protection water line, fire hydrant, and water service for the new pavilion and restroom. Since there are two water systems in the area, preliminary discussions for water service were initiated with the DWS and HWR. DWS indicated that the nearest points-of-adequacy for fire protection purposes were at the Hana Highway and Keawa Place intersection or at the Hana Highway and Uakea Road intersection. Both points-of-adequacy are approximately equidistant from the site; therefore, this alternative would require about 1,700 feet of new 8-inch water line. HWR indicated that the nearest point-of-adequacy for fire protection purposes is within the residential subdivision. This alternative would require about 300 feet of new 8-inch water line. HWR also noted that the private water system has adequate capacity for the new restroom and pavilion building.

To minimize construction costs, the private water system alternative will be implemented. In addition to the fire protection water line and fire hydrant, water service for the new building consisting of a water lateral with a 1-inch meter, a backflow preventer, and a 2-inch line from the meter to the building will be installed.

IV. WASTEWATER SYSTEM

An individual wastewater system consisting of a septic tank and absorption field serves the existing comfort station. The individual wastewater system will remain in place and continue to serve the existing comfort station. (See Figure 7 – Existing Utilities Plan, page 14.)

Wastewater improvements for this project include installing a new traffic-rated individual wastewater system to serve the new restroom and pavilion building. Projected use of the new building is 250 persons per day. Based on the projected use and the wastewater rate of 5 gallons per person per day, the new individual wastewater system will have a 1,800-gallon septic tank and a 1,600-square foot absorption area. (See preliminary wastewater information in Appendix A.)

V. ELECTRICAL, TELEPHONE & CABLE TELEVISION SYSTEMS

Maui Electric Company, Hawaiian Telcom, and Oceanic Time Warner Cable provide electrical, telephone, and cable television service for the area. Existing overhead lines run adjacent to the site along the Old Government Road right-of-way. (See Figure 7 – Existing Utilities Plan, page 14.)

Electrical improvements for this project include an overhead connection to the new building. However, there are no provisions for telephone or cable television service for the new building.

VI. DRAINAGE SYSTEM

A. Topography

Elevations of the site range from about 90 feet to 130 feet above mean sea level. The site generally slopes down from southwest to northeast. The steepest areas are at the northerly end of the site with slopes that range from about 10 to 12 percent and at the southeasterly end of the site adjacent to the Hana Highway with slopes that range from 20 to 40 percent. The central portion of the site has moderate slopes that range from about 5 to 10 percent. The flattest areas are on the existing park site with slopes that range from about 2 to 5 percent. (See Figure 6 – Topographic Map, page 13.)

B. Soil

According to the Soil Conservation Service, the on-site soils include Hana silty clay loam at 3 to 15 percent slopes (HKNC). The Hana series consists of well-drained, moderately deep variant soils on the intermediate uplands of East Maui. The survey characterizes the soil as having a thin, dark brown surface layer with moderate permeability, slow to medium runoff, and slight to moderate erosion hazard. (See Figure 3 – Soil Map, page 10.)

C. Flood and Tsunami Hazard

The flood insurance rate map of the area shows there are no flood hazard areas on the site. The flood insurance rate map designates the site as Zone C, an area subject to minimal flooding. (See Figure 4 - Flood Insurance Rate Map, page 11.)

D. Existing Drainage Improvements

There are no drainage improvements on the current park site. Runoff from the current park site and the expansion area flows in various directions onto adjoining properties, enters drainageways, and eventually makes its way into Hana Bay. Hana Bay is about 1,200 feet to the west of the site. These flow paths are shown on the drainage plan of existing conditions (See Figure 8 - Existing Drainage Plan, page 15.)

As shown, a drainage divide through the site splits it into two general drainage areas. Runoff from about two-thirds of the site drains toward the north; and runoff from the remaining one-third of the site drains toward the southeast. As noted on the drainage plan, off-site runoff from about 1.60 acres of pasture land (Off-site Area "A") on the mauka side of Hana Highway also contributes to the larger drainage area. This runoff flows across the highway, enters the site, and flows in a northerly direction. However, as shown, off-site runoff from about 0.61 acre of pasture land (Off-site Area "B") on the mauka side of the highway does not enter the site.

A small stream about 500 feet to the north of the site, Holoinawawae Stream, receives runoff from the larger drainage area. Holoinawawae Stream continues downstream beyond the site, flattens out, and discharges into Hana Bay.

A small, unnamed drainageway that adjoins the southeasterly side of the site receives runoff from the smaller on-site drainage area. The drainageway also receives runoff from off-site areas on the mauka side of the site. The drainage area at the proposed driveway culvert includes about 75 acres of primarily pasture land. (See Figure 9 - Off-Site Drainage Area Map, page 16.) The drainageway continues downstream beyond the site, flattens out, and discharges into Hana Bay.

E. Proposed Drainage Improvements

Proposed on-site drainage improvements include swales, drain inlets, catch basins, manholes, drain pipes, and subsurface detention/retention basins to mitigate the increase in runoff due to the project. Proposed off-site drainage improvements consist of a culvert and channel improvements at the unnamed drainageway.

The County drainage standards require the use of a 50-year, 1-hour rainfall for computing volumes and rates of flow.

Drainage improvements that involve transmission of storm flows will conform to the "Rules

for the Design of Storm Drainage Facilities in the County of Maui." The rules will be applied to the sizing and spacing of inlets and manholes, and sizing of drain lines and infiltration chambers. Based on the County rules, the drainage system will be designed to handle a storm with a recurrence interval of 50 years since the drainage area is less than 100 acres.

The following is a summary of hydrologic design data for the proposed project. (See preliminary drainage information in Appendix B.)

Item	Existing	Developed
Drainage Area	3.43 acres	0.96 acres
50-year, 1-hour Rainfall	5.2 inches	5.2 inches
50-year, 1-hour Peak Flow	11.56 cfs	14.45 cfs

The Preliminary Grading and Drainage Plan shows the proposed grading and drainage improvements. (See Figure 10 - Preliminary Grading and Drainage Plan, page 17.) The plan involves a moderate amount of grading work to create building pads for the new park amenities. Approximate earthwork volumes include 10,000 cubic yards of cut and 10,000 cubic yards of fill.

Design concepts incorporated into the plan include maintaining existing drainage patterns and mitigating increases in runoff due to the project. Measures for mitigating increases in runoff include subsurface detention/retention basins, drain inlets with flow restrictors, grassed swales, and shallow drainage retention areas. Subsurface detention/retention basins consist of perforated drain pipe in a gravel bed, a flow control manhole, and an outlet pipe. These basins will collect runoff, regulate the outflow of runoff, and retain a portion of the collected runoff.

At the upper southeast quadrant of the site, runoff from the current park area will continue to flow into the unnamed drainageway along the southeasterly side of the site.

At the upper southwest quadrant of the site, runoff from Off-site Area "A," the future skateboard area, and a portion of the future playground area will drain toward the north. Swales and grated drain inlets will collect runoff from the skateboard area and a portion of the playground area, and drain pipes will convey it to a subsurface detention/retention basin. This basin will control the increase of runoff and will release runoff at pre-development levels at the northwesterly side of the site. To simulate existing conditions, runoff entering this quadrant will be released at multiple points at pre-development levels.

