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FINAL ENVIRONMENTAL ASSESSMENT

for

KIPAHOEHOE NATURAL AREA RESERVE

In accordance with

CHAPTER 343, HAWAII REVISED STATUTES

Proposed by:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

September 23, 2002

Project Name Kipahoehoe Natural Area Reserve
Management Plan

Project Location Kipahoehoe, South Kona, Hawaii,
TMK: 8-8-01-5, 6, 7, 8, 10, 11, 12, 13

Applicant State Of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

Approving Agency State of Hawaii
Department of Land and Natural Resources

Agencies Consulted Federal: U.S. Department of Agriculture
Natural Resources Conservation Service

U.S. Department of Interior
Fish and Wildlife Service
National Park Service
USGS, Biological Resources Division

State: Department of Land and Natural Resources
Division of Conservation and Resource Enforcement
Division of Forestry and Wildlife
Land Division
Historic Preservation Division
Natural Area Reserve System Commission

County: Planning Department

Private: Bishop Museum
Conservation Council for Hawaii
Damon Estate
Earthjustice Legal Defense Fund
Hawaii Audubon Society
National Wild Turkey Federation
Native Hawaiian Advisory Council
Native Hawaiian Legal Corporation
Pig Hunters of Hawaii
Sierra Club, Moku Loa Group
The Nature Conservancy of Hawaii
Wildlife Conservation Association of Hawaii
Yee Hop Ranch

Determination, Findings and Reasons for Supporting Determination

1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

The proposed project is designed to improve and protect the natural and cultural resources of the Kipahoehoe Natural Area Reserve (NAR). Activities of the proposed project will include fencing and removal of nonnative plants and animals from managed areas. Native forests are not only a natural resource but a cultural resource as well. Protection of the natural resources directly correlates to the protection of the cultural resources of the area. Archeological sites that are known in the area will be protected from any disturbance. Any new sites discovered during the project will be treated in compliance with the requirements of the DLNR Historic Preservation Division.

2) Curtails the range of beneficial uses of the environment;

This project will not curtail beneficial uses of the environment of the Kipahoehoe NAR. The project will improve and protect habitat for native flora and fauna. The protected forest areas will also improve and maintain the quality of the South Kona Watershed.

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 proposed project is consistent with the Environmental Policies established in Chapter 344, HRS. The project is also consistent with the Natural Area Reserve policies outlined in Chapter 195, HRS.

4) Substantially affects the economic or social welfare of the community or state;

The economic welfare of the community should not be affected by the proposed project as there is no economic activity within the boundaries of the Kipahoehoe NAR. The project will improve public access to the preserve and provide more recreational opportunities in the South Kona district, hence the social welfare of the community will not be detrimentally affected.

5) Substantially affects public health;

Public health will not be detrimentally affected by the proposed project. Preserving stands of forest can actually improve public health by maintaining and improving watershed quality.

6) Involves substantial secondary impacts, such as population changes or effects on public facilities;

This project will have no effect on the human population of the Big Island. As stated in the EA there is expected to be more public access to the preserve, but it will be controlled by the Division of Forestry and Wildlife (access keys, permits etc.).

7) Involves a substantial degradation of environmental quality;

The Management Plan for the Kipahoehoe Natural Areas Reserve is designed to improve and protect native flora and fauna as well as protecting cultural resources. Environmental quality will improve with the implementation of this plan.

8) Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions;

As stated previously, this project is intended to improve environmental quality and there will be no cumulative effect on the environment. With the construction of fence lines and improvements of roads, there will be some very limited short term damage to the areas cleared, but the benefits of fencing will far outweigh the temporary disturbance that will occur in the construction phase.

9) Substantially affects a rare, threatened or endangered species or its habitat;

This project is designed to protect and enhance the habitat of rare and endangered species. Appendix B lists the species of plants that are listed as endangered or species of concern. Most of these plants are severely threatened by browsing by non-native ungulates. If no action is taken to fence and protect the areas where they persist extinction will be inevitable. Protecting forest habitat from ungulates will also enhance habitat for rare birds found in Kipahoehoe (Appendix C). By defining boundaries and fencing critical sections of the NAR, the threat of Koa logging by adjacent land-owners will be curtailed. Old growth koa trees are essential habitat for many of the rare birds found at Kipahoehoe.

During the construction phase of the project, measures will be taken to prevent any disturbance to Hawaiian Hoary bat habitat. Clearing of fence lines and roadways will be scheduled to avoid the breeding and pupping season of the bats (June-July). Any trees with bats found roosting in them will not be cleared.

An outplanting program of rare and endangered plants will further the survival of these species and increase diversity of the habitat.

10) Detrimentially affects air or water quality or ambient noise levels;

This project will have no detrimental affects on air quality, water quality or noise levels. Protecting the upper forests stands of Kipahoehoe, as this project is designed to do, will improve water quality in the future and protect the watershed.

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, freshwater, or coastal waters.

There is always the possibility that Mauna Loa could send a lava flow over the Kipahoehoe NAR, but this fatalistic approach is akin to someone not driving because they might die in a car crash.

12) Substantially affects scenic vistas and view planes identified in county or state plans or studies;

No affects to view plans will result from the proposed project.

13) Requires substantial energy consumption.

Energy consumption of the proposed project will be nominal. Small power tools, personnel transportation, and a bulldozer for road improvements are the only energy consuming elements that will be used. If a small shelter is built, it will not be wired for electricity.

Project Description

Summary:

The attached Plan describes proposed management activities to be undertaken in the Kipahoe Natural Area Reserve. Specific projects include construction and repair of access and boundary roads, and installation of fences to exclude livestock and feral animals from portions of the Reserve. Other actions include control of invasive non-native weeds, and planting of rare and endangered species to supplement natural populations. Also proposed are construction of a small cabin, and development of hiking trails for public use.

The project area is located entirely within the boundaries of the Kipahoe Natural Area Reserve. The Plan only addresses the portion of the Reserve located above Highway 11; a supplement for the coastal portion of the Reserve may be written at a later date. All project lands are State owned and within the Conservation District, Protected Subzone. Maps of the project area can be found in Appendix A of the Plan.

Affected Environment

Kipahoe Natural Area Reserve occupies 5,583 acres on the SW slope of Mauna Loa, a wedge shaped parcel that corresponds to the traditional 'ahupua'a of Kipahoe. The Reserve extends from sea-level to 5600' elevation. Rainfall in the mauka Reserve averages 60 to 100 inches a year. Most of the Reserve is vegetated by a mosaic of different aged stands of 'ohi'a (Metrosideros polymorpha) forest on a substrate of young (<2000 years) 'a'a lava flows. A significant area was covered by the historic 1919 and 1950 flows; these are in the early stages of forest development. Several kipuka of older substrate occur above 3600' elevation. They contain deeper soil and well-developed koa (Acacia koa) dominated forests with a diverse assemblage of other native plants.

Flora:

The vegetation throughout the project area is predominantly native forest and shrubland. Some introduced plants are present, particularly near roads, pastures or in other disturbed areas. The Management Plan identifies and describes seven major vegetation types in the upper Reserve.

Several rare and endangered plant species have been observed within the project area. Most of these are located within the forested kipuka. See Appendix B of the plan for complete lists of plant species in the Reserve.

Kipahoe contains one of the few remaining tracts of undisturbed forest in South Kona. While a large part of the leeward slope of Mauna Loa remains forested, the natural vegetation has been altered by a long history of logging and cattle ranching. Development of coffee and macadamia nut farming is also contributing to the loss of native forest in the region.

Fauna:

Information about animals within the Kipahoe NAR is limited. See Appendix C for a list of bird species recorded from the Reserve. 'Elepaio (Chasiempis sandwichensis), 'amakahi (Hemignathus virens), 'apapane (Himatione sanguinea) and 'i'iwi (Vestiaria coccinea) are common throughout the project area. 'I'o (Buteo solitarius) are frequently seen in the area, and nests have been observed in snag trees. The endangered 'akepa (Loxops coccineus) and Hawaii creeper (Oreomystis mana) are known from similar habitat in the vicinity. Kipahoe is considered to be critical habitat for the 'alala or Hawaiian crow (Corvus hawaiiensis). The last observation of a wild crow in the area was in the early

1980's. While it is unlikely that crows persist here, Kipahoehoe is an important site for possible reintroduction.

Although little is known about them, the 'opeapea, or Hawaiian bat (Lasiurus cinereus semotus), is common in the vicinity of Highway 11, and undoubtedly uses trees within the Reserve as roosting sites.

Little is known regarding invertebrates in Kipahoehoe. Given the relatively intact condition of the native forests, it can be assumed that the Reserve still holds a diverse fauna.

Feral pigs are common throughout the NAR, especially in *kipuka* with well-developed soils. At higher elevations, feral goats are fairly common and small herds periodically move through the area. Feral, Mouflon and hybrid sheep are also present, but not in as large numbers as goats.

Feral dogs and cats, rats, mice, and mongoose are also found in the Reserve.

Significant & Sensitive Habitats:

The entire Reserve can be considered a sensitive habitat, particularly for native forest birds, the Hawaiian bat, and a variety of native invertebrates. Endangered species known to be present in the Reserve include the native lobeliads Cyanea hamatiflora and C. stictophylla. Plants considered Species of Concern (SOC) include Rubus macraei, Reynoldsia sandwicensis, and Phyllostegia floribunda.

Bohea timonides (SOC), Flueggea neowawrea (Endangered), and Phyllostegia stachyoides (SOC) were historically known from the vicinity; they may still be present in the Reserve.

Archaeological Sites:

No archaeological sites have been observed in the areas where most of the proposed activity would take place. Portions of the historic Ka'apuna trail, which passes through the Reserve, were located during recent field surveys. This trail was widened with a bulldozer years ago, obliterating any of the original historic construction. At lower elevations, undisturbed segments of what may be the historic *ala ehu* can still be found. Neither of these features will be damaged by the activities proposed in the plan. A short portion of the *ala ehu* might be reopened for use as a public hiking trail; this is discussed in more detail in the Plan. The majority of actions proposed in the Plan will take place along existing road corridors, or will take place on recent lava flows, minimizing the likelihood that historic sites will be affected.

Impacts Resulting from Project

Short Term Impacts:

The primary short-term environmental impacts from this project will be those associated with improvement of roads and construction of fences. Destruction of vegetation and ground disturbance will occur in a strip 16 to 20 feet wide along road corridors. Noise and air pollution from small power tools, heavy machinery, vehicles, generators, etc. will be unavoidable during fence construction. Helicopter airlift of materials may be necessary on occasion. Increased human activity in the area, such as from work crews camping on site, will be necessary. This increase in activity may disturb native birds and/or bats in the immediate vicinity.

Long Term Impacts:

Proceeding with the activities proposed in this plan will likely lead to an increase in human traffic in this remote area. This, and the unavoidable disturbance associated with fence and road

construction create the potential for negative effects. Most significant are greater potential for inadvertent introduction of new weed species, and further spread of non-native plants already present in the Reserve.

Constructing new roads and fences, and siting a cabin in the upper Reserve may affect the "wilderness" character of this remote area. The site chosen for the cabin is a bulldozed clearing near an existing road; no additional site preparation will be necessary. The structure will only be visible from the air and will have no impact on views from roads or trails in the vicinity. Building a cabin will have the positive effect of concentrating unavoidable human impacts in a single place. Presently, workers camp in tents, and camp sites tend to sprawl over a large area. Poor sanitation near camping areas can lead to an increase in cats, rats, mice and mongoose, resulting in greater predation on native birds and plants. Installing an outhouse or composting toilet at the cabin will reduce this problem.

Installing a water catchment and storage tank near the cabin will have the additional positive effect of providing a water supply on-site in the event of fires.

Constructing a new *makai* access road will be an open invitation for the public to visit the upper Reserve. Even if a locked gate is placed on the road, it will not exclude foot, bicycle, motorcycle or all-terrain vehicle traffic. This unsupervised use of the area could create a greater risk of fire, weed introduction and damage to rare plants. Also likely is increased trespass onto neighboring private lands. The alternate *mauka* access proposed in the plan would avoid these problems, but will not be feasible until neighboring properties change ownership.

Reopening a portion of the *ala ehu* as a hiking trail could lead to damage to the trail itself, or other historic sites nearby. Damage to native vegetation near the trail, and spread of weeds along the trail corridor, are likely. Trail development may also lead to problems associated with hikers parking their vehicles on the roadside, such as safety, increased theft, etc.

Long-term benefits of this project include regeneration of native vegetation within the fenced area. Grazing within the *kipuka* has resulted in the destruction of much of the natural forest understory. Native tree seedlings, herbaceous ground cover and ferns have been largely extirpated. The result has been an increase in sunlight reaching the forest floor. These conditions have favored the establishment of non-native grasses, which compete with and prevent the establishment of native plant seedlings. Long term studies of similar areas (particularly in Hawaii Volcanoes National Park) show that native plants can often reestablish themselves and shade out non-native competitors if animal disturbance is removed. Koa is a prolific seeding, fast growing tree that will rapidly recolonize disturbed areas once grazing pressure is removed.

Additionally, the fenced, animal free areas will be available as outplanting sites for rare and endangered species. At present, efforts to reintroduce and enhance populations of species appropriate to this area have been hampered by the presence of pigs and goats.

Excluding pigs will also remove the primary vector by which seeds of the most invasive weeds are being spread. Some of the most invasive weed threats are species of guava and passionfruit, which are readily distributed in the droppings of pigs that have eaten the fallen fruit.

Socio-economic impacts:

Proceeding with this project will require spending the funds necessary for the proposed actions. Costs will include purchase of fencing material, contracting with land surveyors, helicopter and bulldozer operators, paying salaries of Reserve staff, vehicle operating expenses, etc. These monies will come from normal NAR operating funds, which have already been obligated. Supplemental funding will be sought in the form of grants from agencies such as the US Fish & Wildlife Service. It is expected that a large portion of these monies will be released back into the economy in the form of payments to local vendors and contractors.

The primary social impact resulting from this project will be the permanent removal of 1000 acres from an area now (technically) available for public hunting. This is not expected to be a significant impact for several reasons. The project area represents less than 20 percent of the 5,583 acre Kipahoehoe NAR, the majority of which will remain open for hunting for the foreseeable future. Little, if any, hunting is now taking place in the upper Reserve. This is due to the remote location of the site, and lack of public access.

The area to be fenced will remain available for non-hunting use. However, due to the sensitivity of the area, unregulated public use of the upper Reserve will not be encouraged.

In addition to the remaining portion of Kipahoehoe, there are large tracts of State land that will remain available for public hunting in the South Kona and Ka'u Forest Reserves. These nearby areas are more suitable for hunting and recreation use, and will not be affected by the actions described in this plan.

Positive social impacts from this project include protection and restoration of a unique and aesthetically pleasing Hawaiian forest; available for nature appreciation, education and research, and the preservation of a remnant of our rapidly disappearing natural heritage.

Cultural impacts:

This project will have no negative effect on cultural activities, other than removal of a small area from public hunting use. Discussion of whether the hunting of game animals of European origin constitutes a "traditional" cultural activity is outside the scope of this document.

Pre-contact Hawaiian use of upland forests such as those in Kipahoehoe was likely limited to activities such as gathering plant materials, and bird-catching. At present, these activities are prohibited by NAR rules. Proceeding with this project will have no effect on present statutes.

It is beyond the scope of this document to evaluate the standing of "gathering rights" within the Natural Area Reserves System. Gathering is not now allowed. If laws were to be changed, this project would potentially have a positive impact on gatherers of traditional materials, as it is designed to protect and enhance the native plant and animal life that they might collect.

Mitigation Measures

As stated earlier, the major impacts from this project are vegetation related. Damage to living native plants will be restricted to within the road/fence corridors, and no living trees greater than 12 inches diameter will be cut. No legally protected plant species have been observed near the proposed fence lines, but an additional reconnaissance of all fence and road corridors will be made before work begins. Significant plants will be marked with flagging, and/or alignments will be shifted to avoid damage.

Weed introduction will be minimized by ensuring that all heavy equipment, fence material, tools, boots, etc. have been cleaned before entering the project area. The long-term management plan for the Reserve includes regular monitoring and control of newly introduced species of non-native plants along fence lines and access roads.

No archaeological sites have been seen within the area to be disturbed by this project. Fence and road alignments will be chosen to utilize previously disturbed areas where ever possible. Should any sites be discovered during construction, work will be halted and the proper authorities notified. Before any of the historic trail remnants are opened for public use, the State Historic Preservation Office will be consulted.

No mitigation is planned to compensate for removal of a portion of the Reserve from a public hunting area. The hunting public would be well served if DOFAW were to develop create access to other Forest Reserve tracts in the South Kona region. However, this is not the responsibility of the NARS program, but of other programs within the Division of Forestry and Wildlife.

Alternatives to Project

Several alternatives to this project have been identified and are discussed here.

Alternative #1:

Proceed with the project as described in the Plan. Incrementally build fences around selected portions of the NAR, and remove all feral ungulates from these areas. Public hunting would be used for animal control when feasible, but NAR staff would do the majority of the removal. Seven to eight miles of fence would be required, predominantly along existing roads. An access road to the upper Reserve would be constructed, and a small cabin built for the use of work crews. Non-native plant control and rare species recovery efforts would continue.

This is the preferred alternative, as it the most feasible, and in keeping with the Natural Area Reserve Law and the Management Policies of the Natural Area Reserves System. (Chapter 195, HRS)

Alternative #2:

Construct fences that enclose a single large area; encompassing the entire Reserve above Highway 11. This large unit would require roughly 16 miles of fence to enclose 4000 acres. Feral ungulates would be removed from all of the NAR above the highway.

While it might seem desirable to remove feral ungulates from as much of the NAR as possible, this alternative is not cost-effective or feasible. The most significant biological resources occur in a relatively small area at higher elevation, and would be protected in the plan described in Alternative #1.

Before fences could be built around the entire Reserve, the boundary would have to be surveyed, and perimeter roads built. It would be nearly impossible to remove feral ungulates from an area of this size. Cross fences would be required to reduce the large area to multiple units of more manageable size. This cross fencing would increase the expense and disturbance associated with the project.

Alternative #3:

No fences. Construct a road to improve access to the upper Reserve, and rely on public hunting as the sole means to control ungulate populations.

While this might appear an inexpensive and politically palatable scheme, this alternative was rejected for several reasons.

As long as the Reserve boundaries remain unfenced, feral animals will continue to enter the area from adjacent private lands. It is doubtful that hunting pressure within the Reserve will be great enough to significantly decrease feral animal damage. Trespassing and conflicts with neighboring landowners would be inevitable. Encouraging more human traffic in the area will also increase the likelihood of fires, introduction of new weed species and damage to rare plants.

Alternative #4:

Construct a system of fences and an access road, as described in the Plan. Use public hunting as the sole means to reduce feral animal populations inside the fenced areas.

Installing fences will prevent animal ingress, and may reduce the danger of trespass mentioned in Alternative #3. The other problems associated with unsupervised public activity in the sensitive upper Reserve remain. Increasing public hunting may reduce animal numbers within the fenced areas to some degree, but it is doubtful that complete eradication will result.

In recent years, several attempts have been made to use public hunting as the primary tool for control of feral animals in remote Hawaiian natural areas. While some of these projects were good for public relations, they have all been unsuccessful in achieving their primary goal. This goal was the long-term reduction of animal damage to levels comparable to that achieved by professional hunters, snaring, etc.

There are many reasons why public hunting is not an effective way to control feral animals over the long term. A sudden increase in hunting pressure in an area with large numbers of "tame" animals may result in large numbers of animals being taken at first. Over time, those that remain become wary and difficult to catch. Hunters eventually lose interest in travelling to the remote area, game populations rebound, and the cycle begins again. If fences are to be built, it is important that all animals be removed from within them as quickly as possible.

Alternative #5:

Build no fences or access roads. Animal control restricted to other measures, including snares, aerial shooting, staff hunts, etc.

These methods may be more effective in reducing animal damage than relying on public hunting alone. In the short term, this will be less expensive than the cost of fencing large areas. However, as long as the Reserve boundaries remain open, there will be ingress of animals from adjacent lands. Animal removal would have to continue indefinitely. This long-term control program would be expensive and unpopular, as it would be perceived as an unending "waste of meat" by the hunting community. The best long-term solution is to enclose the Reserve, and remove all animals as quickly as possible.

Alternative #6:

No action.

Implies continued neglect of the Reserve and acceptance of the inevitable degradation of this unique natural resource.

Expected Determination

No significant negative impact on the environment is expected from this project.

Findings and Reasons Supporting Expected Determination

The intent of this project is to benefit native species in the project area. Creating permanent barriers to exclude feral ungulates will remove a major threat to the continued survival of the native

forests in the Reserve. Creating secure sites for reintroduction of rare plant species is necessary for their survival in the wild.

Ample evidence exists to show that disturbance caused by ungulates is a factor contributing to replacement of Hawaiian vegetation by introduced weeds. If animals are removed before damage becomes too severe, native vegetation is often able to recover naturally and the spread of weeds slowed or even reversed. Implementing a weed control program will increase the probability of native vegetation recovery, and prevent the establishment of new noxious plant species. The short term damage to vegetation as a result of building fences and roads will be more than offset by the regeneration that will take place once animals have been removed.

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Sources of Information:

Hawaii Branch NARS staff field notes 1996-2000

Kipahochoe Natural Area Reserve Management Plan, prepared by DLNR/DOFAW, 1989.

Kipahochoe Natural Area Reserve Resource Information, prepared by the Nature Conservancy of Hawaii, 1989.

KIPAHOEHOE NATURAL AREA RESERVE

MANAGEMENT PLAN

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

2002

**KIPAHOEHOE NATURAL AREA RESERVE
MANAGEMENT PLAN**

TABLE OF CONTENTS

Background	1
Scope	1
General Information	2
Plant Communities of the Reserve	
'Ohi'a and 'Ohi'a/Ie'ie Lowland Forest	3
Exotic Vegetation	5
Pioneer Vegetation of Recent Lava Flows	6
'Ohi'a/Uluhe Forest	7
'Ohi'a Montane Mesic - Wet Forest	8
Koa/'Ohi'a Montane Mesic - Dry Forest	9
'Ohi'a Dry Forest and Montane Shrubland	11
Proposed Management Actions	
Middle Kipuka Management Unit	12
Boundary Survey	12
Upper Koa Forest Management Unit	12
North Kipuka Management Unit	13
South Kipuka Management Unit	13
Lower Koa Forest Management Unit	13
Mauka Shrublands Management Unit	14
Makai Access Road	14
Mauka Access Road	15
Management Shelter	16
Discussion of Issues	
Fence Construction	16
Road Construction	16
Public Access	17
Hunting	17
Feral Animal Control	18
Weed Control	19
Rare Plants	19
Appendix A	Project Area Maps
Appendix B	Plant Species Checklists
Appendix C	Bird Species
Appendix D	Cultural Assessment

KIPAHOEHOE NATURAL AREA RESERVE MANAGEMENT PLAN

Background

In 1970, Hawaii passed the Natural Area Reserves Law (HRS 195-1), mandating that a Natural Area Reserves System be developed to "preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites, of Hawaii." The Kipahoehoe Natural Area Reserve (NAR) was established in October, 1982 for protection of natural features and native ecosystems occurring in the Reserve.