At the mid-level of the site, including the open play area and overflow parking area, swales and grated drain inlets will collect runoff and drain pipes will direct it to the same detention/retention basin mentioned above.

At the lower end of the site, including the restroom and pavilion building, and the parking lot, grated drain inlets and a catch basin will collect parking lot and roof runoff, and drain pipes will convey it to a second detention/retention basin. This basin will also control the increase of runoff and will release it at pre-development levels at the northerly corner of the site.

Drainage improvements along the driveway consist of a double 48-inch culvert, head-walls, and channel grading and stabilization. These improvements will direct runoff under the driveway and allow for access to and from the site during storms.

The following is a summary of preliminary design data for the detention/retention basins. These figures represent the total mitigation volumes for the entire site. These figures are subject to adjustment as the designs are further refined.

Detention Volume	5,000 cubic feet
Retention Volume	1,520 cubic feet
Flow Rate In	14.45 cfs
Flow Rate Out	11.56 cfs

F. Conclusion

There will be no adverse effects on the adjacent or downstream properties due to this project. This conclusion is based maintaining peak discharge rates and volumes at pre-development levels.

VII. REFERENCES

1. City and County of Honolulu, Department of Public Works, Division of Engineering, *Storm Drainage Standards*, Honolulu, Hawaii, May 1988.
2. County of Maui, "Title MC-15, Department of Public Works and Waste Management, Chapter 4, Rules for the Design of Storm Drainage Facilities in the County of Maui," Wailuku, Hawaii, November 1995.
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5. R. M. Towill Corporation, *Drainage Master Plan for the County of Maui*, Honolulu, Hawaii, October 1971.
6. State of Hawaii, "Title 11, Hawaii Administrative Rules Department of Health, Chapter 62, Wastewater Systems," Honolulu, Hawaii, January 14, 2004.
7. U. S. Department of Agriculture, Soil Conservation Service, *Erosion and Sediment Control Guide for Hawaii*, Honolulu, Hawaii, March 1981.
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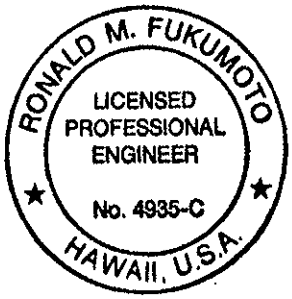
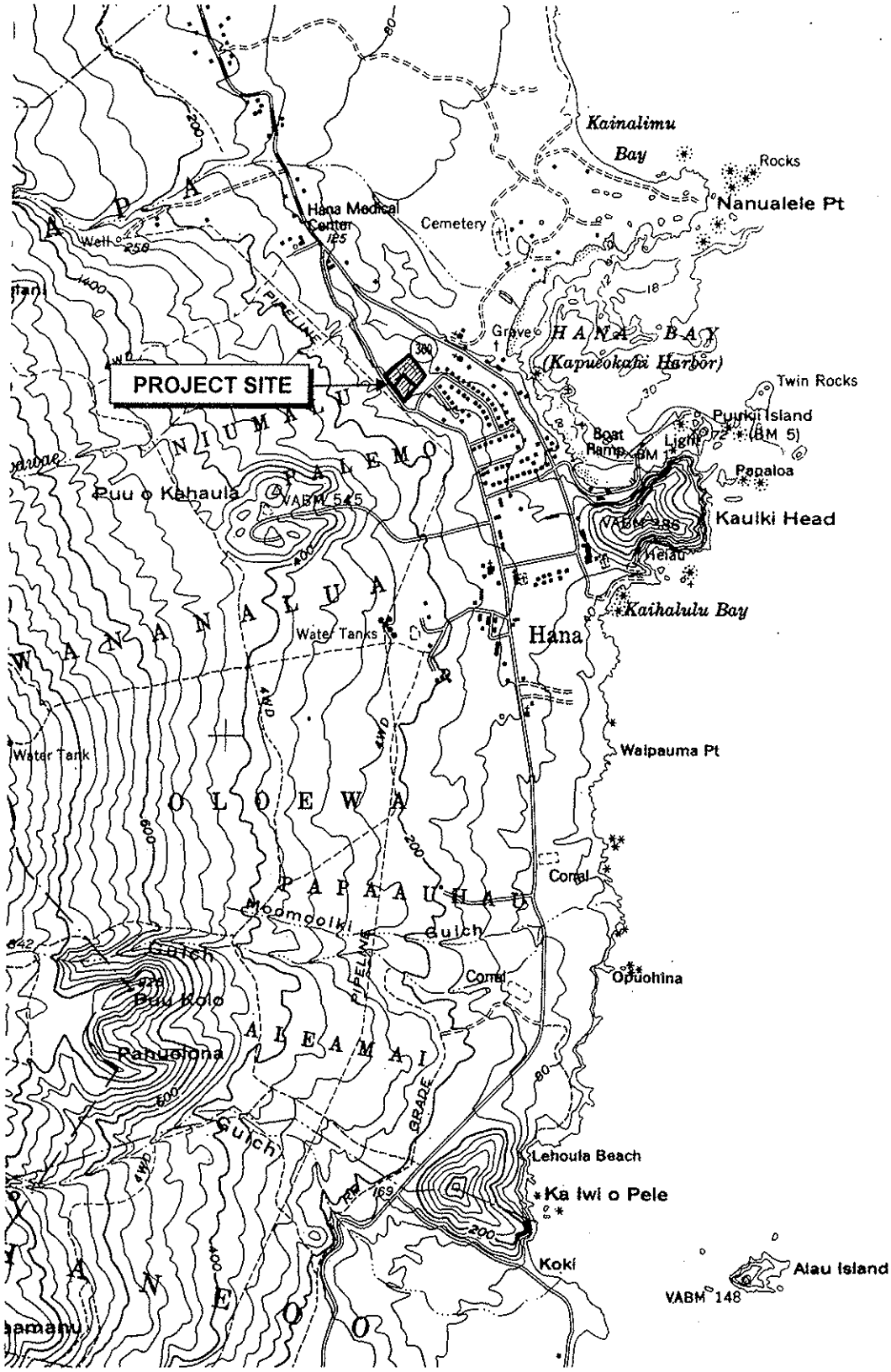
9. U. S. Department of Agriculture, Soil Conservation Service, *Urban Hydrology for Small Watersheds*, Technical Release 55, Second Edition, Washington, D.C., June 1986.
10. U. S. Department of Commerce, Weather Bureau, *Rainfall-Frequency Atlas of the Hawaiian Islands for Areas to 200 Square Miles, Durations to 24 Hours, and Return Periods from 1 to 100 Years*, Technical Paper No. 43, Washington, D.C., 1962.
11. U.S. Department of Health, Education, and Welfare, Public Health Service, *Manual of Septic Tank Practice*, Publication No. 526, Springfield, Virginia, August 1, 1959.



This work was prepared by
me or under my supervision.

Ronald M. Fukumoto



LOCATION MAP (USGS Map)

SCALE IN FEET

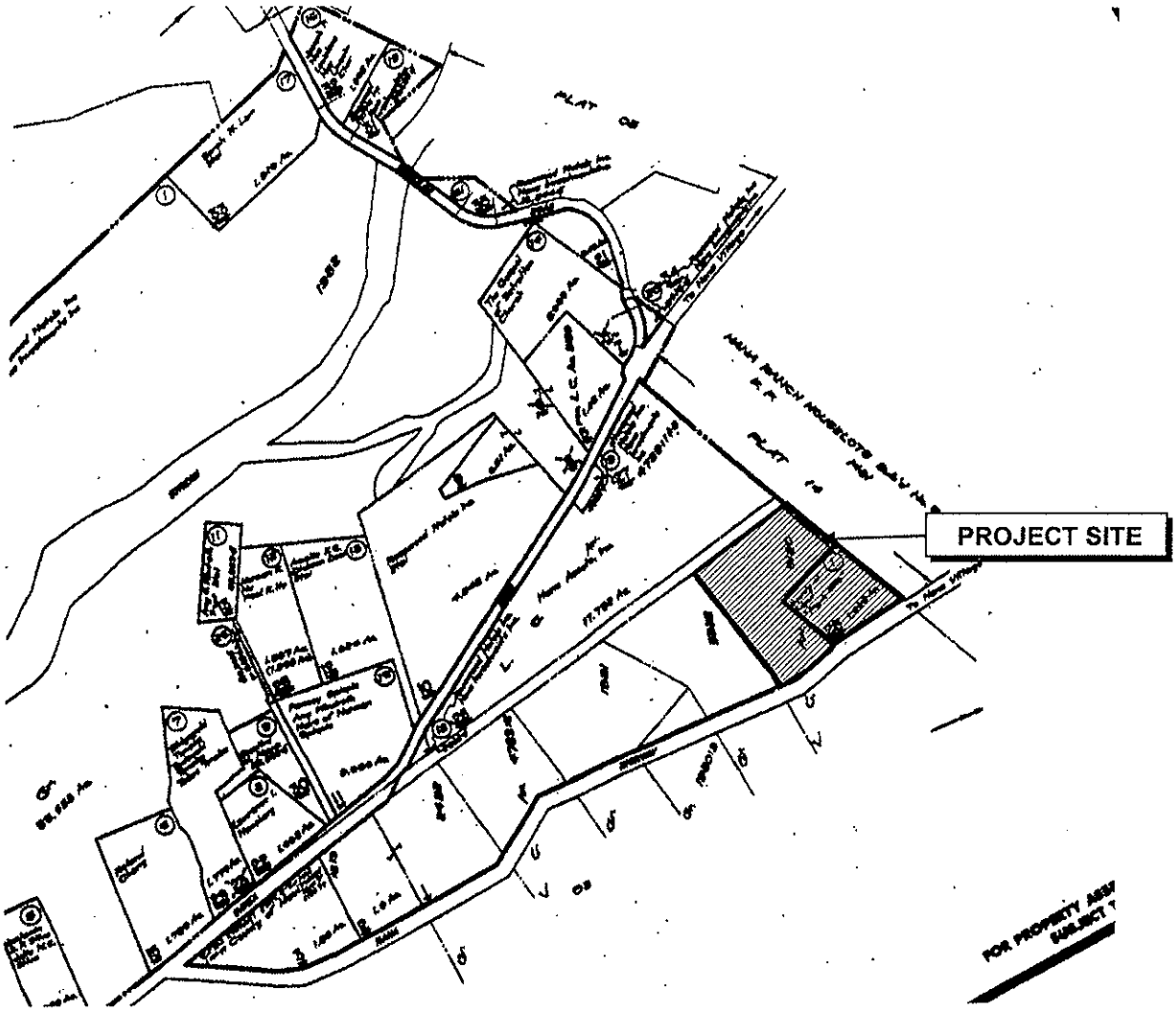
NORTH 0 1000 2000 4000 6000

Figure 1

SOURCE: USGS HANA QUADRANGLE MAP

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.



NORTH

VICINITY MAP (Tax Map)

SCALE IN FEET

0 250 500 1000 2000

Figure 2

SOURCE: TAX MAP KEY (2) 1-4-006:025

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

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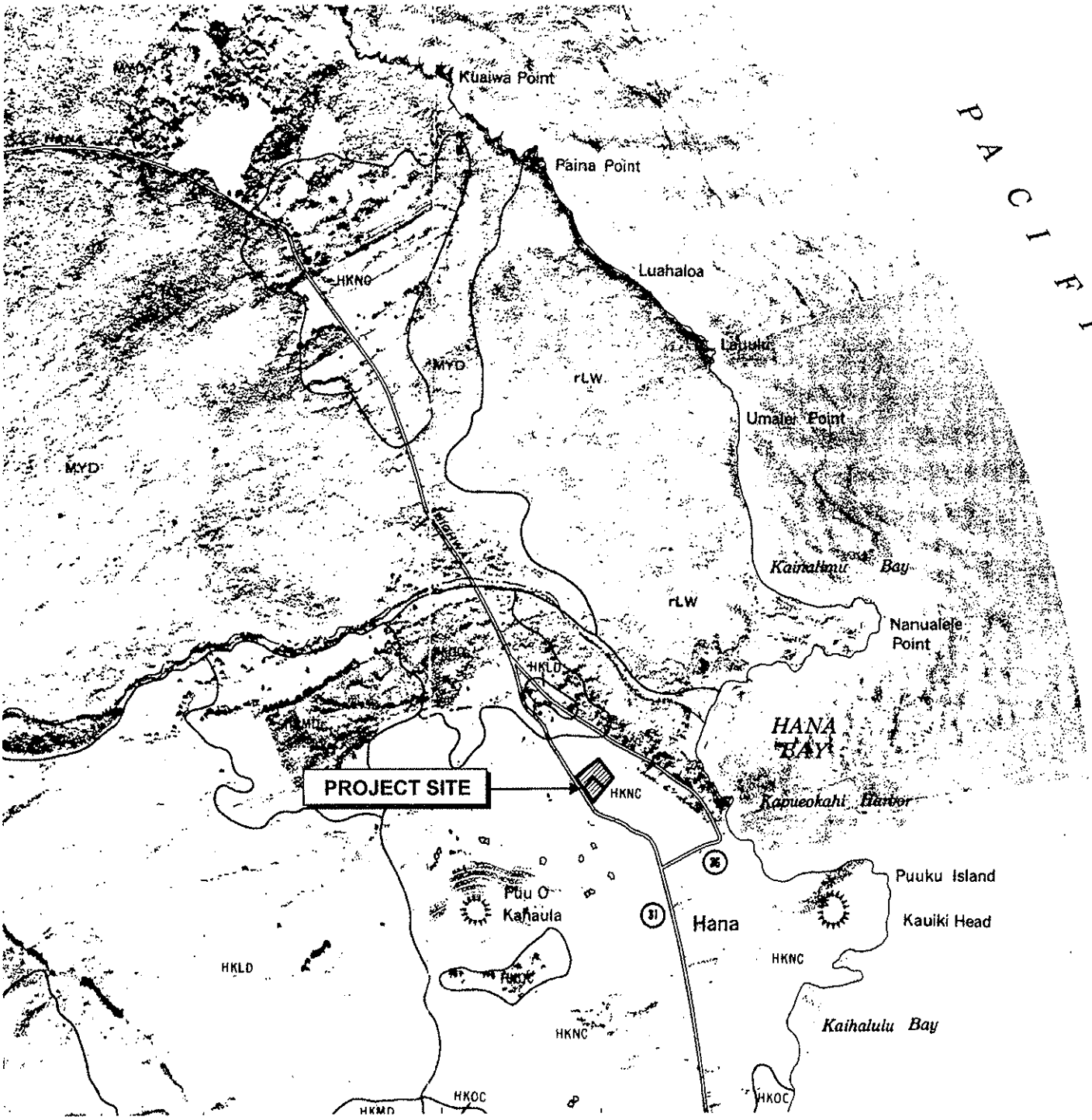