This plan was drafted in accordance with the Management Policies of the Natural Area Reserves System, pursuant to HRS 195-7, which states that management plans addressing biological, social and cultural concerns will be drafted for each Reserve, and will be subject to public comment through the Environmental Review process.

This plan contains material adapted from two previous documents: the Kipahoehoe Natural Area Reserve Resource Information Notebook, prepared by The Nature Conservancy of Hawaii Heritage Program in July 1989, and the Kipahoehoe Natural Area Reserve Management Plan prepared by the Natural Area Reserves System in November 1989. Additional information was gathered as NAR staff conducted surveys and management in the Reserve from 1996 onward.

Scope

This plan addresses only the portion of the Reserve located above Highway 11 -- approximately 80% of the Reserve, which has a total area of 5,583 acres. A supplement for the coastal portion of the Reserve may be written at a later date.

This plan is based on the Special Ecological Area (SEA) approach to managing native ecosystems developed at Hawaii Volcanoes National Park. This strategy limits intensive management activity to areas of high biological value, and where efforts to protect and restore native species would be most feasible. As explained in the plan, only a portion of the Reserve would be designated as a SEA. Little, if any active management would take place in the remainder. This approach is the most realistic, given the limited resources available for management of the Natural Area Reserve System.

The following are some criteria used to evaluate a potential SEA. Intactness of the native ecosystem, rarity and/or degree of threat to the ecosystem/plant community, presence of rare species, value for research, education and as a representative example of a particular ecosystem, feasibility of actually implementing management actions, and clearly defined boundaries.

This plan consists of four parts:

- A general description of the physical characteristics of the Reserve, followed by a detailed description of each of the major plant communities found there. Important biological resources, and threats to these communities are identified.
- A prioritized list of management actions intended to alleviate some of these threats.
- More detailed information about these management actions, and a discussion of some of the issues associated with the proposed actions.
- Appendices with maps of the Reserve, including vegetation types, proposed developments, and boundaries of proposed SEA. Also, lists of plant and vertebrate species found within the Reserve.

General Information

The Kipahoehoe Natural Area Reserve is located in the South Kona district of the island of Hawaii. The NAR encompasses most of the traditional *'ahupua'a* of Kipahoehoe, a 5,583 acre wedge-shaped section of the southwestern slope of Mauna Loa. The parcel includes roughly 2 miles of shoreline, and narrows to less than a mile across at the top of the Reserve, at 5,600' elevation.

Yee Hop Ranch borders the Reserve to the north, south and east. Also to the east is undeveloped land owned by the Damon Estate (Kahuku Ranch). A small parcel of unencumbered State-owned land borders the NAR to the south, between 5,500' and 5,600' elevation. The only public access to Kipahoehoe is from Highway 11, which crosses the NAR at the 1,400' elevation.

A variety of native and non-native plant communities are found within the Reserve. Most of the vegetation above Highway 11 can be described as mesic to wet *'ohi'a* (*Metrosideros*) forests in an early stage of succession on recent (<2000 years old) *'a'a* lava flows. Within these geologically recent areas are several *kipuka* of older substrate that support diverse, taller forest on deeper soils.

For the purposes of this plan, seven different vegetation types were identified, as shown on the maps in Appendix A. The following section contains a brief description of each, including location and extent within the Reserve, threats to this plant community, and a discussion of management actions that could be taken to alleviate these threats. Vegetation community classifications are adapted from those described in The Nature Conservancy's Hawaii Heritage Database.

Plant Communities of the Kipahoehoe Natural Area Reserve

'Ohi'a and 'Ohi'a/'Ie'ie Lowland Forest

This plant community occurs in a narrow belt along Highway 11. The upper extent appears to be 1,600' elevation, where it grades into 'Ohi'a/Uluhe forest. This forest type occupies roughly 300 acres within the Reserve.

'Ohi'a is the dominant tree, reaching up to 80 feet in height, with *kolea* (*Myrsine*), *kopiko* (*Psychotria*), and 'alahe'e (*Psydrax*) the most common understory trees. 'Ie'ie (*Freycinetia*) vines are locally abundant, and often form a thick tangle on the forest floor. In areas without 'ie'ie, the forest understory is comprised of low ferns and shrubs growing in a substrate of mossy 'a'a lava.

This plant community is relatively common in Hawaii, occurring on most of the main islands.

No rare plants have recently been recorded in this section of Kipahoehoe, but some might be located in a systematic search of the area. Rare plants seen in similar habitat nearby include 'ahakea (*Bobea timoniodes*), 'ohe makai (*Reynoldsia sandwicensis*), mehamehame (*Fleuggea neowawraea*) and *Neraudia ovata* (no common name.)

This area has fair to poor value as native bird habitat, due to diseases carried by mosquitoes and non-native birds common at this low elevation. The 'opeapea or Hawaiian bat (*Lasiurus cinereus semotus*) is locally common.

Threats:

The primary threat to this plant community is the continued spread of non-native plants, particularly christmasberry (*Schinus*) from the corridor of disturbed forest along the highway. At present, weed invasion is minimal at distances greater than 100 meters from the road. Many non-native plants established in this area are commonly spread by wind or birds.

Introduced plants such as *kukui* (*Aleurites*), *ti* (*Cordyline*), coffee (*Coffea*), and guava (*Psidium guajava* and *cattleianum*) have replaced native vegetation in several small *kipuka* that were once used for agriculture. While these plants are generally restricted to areas with deeper soil, some have the potential to colonize the surrounding lava flows or invade the undisturbed 'ohi'a forest.

Highway 11 bisects the Reserve at this elevation in this area; there is a possibility that discarded cigarettes could start wild fires. Fire prone non-native grasses such as molasses grass (*Melinis*) occur along the road edges; if they become established in the forest, the potential for severe fires would increase.

Several pull-outs along the highway have become dumpsites for trash and yard waste. Seeds or cuttings of noxious species could take root and spread into the forest from these points. It is likely that marijuana growers access the Reserve from the highway as well; possibly introducing new weed species with soil in grow bags.

Hunting access to this area from the highway is excellent. However, the extremely rugged and rocky terrain makes it difficult and dangerous for hunters and their dogs to travel any significant distance from the road. Feral pig disturbance appears to be confined to the deeper soils in the *kipuka* mentioned earlier. The native elements in these areas have already been significantly degraded, and reducing animal populations seems unnecessary.

Management recommendations:

The terrain in this part of the Reserve is so rugged that any management activity would be difficult and hazardous. The rough lava and dense tangle of 'ie'ie vines provide an effective barrier to animals and humans. This plant community is not considered rare. It is threatened by the gradual spread of non-native plants, but appears to be in no immediate danger. Limited resources should be directed to managing more significant areas at higher elevation.

Some management actions appropriate in this area include:

- Regular monitoring and control of noxious weeds along the highway to prevent the establishment of new species.
- Development of a parking area and short loop trail into the forest above the highway. This would be combined with development of interpretive materials, and non-native plant control to preserve a representative sample of forest. This native lowland forest could become a valuable site for environmental education. Trail development would also improve hunting access into the lower Reserve. Construction and a possible alignment for this trail are discussed later in the plan.

Exotic Vegetation

Forests dominated by non-native species can be found in a few small areas where human activity was concentrated. Forest clearings for small farms or house sites were often made in *kipuka* with deep soil, generally at elevations below 2500'.

With the cessation of farming, non-native plants have invaded the disturbed areas, and in many cases mature forest has developed. Typical tree species include guava, *kukui*, coffee, rose apple (*Syzygium jambos*), mango (*Mangifera indica*), and christmas berry.

Threats:

These pockets of introduced trees may be susceptible to invasion by other non-native plants if further disturbance occurs.

Management recommendations:

No action seems necessary as these areas are of little biological value. Archaeological features such as trails, house sites and agricultural walls are likely to be found here. Human activity should be discouraged in these areas to prevent damage to such sites.

Pioneer Vegetation on Recent Lava Flows

This plant community is found on the 1919 'Alike lava flow that runs along the southern boundary of the NAR, and on the 1950 Ka 'apuna lava flow which covers a small area at the northeast corner of the Reserve. It occupies roughly 600 acres. Recent lava flows with similar vegetation are common at higher elevations on Maui and Hawaii.

Vegetation on the flow varies with elevation. Near the top of the Reserve, the ground is nearly barren. At lower elevations, a ground cover of lichen and moss is common, interspersed with the sedge 'uki (*Machaerina*), 'ama'u (*Sadleria*) and uluhe (*Dicranopteris*) ferns, shrubs such as 'ohelo (*Vaccinium*), pukiawe (*Styphelia*), na'ena'e (*Dubautia*), kukaenene (*Coprosma*) and sapling 'ohi'a trees.

Rare plants are unlikely to occur on these recent lava flows.

The scattered small trees offer fair habitat for native forest birds. 'Amakihi and 'apapane are commonly observed on the flows.

Threats:

The harsh conditions on the recent lava flows have so far discouraged the establishment of most non-native plants. Non-native grasses that could invade this habitat include fountain grass (*Pennisetum setaceum*), beardgrass (*Schyzachrium*) and broomsedge (*Andropogon*). Colonization by grasses could interfere with native plant succession, and create a fire hazard.

Browsing damage from feral goats and sheep is apparent at higher elevations. They appear to feed preferentially on certain native plants, altering the natural composition of this forest. Feral pigs do not often cross this rough terrain.

Management Recommendations:

No action is feasible at this time. This plant community is not rare, nor is it immediately threatened. Increased goat hunting might reduce damage to native vegetation to some extent. The only way to permanently remove goats from the area would be to fence the entire Reserve, otherwise they will continue to enter from adjacent private lands. A portion of this community would be protected by the fencing scheme proposed later in the plan.

Highway 11 and the 4 wheel drive roads that cross the Reserve should be monitored for invasion of the fire-prone grasses mentioned above.

'Ohi'a/Uluhe Forest

This plant community occupies the majority of the Reserve between 1600' and 4600' elevation; about 2500 acres. It represents an early successional stage of 'ohi'a forest on a recent (between 200 and 750 years old) lava flow that covered most of Kipahoehoc.

The forest is comprised of 'ohi'a trees emerging from a dense mat of *uluhe* (*Dicranopteris*) fern. Beneath the fern is an extremely rugged 'a'a flow. Other native plants found here include some that grow on the recent lava flows, as well as young *kopiko*, 'olapa (*Chairodendron*), *kava'u* (*Ilex*), and *kolea* trees. Small pockets of 'Ohi'a Montane Wet Forest occur within this fern forest.

This vegetation type is common in Hawaii, and occurs on all the main islands. This forest is still too young to support much plant diversity to have developed; rare species are unlikely to be found here. The dense stands of small diameter 'ohi'a offer good habitat for the more common native birds.

Threats:

The dense mat of *uluhe* fern prevents the establishment of most non-native plants. Above 2500' elevation the forest is essentially weed free.

The combination of thick *uluhe* and the rough lava beneath make this portion of the Reserve virtually impenetrable to pigs, goats, and human beings.

While this area is usually damp, drought conditions can make the *uluhe* an extreme fire hazard. Were a fire to start in this portion of the Reserve, it would be difficult and costly to extinguish.

Management Recommendations:

No action seems necessary or feasible. This plant community acts as a barrier protecting more sensitive areas, and can be utilized as a "natural fence."

'Ohi'a Montane Mesic - Wet Forest

This community occurs in the Reserve in the lower reaches of the *Koa/'Ohi'a Forest kipuka*, and in a narrow strip of older soil south of the 1919 flow, between 2200' and 3000' elevation. It comprises at most 300 acres of the NAR.

'Ohi'a up to 80 feet tall are dominant in this forest, with a subcanopy layer that includes *kopiko*, *kolea*, *kawa'u*, *'olapa*, *mamaki* (*Pipturus*) and *olomea* (*Perrottetia*). Below this is a dense layer of *hapu'u* (*Cibotium*) and a diverse understory of native shrubs and ferns.

This plant community occurs on most of the main islands, and is widespread on the island of Hawaii.

Rare plants such as native mints (*Phyllostegia* and *Stenogyne*) are likely to occur here, as well as the lobeliads *Cyanea* and *Clermontia*.

This dense forest is important habitat for native birds, especially at elevations above the range of disease carrying mosquitoes.

Threats:

Feral pig disturbance is widespread in this forest type. Evidence of feral cattle was observed in the *kipuka* south of the 1919 flow.

This community is vulnerable to invasion by a variety of non-native plants, especially guava and banana poka, which are often spread in the feces of feral pigs.

Management Recommendations:

The 'Ohi'a Forest in the *kipuka* above 3800' elevation is heavily disturbed by pigs, but few weed species are established here. The surrounding 'Ohi'a/Uluhe Forest has acted as a barrier to weed spread; preventing ingress of animals from weed infested areas. Reducing pig activity in the *kipuka* is essential to maintain the health of this forest, and is discussed under specific management actions.

The small strip of forest south of the 1919 flow, however, is heavily infested with non-native plants. Pigs and cattle have destroyed most of the natural understory. Encouraging public hunting in this area might reduce animal damage. Hunting (with dogs) is allowed here, although few (if any) hunters use the area, as the only public access requires a one-mile hike over 'a'a lava. The boundary between the NAR and adjacent Yee Hop Ranch is not marked. Short of constructing a fence, there is no way to ensure that hunters and their dogs do not trespass onto private property. Developing an access and constructing a boundary fence would be a gesture of goodwill to the hunting public and the Ranch. However, the expense of surveying the boundary and building 1¼ mile of fence through dense forest would be more than the benefit expected from reducing pig numbers in a small pocket of forest already invaded by noxious weeds.

Koa'Ohi'a Montane Mesic - Dry Forest

This plant community is found in four *kipuka* of older substrate (>2000 years) between 3800' and 5400' elevation. It occupies roughly 550 acres of the Reserve. The *kipuka* have been labeled "North", "Middle", "South" and "East" on the maps in Appendix A.

This forest type is the most impressive and diverse in the Reserve. Giant *koa* trees (as large as 100' tall and up to 8' in diameter) tower over an *'ohi'a* canopy up to 80' high. The subcanopy is diverse, and contains large specimens of *kolea*, *kopiko*, *kawa'u*, *'olapa*, *naio* (*Myoporum*), *ho'awa* (*Pittosporum*), *'alani* (*Melicope*) and other trees. At lower elevations and in wet areas, *hapu'u* forms an additional canopy layer. In areas not disturbed by animals, the ground is covered with a dense growth of such ferns as *Dryopteris*, *Diplazium*, *Pteris*, the sedge *Uncinia*, the succulent herb *'ala'alawainui* (*Peperomia*) and the native lily *pa'iniu* (*Astelia*). With increasing altitude, the climate becomes drier, tree ferns are less abundant and are replaced by *'akala* (*Rubus*) shrubs. Trees develop a gnarled habit, and *naio* becomes a more common component of the forest.

This forest community occurs on Maui, Hawaii and Kauai. Nearly 90% of the original range on Hawaii has been severely degraded and deforested. Cattle ranching, logging, fire, feral ungulates, and invasion by non-native plants threaten most of the remainder.

This is important and essential forest habitat for at least four endangered birds. The endangered Hawaii Creeper, *'akepa* and *'akaipola'au* have been observed in similar habitat nearby, and may be present within the Reserve. Kipahoe is considered essential habitat for the *'alala*, although none have been seen here recently.

This diverse forest is habitat for several species of rare plants. The endangered native lobeliads *Cyanea hamatiflora* and *Cyanea stictophylla*, have been found here recently, as well as the mints *Stenogyne macrantha*, *Phyllostegia floribunda*, and the shrub *Rubus macraei*.

Threats:

The primary threat to this forest community is the damage caused by feral pigs and goats. Pig disturbance of the soil and understory vegetation is causing erosion, eliminating certain sensitive plant species, and creating conditions favorable for the establishment of non-native weeds. Goats have heavily grazed the North, South and East *Kipuka*. As a result, non-native grasses have replaced the native understory vegetation, primarily rice grass (*Ehrharta*) and kikuyu (*Pennisetum clandestinum*). The thick mat of grass prevents the regeneration of native plants. Goats continue to girdle and kill small diameter trees. They feed preferentially on trees such as *koa*, *naio* and *pilo*. If grazing continues, these species may disappear from the forest as older trees die and are not replaced.

Cattle grazing is taking place on the Ranch property adjacent to the North *Kipuka*. A log barrier constructed to exclude cattle is in disrepair, and cattle regularly trespass into the Reserve.

With the exception of pasture grasses in disturbed areas, the *kipuka* are nearly free of non-native plants. The remote location of the area, and the barrier of surrounding lava flows and *uluhe* fern have kept many troublesome weeds from becoming established. Non-native plants that have invaded similar forests elsewhere include guava, banana poka and granadilla (*Passiflora mollisima* and *ligularis*), blackberry (*Rubus argutus*), and German ivy (*Senecio mikanoides*).

Koa logging is taking place on the private lands adjacent to the Reserve. The boundary between State and private lands is presently unmarked. If logging were to take place in this area, trees may be taken from within the Reserve.

Management Recommendations:

Cattle, pigs, sheep and goats must be removed from the upper Reserve to prevent further damage to the forest and allow natural regeneration to begin. Native plants would rapidly recolonize many of the disturbed areas once animals were removed, and creation of animal free sanctuaries would allow reintroduction of rare plant species that once grew here. This will require construction of a system of animal proof fences, and systematic hunting to remove all animals from within the fences. The specifics of this are discussed later in the plan.

The boundary between the NAR and Yee Hop Ranch needs to be surveyed and marked in the upper portion of the Reserve. This will allow construction of animal proof fences along the boundary, and will prevent the possibility of *koa* being taken from State land.

Control of non-native plants should be started. The focus should be on preventing invasive weeds from becoming established in the interior of the *kipuka*. For example, small populations of German ivy have been located in the North and Middle *Kipuka*. It is important to eliminate this plant before it spreads farther within the Reserve.

'Ohi'a Dry Forest and Montane Shrubland

These communities occupy approximately 250 acres at the very top of the Reserve (5,200' to 5,500'.) They occur on the same lava flow substrate that is occupied by *Ohi'a/Uluhe Forest* at lower elevation. Vegetation is primarily stunted 'ohi'a, native shrubs such as *pukiawe*, 'ohelo and 'a'ali'i (*Dodonaea*.) The native sedges *Carex* and *Gahnia*, native grasses such as *Deschampsia* and *Agrostis*, lichens, and ferns are typical groundcover. A few small kipukas within the shrubland contain small groves of taller 'ohi'a, with the same understory species.

This plant community is common on Hawaii and Maui.

No rare plants are known to occur in this part of the Reserve.

This low stature forest provides good habitat for common native birds, and is located well above the range of disease causing mosquitoes.

Threats:

Non-native plants have not yet become widely established at this high elevation.

Feral goats are causing moderate damage. They selectively browse some native species. Goats also trample and scuff up dirt to make bedding areas. Non-native species, particularly grasses, often invade these disturbed areas.

Management recommendations:

This plant community does not appear to be in immediate danger, nor is it considered rare. Removing goats would prevent further damage to native plants. This could be partially accomplished while protecting *Koa'Ohi'a Forest kipuka* as described below.

Regular monitoring and removal of new weed species, particularly fire-prone grasses, should be implemented along roadsides.

Proposed Management Actions

The most important features of the Kipahoehoe NAR are the four *kipuka* of *Koa'Ohi'a* forest at the upper elevations. They represent one of the few remaining examples of this plant community in the State not significantly disturbed by cattle or logging. These *kipuka* contain several rare plant species, and are important habitat for native forest birds, including endangered species. The actions outlined in this plan would treat the portion of the Reserve containing these *kipuka* as a Special Ecological Area. Management of the Reserve would be primarily oriented to protecting this area of high biological value.

Specifically, this plan calls for constructing a system of animal proof fencing and permanently removing pigs, goats, cattle and sheep from the entire Reserve above the 3,600' elevation, an area of approximately 1,600 acres. This represents less than one-third of the Kipahoehoe NAR. In the remainder of the Reserve, public hunting would continue to be the primary method by which feral ungulate numbers were controlled.

These fences would be aligned in such a way as to use existing roads and natural barriers as much as possible. Some new road construction would be required for the fence lines. Construction of an access road to the upper Reserve may also be necessary.

Also presented in this section are the methods by which feral animals would be removed, a discussion of how public access (for hunting and non-hunting recreation) to the Reserve could be improved, and an outline of non-native plant control strategies.

Prioritized List of Management Actions

Management Unit: Middle Kipuka

Creating this unit would require construction of a 1,200' foot fence line along an existing road at the 4,400' elevation, across the Middle *Kipuka*. See map in Appendix A. The ends of this fence line tie into the dense *uluhe* fern surrounding the *kipuka*. This creates an enclosed unit of roughly 150 acres below the road, with the *uluhe* fern acting as a natural barrier around most of the perimeter.

This fence was completed in early 1998. There are no longer goats within the fenced area. As of this writing no pig control has been done, but remains a high priority for this unit.

Boundary Survey

Many of the roads and fences proposed in this plan would follow Reserve boundaries. Before they can be constructed, the boundary needs to be formally surveyed. Marking the Reserve boundaries is an important first step in preventing cattle trespass or removal of *koa* from the Reserve.

The portion of the Reserve most needing survey includes the north and south boundaries from 3,600' elevation to the top, and the entire eastern (or upper) boundary. Total distance is approximately 5½ miles. Most of this distance will be along existing roads, or across open pasture and lava fields, so this survey should be easy to conduct.

Management Unit: Upper Koa Forest

This unit would be completely enclosed by fences, and would not rely on natural barriers. It would be roughly triangular in shape, and would comprise 350 acres. The upper portions of the North, Middle and South *Kipuka* would be included in this unit, as well as some of the 1919 flow and *'Ohi'a Dry Forest and Shrubland* community.