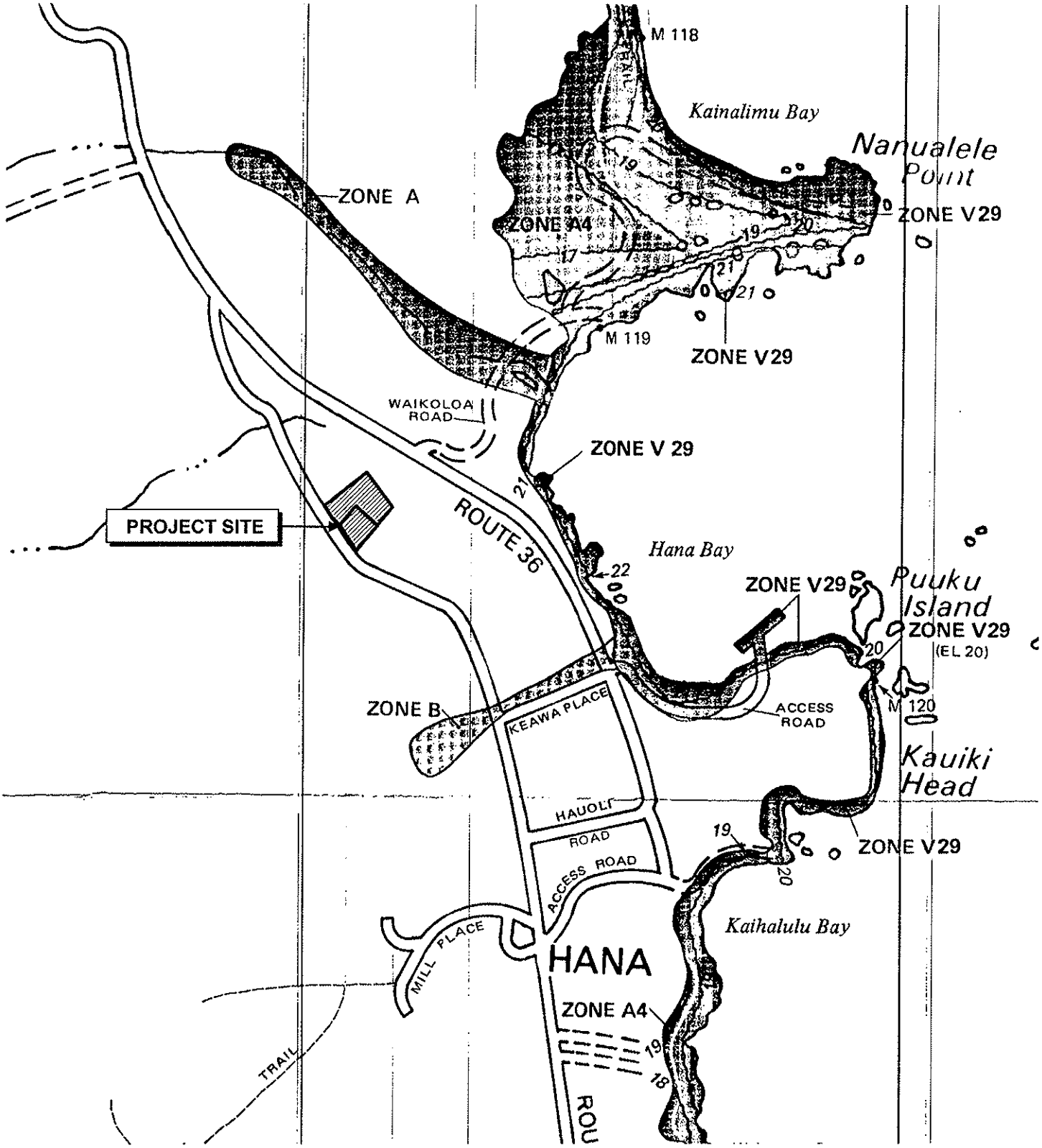
SOIL MAP
SCALE IN FEET

NORTH 0 1000 2000 4000 6000

Figure 3
SOURCE: SOIL SURVEY

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.