The lower unit boundary will be the 4,400' contour road. The north side of the unit will follow the Reserve boundary between 4,400' and 5,200'. The third leg of the triangle follows the existing Koa Mill Road which makes a diagonal across the upper Reserve.

Most of this fence would be constructed along existing roads, or through pasture, with the exception of 900 feet that would traverse the 1919 flow along the south Reserve boundary in order to connect the Koa Mill road with the 4,400' contour road.

The present road along the north side of the NAR does not follow the actual boundary. It follows a log barrier that lies approximately 100 to 150 yards inside the Reserve. The +/-50 acre area of the NAR outside the barrier is still being used as pasture.

Two different alignments could be chosen for a fence along this boundary. The first choice would be to use the existing road as an informal boundary. This would essentially "donate" the 50 or so acres of the NAR presently being grazed to the Ranch.

The second choice would be to formally survey and construct a new road and fence along the actual boundary. This would allow all of the NAR to be removed from grazing. The pasture area has been severely disturbed; of the original forest, only scattered trees remain. If cattle were removed, the pasture could be replanted with native trees. This would be the more expensive of the two choices, as it would require survey and construction of approximately one mile of new roadway. However, in the long run this would be preferable to using the existing road. Formalizing the boundary will remove a potential source of friction with the Ranch, and allow restoration of native forest in a significant portion of the Reserve.

Management Unit: North Kipuka

This unit would require 1¼ mile of fence to be constructed on existing roadway along the North Reserve boundary between 4,400' and 3,600' elevation. It would enclose 100 acres, with the *uluhe* fern acting as a natural barrier on one side. As with the Upper Koa Forest unit, this roadway does not follow the true boundary. The actual boundary will need to be surveyed and a new road constructed, or a portion of the Reserve will be left unfenced.

Management Unit: South Kipuka

Enclosing this unit will require approximately 1¼ mile of fence. This fence would begin at the 4,400' elevation road and run down to 3,600' where it would end in the dense *uluhe* below the South Kipuka. Roughly 100 acres of the south *kipuka* will be protected by this fence. In order to build the fence, new roadway would have to be constructed on the 1919 flow along the *kipuka* edge. This roadway would be incorporated into the *makai* access road described later.

3600' Contour Road and Fence Construction: Lower Koa Forest Unit

As described above, the North, Middle and South Kipuka management units all rely on strategic fences tied into patches of dense *uluhe* fern. This fern growth is effective as a natural barrier to goats and sheep, but pigs may occasionally tunnel under it. Because of this, these three management units will always be vulnerable to incursion by pigs. A concerted hunting/snaring program in the three *kipuka* will greatly reduce pig numbers, but in the long term, it makes more sense to completely surround these units with fences, and permanently remove animals from the enclosed area.

Enclosing this area requires construction of a new road across the Reserve at the 3,600' contour; a distance of 1¼ miles. A fence along this road will join with the lower ends of the North and South Kipuka fences. This will create a single fenced unit of 1000 acres.

This road would cross extremely rough terrain and dense *uluhe* fern, and may be difficult and hazardous to construct. This, and the impact to the forest that will result from building a road through undisturbed vegetation, would ordinarily make it a last resort.

However, there are other factors that make this road desirable. Presently, a wildfire starting at lower elevation (from Highway 11) could burn upslope through the dense fuels of *uluhe* fern and into the valuable *kipuka* forests. A road across the Reserve below the *kipuka* would provide an important fuel break in case such a fire did occur.

Second, this road/fence will provide a distinct boundary between the upper Reserve, which will eventually be closed to public hunting (except for supervised animal removal), and the lower Reserve, which will remain open.

Third, an access trail could be made from this road to the lower end of the Middle *Kipuka*. This would greatly improve access for weed control, outplanting, etc. to an area that can presently only be reached by a long hike.

This road would displace roughly 3 acres of native vegetation (20 foot wide corridor, 1¼ miles long). This would be primarily *uluhe* fern and young '*ohi 'a* trees. It is unlikely that any rare plants would be damaged. As stated earlier, the '*Ohi 'a/Uluhe* community is not considered rare, nor does it have a high diversity of plant species.

Management Unit: Mauka Shrublands

This unit includes the uppermost 250 acres of the Reserve. It contains 100 acres of the East *Kipuka* owned by the State of Hawaii, as well as 150 acres of '*Ohi 'a Dry Forest and Shrubland* and portions of the 1919 and 1950 lava flows. Two miles of fence would be required to enclose the top of the Reserve. The lower boundary of this unit would be the fence along the *mauka* road across the Reserve.

This fence would cross rugged, roadless terrain, and will be difficult and expensive to install. A new road built around the Reserve perimeter would make construction of this fence easier. However, in the interest of reducing impacts to the area, it is recommended that a perimeter road only be built on recent lava flows, and not over older substrate with well developed vegetation. In these areas, a helicopter would be used to ferry fence material to the site, and possibly to unroll the fence wire.

Makai Access Road

At the present time, Highway 11 is the only formal access to the Reserve. The upper portion of the Reserve, which contains the most significant biological resources, can only be reached by helicopter, by use of private roads on neighboring Yee Hop ranch, or by hiking up the 1919 lava flow; a round trip distance of over 10 miles.

Since 1998, Yee Hop Ranch has allowed limited access to the NAR via private roads in the adjacent Alike tract. Only DLNR personnel on official business have been allowed to use this access, dependent on the availability of the Ranch manager to open gates and process waivers of liability. Use of these roads is based on an informal agreement, and can be denied at any time.

This arrangement has been sufficient to date, although planned work trips have been cancelled when there was poor communication (gate not open) or conflict with activities on the Ranch. Successful implementation of this management plan requires continued good relations and cooperation with the Ranch. However, relying solely on this limited access could slow the implementation of this plan, especially if fences are to be built by a private contractor.

The present limited access has already proved to be an impediment to planned animal control activities. The Ranch is unwilling to allow public use of private roads to get into the NAR, and has asked that hunting dogs not be used for feral animal control, citing concern that dogs may trespass into their pasture and interfere with cattle. These restrictions make it essentially impossible for public hunting (the preferred method) to be effective in removing animals from the upper Reserve.

If, at some point in the future, this access to the upper Reserve becomes inadequate, consideration should be given to construction of a new access road, entirely on State land. The most feasible route for this road would be up the 1919 flow. It would follow the southern NAR boundary from Highway 11 uphill to the 4800' elevation, where it would join existing roads. The access road would be 5 miles in length. Half of this distance would incorporate existing segments of abandoned jeep trail. The South *Kipuka* unit fence would be installed along a portion of this road.

In order to minimize problems such as trespassing and illegal hunting on the Ranch, as well as fires, illegal dumping, marijuana cultivation, and accidental introductions of weed species into the Reserve, it is recommended that the access road be closed by a locked gate at the highway. Foot traffic would be unrestricted, but vehicular access would be by permit only. Gates and signage would also need to be placed on some of the existing *mauka* roads to prevent trespass onto the Ranch.

Mauka Access Road

There has recently been increased interest on the part of entities such as the US Fish & Wildlife Service, the National Park Service, and the Nature Conservancy in protecting native ecosystems in the South Kona region. Several parcels of land in the vicinity have recently traded hands, and are now being managed for native forest conservation.

It is likely that trend will continue. The lands of Kahuku and Papa 1-2, which lie to the south and east of Kipahoehoe, have been suggested as possible conservation acquisitions. If this takes place, the result will be creation of a large, contiguous block of land owned by a variety of public and private conservation entities. Conservation endeavors in the region will be much more efficient and effective if the respective land managers cooperate in developing access roads, as well as strategies for fencing, fire suppression, and feral animal and weed control.

If Papa 1-2 and/or Kahuku do change hands, and the new owners are cooperative, a road could be built that crosses the unencumbered parcel of State land at Alika (above Yee Hop Ranch), and enters Kipahoehoe at the Southeast corner of the Reserve. Access from Highway 11 would be over existing roads across State and Nature Conservancy lands at Honomalino.

At present, this potential access route to the NAR is wishful thinking at best. However, it is important to include it in this plan, because if it becomes feasible, it will be the best possible way to access the upper Reserve.

As discussed earlier, the present access through Yee Hop Ranch is inadequate for the long term. The proposed *makai* access is entirely within the NAR, but could potentially create new problems due to increased public traffic in the Reserve. This third, *mauka* access would cross land owned by parties sympathetic to the conservation goals of the Natural Area Reserves System, and hence more likely to allow fence contractors, hunting parties, etc. to pass through. The lower section of this route, which crosses State and Nature Conservancy lands at Honomalino, is gated and not open to the general public. If the road is extended into upper Kipahoehoe, it is unlikely that trespassing will become a problem.

A map of the improvements proposed in this section can be found in Appendix A. Further discussion of issues related to these management actions follows in the next portion of the plan.

Management Shelter Construction

Due to the remote nature of the Reserve, workers involved in fence construction, weed control, and other activities will often need to camp on site. Construction of a simple shelter near the top of the Reserve will make it easier for crews to work efficiently. A small, open sided 'pavilion' with a wooden deck floor; 400 to 600 sq. ft. area under roof should be sufficient.

Runoff from the roof would fill a water tank of 1000 to 1500 gallons. This water would be used for showers, herbicide mixing and clean-up, irrigation of rare plants, etc. This water supply would also be valuable in the event of a fire. To keep the area sanitary, it will also be advisable to construct a small outhouse for a pit or composting toilet.

Constructing a shelter will confine some human impacts to an area that can be 'hardened' to accommodate them. It will increase productivity of work crews by reducing the amount of equipment required to camp on site, as well as the vehicle traffic needed to haul this equipment.

Discussion of Issues Relating to this Plan

Fence Construction

Fences proposed in this plan would be built of galvanized woven hog wire. In areas where pigs are likely to be present, a strand of barbed wire will be placed at ground level. To prevent goats and sheep from jumping over the wire, one or two strands of barbed wire will be attached above the hog wire. The wire will be clipped to galvanized "T" posts, spaced 8' to 10' apart. Wire skirts and anchor pins will be placed along the line to block any gaps that would allow pigs to pass under the fence. For additional security, the fence will be reinforced every 100' with line posts of treated wood or metal pipe. Pipe or posts will also be used for braces at all major bends and corners.

A fence made from 47" hog wire topped with barbed wire (for an effective height of 6 feet) would be sufficient to exclude goats and pigs. Mouflon sheep, originally released at Kahuku Ranch in the late 1960's, have expanded their range beyond the original release site. In recent years, they have been observed inside Hawaii Volcanoes National Park, indicating that they can cross six foot high fences. The Park now must undertake an expensive modification of their fence lines. Mouflon are uncommon in the vicinity of Kipahochoe at present. However, in the absence of a control program, it is only a matter of time before their range expands to fill all suitable habitat on Mauna Loa. If possible, the Kipahochoe fences should be built tall enough to exclude Mouflon in order to avoid later difficulties. Mouflon proof fencing may need to be 8 feet tall or higher, which will add significantly to the cost and difficulty of implementing this plan.

Most of the fences mentioned in this plan will be installed along existing or proposed roadways. It is possible to install fence on unmodified lava flows, and avoid the environmental impact associated with road construction. However, this will greatly increase the cost and difficulty of the project. Mouflon proof fencing may require 10' long fence posts, which may be impossible to install without an elevated platform (such as a truck tailgate) to work from.

Where feasible, gates or stiles will be installed to aid in crossing the fences.

Road Construction

It is acknowledged that road construction can adversely impact the natural environment. Direct impacts are destruction of vegetation and soil disturbance in the road corridor. Indirect effects include increased potential for the introduction of weeds along the disturbed corridor. The actions proposed in this plan, for the most part, will be restricted to areas that have already been disturbed. Only where it is absolutely necessary will roads be built into undisturbed sites.

The majority of new roads proposed in this plan will be built on recent lava flows. These flows are sparsely vegetated, and rare plant species are unlikely to occur. While certain non-native weeds can be expected to colonize road corridors, most will not readily spread onto undisturbed lava. Regular monitoring and weed control should be sufficient to prevent pests from spreading beyond road sides.

All roads mentioned in this plan would be for 4-wheel drive vehicles only. They would be unsurfaced lava rock, ripped and compacted where necessary. Width will be approximately 16 feet. Where possible, grades will be kept below 15%. Due to the porous nature of the lava rock, culverts or water diversions will be unnecessary.

Before construction begins, all road alignments will be traversed on foot, and changed where necessary, to prevent damage to rare plants.

Public Access

The entire Kipahoe NAR is presently open for public (daylight hours) use for hiking, nature study, hunting, etc. However, the rugged terrain and lack of a road and trail system discourage much activity. Due to the sensitive nature of the natural communities at higher elevations, and the potential for trespass onto neighboring private lands, access to the upper Reserve should remain restricted.

The lower portions of the Kipahoe NAR are less sensitive, and may be suitable for development of short hiking trails, possibly accompanied by interpretive signs or a trail guide.

One possible alignment for a trail is presented in Appendix A. This route would incorporate remnants of historic trails built for foot and horse traffic. These include what may be a portion of the *ala ehu*; an inland route that circled much of the island, much as the *ala kahakai* circles the coast. The Historic Preservation Division would be consulted before any trail development took place.

Hunting

The entire Kipahoe NAR is presently part of Hunting Unit K. Hunting of feral pigs, goats and sheep is allowed year-round, 7 days a week. The daily bag limit is two animals of each species.

Despite these liberal rules, little hunting takes place in Kipahoe. This is due to the rugged terrain, dense vegetation, poor access and the sparse population in this part of the island. There are better places to hunt elsewhere in South Kona and Ka'u; Kipahoe is rarely visited.

The high level of goat and pig activity in the upper Reserve presents a serious threat to the native forest. A partial solution to this problem would be to develop a public access to the top of the Reserve, and to encourage increased hunting pressure.

As mentioned earlier, this will require construction of a new road; Yee Hop Ranch will not allow the public to traverse their property. If such a road were constructed, trespass and illegal hunting on neighboring private property would undoubtedly become a problem. This could jeopardize the present good relationship with the Ranch.

Special hunts, with NAR staff present to supervise volunteer hunters in animal removal from fenced units would be another option. However, the Ranch has not agreed to this, citing concern of trespass and the possibility of lost dogs interfering with cattle operations. Without building a new access road, the only way to get hunters to the upper Reserve would be by helicopter, which is prohibitively expensive.

If the actions proposed in this plan are implemented, the result will be the withdrawal of approximately 1000 acres from the public hunting area. Game animals will be permanently removed from the within the fenced units. This will not have any significant effect on public hunting opportunities in the South Kona region, because hunters are not using the upper Kipahoe area.

In the long run, the hunting public would be far better served if DOFAW were to develop access to other Forest Reserve parcels in South Kona, particularly Honomalino, Kukuiopae, and Opihiali. These tracts are significantly larger than the portion of Kipahoe from which animals will be removed. They also contain large expanses of mature forest with open understory; which is much better for hunting than the dense brush of Kipahoe.

Feral Animal Control

The primary threat to the native ecosystems in the upper portion of Kipahoe is the continuing uncontrolled disturbance and damage to vegetation caused by feral pigs, goats, cattle and sheep. Constructing animal proof fences around the management units described above will prevent ingress from outside the Reserve, but all animals within the fenced areas will need to be removed.

Game drives to chase animals out of areas prior to fence closure may be partially successful, given the small areas to be fenced, and the relatively open nature of the forests at higher elevation. After the drives, some follow up method must be used to ensure that every animal has been removed. Hunting with dogs (using public hunters whenever possible) would be the preferred method, but access problems and the concerns of the Ranch make this not feasible.

Goats, cattle and sheep in the relatively open forest of the upper Reserve will often be visible from a helicopter. Any animals trapped within the fence after game drives could be shot from the air or hunted down on the ground.

Feral pigs will be difficult to drive in areas with dense vegetation. Without hunting dogs, the only feasible method to remove these animals will be through the use of snares. The forested *kipuka* units are small, and should be fairly easy to saturate with a large number snares, in order to remove most of the animals in a short time. The existing system of management transects will allow all snares to be checked efficiently. At the beginning of the snaring program, snares will be checked frequently to reduce the time that animals are left trapped alive. As animal numbers drop, checks will take place less often. When fully enclosed units are known to be pig free, all snares will be removed.

Unless the 3,600' contour fence has been built, enclosing the Lower *Koa* Forest unit, there will always be the possibility of further pig ingress through the uluhe fern into the North, Middle and South *kipuka*. A concerted snaring program will reduce pig numbers, but cannot completely eliminate them. For this reason, it is recommended that this lower road and fence be constructed, creating a single, fully enclosed unit from which all animals can be removed.

If a snaring program is instituted in the upper Reserve, there is a remote possibility that dogs may accidentally be trapped. This risk can be reduced in several ways. Snaring would only take place in units that are enclosed by fences and have warning signs posted. The upper portion of the NAR (above Highway 11) would be closed to hunting with dogs as long as snaring was taking place. Hunting without dogs would be continue in the portion of the Reserve below the fenced units.

Weed Control

The majority of the Kipahoehoe NAR is still relatively free of non-native plant species. Many plants that are pests in similar habitats elsewhere in Hawaii have not yet become established in the Reserve. Any vegetation management program would focus primarily on preventing new introductions. This could be accomplished by regular monitoring of roads, trails and Reserve boundaries, and eradicating incipient populations of weeds before they spread further.

Some problematic weeds, especially *Passiflora*, *Schinus*, and *Psidium*, have already become widespread in the Reserve. Control of these plants would be directed towards reduction/removal in sensitive areas like the *kipuka*. Control in these selected areas would be done by hand-pulling and use of herbicides. If biological control agents for these plants become available, it may be desirable to attempt releases in the NAR.

In portions of the *kipuka* that have been grazed, non-native grasses have become well established. Grass specific herbicides may be effective in suppressing the grasses and speeding recovery of native woody plants.

Rare Plants

As one of the largest remaining tracts of undisturbed native vegetation in South Kona, the Kipahoehoe NAR is an important potential site for the restoration of rare plant (and animal) species.

Several rare plant species persist in the Reserve; others are known from the immediate vicinity. Once feral animals are removed from the upper Reserve, an aggressive program to restore rare species should be pursued. Species selected would be those likely to have occurred in or near Kipahoehoe. When possible, plants would be grown from seed or cuttings collected within the Reserve.

Appendix B lists rare plants that might be appropriate for this restoration program.

Appendix A

**Kipahochoc Natural Area Reserve
Management Plan**

Project Area Maps

- **Reserve Location and Adjacent Landowners**
- **Vegetation Communities**
- **Management Units and Proposed Fences**
- **Proposed Internal Road System**
- **Access Routes**
- **Possible Public Hiking Trail Alignment**

Appendix B

**Kipahoehoe Natural Area Reserve
Management Plan**

Plant Species Checklists

- **Native Plant Species**
- **Non-native Plant Species**
- **Status of Rare Plants Proposed for Recovery Program**

Appendix C

Kipahohoe Natural Area Reserve Bird Species Checklist

The birds listed have been reported from visual and audio identification in or near the Reserve. The list includes information on rare birds, compiled from the literature. Taxonomy follows the Checklist of the Birds of Hawaii by Pyle (1988).

Status	Species	Common Name	Source
X	<u>Acridotheres tristis</u>	Common Myna	*
X	<u>Alectoris chukar</u>	Chukar	x
E	<u>Asio flammeus sandwichensis</u>	Pueo; Hawaiian owl	?
E+	<u>Buteo solitarius</u>	'Io; Hawaiian hawk	*
X	<u>Cardinalis cardinalis</u>	Northern Cardinal	*
E	<u>Chasiempis sandwichensis sandwichensis</u>	'Elepaio	*
E+	<u>Corvus hawaiiensis</u>	'Alala; Hawaiian crow	?
X	<u>Geopelia striata</u>	Zebra Dove	*
E+	<u>Hemignathus munroi</u>	'Akiapola'au	?
E	<u>Hemignathus virens virens</u>	'Amakihi	*
E	<u>Himatione sanguinea sanguinea</u>	'Apapane	*
X	<u>Leothrix lutea</u>	Red-billed Leothrix	*
X	<u>Lophura leucomelana</u>	Kalij Pheasant	*
E+	<u>Loxops coccineus coccineus</u>	'Akepa	?
X	<u>Meleagris gallopavo</u>	Wild Turkey	x
E+	<u>Oreomystis mana</u>	Hawaii creeper	?
I	<u>Phaethon lepturus dorotheae</u>	Koa'e kea; White-tailed tropic bird	*
X	<u>Phasianus colchicus</u>	Ring-necked Pheasant	x
X	<u>Streptopelia chinensis</u>	Spotted Dove	x
X	<u>Tyto alba</u>	Common Barn-owl	*
E	<u>Vestiaria coccinea</u>	'I'iwi	*
X	<u>Zosterops japonicus</u>	Japanese White-eye	*

+ = Rare
X = Not Native
I = Indigenous
E = Endemic

* = Confirmed during NARS inventories
x = Cited in literature sources for Kipahohoe
? = Cited in literature for South Kona area; not confirmed in the Reserve

Taken from Kipahohoe Natural Area Reserve Resource Information Notebook, prepared by The Nature Conservancy of Hawaii, 1989.