FLOOD INSURANCE RATE MAP

SCALE IN FEET

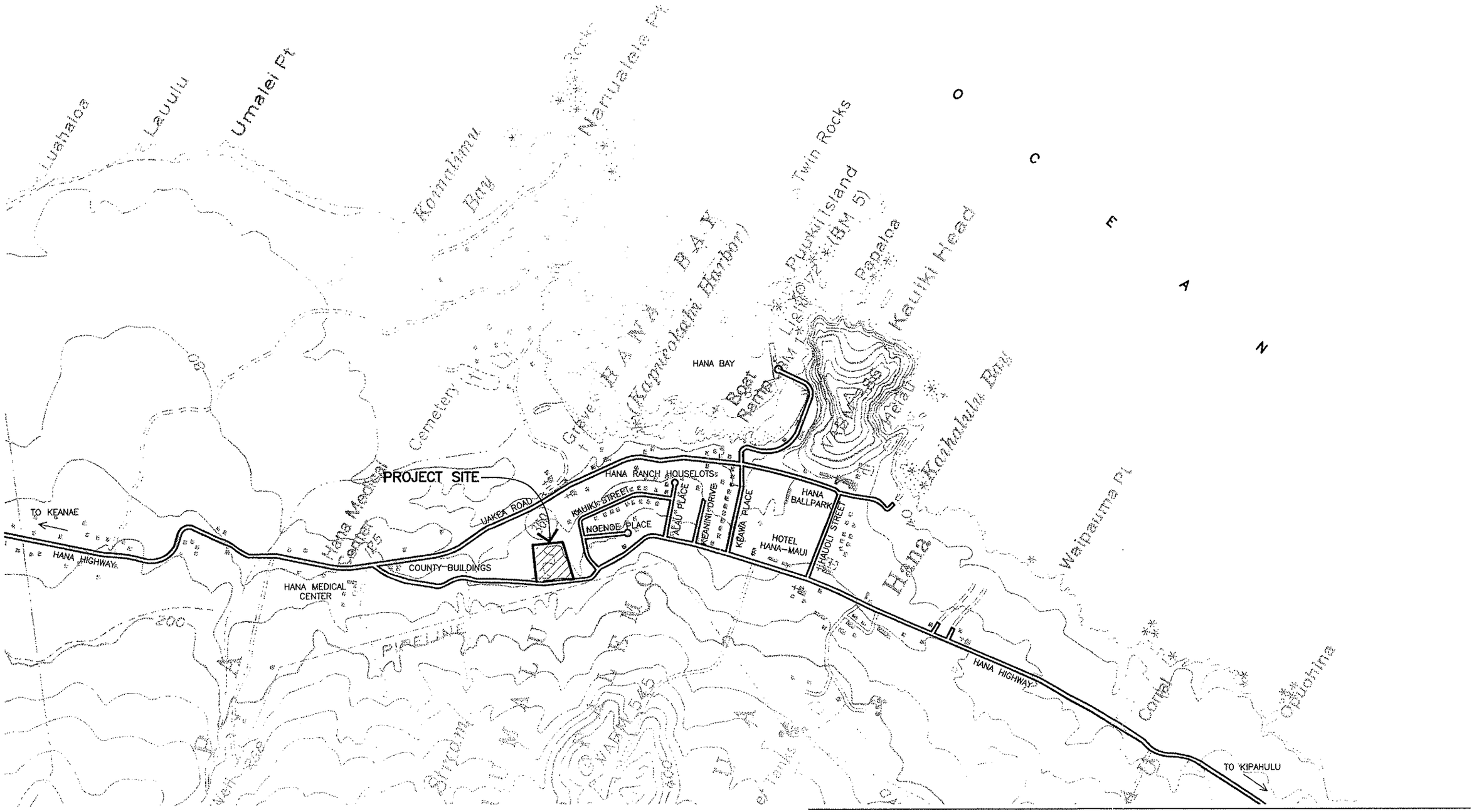
NORTH 0 500 1000 2000 3000

Figure 4

SOURCE: FIRM COMM. PANEL NO. 150003 0320B

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.



LEGEND:

-----100----- EXISTING CONTOUR

REGIONAL TOPOGRAPHIC MAP

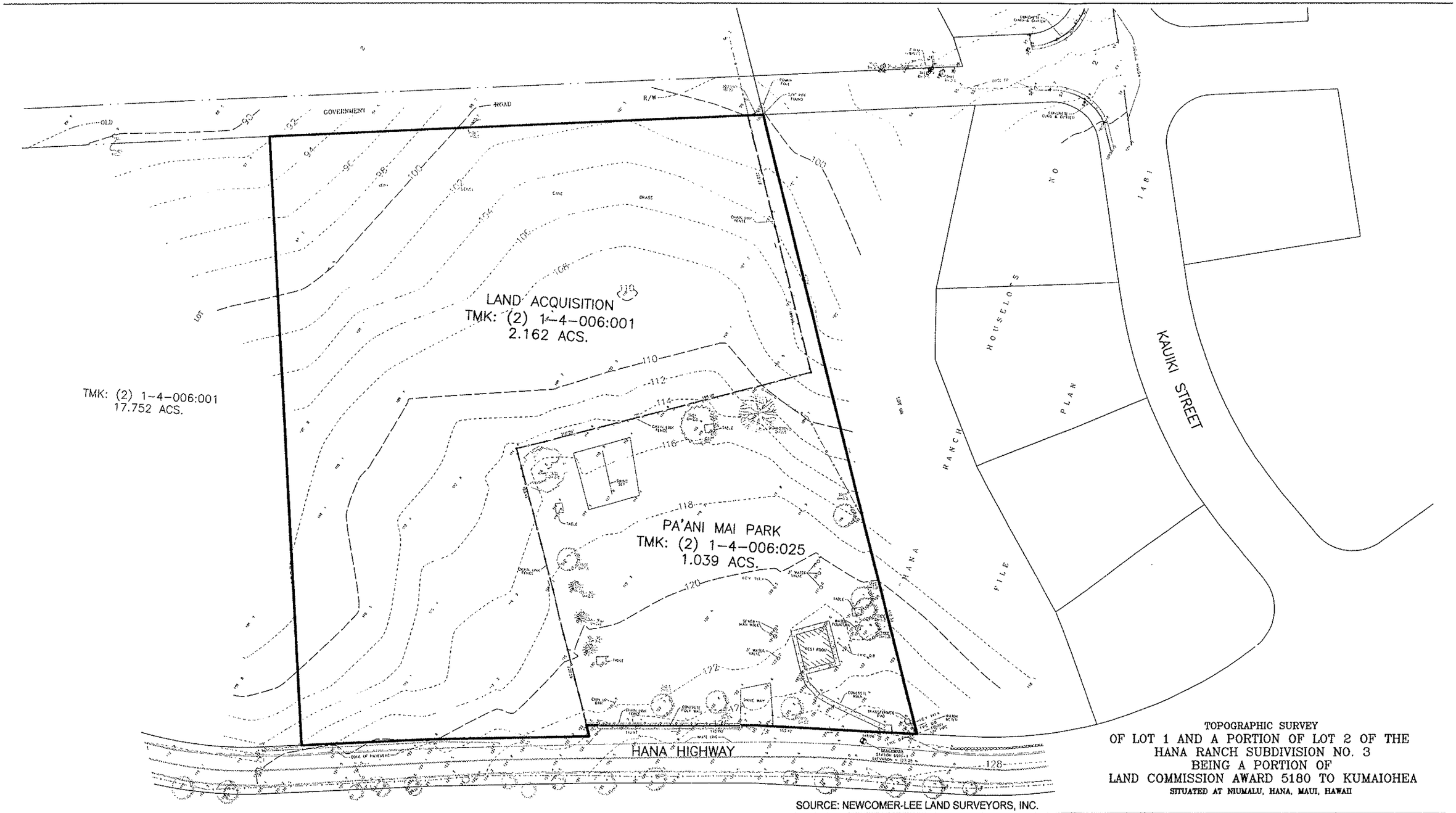
Figure 5

SCALE IN FEET

NORTH 0 500 1000 2000 3000

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.



LEGEND:

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TOPOGRAPHIC SURVEY
OF LOT 1 AND A PORTION OF LOT 2 OF THE
HANA RANCH SUBDIVISION NO. 3
BEING A PORTION OF
LAND COMMISSION AWARD 5180 TO KUMAIOHEA
SITUATED AT NIUMALU, HANA, MAUI, HAWAII

SOURCE: NEWCOMER-LEE LAND SURVEYORS, INC.

TOPOGRAPHIC MAP

Figure 6

SCALE IN FEET

NORTH 0 30 60 120 180

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.

TOPOGRAPHIC SURVEY
OF LOT 1 AND A PORTION OF LOT 2 OF THE
HANA RANCH SUBDIVISION NO. 3
BEING A PORTION OF
LAND COMMISSION AWARD 5180 TO KUMAIOHEA
SITUATED AT NIUMALU, HANA, MAUI, HAWAII

LEGEND:

-----100----- EXISTING CONTOUR

EXISTING UTILITIES PLAN

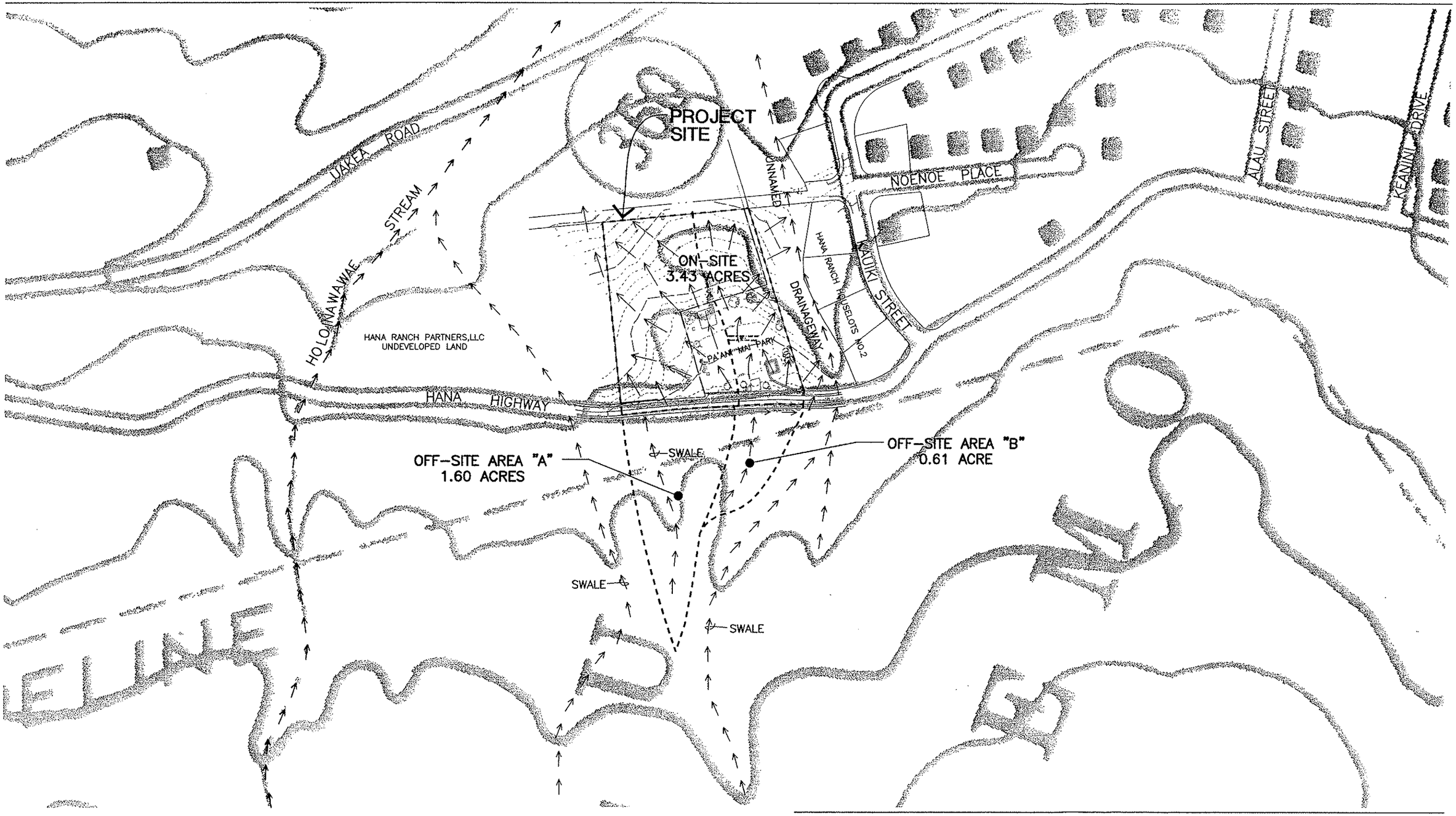
Figure 7

SCALE IN FEET

NORTH 0 30 60 120 180

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.

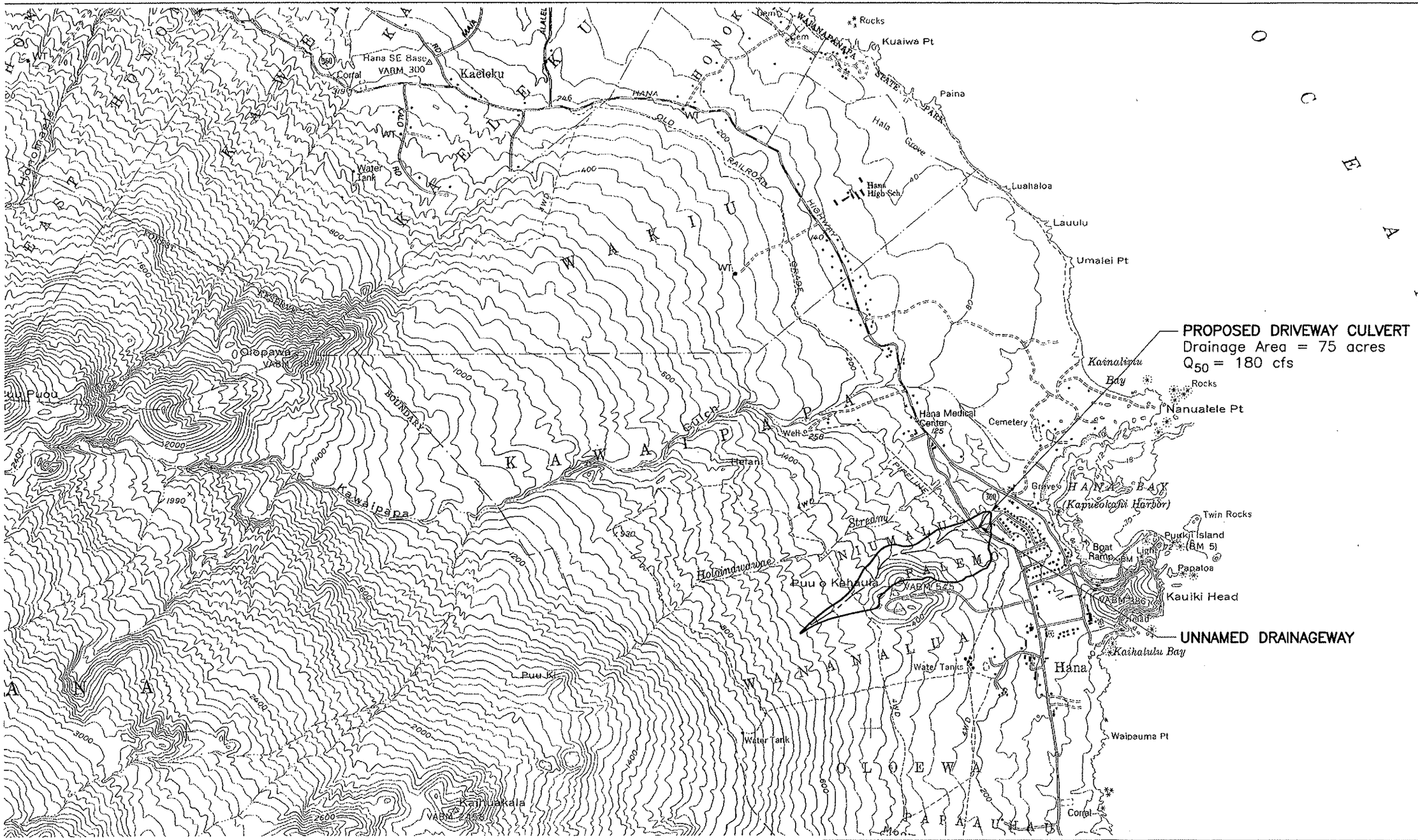


EXISTING DRAINAGE PLAN

Figure 8
DATE: 9/10/07

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.