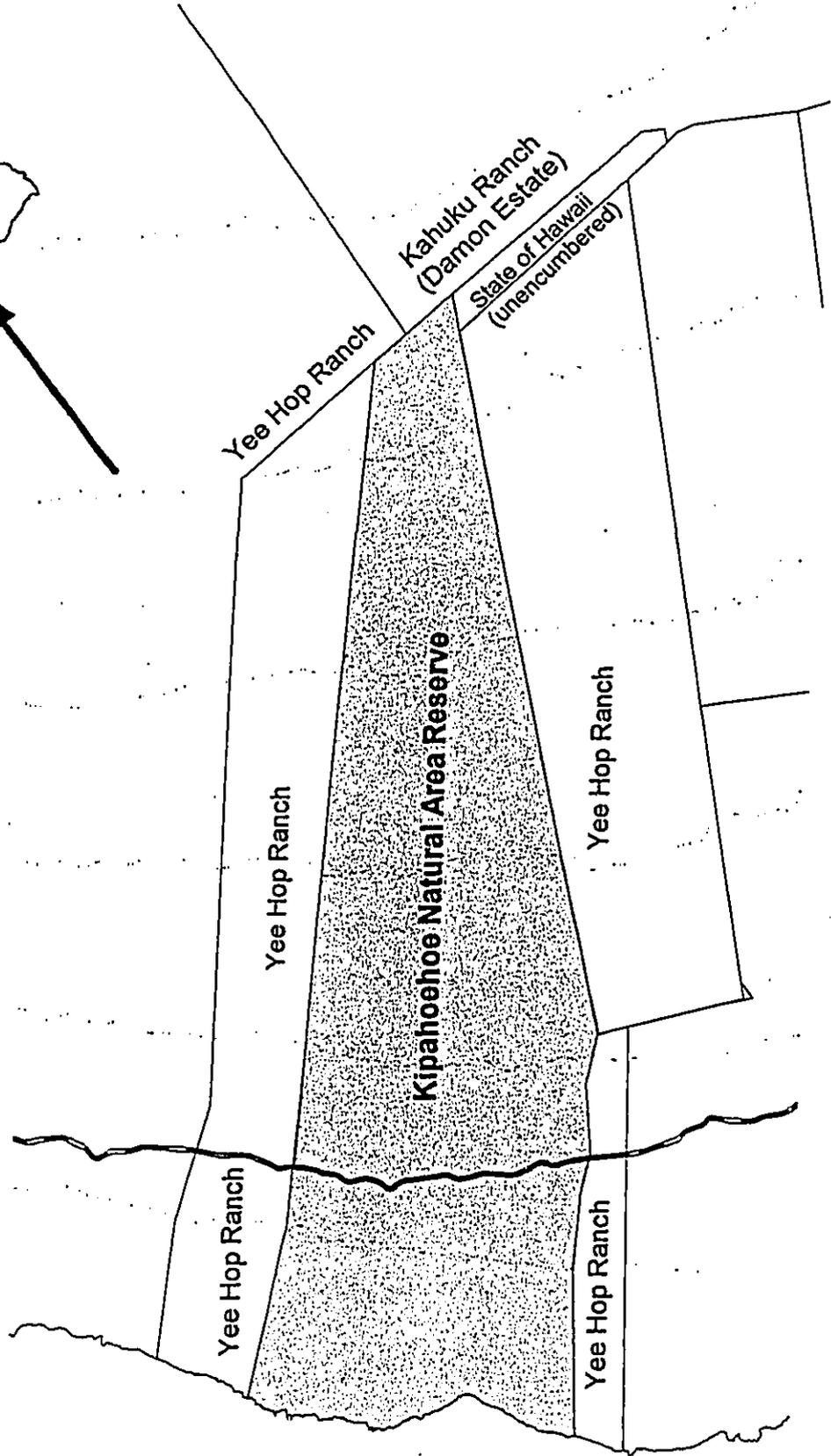
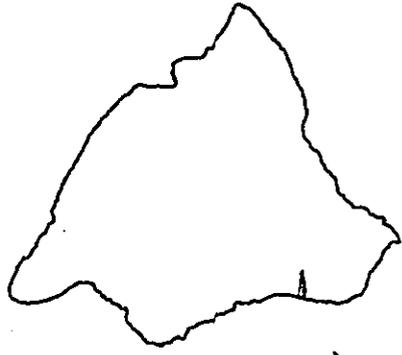
Appendix A

**Kipahoe Natural Area Reserve
Management Plan**

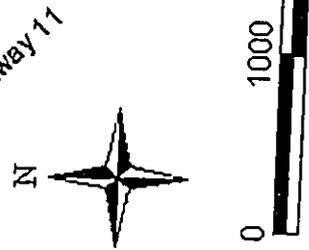
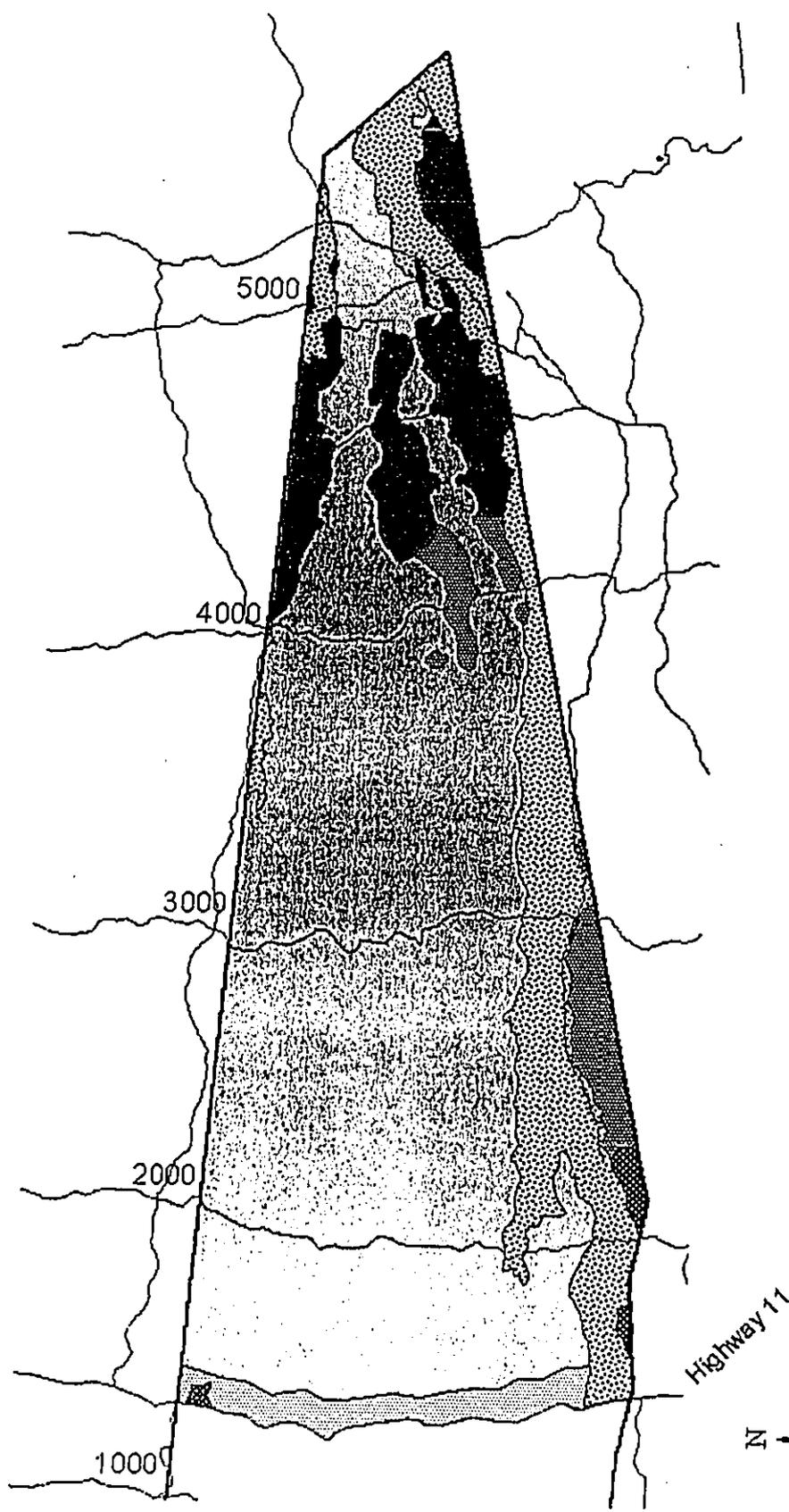
Project Area Maps

- Reserve Location and Adjacent Landowners
- Vegetation Communities
- Management Units and Proposed Fences
- Proposed Internal Road System
- Access Routes
- Possible Public Hiking Trail Alignment

Kipahoehoe Natural Area Reserve Location and Adjacent Landowners



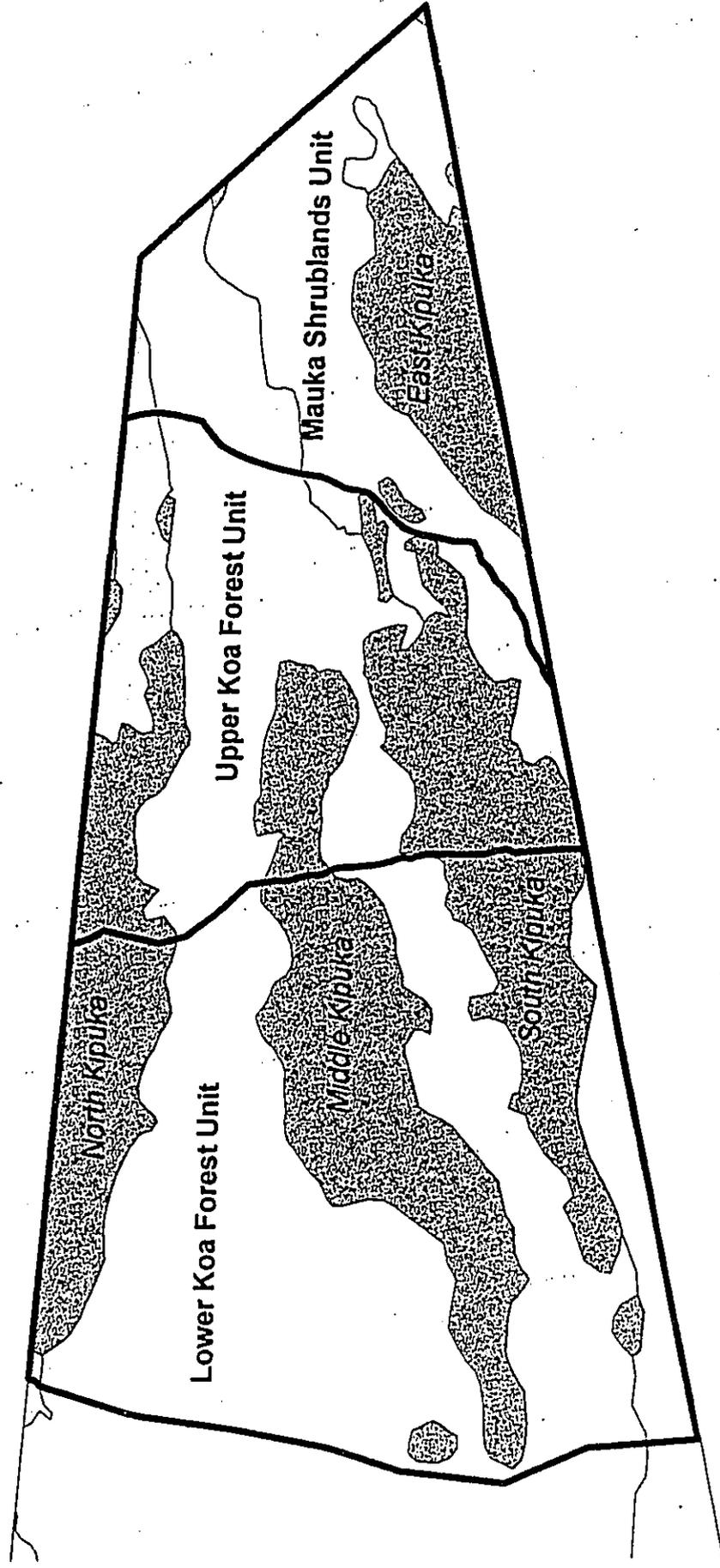
Kipahoehoe Natural Area Reserve Vegetation Map



-  'Ohi'a mesic-wet forest
-  'Ohi'a dry forest and montane shrubland
-  'Ohi'a and 'Ohi'a/'e'ie lowland forest
-  'Ohi'a/Uluhe forest
-  Lava flows of 1919 and 1950
-  Koa/'Ohi'a mesic-dry forest
-  Exotic vegetation

-  1000 ft elevation contour
-  Existing roads
-  NAR Boundary

Kipahoe Natural Area Reserve Management Units and Proposed Fences



 Proposed fence alignments

 Kipahoe NAR Boundary

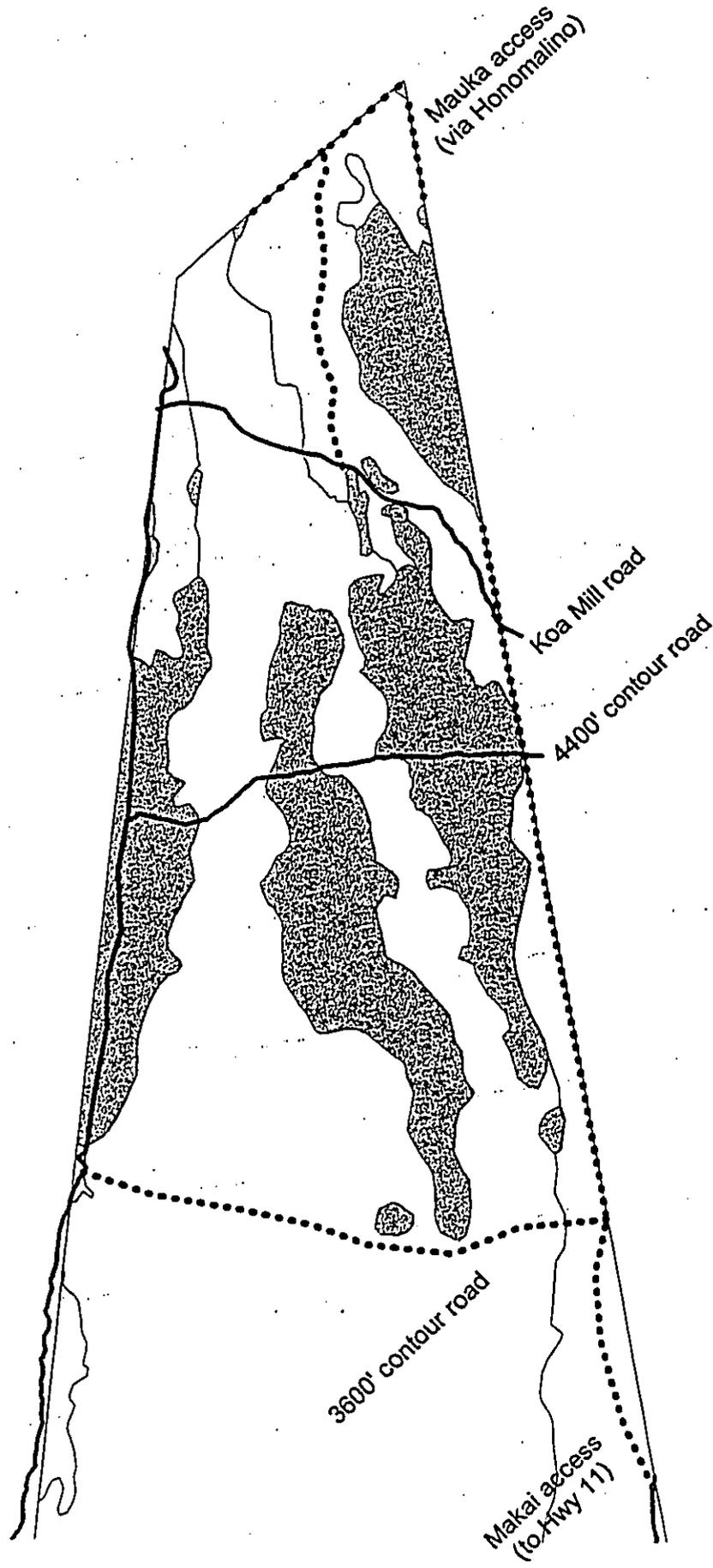
 200 ft elevation contour

 Koa/Ohi'a Forest Kipuka

 Lava Flows of 1919 and 1950



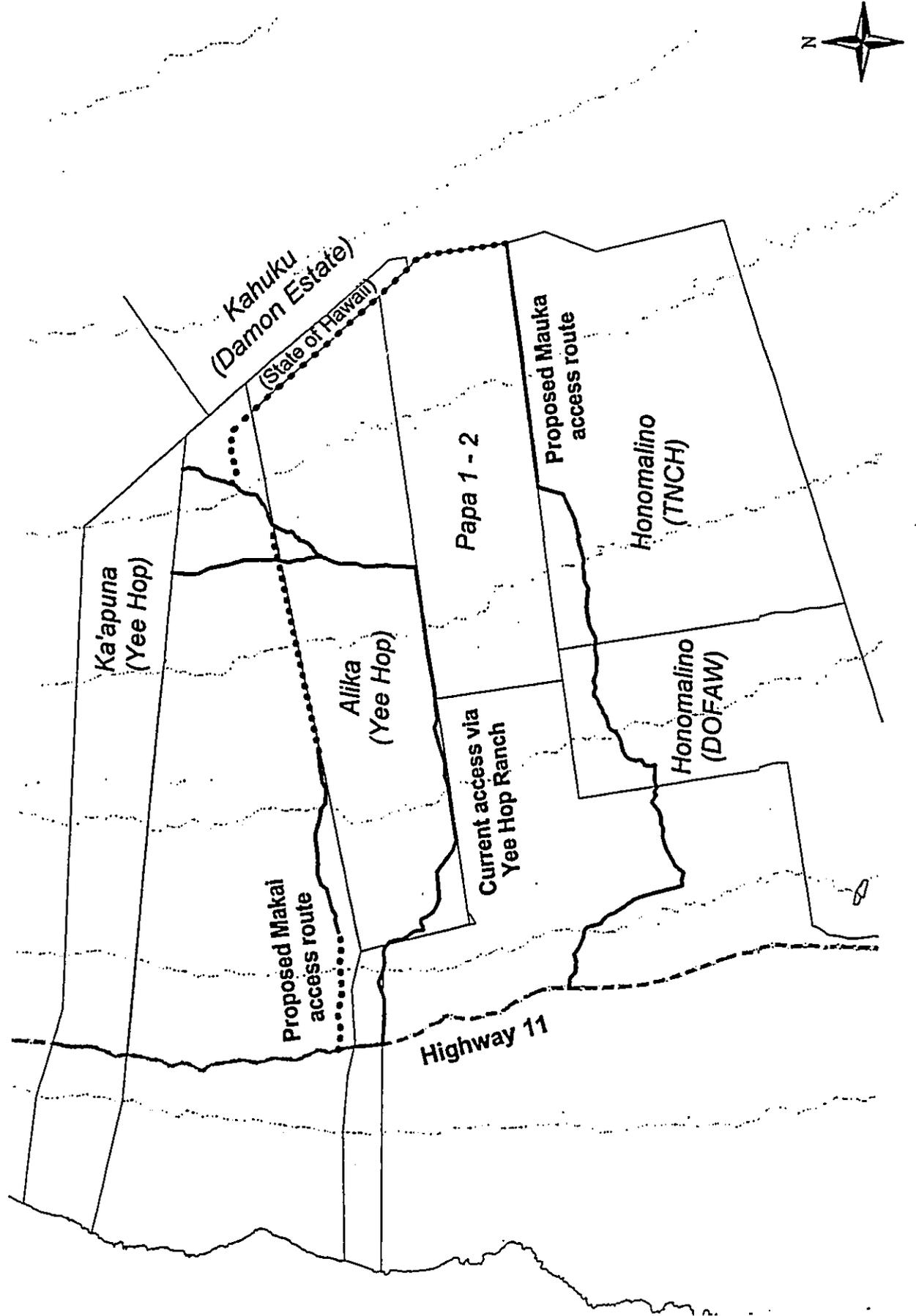
Kipahoe Natural Area Reserve Internal Road System



- Proposed new roadway
- Existing roadway
- Kipahoe NAR Boundary
- 200 ft elevation contour
- Koah'Ohia Forest Kipuka
- Lava Flows of 1919 and 1950

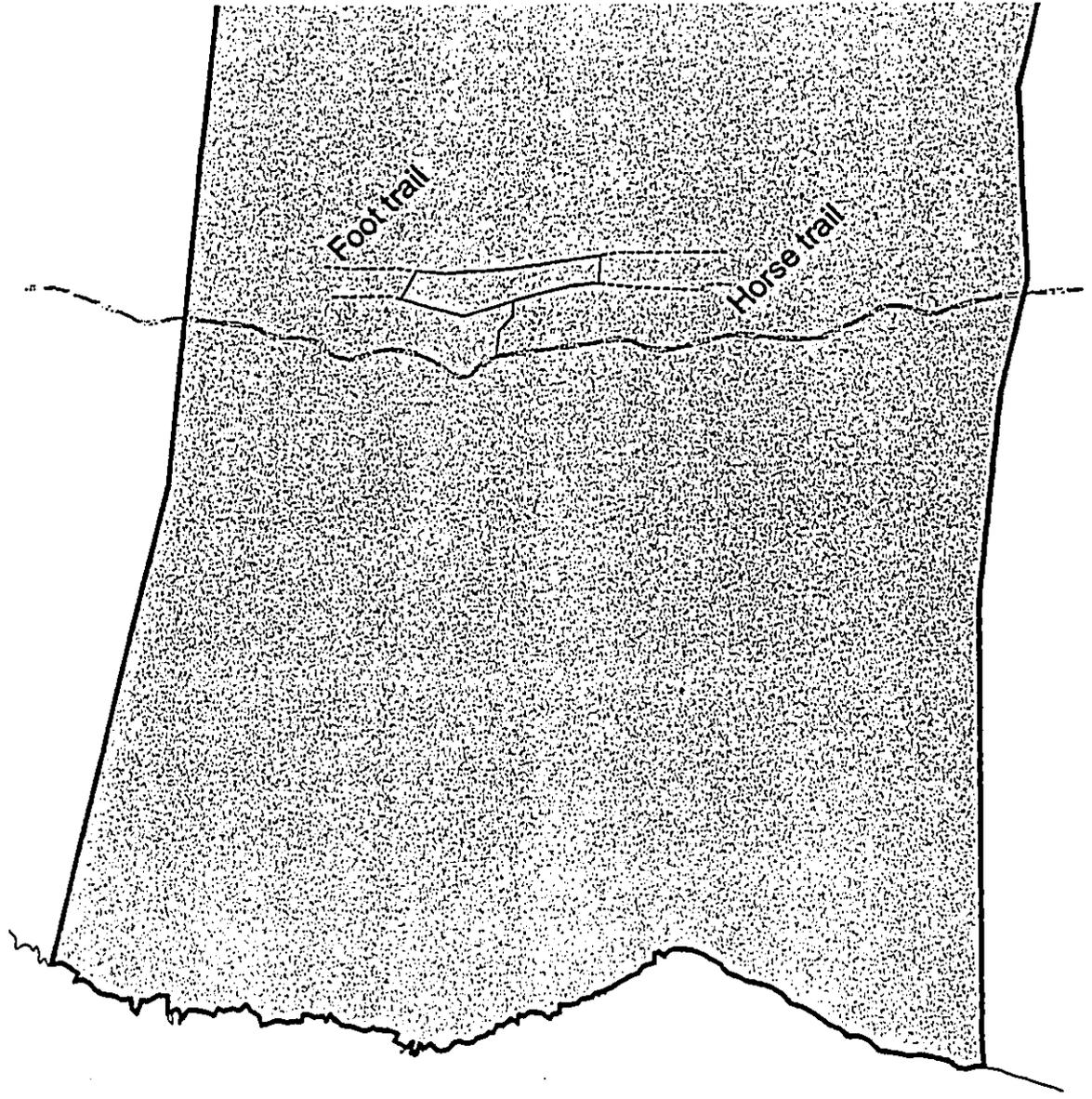


Kipahoehoe Natural Area Reserve Access Routes



Kipahoehoe Natural Area Reserve

Proposed restoration of historic trails
and development as recreational hiking route