NORTH 0 1000 2000 4000 6000

SCALE IN FEET

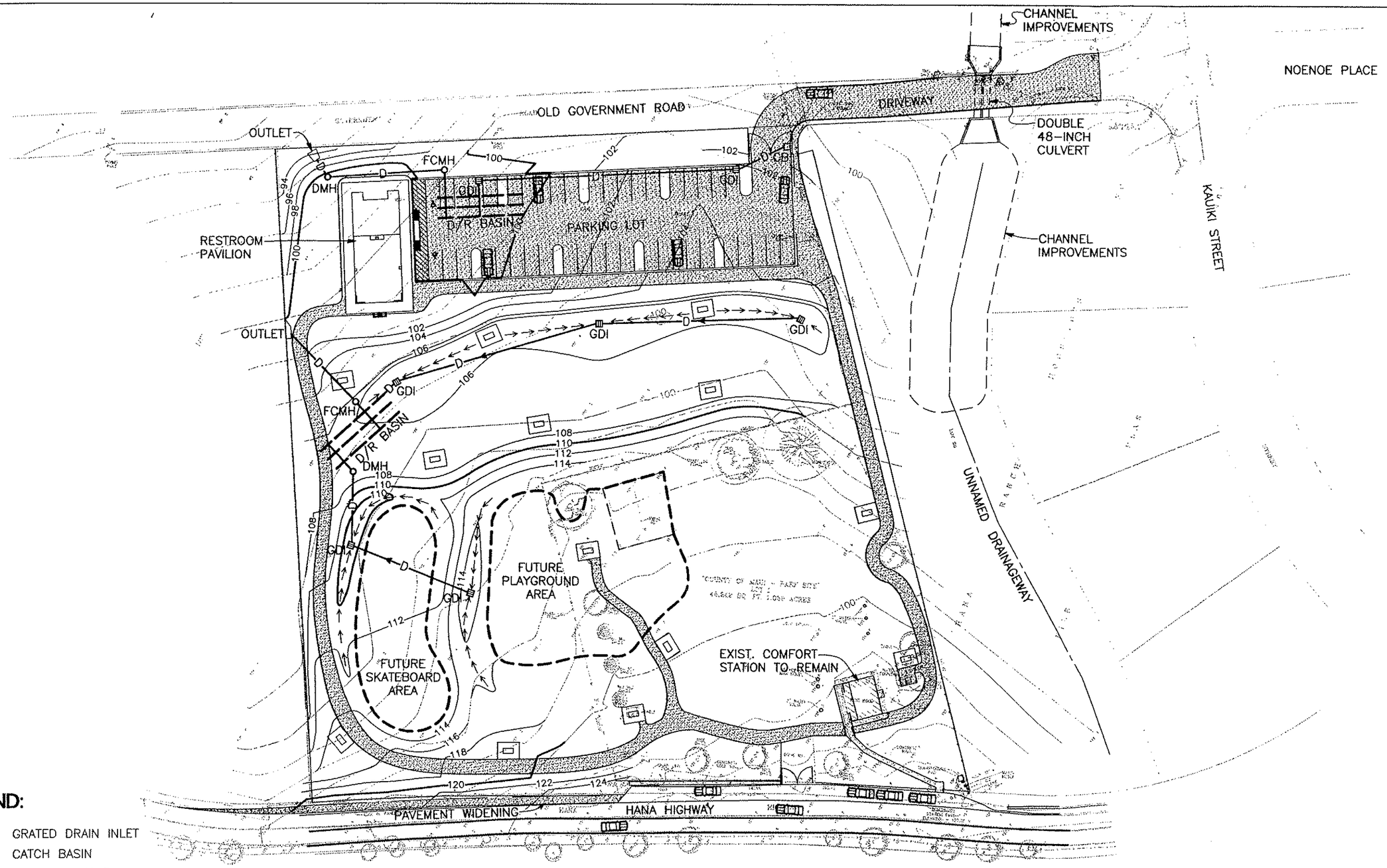
OFF-SITE DRAINAGE AREA MAP

Figure 9

DATE: 9/10/07

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.



LEGEND:

- GDI — GRATED DRAIN INLET
- CB — CATCH BASIN
- DMH — DRAIN MANHOLE
- FCMH — FLOW CONROL MANHOLE
- D — DRAIN PIPE
- SWALE
- 100 — EXISTING CONTOUR
- 100 — FINISH CONTOUR

NORTH

SCALE IN FEET 0 30 60 120 180

PRELIMINARY GRADING & DRAINAGE PLAN

Figure 10

DATE: 9/10/07

FOR: HIYAKUMOTO + HIGUCHI ARCHITECTS, INC.

BY: RONALD M. FUKUMOTO ENGINEERING, INC.

PRELIMINARY WASTEWATER INFORMATION

A. SEPTIC TANK SIZING

Facility usage = 250 people/day
Usage rate at picnic parks with toilet waste only = 5 gallons/person/day
Wastewater flow = 250 persons/day x 5 gallons/person/day = 1,250 gallons
Septic tank sizing = 1,250 gallons x 1.25 = 1,562 gallons
Required size of septic tank = 1,800 gallons

B. ABSORPTION FIELD SIZING

System capacity = 1,800 gallons
Approximate 250 gallons/bedroom
Bedroom equivalent for system = 7 bedrooms
Percolation rate (assumed) = 22.5 minutes/inch
Required absorption area/bedroom at percolation rate = 220 square feet/bedroom
7 bedrooms x 220 square feet/bedroom = 1,540 square feet
Required size of absorption field = 1,600 square feet

PRELIMINARY DRAINAGE INFORMATION

A. RUNOFF COEFFICIENT

1. Existing Conditions

	Area(acres)	Coefficient
a. Hana Ranch Partners LLC – Undeveloped Land Landscaped/Unimproved Areas – Off-site Area A	1.60	0.30
b. Hana Ranch Partners LLC – Undeveloped Land Landscaped/Unimproved Areas – Off-site Area B	0.61	0.30
c. Pa'ani Mai Park including acquired land and highway		
Buildings/Roadways/Walkways	0.25	0.95
Unimproved Areas/Pasture Land	2.16	0.35
Landscaped Areas	1.02	0.25
Total =	3.43	

$C_{composite} = [(0.25 \times 0.95) + (2.16 \times 0.35) + (1.02 \times 0.25)] / 3.43 = 1.25 / 3.43 = 0.36$

d. Off-site Drainage Area for Culvert at Proposed Driveway	75	0.30

2. Developed Conditions

Pa'ani Mai Park – existing comfort station area including acquired land		
Buildings/Roadways/Walkways	0.96	0.95
Landscaped/Unimproved Areas	2.47	0.25
Total =	3.43	