Loop trail to be
opened for
public use



Approximate
location of
historic trail
remnants



State Hwy 11



Appendix B

**Kipahoe Natural Area Reserve
Management Plan**

Plant Species Checklists

- **Native Plant Species**
- **Non-native Plant Species**
- **Status of Rare Plants Proposed for Recovery Program**

Kipahoehoe Natural Area Reserve Native Plant Species

Adapted from
Hawaii Branch NARS staff field observations 1996-2000
DLNR/DOFAW 1989 Kipahoehoe Natural Area Reserve Management Plan
TNCH 1989 Kipahoehoe Natural Area Reserve Resource Information

Scientific name	Common name(s)	Listing	Status
Acacia koa	koa		
Agrostis sandwicensis	bent grass		
Alyxia oliviformis	maile		
Antidesma platyphyllum var. platyphyllum	hame		
Astella menziesiana	pa'iniu, kaluaha	SOC	?
Bobea timonioides	'ahakea		
Broussaisia arguta	kanawao, pu'aha-nui		
Canavalia hawaiiensis	'awikiwiki		
Carex meyenii			
Carex wahuensis			
Cassytha filiformis	kaunaoa		
Cheirodendron trigynum ssp. trigynum	'olapa		
Clermontia clermontioides ssp. clermontioides	'oha-wai		
Cocculus trilobus	huehue		
Coprosma ernodeoides	kukae-nene		
Coprosma montana	pilo	END	
Cyanea hamatiflora ssp. carlsonii	haha	END	
Cyanea stictophylla	haha		
Cyrtandra hawaiiensis	ha'iwale		
Deschampsia nubigena	hair grass		
Diospyros sandwicensis	lama		
Dodonaea viscosa	'a'alii		
Dubautia ciliolata ssp. ciliolata	na'ena'e, kupaoa		
Dubautia scabra	na'ena'e, kupaoa		
Embelia pacifica	kilioe	END	?
Flueggea neowawraea	mehamehame		
Freycinetia arborea	'ie'ie		
Gahnia gahniiformis	'uki		
Gnaphalium sandwicense var. kilaueanum	'ena'ena		
Hedyotis centranthoides			
Hedyotis terminalis	manono		
Ilex anomala	kawa'u		
Ipomoea indica	morning glory, koali-awa		
Isachne distichophylla	'ohe		
Labordia hedyosmifolia	kamakahala		
Luzula hawaiiensis var. hawaiiensis	wood rush		
Machaerina angustifolia	'uki		
Melicope clusiifolia	alani		
Melicope volcanica	alani		
Metrosideros polymorpha var. polymorpha	'ohi'a, 'ohi'a-lehua		
Myoporum sandwicense	naio		
Myrsine lessertiana	kolea		

VASCULAR PLANTS

Listing: SOC = Species of Concern T = Threatened END = Endangered

Status: P = Planted, not known to have occurred naturally in Kipahoehoe
? = Historic occurrence, not recently observed

Scientific name	Common name(s)	Listing	Status
<i>Myrsine sandwicensis</i>	kolea-lau-li'i		
<i>Nothoestrum longifolium</i>	'aiea		
<i>Peperomia hypoleuca</i>	'ala'ala-wai-nui		
<i>Peperomia leptostachya</i>	'ala'ala-wai-nui		
<i>Peperomia tetraphylla</i>	'ala'ala-wai-nui		
<i>Perrottetia sandwicensis</i>	olomea		
<i>Phyllostegia floribunda</i>	kiponapona	SOC	
<i>Phyllostegia stachyoides</i>	kiponapona	SOC	
<i>Pipturus albidus</i>	mamaki		
<i>Pittosporum hawaiiense</i>	ho'awa		
<i>Pittosporum hosmeri</i>	ho'awa		
<i>Pritchardia schattaueri</i>	lo'ulu	END	P
<i>Psychotria hawaiiensis</i>	kopiko 'ula		
<i>Psydrax odoratum</i>	'alahe'e, walahe'e		
<i>Pycreus polystachyos</i> ssp. <i>polystachyos</i>			
<i>Reynoldsia sandwicensis</i>	'ohe makai	SOC	
<i>Rubus hawaiiensis</i>	'akala		
<i>Rubus macraei</i>	'akala	SOC	
<i>Rumex giganteus</i>	pawale; uhauhako		
<i>Santalum paniculatum</i> var. <i>paniculatum</i>	'iliahi		
<i>Smilax melastomifolia</i>	hoi-kuahiwi, aka'awa		
<i>Stenogyne macrantha</i>		SOC	
<i>Stenogyne sessilis</i>	ma'ohi'ohi		
<i>Styphelia tameiameia</i>	pukiawe		
<i>Tetraplasandra oahuensis</i>	'ohe-mauka		
<i>Trematolobelia grandifolia</i>	koli'i		
<i>Uncinia uncinata</i>			
<i>Urera glabra</i>	opuhe		
<i>Vaccinium calycinum</i>	'ohelo-kau-la'au		
<i>Vaccinium reticulatum</i>	'ohelo		
<i>Xylosma hawaiiense</i>	maua		

VASCULAR PLANTS

Scientific name	Common name(s)	Listing	Status
<i>Adenophorus pinnatifidus</i>	palai la'au		
<i>Adenophorus tamariscinus</i>	wahine-noho-mauna		
<i>Asplenium adiantum-nigrum</i>	'iwa'iwa, manawahua		
<i>Asplenium contiguum</i>			
<i>Asplenium horridum</i>	'alae, 'iwa		
<i>Asplenium lobulatum</i>	pi'i-pi'i-lau-manamana, 'anali'i		
<i>Asplenium nidus</i>	'ekaha, bird's-nest fern		
<i>Asplenium trichomanes</i>	'owali'i		
<i>Athyrium microphyllum</i>	'akolea		
<i>Cibotium chamissoi</i>	hapu'u, hapu'u-'i'i		
<i>Cibotium glaucum</i>	hapu'u		
<i>Coniogramme pilosa</i>	lo'ulu		

FERNS

Listing: SOC = Species of Concern T = Threatened END = Endangered

Status: P = Planted, not known to have occurred naturally in Kipahoe
 ? = Historic occurrence, not recently observed

	Scientific name	Common name(s)	Listing	Status
FERNS	<i>Dicranopteris linearis</i>	uluhe		
	<i>Diplazium sandwichianum</i>	ho'io, pohole		
	<i>Doryopteris decora</i>	manawahua, kumuniu, 'iwa'iwa		
	<i>Dryopteris fusco-atra</i>	olua, 'opeha		
	<i>Dryopteris glabra</i>	hohiu, kilau		
	<i>Dryopteris wallichiana</i>	lau-kahi, 'io nui		
	<i>Elaphoglossum crassifolium</i>			
	<i>Elaphoglossum hirtum</i> var. <i>micans</i>	maku'e		
	<i>Elaphoglossum parvisquameum</i>			
	<i>Elaphoglossum wawrae</i>	maku'e		
	<i>Grammitis hookeri</i>	maku'e-lau-li'i		
	<i>Grammitis tenella</i>	kolokolo, mahinalua		
	<i>Lycopodium cernuum</i>	wawae-'iole		
	<i>Lycopodium venustum</i>	wawae-'iole		
	<i>Mecodium recurvum</i>			
	<i>Microlepia strigosa</i>	palapalai		
	<i>Nephrolepis cordifolia</i>	'okupukupu		
	<i>Nephrolepis exaltata</i>	'okupukupu		
	<i>Odontosoria chinensis</i>	pala'a		
	<i>Opioderma pendula</i>	puapuamoa		
	<i>Pellaea ternifolia</i>	kalamoho, kalamoho-lau-li'i		
	<i>Pleopeltis thunbergiana</i>	pakahakaha, 'ekaha-'akolea		
	<i>Polypodium pellucidum</i>	'a'e, 'a'ae, ae-lau-nui		
	<i>Psilotum complanatum</i>	moa		
	<i>Psilotum nudum</i>	moa		
	<i>Pteridium decompositum</i>	kilau		
	<i>Pteris cretica</i>	'owali,		
	<i>Pteris excelsa</i>	waimaka-nui		
	<i>Sadleria cyatheoides</i>	'ama'u, ama'uma'u		
	<i>Thelypteris globulifera</i>			
<i>Thelypteris hudsoniana</i>				
<i>Thelypteris stegogrammoides</i>	ho'io kula			
<i>Vandenboschia davallioides</i>	palaihihi			

Listing: SOC = Species of Concern T = Threatened END = Endangered

Status: P = Planted, not known to have occurred naturally in Kipahoehoe
 ? = Historic occurrence, not recently observed

Kipahoe Natural Area Reserve Non-native Plant Species

Adapted from
Hawaii Branch NARS staff field observations 1996-2000
DLNR/DOFAW 1989 Kipahoe Natural Area Reserve Management Plan
TNCH 1989 Kipahoe Natural Area Reserve Resource Information

Scientific name	Common name(s)
<i>Ageratina riparia</i>	spreading mist flower; Hamakua pa'makani
<i>Ageratum conyzoides</i>	maile-hohono
<i>Aleurites moluccana</i>	candlenut, kukui
<i>Andropogon virginicus</i>	broomsedge
<i>Anemone hupehensis</i> var. <i>japonica</i>	
<i>Arundina graminifolia</i>	bamboo orchid
<i>Axonopus fissifolius</i>	narrow-leaved carpetgrass
<i>Begonia hirtella</i>	
<i>Buddleia asiatica</i>	
<i>Caesalpinia major</i>	
<i>Cardamine flexuosa</i>	
<i>Centella asiatica</i>	Asiatic pennywort, pohekula
<i>Cerastium fontanum</i> ssp. <i>triviale</i>	chickweed, hehine-hauli
<i>Cirsium vulgare</i>	bull-thistle, pua kala
<i>Coffea arabica</i>	arabian coffee
<i>Cordyline fruticosa</i>	ti, ki
<i>Cuphea carthagenensis</i>	pukamole, tarweed
<i>Digitaria setigera</i>	mau'u-kukaepua'a, itchy crabgrass
<i>Dioscorea pentaphylla</i>	pi'ia, pi'a, five-leafed yam
<i>Drymaria cordata</i>	pipili
<i>Ehrharta stipoides</i>	meadow ricegrass, pu'u-lehua
<i>Erechtites valerianifolia</i>	
<i>Geranium homeanum</i>	
<i>Gnaphalium purpureum</i>	purple cudweed
<i>Holcus lanatus</i>	velvetgrass, Yorkshire fog
<i>Kalanchoe pinnata</i>	air plant, 'oliwa-ku-kahakai
<i>Lantana camara</i>	lantana, lakana
<i>Melinis minutiflora</i>	molassesgrass
<i>Oplismenus hirtellus</i>	basketgrass, honohono-kukui
<i>Oxalis corniculata</i>	
<i>Paspalum conjugatum</i>	Hilo grass, mau'u-hilo
<i>Paspalum urvillei</i>	vasey grass
<i>Passiflora ligularis</i>	sweet grandilla
<i>Pennisetum clandestinum</i>	kikuyu grass
<i>Persea americana</i>	avocado
<i>Phaius tankarvilleae</i>	Phillipine orchid
<i>Physalis peruviana</i>	poha, Cape gooseberry
<i>Pluchea symphytifolia</i>	sour bush
<i>Prunella vulgaris</i>	self-heal
<i>Psidium cattleianum</i>	strawberry guava, waiawi
<i>Psidium guajava</i>	guava, common guava, kuawa
<i>Ranunculus plebeius</i>	
<i>Rubus rosifolius</i>	thimbleberry, 'ola'a
<i>Sacciolepis indica</i>	Glenwood grass
<i>Schinus terebinthifolius</i>	christmas berry, wilelaiki
<i>Schizachyrium condensatum</i>	

VASCULAR PLANTS

	Scientific name	Common name(s)
VASCULAR PLANTS	<i>Senna pendula</i> var. <i>advena</i>	
	<i>Sonchus oleraceus</i>	sow thistle, pua-lele
	<i>Sporobolus africanus</i>	African dropseed
	<i>Stachytarpheta jamaicensis</i>	Jamaica vervain, oi, owi
	<i>Vernonia cinerea</i>	ironweed
	<i>Veronica plebeia</i>	
	<i>Veronica serpyllifolia</i>	
	<i>Vulpia bromoides</i>	brome fescue
	<i>Youngia japonica</i>	Oriental hawksbeard

	Scientific name	Common name(s)
FERNS	<i>Blechnum occidentale</i>	
	<i>Deparia petersenii</i>	
	<i>Phlebodium aureum</i>	laua'e-haole
	<i>Phymatosorus scolopendria</i>	laua'e
	<i>Thelypteris dentata</i>	pa'i'iha

Kipahoe Natural Area Reserve
Management Plan

Rare plant species that may be suitable for recovery/reintroduction efforts in the Reserve

Species (Federal status)	Habitat	Status
<u>Argyroxiphium kauense</u> (END)	montane shrublands	Not recorded from Kipahoe, but known from similar habitat in Ka'u and S. Kona.
<u>Asplenium fragile</u> var. <u>insulare</u> (END)	mesic forest	? extant Kipahoe (lava tube)
<u>Cyanea hamatiflora</u> ssp. <u>carlsonii</u> (END)	mesic forest	Wild plant found in Kipahoe 1995 -- Killed by goats 1999. Outplanted >50 from other sources, more planned.
<u>Cyanea marksii</u> (SOC)	wet forest	Not recorded in Kipahoe, extant nearby S. Kona
<u>Cyanea stictophylla</u> (END)	mesic to wet forest	One wild plant in Kipahoe, inside temporary fence.
<u>Cytrandra menziesii</u> (SOC)	mesic to wet forest	? extant Kipahoe
<u>Dellissea undulata</u> ssp. <u>undulata</u> (END)	mesic forest	Historic record from nearby South Kona
<u>Exocarpos gaudichaudii</u> (SOC)	montane shrublands	S. Kona
<u>Exocarpos menziesii</u> (rare)	montane shrublands	S. Kona and Ka'u
<u>Fragaria chiloensis</u> ssp. <u>chiloensis</u> (SOC)	mesic-wet forest	? extant Kipahoe.
<u>Nothoestrum longifolium</u> (rare)	mesic forest	extant Kipahoe
<u>Phyllostegia floribunda</u> (SOC)	mesic-wet forest	One wild plant in Kipahoe. Cuttings in cultivation
<u>Phyllostegia stachyoides</u> (SOC)	mesic-wet forest	Collected Kipahoe 1930
<u>Pittosporum hawaiiense</u> (SOC)	mesic-wet forest	? extant Kipahoe
<u>Pritchardia schattaueri</u> (END)	mesic-wet forest	Nearby S. Kona. 6 planted in enclosure fence.

Species (Federal status)	Habitat	Status
<u>Ranunculus hawaiiensis</u> (SOC)	mesic forest	? extant Kipahoehoe
<u>Rubus macraei</u> (SOC)	mesic forest	Extant Kipahoehoe, one population inside fence
<u>Stenogyne macrantha</u> (SOC)	mesic-wet forest	Locally common in Kipahoehoe

SOC = Federal Species of Concern
 END = Listed Endangered Species
 Rare = uncommon but no legal status

? extant = likely recent observation but not confirmed with voucher

Appendix C

Kipahoe Natural Area Reserve
Bird Species Checklist

The birds listed have been reported from visual and audio identification in or near the Reserve. The list includes information on rare birds, compiled from the literature. Taxonomy follows the Checklist of the Birds of Hawaii by Pyle (1988).

Status	Species	Common Name	Source
X	<u>Acridotheres tristis</u>	Common Myna	*
X	<u>Alectoris chukar</u>	Chukar	x
E	<u>Asio flammeus sandwichensis</u>	'Pueo; Hawaiian owl	?
E+	<u>Buteo solitarius</u>	'Io; Hawaiian hawk	*
X	<u>Cardinalis cardinalis</u>	Northern Cardinal	*
E	<u>Chasiempis sandwichensis sandwichensis</u>	'Elepaio	*
E+	<u>Corvus hawaiiensis</u>	'Alala; Hawaiian crow	?
X	<u>Geopelia striata</u>	Zebra Dove	*
E+	<u>Hemignathus munroi</u>	'Akdapola'au	?
E	<u>Hemignathus virens virens</u>	'Amakihi	*
E	<u>Himatione sanguinea sanguinea</u>	'Apapane	*
X	<u>Leothrix lutea</u>	Red-billed Leothrix	*
X	<u>Lophura leucomelana</u>	Kalij Pheasant	*
X	<u>Meleagris gallopavo</u>	Wild Turkey	x
E+	<u>Oreomystis mana</u>	Hawaii creeper	?
I	<u>Phaethon lepturus dorotheae</u>	Koa'e kea;	*
X	<u>Phasianus colchicus</u>	White-tailed tropic bird	
X	<u>Streptopelia chinensis</u>	Ring-necked Pheasant	x
X	<u>Tyto alba</u>	Spotted Dove	x
E	<u>Vestiaria coccinea</u>	Common Barn-owl	*
X	<u>Zosterops japonicus</u>	'Iwi	*
		Japanese White-eye	*

+ = Rare

X = Not Native

I = Indigenous

E = Endemic

* = Confirmed during NARS inventories

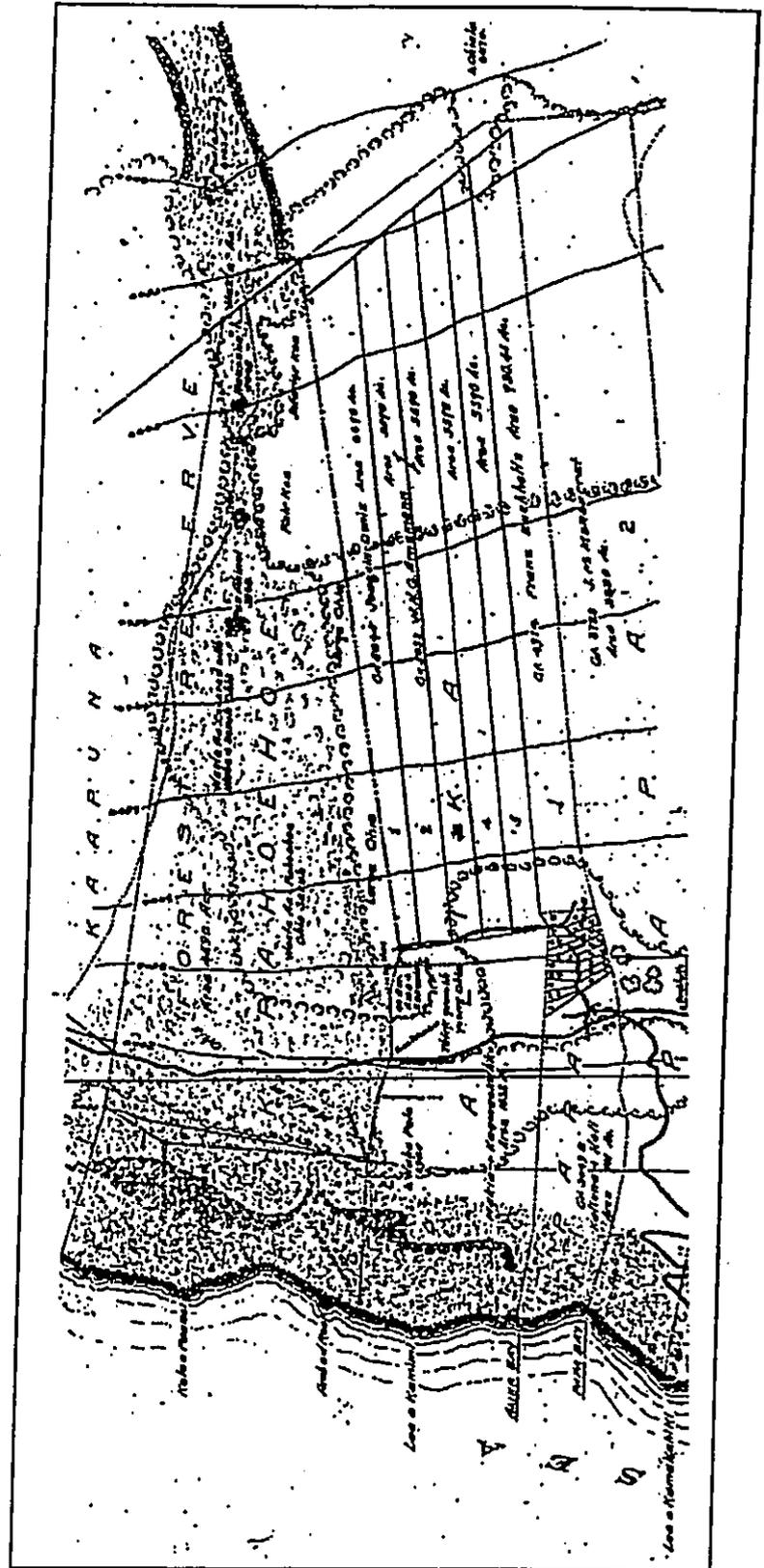
x = Cited in literature sources for Kipahoe

? = Cited in literature for South Kona area; not confirmed in the Reserve

Taken from Kipahoe Natural Area Reserve Resource Information Notebook, prepared by The Nature Conservancy of Hawaii, 1989.