$C_{composite} = [(0.96 \times 0.95) + (2.47 \times 0.25)] / 3.43 = 1.53 / 3.43 = 0.45$

B. RECURRENCE INTERVAL & RAINFALL

1. Recurrence interval $T_m = 50$ years (due to sump conditions)
2. One-hour rainfall $I_{50} = 5.2$ inches

C. TIME OF CONCENTRATION

1. Existing Conditions $T_c = 16$ minutes
2. Developed Conditions $T_c = 16$ minutes
3. Existing Conditions for Culvert $T_c = 26$ minutes

D. EXISTING RUNOFF (Rational Method)

1. Off-site Area (Hana Ranch Partners LLC – Undeveloped Land)
   a. $C = 0.30$
   b. $i = 5.2 \times 1.80 = 9.36$
   c. $a = 2.21$ acres
   d. $Q = Cia = 0.30 \times 9.36 \times 2.21 = 6.21$ cfs

2. On-site Area (Pa'ani Mai Park including land acquisition)
   a. C = 0.36
   b. I = 5.2 x 1.80 = 9.36
   c. a = 3.43 acres
   d. Q = Cia = 0.36 x 9.36 x 3.43 = 11.56 cfs

3. Off-site Area for Culvert at Driveway
   a. C = 0.30
   b. I = 5.2 x 1.5 = 7.80
   c. a = 75 acres
   d. Q = Cia = 0.30 x 7.80 x 75 = 176 ≈ 180 cfs

E. DEVELOPED RUNOFF (Rational Method)
1. On-site Area (Pa'ani Mai Park including land acquisition)
   a. C = 0.45
   b. i = 5.2 x 1.8 = 9.36
   c. a = 3.43 acres
   d. Q = Cia = 0.45 x 9.36 x 3.43 = 14.45 cfs

F. INCREASE DUE TO DEVELOPMENT (Rational Method)
1. On-site Area (Pa'ani Mai Park including land acquisition)
   ΔQ = 14.45 – 11.56 = 2.89 cfs (for 50-year, 1-hour storm)

G. CURVE NUMBER (CN) COMPUTATION
1. Existing

Park Lawn	CN = 39	Area = 1.02 acres
Land Acquisition	CN = 54	Area = 2.16 acres
Building, Parking, & Walkways	CN = 95	Area = 0.25 acres
	CN = [(39x1.02)+(54x2.16)+(95x0.25)]/3.43 = 53	

2. Developed

Park Lawn	CN = 39	Area = 2.47 acres
Building, Parking, & Walkways	CN = 95	Area = 0.96 acres
	CN = [(39x2.47)+(95x0.96)]/3.43 = 55	

H. RAINFALL DATA
1. 50-year, 1-hour P = 5.2 inches

I. RETENTION VOLUME
1. 50-year, 1-hour
   a. Existing – 3.43 acres
      S = (1000/CN) – 10 = (1000/53) – 10 = 8.87
      $Q = (P-0.2S)^2/(P+0.8S) = (5.2-0.2x8.87)^2/(5.2+0.8x8.87)$ = 0.96 inch
      Volume = (0.96/12)x3.43x43560 = 11,953 cu. ft.

b. Developed – 3.43 acres
   $S = (1000/CN) - 10 = (1000/55) - 10 = 8.18$
   $Q = (P-0.2S)^2/(P+0.8S) = (5.2-0.2x8.18)^2/(5.2+0.8x8.18) = 1.08$ inch
   Volume = (1.08/12)x3.43x43560 = 13,467 cu. ft.
c. Increase due to development
   ΔV= 13,467 – 11,953 = 1,514 cu. ft.

J. DETENTION VOLUME

RATIONAL METHOD DETENTION BASIN SIZING

Design Data

Drainage Area = A =	3.43	acres
Developed Runoff Coefficient = C =	0.45	
Design Storm =	50	year
One Hour Rainfall = i =	5.20	inches
Present Peak Discharge = Q_{OUT} =	11.56	cfs
Developed Peak Discharge = Q_{IN} =	14.45	cfs
Q_{OUT} / Q_{IN} =	0.80	
Outflow Adjustment Coefficient = k =	0.80	

Storm Duration, minutes	Correction Factor	Rainfall Intensity, in./hr.	Runoff Volume, cu. Ft.	Outflow Volume, cu. ft.	Storage Volume, cu. ft.	
T	*f*	*I = fi*	*CIAT*	$kQ_{OUT}T$	(4) - (5)	
(1)	(2)	(3)	(4)	(5)	(6)	
1	8.5512	44.466	4,152	555	3,597	
2	4.7169	24.528	4,581	1,110	3,471	
3	3.4759	18.075	5,064	1,665	3,399	
4	2.8858	15.006	5,605	2,220	3,385	
5	2.5575	13.299	6,209	2,774	3,435	
6	2.3605	12.275	6,877	3,329	3,548	
7	2.2374	11.634	7,605	3,884	3,721	
8	2.1578	11.221	8,382	4,439	3,943	
9	2.1025	10.933	9,188	4,994	4,194	
10	2.0576	10.700	9,991	5,549	4,442	
11	2.0135	10.470	10,755	6,104	4,651	
12	1.9689	10.238	11,473	6,659	4,814	
13	1.9244	10.007	12,148	7,213	4,935	
14	1.8807	9.780	12,785	7,768	5,017	
15	1.8381	9.558	13,388	8,323	5,065	
16	1.7971	9.345	13,962	8,878	5,084	peak
17	1.7578	9.141	14,511	9,433	5,078	
18	1.7205	8.947	15,038	9,988	5,050	
19	1.6855	8.765	15,551	10,543	5,008	
20	1.6529	8.595	16,052	11,098	4,954	
21	1.6227	8.438	16,547	11,652	4,895	

Required Detention Volume = 5,084 ≈ 5,000 cubic feet to reduce developed flow from 14.45 cfs to pre-development flow of 11.56 cfs.

K. DETENTION/RETENTION PIPE PRELIMINARY DESIGN

The drainage basin will consist of large-diameter corrugated aluminum pipe in a gravel bed of filter rock. The basin will be designed to keep peak flow rates due to a 50-year, 1-hour storm at pre-development levels. The following are preliminary sizing computations.

1. Required detention volume = V = 5,000 cubic feet
2. Required retention volume = V = 1,520 cubic feet
3. Use 5-foot diameter perforated corrugated aluminum pipe in 7-foot deep by 7-foot wide gravel bed consisting of "4-C" filter rock.
4. Pipe Area = Πr^2 = Π x 2.5^2 = 19.63 square feet
5. Gravel Area = (7x7) – 19.63 = 29.37 square feet
6. Gravel Void Area = 29.37 x 0.45 = 13.21square feet
7. Allowable Gravel Void Area = 13.21x 0.50 = 6.61 square feet
8. Pipe Area + Allowable Gravel Void Area = 19.93 + 6.61 = 26.24 square feet
9. Required Length = (1,520 + 5,000) / 26.24 = 6,520 / 26.24 = 249 feet
10. Set height of outlet pipe within D/R pipe so that 1,520 cubic feet of runoff is retained within pipe.