KĪPĀHOEHOE MA KAPALILUA- KONA HEMA, HAWAI'I:

A CULTURAL STUDY OF KĪPĀHOEHOE AND NEIGHBORING LANDS IN KAPALILUA, SOUTH KONA, ISLAND OF HAWAI'I



*Kīpāhoehoe section of Kapalilua-
South Kona, Hawai'i
(HTS Plat Tracing, 1914)*



Kumu Pono Associates

*Historical & Archival Documentary Research · Oral History Studies · Integrated Cultural
Resources Management Planning · Development of Preservation & Interpretive Plans*

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SOUTH KONA, ISLAND OF HAWAI'I**

(TMK 8-8-01:5,6,7,10,11,12,13)

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JULY 5, 2002

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EXECUTIVE SUMMARY

At the request of Ms. Lisa Hadway, Natural Area Specialist for the State of Hawai'i Department of Land and Natural Resources – Division of Forestry and Wildlife (DLNR-DOFAW), cultural historian and resources specialist, Kepā Maly (*Kumu Pono Associates*), conducted a detailed study of archival and historical literature, oral history interviews with individuals known to be familiar with the natural and cultural landscape and history of land use in the vicinity of Kīpāhoehoe and the larger Kapalilua region of South Kona, on the island of Hawai'i.

The work conducted as a part of this study included two basic components: (1) research and report findings from archival and historical literature; and (2) conduct oral history interviews and consultation with *kama'āina* (native residents) and others with knowledge of the land. This research was primarily conducted by the author and Onaona Maly in the period between March to May 2002. Research was conducted in private and public collections, and that documentation, cited herein, includes written narratives that cover the period from 1779 to the 1980s.

The archival-historical resources were located in the collections of the Hawai'i State Archives, Land Management Division, Survey Division, and Bureau of Conveyances; Hawaiian Historical Society; University of Hawai'i-Hilo Mo'okini Library; private family collections; and in the collection of *Kumu Pono Associates*. The documentation includes — rich narratives translated from native Hawaiian accounts; descriptions of Kīpāhoehoe and vicinity recorded in historic surveys; a history of land tenure from 1848 to the present; the establishment of the South Kona Forest Reserve; and an overview of the C.Q. Yee Hop & Company operations in the region.

The oral historical component of this study includes interviews conducted by Maly with elder *kama'āina* from the Kapalilua region between 1996 to 2002. The interviews represent families with generational attachments to lands from Ka'ōhe to Kapu'a. All of the interview participants have lived upon, worked on, or are descended from traditional residents of the lands in the Kapalilua region, or know the land from traveling it with their extended family and friends from 1914. While some of the interviews were conducted prior to initiation of the present study, follow up interviews and discussions with interviewees regarding the proposed fencing of the Kīpāhoehoe Natural Area Reserve, were undertaken when possible. Unfortunately, the two eldest interviewees passed away prior to initiation of this study.

Interview and consultation participants, descended from traditional residents of the region included members of the Ahuna, Ka'iawe-Hao, Grace, Makia-Kawā'auhau, Paulo, Kaupiko, Kaliuna, Keli'ikuli, and Kelepolo families. Additionally, Amoi Yee, wife of the late Yee Chee (resident manager of the C.Q. Yee Hop & Company, South Kona operation from the 1920s to 1960s), and her son Norman, also participated in interviews and a field visit to the Ka'apuna-Kīpāhoehoe-'Alikā *mauka* lands. The collection of interviews and notes cover a wide range of native practices, knowledge of the land and seascapes of Kapalilua (including Ka'apuna, Kīpāhoehoe and 'Alikā), and descriptions of historic ranching and lumbering operations. Selected narratives from the interviews may be read in *Appendix A* of this study.

All of the interviewees and their families expressed their feelings that care of the land, cultural resources, forests and fisheries is important to them. Interviewees who were asked about the care of the Kīpāhoehoe forest believe that good stewardship of the Natural Area Reserve, will be of benefit to the region.

ACKNOWLEDGMENTS

The oral histories of elder *kama'āina* provide us and future generations with important information and personal views of the past. Without the contributions of the interviewees and their families, our understanding of the land, practices, and history of place would be greatly diminished.

To each of you — the late Mary Tom-Ahuna (with Flora, Henry and Glenn Ahuna); Hannah Grace-Acia (with Hannah Kawā'auhau-Shimasaki, Vicky Kawā'auhau-Whitworth, Donald K. Kawā'auhau, Ellen Kawā'auhau-Cullen, and Cynthia Whitworth-Galiato); the late Louis Kānoa Hao, Sr.; Amoi Sam Choy-Yee and Norman Yee; Hannah Kaupiko and Walter Kahiwa; Lillian Kelepolo-Galiato; and Walter Paulo; also to Nick Agorastos (with Leslie Agorastos) and Glenn Nihipali, who took Kepā the Yees and members of the Ahuna family into the field; and Lisa Hadway —

We say — *Mahalo nui nō, a ke aloha o ke Akua pū me 'oukou a paul*

We also wish to note here, that while a sincere effort was made to provide readers with a detailed history of Kīpāhoehoe and vicinity, it was impossible to record everything that could be said about the lands, traditions, and practices of the people on the land. The information compiled herein does provide readers with important descriptions of the Kīpāhoehoe-Kapalilua region, and alerts members of the Natural Area Reserve program to the kinds of activities and cultural resources associated with the land. We have made every effort to present readers with an overview of the rich and varied history of the area, and to accurately relay the recollections, thoughts, and recommendations of the people who contributed to this study.

māua nō me ka ha'aha'a — Kepā a me Onaona Maly

"A'ohē hana nui, ke ālu 'ia!
(It is no great task when done together by all!)

CONTENTS

INTRODUCTION	• 1
<i>Background</i>	• 1
<i>Archival and Historical Research and Oral History Interviews</i>	• 1
KĪPĀHOEHOE AT KAPALILUA: A CULTURAL-HISTORICAL CONTEXT	• 4
<i>Overview of Natural and Cultural Resources in Hawaiian Culture</i>	• 4
<i>An Overview of Hawaiian Settlement</i>	• 4
<i>Hawaiian Land Use and Resource Management Practices</i>	• 5
<i>Ahupua'a—A Sustainable Hawaiian Resources Management Unit</i>	• 6
<i>Kapalilua – Regional Land Use Practices</i>	• 7
NĀ MO'OLEO MAOLI: NATIVE TRADITIONS AND HISTORICAL NARRATIVES OF KĪPĀHOEHOE AND KAPALILUA-SOUTH KONA	• 8
<i>Kapalilua: Native Traditions and Historical Accounts</i>	• 8
<i>Ka'ao Ho'oniua Pu'uwai no Ka-Miki – The Heart Stirring Story of Ka-Miki (recorded in 1914-1917)</i>	• 10
<i>Kapalilua: Places, Features, and Practices Described in Ka'ao Ho'oniua Pu'uwai no Ka-Miki</i>	• 11
<i>He Moololo Kaa no Kekuhaupio, Ke Koa Kaulana o ke Au o Kamehameha ka Nui</i>	• 23
HISTORICAL JOURNALS AND LETTERS— FOREIGN VISITORS AND RESIDENTS DESCRIBE KAPALILUA (INCLUDING KĪPĀHOEHOE AND NEIGHBORING LANDS)	• 24
<i>Captain James Cook—Voyages of Discovery (1776-1780)</i>	• 24
<i>The Journal of William Ellis</i>	• 26
<i>The Journal of Chester S. Lyman (A Visit to Kīpāhoehoe Village in 1846)</i>	• 28
<i>Records of the Hawaiian Mission Station – South Kona, Hawai'i</i>	• 30
MĀHELE 'ĀINA (LAND TENURE DEFINED)	• 36
<i>Proceedings and Requirements of the Māhele 'Āina</i>	• 36
<i>Disposition of Kīpāhoehoe and Neighboring Lands in the Māhele</i>	• 40
GOVERNMENT COMMUNICATIONS DOCUMENTING RESIDENCY, LAND USE AND DISPOSITION OF LAND	• 50
<i>Government Leases and Land Sales in Kīpāhoehoe and Vicinity</i>	• 51
<i>Boundary Commission Proceedings— Ka'apuna, Kīpāhoehoe, 'Alikā and Vicinity: Kama'āina Testimony on Boundaries, Practices, and Features</i>	• 54

<i>Kaapuna</i>	• 54
<i>Alika</i>	• 57
<i>Papa</i>	• 59
<i>Kapalilua in Hawaiian Government Survey Records</i>	• 60
<i>Field Letter Communications</i>	• 61
<i>Field Book Documentation & Sketches</i>	• 64
<i>Government Schools of Kapalilua</i>	• 76
<i>Trails (Ala Hele) and Government Roads (Alanui Aupuni)</i> <i>of the Kapalilua-South Kona Region</i>	• 79
<i>The Hawaiian Land Grant and Homesteading Programs</i>	• 86
THE SOUTH KONA FOREST RESERVE AND KĪPĀHOEHOE NATURAL AREA RESERVE	• 92
<i>A Historical Overview of Forestry in South Kona</i>	• 92
C.Q. YEE HOP-OLELOMOANA RANCH	• 109
<i>Kīpāhoehoe and Neighboring Lands in Communications Between Government Land Agents and C.Q. Yee Hop & Co., Ltd., Olelomoana Ranch Co., Hawaiian Hardwood Co. Ltd., and Yee Hop Realty.</i>	• 110
HISTORIC DESCRIPTIONS OF ARCHAEOLOGICAL RESOURCES	• 116
SUMMARY OF DOCUMENTATION RECORDED IN ORAL HISTORY INTERVIEWS AND HISTORICAL RECORDS	• 118
<i>Fencing the Kīpāhoehoe NAR</i>	• 120
REFERENCES CITED	• 122
APPENDIX A. KAPALILUA ORAL HISTORY INTERVIEWS	• A-1

ILLUSTRATIONS

- Figure 1. *Kīpāhoehoe Natural Area Reserve Location and Adjacent Landowners, Kapalilua-South Kona, Island of Hawai'i* • 2
- Figure 2. *Annotated Interview Map (Showing Approximate Locations of Sites Identified in Oral Interviews)* • at end
- Figure 3. *J.S. Emerson Table of South Kona Stations (October 15, 1890)* • 63
- Figure 4. *J.S. Emerson Sketch 27, Mar. 15, 1884; Register Book No. 256:129 (State Survey Division)* • 65
- Figure 5. *J.S. Emerson Sketch 29, Mar. 20, 1884; Register Book No. 256:141 (State Survey Division)* • 66
- Figure 6. *J.S. Emerson Sketch 31 & 32, Mar. 24 & 25, 1884; Register Book No. 256:173 (State Survey Division)* • 67
- Figure 7. *J.S. Emerson Sketch 33, Mar. 26, 1884; Register Book No. 256:195 (State Survey Division)* • 68
- Figure 8. *J.S. Emerson Sketch 34, Mar. 28, 1884; Register Book No. 256:197 (State Survey Division)* • 69
- Figure 9. *J.S. Emerson, Apr. 22, 1884; Register Book No. 257:75 (State Survey Division)* • 71
- Figure 10. *J.S. Emerson, Apr. 22, 1884; Register Book No. 257:77 (State Survey Division)* • 72
- Figure 11. *J.S. Emerson, Apr. 26, 1884; Register Book No. 257:105 (State Survey Division)* • 73
- Figure 12. *J.S. Emerson, Apr. 26, 1884; Register Book No. 257:107 (State Survey Division)* • 74
- Figure 13. *Kahua Hale Kula ma Kīpāhoehoe (School House Lot at Kīpāhoehoe)* • 77
- Figure 14. *Portion of "Road Exhibit of South Kona" Showing Section between Honokua to Boundary of Ka'ū—Section 7 from Kaapuna to Honomalino.* • 84
- Figure 15. *D.H. Hitchcock's Map of Grant 3153, Sold to Makia and Keaweikaliko (Sept. 1875)* • 88
- Figure 16. *G.T. Wright's Map of Grant No. 5045 to J. Deniz; Lot No. 1, Alika (Feb. 1903)* • 90
- Figure 17. *C.S.F. 2245 South Kona Forest Reserve (Waiea-Kīpāhoehoe Section; 1910)* • 93
- Figure 18. *Por. C.S.F. 8557 – Part 2. Withdrawal of 130 Acres from Kīpāhoehoe Section of the South Kona Forest Reserve (Jan. 21, 1938) (State Survey Division)* • 106
- Figure 19. *Mauna Loa Eruption of 1950 (Pāhoehoe Section) (Air National Guard Photograph - 199th Fighter Squadron)* • 120

(Unnumbered figures, including – photographs of interviewees and various sites or features described during interviews will be found in Appendix A)

INTRODUCTION

Background

As a part of a program designed to protect and restore significant natural resources found within the Kīpāhoehoe Natural Area Reserve, Ms. Lisa Hadway, Natural Area Specialist for the State of Hawai'i Department of Land and Natural Resources – Division of Forestry and Wildlife (DLNR-DOFAW), requested that cultural historian-resource specialist, Kepā Maly (*Kumu Pono Associates*), conduct historical-archival research and compile oral history interviews that would describe the traditional-cultural and historical setting of Kīpāhoehoe, an *ahupua'a*¹ in the South Kona District (Kapalilua) on the island of Hawai'i (*Figure 1*).

The Kīpāhoehoe Natural Area Reserve (NAR) generally follows the traditional boundaries of the *ahupua'a* of Kīpāhoehoe, encompassing approximately 5,538 acres of land, and extending from sea level to around the 5,600 foot elevation on the slopes of Mauna Loa. Kīpāhoehoe is bounded by the *ahupua'a* of Ka'apuna on the north, Kahuku on the east, and 'Alikā on the south, and by the ocean on the west. While this study includes historical references to varying elevational zones (from ocean fisheries to mountains) of Kīpāhoehoe, and neighboring lands of the Kapalilua–South Kona District, the section of the NAR, extending from Highway 11 (Māmalahoa Highway), at approximately the 1,400 foot elevation, to the upper limits of the *ahupua'a* are of particular importance to the present study.

It is in the upper section of Kīpāhoehoe that the NAR program seeks to: (1) develop a buffer fencing to enclose the upper lands of the NAR; and (2) formalize the use of an area previously modified by ranching activities, as a base camp for conservation work mandated as a part of the NAR Program (cf. HRS 195-1). The Kīpāhoehoe study area is home to several unique species of Hawaiian life, and was formerly a part of the larger South Kona Forest Reserve, established by governmental actions in 1910.

Archival and Historical Research and Oral History Interviews

The archival-historical research and oral history interviews conducted for this study were performed in a manner consistent with Federal and State laws and guidelines for such studies. Among the pertinent laws and guidelines are the National Historic Preservation Act (NHPA) of 1966, as amended in 1992 (36 CFR Part 800); the Advisory Council on Historic Preservation's "*Guidelines for Consideration of Traditional Cultural Values in Historic Preservation Review*" (ACHP 1985); National Register Bulletin 38, "*Guidelines for Evaluating and Documenting Traditional Cultural Properties*" (Parker and King 1990); the Hawai'i State Historic Preservation Statue (Chapter 6E), which affords protection to historic sites, including traditional cultural properties of on-going cultural significance; the criteria, standards, and guidelines currently utilized by the Department of Land and Natural Resources–State Historic Preservation Division (DLNR-SHPD) for the evaluation and documentation of cultural sites (cf. Title 13, Sub-Title 13:274-4,5,6; 275:6-Draft of December 1996); and the November 1997 guidelines for cultural impact assessment studies, adopted by the Office of Environmental Quality Control (which also facilitate the standardized approach to compliance with Act 50 amending HRS Chapter 343; April 26, 2000).

In the period between March to July 2002, *Kumu Pono Associates* conducted detailed research in archival-historical literature, referencing both native Hawaiian language and English texts; conducted two field visits in the Kīpāhoehoe study area; and conducted oral history interviews with several individuals known to be knowledgeable about residency and land use in Kīpāhoehoe and neighboring lands.

¹ *Ahupua'a* is a traditional term used to describe an ancient Hawaiian land unit (extending from sea to mountain lands), and remains the primary land unit of the modern land classification system.

Kipahoehoe Natural Area Reserve Location and Adjacent Landowners

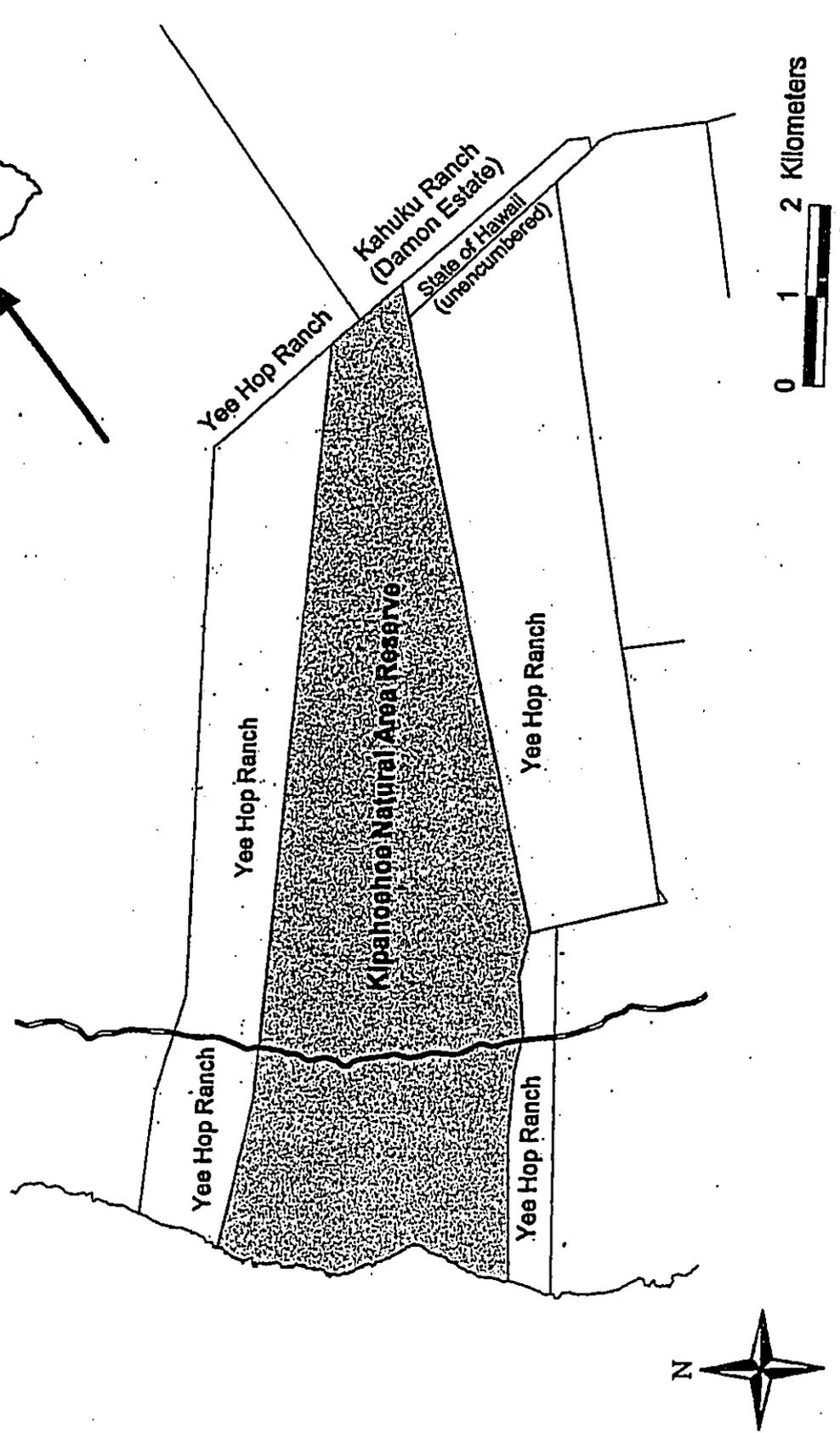


Figure 1. Kipahoehoe Natural Area Reserve Location and Adjacent Landowners, Kapalilua-South Kona, Island of Hawaii'i (DLNR-DOFAW NAR Collection)

While conducting the research, primary references included, but were not limited to—land use records, including an extensive review of Hawaiian Land Commission Award (LCA) records from the *Māhele 'Āina* (Land Division) of 1848; Boundary Commission Testimonies and Survey records of the Kingdom and Territory of Hawai'i; and historical texts authored or compiled by—D. Malo (1951); J.P. I'i (1959); S. M. Kamakau (1961, 1964, 1976, and 1991); Wm. Ellis (1963); A. Fornander (1916-1919 and 1996); G. Bowser (1880); T. Thrum (1908); J.F.G. Stokes and T. Dye (1991); Reinecke (ms. 1930); and Handy and Handy with Pukui (1972). The study also includes several native accounts from Hawaiian language newspapers (compiled and translated from Hawaiian to English, by the author), historical records authored by eighteenth and nineteenth century visitors to the region, and records of the South Kona Mission Station. Archival-historical resources were located in the collections of the Hawai'i State Archives, Land Management Division, Survey Division, and Bureau of Conveyances; the Bishop Museum Archives; Hawaiian Historical Society; University of Hawai'i-Hilo Mo'okini Library; private family collections; and in the collection of the author. This information is generally cited within categories by chronological order of the date of publication.

The oral history interviews cited in this study (*Appendix A*) were conducted by Maly between 1996 to 2002, and are the recollections of elder native Hawaiians and *kama'āina* residents of the larger Ka'ohē-Pāpā region of Kapalilua, South Kona. The interviewees ranged in age from their 50s to 100 years old (several of whom have passed away since the recording of their interviews), and they described life upon the land, and practices of their families. The interviews provide readers with important insight into the relationship of families of Kapalilua with their natural environment.

The recorded interviews were transcribed and returned (with the recordings) to each of the interviewees. Follow up discussions were then conducted to review each of the typed draft-transcripts. The latter process resulted in the recording of additional narratives with several interviewees. Following completion of the interview process, all of the participants in the tape recorded oral history interviews (or their families) gave their permission for inclusion of portions of their transcripts in this study. Because of the review and follow-up discussions with interviewees, the final transcripts cited in this study, at times differ from the original recorded interview. The final released transcripts supercede the original documentation.

During the interviews and follow up conversations, several historic maps were also referenced, and when appropriate, the general locations of sites referenced were marked on the maps. That information was in turn compiled on one map, which is cited as *Figure 1 in Appendix A*, is an annotated interview map (please note that sites are shown at approximate locations).

KĪPĀHOEHOE AT KAPALILUA: A CULTURAL-HISTORICAL CONTEXT

This section of the study provides readers with a general overview of the Hawaiian landscape of Kīpāhoehoe and neighboring lands, and includes discussions on Hawaiian settlement; population expansion; and land management practices that are the basis of the sustainable relationship shared between the Hawaiian people and the land.

Overview of Natural and Cultural Resources in Hawaiian Culture

In Hawaiian culture, natural and cultural resources are one and the same. Native traditions describe the formation (literally the birth) of the Hawaiian Islands and the presence of life on and around them, in the context of genealogical accounts. All forms of the natural environment, from the skies and mountain peaks, to the watered valleys and lava plains, and to the shore line and ocean depths are believed to be embodiments of Hawaiian gods and deities. One Hawaiian genealogical account, records that Wākea (the expanse of the sky—father) and Papa-hānau-moku (Papa, who gave birth to the islands)—also called Haumea-nui-hānau-wāwā (Great Haumea, born time and time again)—and various gods and creative forces of nature, gave birth to the islands. Hawai'i, the largest of the islands, was the first-born of these island children. As the Hawaiian genealogical account continues, we find that these same god-beings, or creative forces of nature who gave birth to the islands, were also the parents of the first man (Hāloa), and from this ancestor, all Hawaiian people are descended (cf. David Malo 1951:3; Beckwith 1970; Pukui and Korn 1973). It was in this context of kinship, that the ancient Hawaiians addressed their environment and it is the basis of the Hawaiian system of land use.

An Overview of Hawaiian Settlement

Archaeologists and historians describe the inhabiting of these islands in the context of settlement which resulted from voyages taken across the open ocean. For many years, archaeologists have proposed that early Polynesian settlement voyages between Kahiki (the ancestral homelands of the Hawaiian gods and people) and Hawai'i were underway by AD 300, with long distance voyages occurring fairly regularly through at least the thirteenth century. It has been generally reported that the sources of the early Hawaiian population—the Hawaiian Kahiki—were the Marquesas and Society Islands (Emory in Tatar 1982:16-18).

For generations following initial settlement, communities were clustered along the watered, windward (*ko'olau*) shores of the Hawaiian Islands. Along the *ko'olau* shores, streams flowed, rainfall was abundant, and agricultural production became established. The *ko'olau* region also offered sheltered bays from which deep sea fisheries could be easily accessed. Also, near shore fisheries, enriched by nutrients carried in the fresh water, could be maintained in fishponds and coastal fisheries. It was around these bays that clusters of houses where families lived, could be found (McEldowney ms. 1979:15). In these early times, the residents generally engaged in subsistence practices in the forms of agriculture and fishing (Handy and Handy 1972:287).

Over the period of several centuries, areas with the richest natural resources became populated and perhaps crowded, and by ca. 900 to 1100 AD, the population began expanding to the *kona* (leeward side) and more remote regions of the island (Cordy 2000:130). In Kona, communities were initially established along sheltered bays with access to fresh water and rich marine fisheries. The primary "chiefly" centers of Kona were established at several locations—these being in the Kailua (Kaiakeakua) vicinity, Kahalu'u-Keauhou, Ka'awaloa-Kealahou, and at Hōnaunau. Smaller outlying communities were established further south, in the region traditionally known as Kapalilua, at areas such as Kauhakō-Ho'okena, Ka'ohe, Pāpā, Miloli'i, Kalihi, Honomalino, and Kapu'a, with even smaller communities at area in between the large *kulana kauhale* (village communities).

Each of the communities shared extended familial relations, and there was an occupational focus on collection of marine resources. By the fourteenth century, inland elevations to around the 4,000 foot level were being turned into a complex and rich system of dryland agricultural fields (contemporarily called the Kona Field System – in reality a complex of dryland cultivating grounds, developed extensively over a wide region of Kona, and used by residents of various *ahupua'a* to supply their own needs and support the larger royal communities). By the fifteenth century, residency in the uplands was becoming permanent, and there was an increasing separation of chiefly class from commoners. In the sixteenth century the population stabilized and the *ahupua'a* land management system was established as a socio-economic unit (see Kamakau 1961; Ellis 1963; Handy, Handy & Pukui 1972; Kelly 1983; and Tomonari-Tuggle 1985).

In Kona, where no streams flowed regularly to the coast, access to potable water (*wai*), was of great importance and played a role in determining the areas of settlement. The waters of Kona were found in springs and water caves (found from shore to the mountain lands), or procured from rain catchment and dewfall. Traditional and historic narratives abound with descriptions and names of water sources, and also record that the forests were more extensive and extended much further seaward than they do today. These forests not only attracted rains from the clouds and provided shelter for cultivated crops, but also in dry times drew the *kāhau* and *kēwai* (mists and dew) from the upper mountain slopes to the low lands (see also traditional-historical narratives and oral history interviews in this study).

In the 1920s-1930s, Handy, Handy and Pukui (1972) conducted extensive research and field interviews with elder native Hawaiians. In lands of North and South Kona, they recorded native traditions describing agricultural practices and rituals associated with rains and water catchment. Primary in these rituals and practices was the lore of Lono — a god of agriculture, fertility, and the rituals for inducing rainfall. Handy et al., observed:

The sweet potato and gourd were suitable for cultivation in the drier areas of the islands. The cult of Lono was important in those areas, particularly in Kona on Hawai'i...there were temples dedicated to Lono. The sweet potato was particularly the food of the common people. The festival in honor of Lono, preceding and during the rainy season, was essentially a festival for the whole people, in contrast to the war rite in honor of Ku which was a ritual identified with Ku as god of battle (Handy, Handy and Pukui 1972:14).

Handy et al. (1972) noted that the worship of Lono was centered in Kona. Indeed, it was while Lono was dwelling at Keauhou, that he is said to have introduced taro, sweet potatoes, yams, sugar cane, bananas, and 'awa to Hawaiian farmers (Handy et al. 1972:14). The rituals of Lono "The father of waters" and the annual *Makahiki* festival, which honored Lono and which began before the coming of the *kona* (southerly) storms and lasted through the rainy season (the summer months), were of great importance to the native residents of this region (Handy et al. 1972: 523). The significance of rituals and ceremonial observances in cultivation and indeed in all aspects of life was of great importance to the well-being of the ancient Hawaiians, and cannot be over-emphasized, or overlooked when viewing traditional sites of the cultural landscape.

Hawaiian Land Use and Resource Management Practices

Over the generations, the ancient Hawaiians developed a sophisticated system of land- and resource -management. By the time 'Umi-a-Li'loa rose to rule the island of Hawai'i in ca. 1525, the island (*moku-puni*) was divided into six districts or *moku-o-loko* (cf. Fornander 1973--Vol. II:100-102). On Hawai'i, the district of Kona is one of six major *moku-o-loko* on the island. The district of Kona itself, extends from the shore across the entire volcanic mountain of Hualālai, and continues to the summit of Mauna Loa, where Kona is joined by the districts of Ka'ū, Hilo, and Hāmākua. The southern most section of the Kona District (of which Kīpāhoehoe is a part), was traditionally called "Ka-pali-lua" (The-two-cliffs). The name is descriptive of the steep, tiered cliffs which are a prominent feature of the landscape.

One traditional reference that describes the district of Kona, defining its southern and northern-most boundaries describes the district in the following way — Kona extends:

mai Ke-ahu-a-Lono i ke 'ā o Kanikū, a hō'ea i ka 'ūlei kolo o Manukā i Kaulanamauna e pili aku i Ka'ū! (from Keahualono [the Kona-Kohala boundary] on the rocky flats of Kanikū, to Kaulanamauna next to the crawling (tangled growth of) 'ūlei bushes at Manukā, where Kona clings to Ka'ū! (*Ka'ao Ho'oniua Pu'uwai no Ka-Miki in Ka Hōkū o Hawai'i*, September 13, 1917; Maly translator).

The southern section of Kona, of which Kapalilua is a part, was noted for its steep slopes (formed by the lava flows of Mauna Loa), extensive upland agricultural plantations in the region above the ancient *ala loa* or *Ke-ala-Ehu* (now generally the alignment of the Māmalahoa Highway — in the Kīpāhoehoe area, situated between 50 to 100 feet *mauka* of the existing highway), and rich near shore and deep sea fisheries.

Ahupua'a—A Sustainable Hawaiian Resources Management Unit

The large districts (*moku-o-loko*) and sub-regions (*'okana* and *kālana*) were further divided into manageable units of land, and were tended to by the *maka'āinana* (people of the land) (see Malo 1951:63-67). Of all the land divisions, perhaps the most significant management unit was the *ahupua'a*. *Ahupua'a* are subdivisions of land that were usually marked by an altar with an image or representation of a pig placed upon it (thus the name *ahu-pua'a* or pig altar). In their configuration, the *ahupua'a* may be compared to wedge-shaped pieces of land that radiate out from the center of the island, extending to the ocean fisheries fronting the land unit. Their boundaries are generally defined by topography and geological features such as *pu'u* (hills), ridges, gullies, valleys, craters, or areas of a particular vegetation growth (see Boundary Commission testimonies in this study; and Lyons, 1875).

The *ahupua'a* were also divided into smaller manageable parcels of land (such as the *'ili*, *kō'ele*, *māla*, and *kīhāpai*), that generally run in a *mauka-makai* orientation, and are often marked by stone wall (boundary) alignments. In these smaller land parcels the native tenants tended fields and cultivated crops necessary to sustain their families, and supplied the needs of the chiefly communities they were associated with. As long as sufficient tribute was offered and *kapu* (restrictions) were observed, the common people, who lived in a given *ahupua'a* had access to most of the resources from mountain slopes to the ocean. These access rights were almost uniformly tied to residency on a particular land, and earned as a result of taking responsibility for stewardship of the natural environment, and supplying the needs of ones' *ali'i* (see Malo 1951:63-67 and Kamakau 1961:372-377).

Entire *ahupua'a*, or portions of the land were generally under the jurisdiction of appointed *konohiki* or subordinate chief-landlords, who answered to an *ali'i-'ai-ahupua'a* (chief who controlled the *ahupua'a* resources). The *ali'i-'ai-ahupua'a* in turn answered to an *ali'i 'ai moku* (chief who claimed the abundance of the entire district). Thus, *ahupua'a* resources supported not only the *maka'āinana* and *'ohana* who lived on the land, but also contributed to the support of the royal community of regional and/or island kingdoms. This form of district subdividing was integral to Hawaiian life and was the product of strictly adhered to resources management planning. In this system, the land provided fruits and vegetables and some meat in the diet, and the ocean provided a wealth of protein resources. Also, in communities with long-term royal residents (like Hōnaunau, Kealakekua and Ka'awaloa), divisions of labor (with specialists in various occupations on land and in procurement of marine resources) came to be strictly adhered to. It is in the cultural setting described above, that we find the *ahupua'a* of Kīpāhoehoe at Kapalilua.

Kapalilua – Regional Land Use Practices

While conducting research and informant interviews in the 1930s-1940s, ethnographers Handy, Handy and Puku'i (1972), traveled through the Kapalilua region and wrote about the customs and practices of the native residents. Of particular importance to understanding native practices associated with residency and land use in various elevational zones of the Kapalilua section of South Kona (in which Kīpāhoehoe is situated), are the following narratives:

In the time of intensive native cultivation, South Kona was planted in zones determined by rainfall and moisture. Near the dry seacoast potatoes were grown in quantity, and coconuts where sand or soil among the lava near the shore favored their growth. Up to 1,000 feet grew small bananas which rarely fruited, and poor cane; from 1,000 to 3,000 feet, they prospered increasingly. From approximately 1,000 to 2,000 feet, breadfruit flourished.

Taro was planted dry from an altitude of 1,000 to 3,000 feet. An old method of planting taro in Kona, described to us by Lakalo at Ho'okena, was to plant the cuttings in the lower, warmer zone where they would start to grow quickly and then to transplant them to the higher forest zone where soil was rich and deep and where moisture was ample for their second period of growth, in which their corms are said to have developed to an average of 25 pounds each (Handy, Handy and Pukui 1972:524-525).

In the upland agricultural zone, there were several methods of dryland planting techniques employed by the farmers. Among the techniques were the *mākālua* and *'umokī* (planting in mulched holes); *pu'epu'e* (planting in earthen or stone mulched mounds); and *pā kukui* (planting in *kukui* groves where trees were felled and used as growing troughs) (Handy, Handy and Pukui 1972:106-109). Fields were also marked by a series of *kuaīwi*, *kuakua*, and *kuāuna* (walls and terraces) (Handy, Handy and Pukui 1972:50-51).

The environmental conditions of Kapalilua led the native residents to develop a subsistence based system of seasonal travel across the land. Native traditions recorded in the nineteenth and early twentieth centuries, and oral history interviews with individuals born in the early 1900s, indicate that the families of the region maintained residences at various elevations. Primary residences were situated close to the *ala loa* (near the present-day Belt Highway), and on the shore. Temporary residences which were utilized recurrently over a long period of time, were maintained further upland in the planting fields and in locations where other mountain resources were collected. This residency and subsistence system, spanning elevations from the shore to the upper forest limits of the high mountain slopes was facilitated by the development of a number of *mauka-makai* trails in each *ahupua'a*. Many of these trails continued to be traveled on foot (or horseback in the historic period) by residents and land owners through the early 1900s. By the late 1930s, some of the trails were being modified for travel by vehicles.

NĀ MO'OLEO MAOLI: NATIVE TRADITIONS AND HISTORICAL NARRATIVES OF KĪPĀHOEHOE AND KAPALILUA-SOUTH KONA

In Hawaiian *mo'olelo* (traditions and historical narratives) are found expressions of native beliefs, customs, practices, and history. Indeed, in Hawai'i the very landscape is storied (*wahi pana*), and each place name is associated with a tradition—ranging from the presence and interactions of the gods with people, to documenting an event or the characteristics of a given place. Unfortunately, today, many of those *mo'olelo* have been lost. This section of the study presents readers with several accounts written by native Hawaiian authors, recording the occurrence of events and travel, and the history of place names that have survived the passing of time.

One of the most significant sources of native *mo'olelo* are the Hawaiian language newspapers which were printed between 1840 to 1948. Most of the accounts that were submitted to the papers were penned by native residents of areas being described, and noted native historians. Over the last 25 years, the author has reviewed and compiled an extensive index of articles published in the Hawaiian language newspapers, with particular emphasis on those narratives pertaining to lands, customs, and traditions. While an extensive search has been completed, only a few traditions specifically pertaining to Kīpāhoehoe have been found that predate publication in the early 1900s.

Though there appears to be only a limited amount of documentation in *mo'olelo* for Kīpāhoehoe, there is a larger collection of important narratives for the Kapalilua region. From those accounts, which describe—native practices; the nature of land use at specific locations; and repeat *mo'olelo* of various sites—we are given a means of understanding how people related to their environment, and sustained themselves in the Kapalilua region. While Kīpāhoehoe may not be referenced in most of the accounts, it is safe to assume that similar uses, and the occurrence of such sites as described in neighboring lands did occur in Kīpāhoehoe and the larger Kapalilua region.

It is appropriate to note here, that the apparent dearth of early native accounts for Kīpāhoehoe is not surprising when one takes into account the dramatic changes that began in the region by ca. 1820. Early in the nineteenth century, the native population began to decline (sometimes at alarming rates), and the decline continued throughout the 1800s. The decline was primarily the result of foreign diseases, periods of drought followed by famine, and changes in land tenure (see citations in this study). Thus, many of the native residents who could have told the *mo'olelo* were gone before detailed written accounts could be recorded.

Of the *mo'olelo* that have been found for Kīpāhoehoe and neighboring lands in the Kapalilua region, we find specific references to cultural sites (such as villages, *heiau*, family sites, trails, and other features), traditions of place, and events spanning several centuries (into the historic period). This part of the study presents readers with a collection of *mo'olelo*, some translated from the original Hawaiian for the first time by the author, which span many centuries.

Kapalilua: Native Traditions and Historical Accounts

In "*Na Hunahuna no ka Moololo Hawaii*" (Fragments of Hawaiian History), native historian and member of the Kamehameha household, John Papa I'i² wrote about the death of King Kalani'ōpu'u in ca. 1782. Kalani'ōpu'u died at Ka'ū, and his remains were taken to Kapalilua. Kiwala'ō (Kalani'ōpu'u's heir) and his cousin Kamehameha met at Hōnaunau, and disagreements over the division of lands arose. The events that unfolded led to a battle that brought Kamehameha to gain control over part of the island of Hawai'i. I'i (1959) recorded the following narratives:

When the company from Kau reached Kapalilua in Kona with the corpse of Kalaniopuu, they heard that Kamehameha had arrived at Keei. That was probably

² John Papa Ii himself, was tied to families of the Kapalilua Region, and his grandfather, Papa, held the land of Ho'okena, and died there in ca. 1811 (Ii 1959:115).

the reason why the corpse was not taken to Kailua but to Honaunau, as they had originally agreed...

After the Kau chiefs had been at Honaunau a while, Kamehameha and his canoe paddlers arrived in his single canoe, named *Noiku*. They landed back of Akahipapa, a lava flat extending into the sea. No sooner had his foot touched land than those on shore were ready to hurl spears of *hau* wood at him, a custom observed upon the landing of a high chief. This they did, and those on land watched with admiration as Kamehameha thrust them aside. A person remained near the chief with a container of water for his bath; and after the spear throwers had finished and had seated themselves, Kamehameha bathed and donned a dry *malo*. He went up to see his cousin Kiwalao, and when they met food was made ready. Thus they met graciously. As Kamehameha went there to see Kiwalao, so did his cousin visit him at Keei, spending the night time and again. It was said that Kamehameha served his cousin as steward during these visits. As Kiwalao was in no hurry to return to Honaunau, his uncle, Keawemauhili, came for him. He left at Keawemauhili's insistence, which caused Kiwalao to remark to Kamehameha that his uncle seemed to be disturbed over their friendly association. "Because of this, trouble may brew between us," he said. It happened so...

...That night, overseers sent a proclamation to all the men of the chiefs to go to the upland of Honaunau for some taro. That same night the great warrior taught Keoua all the things that he was to do on the morrow on the sands of Hauiki in Mokuohai. When day came, all the men had gone to the upland, having started while it was still dark because of the long distance they had to travel to and-fro. This gave Keoua and his companions a chance to do their work. After eating, they went to the beach to bathe or dive (*lele kawa*). They went along the shore diving until they reached Hauiki in Mokuohai. There coconut trees were hewn down, houses burned, and men killed. After this act of war, they turned about and went home. The work was then taken up by others, for the news had reached the chiefs of both sides. They prepared for war and the war canoes were made ready...

Kiwalao was the first to arrive on the battlefield, with the men who were to fight with him. Kamehameha was getting ready, and was preceded to the battlefield by Keeaumoku Papaiahiahi, his uncle. Kalaimamahu, Kamehameha's younger brother, was in charge on Kamehameha's side. They went to the place where they were to encamp, for the purpose of asking the will of the gods. While they were encamped there, a report came that Keeaumoku had been taken captive by his opponents and was to be stabbed. Kiwalao, who was standing close by, said, "Be careful of the *nihopalaoa* on Keeaumoku's neck," and at these words Keeaumoku thought, "The chief has no regard for the life of a *hulu makua* (an older relative)." This news of Keeaumoku's peril caused Kamehameha to hasten to the battlefield. Kaahumanu, later the wife of Kamehameha, and daughter of Keeaumoku, was borne thither on the back of Pahia, a man who was an expert in stone throwing. When they drew near to Kiwalao, Pahia let Kaahumanu down and took some stones into his hand which he flung with such force that Kiwalao fell when they struck his temple. Kiwalao landed on Keeaumoku, who took him by the throat and slashed it with a *lei o mano*, or shark-tooth knife, killing him... [thus] Kamehameha gained the victory in this battle at Mokuohai... [I'i 1959:13]

In the late 1860s, writing under the title "*Ka Moolelo o Kamehameha I*" (The History of Kamehameha I), and later under the title "*Ka Mo'olelo o na Kamehamehas*" (The History of the Kamehamehas), Samuel Mānaiakalani Kamakau, provided readers with some background information pertaining to the *alii* of the Kapalilua region in the late 1700s. From his writing (Kamakau 1961), come the following narratives:

During the war between Ka-lani-'opu'u and Ka-hekili, the parents of Ka-'ahu-manu went to Hawaii with their whole household and company of attendants and followed in the rear of Ka-lani-'opu'u's army, together with the twin half brothers of Ke'e-au-moku. [These were] Ka-me'e-ia-moku and Ka-manawa, who had the same father (Keawe-poepoe) but different mothers... Keawe-a-heulu also belonged to their company. His estates were the lands of Kapalilua, Ka'awaloa, and Kealakekua; those of Ka-me'e-ia-moku and his brother under Ka-lani-'opu'u were Kekaha and the lands of that section... [Kamakau 1961:310]

Kamakau also observed that in his later years (ca. 1811-1818), Kamehameha I enjoyed fishing. He traveled great distances to fish the schools of 'ahi and aku, and among the places he frequented were the fisheries of Kapalilua (Kamakau 1961:203)

Later in his life, while guardian of chiefess Victoria Kamāmalu, Papa I'i visited the lands of Kapalilua. In 1853, while sailing from Ka'iliki'i, I'i and his ward traveled along the coast of Kapalilua, and while at Pāpā, they learned that the smallpox epidemic had reached Hale'ili (a few miles to the north of Pāpā). Such epidemics were one of the important contributors to the demise of the native population throughout the islands. I'i and party spent the night at Kapu'a, and:

Because it was very calm, daylight found them at Papa, at Kapalilua. Not a breath of wind was stirring there. After breakfast Kamamalu asked to leave the ship and go by rowboat, so she and Kaohe, son of Mahuka, went along close to land until they reached Kolo and Kukuiope, before the ship did. When the vessel arrived, the residents were ready to supply it with fuel.

They were greeted with the news that smallpox had reached Haleili, about ten *ahupua'a* away from Papa, where death was making havoc. It was said that some people from Oahu had caused the spread of the disease... The ship was becalmed that day, but when evening came, a land breeze, the *Kewai*, came up. The name *Kewai* is a Kona term meaning a land breeze mixed with rain. The wind helped the ship until dark, when the dew-laden breeze arose. So they arrived at Napoopoo, outside of Waipunaula and Kiloa, at Kealakekua... [I'i 1959:171]

***Ka'ao Ho'oniua Pu'uwai no Ka-Miki –
The Heart Stirring Story of Ka-Miki (recorded in 1914-1917)***

It is not until the early 1900s, that we find a detailed native account pertaining to the lands of the Kapalilua region. This tradition, "Ka'ao Ho'oniua Pu'uwai no Ka-Miki" (The Heart Stirring Story of Ka-Miki) is a long and complex account that was published over a period of four years (1914-1917) in the weekly Hawaiian language newspaper *Ka Hōkū o Hawai'i*. The narratives were primarily recorded for the paper by Hawaiian historians John Wise and J.W.H.I. Kihe³ (translators of the traditions and lore compiled by A. Fornander, 1916-1919), with contributions from others of their peers.

Through the tradition of Ka-Miki, readers learn about the origins of place names, areas of ceremonial significance, how resources were managed and accessed, and the practices of those native families who made the lands of Kapalilua their home. While "Ka-Miki" is not an ancient account, the authors used a mixture of local traditions, tales, and family histories in association with place names to tie together fragments of site-specific history that had been handed down among *kama'āina* (children of the land) over the generations. Also, while the personification of individuals and their associated place names (cited in this account) may not be entirely "ancient," such place name-person accounts are common throughout Hawaiian traditions. The narratives include documentation on approximately 800 named locations, and document site and community histories, local and regional practices, ceremonial sites and practices, and *mele* (chant) texts.

³ J.W.H.I. Kihe was born in 1853, and John Wise was born in ca. 1865.

The English translations below (prepared by Maly), are a synopsis of the Hawaiian texts, with emphasis upon the main events and areas being discussed. The author has added diacritical marks, hyphenation, and underlining to selected names to help readers with pronunciation and identify locational references.

It will be seen that a number of places—including *ahupua'a*, specific locations (extending from the mountain region above the ancient *ala loa* to ocean fisheries)—as well as descriptions of practices (such as travel, development of extensive agricultural field systems, and fishing), are recorded for the Kapalilua region. Specific reference, though limited, is made to Kīpāhoehoe by name, and in association with the dryland agricultural system of Pu'epu'e, which extended from Kukuiope'e to Kapu'a; and by reference to Kauhi'aiamanō, an 'ōlohe champion of the chief, Kīpāhoehoe (April 5, 1917). There are also detailed narratives cited, describing neighboring lands, including those lands of the South Kona Forest Reserve.

This mo'olelo is set in the 1300s (by association with the chief Pili-a-Ka'aiea), and is an account of two supernatural brothers, Ka-Miki (The quick, or adept, one) and Maka-'iole (Rat [squinting] eyes). The narratives describe the birth of the brothers, their upbringing, and their journey around the island of Hawai'i along the ancient alaloa and alahale (trails and paths) that encircled the island. During their journey, the brothers competed alongside the trails they traveled, and in famed kahua (contest fields) and royal courts, against 'ōlohe (experts skilled in fighting or in other competitions, such as running, fishing, debating, or solving riddles, that were practiced by the ancient Hawaiians). They also challenged priests whose dishonorable conduct offended the gods of ancient Hawai'i. Ka-Miki and Maka-'iole were empowered by their ancestress Ka-uluhe-nui-hihikolo-i-uka (The great entangled growth of uluhe fern which spreads across the uplands), who was one of the myriad of body forms of the goddess Haumea, the "Earth-mother," creative force of nature who was also called Papa or Hina. Among her many nature-form attributes were manifestations that caused her to be called upon as a goddess of priests and competitors.

The brothers traveled from North Kona, through the southern lands of the district, on their way to Ka'ū. In between October 29, 1914 to February 5, 1915, Kihe et al., provide us with the following descriptions of *wahi pana* (storied places), traditional practices, and events in the history of the land. Perhaps of greatest importance in a study of traditional land use practices, the following narratives describe the extensive upland agricultural complexes that were kept throughout the region of which Kīpāhoehoe is a part.

***Kapalilua: Places, Features, and Practices
Described in Ka'ao Ho'oniua Pu'uwai no Ka-Miki***

Kahauwawaka was a priest of the *hulihonua* and *kuhikuhi pu'eone* (a seer and reader of the lay of the land—one who directed the construction of important features); he was a counselor to the *ali'i Kauhakō* and *Pāhoehoe*, whose names are commemorated as places to this day.

The *heiau*, by the name *Kahauwawaka*, at Kalāhiki, was named for this priest, as were a plantation in which *iholena* bananas, *'awa*, *kalo*, and other crops were planted; and a fishermen's *ko'a* near the shore. When Ka-Miki and Maka-'iole approached the compound of the chief Kauhakō, Kahauwawaka discerned the supernatural nature of the brothers and warned the chief not to challenge them to a contest... Kauhakō did not heed the warnings of his priest, and he was killed as a result of his arrogance... Following their contest, the brothers traveled to the plantation of Kahauwawaka, and Kahauwawaka invited them to his home for a meal.

Now the house was built high atop a hillock, and it was completely surrounded by stones. The brothers understood that the reason for this was to protect the priest from attack. It was difficult to get to the house, and if someone should try to reach the priest, he would pelt them with sling stones.

While Kahauwawaka was preparing food, Ka-Miki went to fetch 'awa from the priests' garden, which was some distance upland, in the 'ōhi'a and 'ie'ie forest. Ka-Miki returned so swiftly with the 'awa that Kahauwawaka was startled and called out –

Leīna a ka manu hauli o Mākea

The leaping of the birds startled Mākea

[This saying was used to caution one to be aware of occurrences around you, lest you be taken by surprise! (see S.M. Kamakau 1991:11-13).]

Because of Ka-Miki's startling speed, Kahauwawaka further understood the supernatural nature of his guests. Once the 'awa was prepared and the offerings made, they all ate together and drank the 'awa. The 'awa was so powerful that Maka'iole and Kahauwawaka were quickly embraced in sleep. Ka-Miki then descended to the shore of Kalāhiki, at Kōwa'a, where he met with the head fisherman Kūalaka'i, and people of the area.

The shore line at this part of Kalāhiki was called Kaulanawa'a, and it was here that the 'ōpelu fishermen were landing their canoes. The fishermen's usual practice was to haul or drag their canoes on *hau* (*Hibiscus tiliaceus*) and *wiliwili* (*Erythrina sandwicensis*) *lona* (rollers) up to the *hālau wa'a* of Kuaokalā. Ka-Miki saw the canoes landing, and grabbed a canoe with the nets, three men and fish still in it and carried the entire load, placing the canoe in the *hālau*.

This greatly startled the fishermen and people who lived along this shore, and they thought that Ka-Miki was a god in human form. The fishermen called to him commenting on his strength, and Ka-Miki responded that "This is the usual practice of the fishermen of my home land (at Ka'elehuluhulu and Hale'ōhi'u of Kekaha, North Kona)." Kūalaka'i, the lead fisherman offered Ka-Miki half of their catch. Ka-Miki, moved by Kūalaka'i's generosity, told him, "As you have given me these fish, so the *'aumākua lawai'a* (fishermen's deities) shall empower you (*a e mana iā 'oe...*). Kūalaka'i, you, your wife *Kailohiaea*, and your descendants shall have all the fish you need, and your practices will be fruitful." (It was in this way that the *Kū'ula* form fishermen's god *Kūalaka'i* became deified; *Kailohiaea* is perhaps a deity called upon by fisher-women). With these words, Ka-Miki picked up the net with his portion of 'ōpelu, and in the wink of an eye, he disappeared to the uplands, arriving at a place called Pīnaonao.

The forest of Pīnaonao was filled with *lehua* trees, 'i'iwi and 'akakane ('apapane) birds — "moku lehua e hele ala a au i ke kai o Pīnaonao...e luhiehu ala i ka lehua mai uka lilo o ke kualono a hō'ea i nā lae kahakai kōpīpī mālie 'ia ana e nā huna kai mā'oki'oki o ka moana kai malino kupōlua i ka la'i a Ehu" (a *lehua* forest which reaches out to swim in the sea of Pīnaonao...a forest adorned with *lehua* blossoms from the upland ridges to the shore, where the *lehua* is sprinkled with the spray of the streaked ocean, the quiet dark sea in the calm of *Ehu*).

And from within the forest came the laughter of two young women, who were making *lehua* garlands. This forest region was protected and not open to anyone but these two girls, the sacred chiefesses, *Ka-lā-hiki-lani-ali'i* and *Waiea-nui-hāko'i-lani*, who were poetically referred to as "*Nā Lehua o Pīnaonao*" (The *lehua* blossoms of Pīnaonao [spoken in praise of great beauty]).

These two maidens, for whom the lands of *Kalāhiki* and *Waiea* were named, were the daughters of Pāhoehoe-nui-a-Lonohea (k) and Honokua-lau-a-lipo (w). As Ka-Miki drew near to the chiefesses he called to them, "*Eia na 'olua kekāhi i'a e nā kaikamāhine kui lei lehua*" (Here are some fish for the two of you maidens busily making *lehua* garlands.) The sisters were so impressed with Ka-Miki, that they urged him to stay with them in the forest. But Ka-Miki declined and departed, continuing on his way back to the house of Kahauwawaka. After preparing the *ōpelu*, Ka-Miki awakened Maka-'iole and Kahauwawaka. Once again, the priest was surprised at Ka-Miki's nature, and his ability to travel such great distances swiftly. They ate the *ōpelu* with *poi* made of *lehua* and *naioea taros*, and drank more 'awa.

In the meantime, Kalāhiki and Waiea went to their parents and told them about Ka-Miki. *Honokua* sent Waiea to invite him to their compound, but when Waiea arrived at the house of Kahauwawaka she found everyone asleep. Ka-Miki heard the sweet call of Waiea, but pretended to sleep, so she returned home, and her mother Honokua went to the priests' house. Ka-Miki awakened Kahauwawaka and Maka-'iole and told them about meeting Kalāhiki and Waiea. Kahauwawaka told Ka-Miki about the two chiefesses, stating that few people had beheld their beauty.

Kahauwawaka discerned that Kalāhiki and Waiea wished to secure Ka-Miki as their husband, and asked that Ka-Miki allow him to act as his foster grandfather. Ka-Miki agreed. When Honokua arrived at the house of Kahauwawaka, he agreed to bring Ka-Miki and Maka-'iole to the compound of Honokua and Pāhoehoe.

The lands of *Honokua* were named for Honokua-lau-a-lipo, who was the wife of Pāhoehoe-nui-a-Lonohea. A portion of the lands known as *Pāhoehoe* were named, for this chief. Also, there is a great agricultural field in this part of Kona, known by the names of *Pāhoehoe-ku-'ai-moku* (Pāhoehoe-who-stands-above-the-district) or *Kahull-a-pāhoehoe* (The-taro-top-planting-of-Pāhoehoe). And some of the *ahupua'a* which bear the name *Pāhoehoe*, were named for the chiefess Pāhoehoe-wahine-iki-a-lani, sister of the Pāhoehoe-nui-a-Lonohea.

Pāhoehoe-wahine-iki-a-lani was married to the chief *'Ala'ē*, who was the *kaulana pa'a 'āina* (champion who secured, or maintained peace upon the land) for the chief Pāhoehoe. The great cultivated fields of Pāhoehoe-wahine-iki-a-lani were a sacred *kalo* plantation and 'awa garden, situated in the uplands. This plantation extended from Haukālua to Ka'ohe, where it joined the upland plantation of Pu'epu'e, and extended from Kukuiope'a to Kapu'a. The natives of Kapalilua could point out these sites to this day.

Now, when Ka-Miki, Maka-'iole and Kahauwawaka arrived at the royal compound of Pāhoehoe and Honokua, they were warmly greeted by the chiefesses. Food was gathered from the chief's gardens, and a feast was prepared. Ka-Miki mixed the 'awa. Pāhoehoe was known as a chief who greatly loved, and frequently drank 'awa. Because he drank so much 'awa, he was also called Pāhoehoe-o-Lumilumi (Pāhoehoe of 'awa intoxication).

Kahauwawaka presented the prayer chants, and all those gathered at the royal compound (*hālau ali'i*), ate and drank the 'awa prepared by Ka-Miki. Because the 'awa was very potent, everyone fell asleep. Ka-Miki then left the royal compound and traveled upland to the *kō'ele* (chief's cultivated fields).

Looking about the land Ka-Miki called in a prayer chant to his ancestress (the goddess) Ka-uluhe-nui-hihi-kolo-i-uka, asking her to further clear the land and prepare more *kalo* for planting —

E o'u kūpuna wahine
I ke kualono, i ke kuahiwi

I ke kuamauna
I ka hei
I ka manomanowai
I ka waokele
I ka waoakua
I ka 'ōhi'a lōloa
I ka uluhe
I ke 'āma'uma'u
I ka lā'au kala'ihī o'o i ka nahele
Hihī a ka 'ie'ie la e
E iho e kanu i ka māla a kākou
lā Kahihī-'ie-i-ka-nahēle
I ka māla 'ai a ke ali'i
A Pāhoehoe-nui-a-Lonohea
A me ke ali'i wahine
Me Honokua-lau-a-lipo
I ulu ke kalo
A pua ke kalo
A o'o ke kalo
A i'o mākole
A pili wale mai
Ka 'ohā o ke kalo a kākou
Mai kēlā kaikā a kēia kaikā
Mai kēlā kua'iwi a kēia kua'iwi
'Oia ho'i e, 'oia ho'i la
A lele ka huli a kākou la

O my ancestress
 Upon on the mountain ridges,
 mountain peak
 And mountain tops
 All knowledgeable
 [Ancestress] Of the multitudinous waters
 In the wet forests
 In the region of the gods
 The long 'ōhi'a
 The uluhe fern
 The 'āma'uma'u fern
 The rigid woods of the forest
 The tangled 'ie'ie growth
 Descend and plant our garden
 O deity, Tangled-growth-of-'ie'ie
 [Plant] the garden which the chief eats
 Garden of Great-Pāhoehoe-of-Lonohea
 And the chiefess
 Honokua-lau-a-lipo
 Cause the taro to grow
 Let the taro bloom
 Let the taro mature
 Till the flesh reddens
 Till the offspring (growth)
 Clings to our taro
 From that patch and this patch
 From that row to this row
 Let it be, it is so
 Let our planting stalks leap to their place

Upon completing the chant, Ka-Miki called out to each variety of *kalo*, instructing it to leap into its' planting pit —

A lele Ka'ohē a kona mākalua...
 Let the Ka'ohē taro leap to its whole.

Ka-Miki then called out to the all the varieties of *kalo* to be planted, and they too leapt into their *mākalua* planting pits. Besides the *kalo ka'ohē*, the other taro planted were:

Palakea, Lauoa, Uia, Kanohu, Manini, O'opukai, Pāpākolekoa'e, 'Ōpelu, Lehua,
'Elepaio, Pa'akai, Moi (also called Ne'ene'e), Kumu, Wehiwa, Pala'i'i, Mākoko (also
called Nohu), Naioea, Pi'iali'i, Mana ('ele'ele, kēa, and lauoa), Uahi-a-Pele, Ha'akea
(also called Hookea), 'A'apu (also called 'Apu wai), 'Akilolo, 'Apowale, Helemauna (also
called Piko 'ele'ele), Ipu-o-Lono, Hāpu'u (also called Hāpu'upu'u), Papapueo, Kahalu'u-
kea, Hīnālea, 'Ie'ie, 'Āpi'i, Hina-pū, and Lehua-ku-i-ka-wao.

Ka-Miki then called upon his ancestress Ka-'ohu-kolo-mai-iluna-o-ka-lā'au (The mist which crawls atop the forest) to cause the young taro to grow so that the food would be abundant —

Hānau ka lā, o Nauele

O Nauele ka lā o Kupanole

The sun is born of Nauele
 (a soft light)
 The sun of Nauele is now
 at Kupanole

*Kupa-nole ka lā o Kōhia
Kōhia ka lā iā Hina
O ke kukuna o ka lā, pa'a
O ka pa'a o Hilina, o Hilinehu*

*O ka lā o ke Kamani
O ka hui o Kamani-'ula*

*O ka 'ēheu o Halulu
Ke hā'ina mai la o Ha'i
Ke hakina mai la e ka lā
O ke keiki holo lani a Wākea
O Wākea kai lalo
O ka lā kai luna
O ke keiki lā kōia a Wākea
i ho'okahua ai
'Oia ho'i o ka lā
Hānau ka lā
O ka lā ho'i auane'i ko lalo nei?
O wai la? O ka Moana
Aia! Aia ho'i hā!*

The sun of *Kupanole*, now at *Kōhia*
The sun at *Kōhia* is with *Hina*
The rays of the sun are held back
Secured at the time of *Hilina[na]*
and *Hilinehu* (December and
November)
The day of the *Kamani*
The cluster [constellation] of
Kamani-'ula
[at] The wing of *Halulu*
Ha'i has spoken
The sun breaks forth
It is the sky traveling child of *Wākea*
Wākea is the one below
The sun is the one above
This is the sun child which
Wākea founded
It is the sun
Born is the sun
What is there below the sun?
Who is it? It is the ocean
There it is! So it is given the
breath of life!

A mist settled upon the forest garden as if it were in the calm of night and Ka-Miki saw the *kalo* buds shoot forth and leaf. He then returned to the chiefs' *hālau*, where more 'awa was prepared.

A short while later, *Haukālua nui* and *Haukālua iki* (father and son), the two *konohiki* (overseers) who managed the plantation of *Ka-huli-a-Pāhoehoe* arrived at the plantation, where they were startled to see the greatly increased size of the cultivated fields, and increased varieties of *kalo* planted therein. It was for the *konohiki*, *Haukālua nui* and *Haukālua iki*, that the lands of *Haukālua* were named.

Haukālua nui brought word of the mysterious developments at *Ka-huli-a-Pāhoehoe* to *Pāhoehoe*. And immediately, the chief knew that it had been the work of *Ka-Miki*... *Pāhoehoe* and *Honokua* invited *Ka-Miki* and *Maka-'iole* to stay and become the husband of their daughters, but they declined, explaining the nature of their journey around the island... Bidding *aloha* to *Pāhoehoe mā* (and companions), *Ka-Miki* and *Maka-'iole* then departed, passing through the lands of *Kukuiope'e*, *Kolo*, *'Ōlelomoana*, *'Ōpihihali*, *Ka'apuna*, [*Kīpāhoehoe*] and *'Alikā*, all of which were named for *ali'i* who controlled the *ahupua'a* of those names...

The brothers descended to the shore, and arrived at the *hālau ali'i* (royal compound) of the chief Pāpaua, which was situated near the canoe landing, in the land now called *Pāpā*. The chief *Pāpaua* was famed for his *pā-hi-aku* (mother of pearl, bonito fishing lure), and the place name, *Pāpā* commemorates *Pāpaua*. *Pāpaua* was descended from the family of *Pā-ku-huhu-a-Kalino*, as told in the story of *Kalino*⁴, and was the brother-in-law of *Hīkāpōloa*, a great chief of *Kohala*...

The land of Pāpā was well populated and there were many fishermen and fishing canoes in Pāpā and neighboring lands. *Ka-Miki* met with *Pūpuhi*, the head fisherman of *Pāpaua*, at the canoe landing, and it was agreed that *Ka-Miki*

⁴ See the account of *Ka-uma-'ili-'ula* (in S.M. Kamakau 1991:102-103).

would accompany the chief on his fishing expedition in place of Pūpuhi. Once in the canoe, Ka-Miki gave one thrust of the paddle, and the canoe was directed to the aku fishing grounds. So great was the strength of Ka-Miki's thrust, that Pāpaua almost fell out of the canoe. Once at the fishing ground, a great catch of *aku* was made, and it was understood that Ka-Miki was no ordinary person.

Upon returning to the shore, Pūpuhi invited Ka-Miki *mā* to stay at Pāpā, but he declined, explaining the nature of the journey with his brother. Pūpuhi then warned them about the fierce 'ōlohe, *Omoka'a* and *Okoe mā*, who dwelt along the path and waylaid travelers. It was in this way, that Ka-Miki and Maka-'iole learned that those 'ōlohe had a special compound along the trail with houses on both sides of it, and in between the two was an imu which was always kept glowing hot. It was the practice of *Omoka'a* and *Okoe mā* to compete in riddling and fighting techniques with everyone who passed by, and they had killed many people. Their victims were baked in an *imu* and their bones were used for fishhooks. Pūpuhi also told them about *Manukā of Nāpu'uapele*, who was a master in fighting with sling stones, and in all manner of fighting.

Pūpuhi further explained to Ka-Miki that the people who lived in this region, were so afraid of the 'ōlohe that they traveled bunched up, together in groups, rather than to travel alone. Ka-Miki told Pūpuhi that the purpose of their journey was to meet with 'ōlohe practitioners of that nature, and make right the ways of such practitioners. The brothers then departed and passed through the lands of *Ho'opūloa* (To cluster together), which were named for a chief who had taken that name.

Likewise, the neighboring lands of *Omoka'a* and *Okoe* were named residents of those places. *Omoka'a* (k), *Okoe* (w), and their five children lived along the main trail which passed through the region. The children lived on the *makai* side of the trail, and the parents lived on the *mauka* side of the trail. It was the practice of this family to waylay travelers and bake them in their *imu*, which was kept in the middle of the trail. People of the surrounding communities feared these 'ōlohe and never traveled individually, they stuck together (*ho'opū*) in groups, and went great distances to avoid using the land trails as long as *Omoka'a mā* continued their evil ways. Most people of this region traveled by canoe whenever they could.

While people feared *Omoka'a*, *Okoe* and their children, the land of the *Ho'opūloa* area was celebrated in the saying —

Ka 'āina i ka wai pū'olo i ka maka o ka 'ōpua hiwahiwa i ke ao lewa i ka lani papanu'u a Haunu'u (The land of water laden horizon clouds, cherished by the banks of clouds which line the sky foundation of *Haunu'u*).

While all the warnings had been given, Ka-Miki and Maka-'iole passed through the *Ho'opūloa* vicinity uneventfully, and continued their journey until they arrived in the uplands of *Kapu'a*. The area was well populated and there were many houses. There, they met with *Nā-niu-a-'ō'ū* (The-coconut grove of 'Ō'ū), a farmer and *kāula Pele* (priest of the *Pele* class). A section of land at *Kapu'a*, known as *Niu-'ō'ū* was named for this priest.

Nā-niu-a-'ō'ū tended an agricultural field in the uplands, but his efforts were often thwarted because of the dry nature of the land. Before the arrival of Ka-Miki and Maka-'iole, *Nā-niu-a-'ō'ū* had a premonition of their nature, and saw that they would be followed by a great cleansing of the land. *Nā-niu-a-'ō'ū* went about telling all of the people from the uplands to the shore that they should remain within their houses for a great storm was coming. But because of the *kapu* associated with his priest nature,

Nā-niu-a-'ō'ū was considered to be *ano 'ōpulepule* (somewhat crazy) by the people of Kapu'a, and they often ridiculed him.

When Ka-Miki and Maka-'iole arrived at Nā-niu-a-'ō'ū's residence, he happily welcomed them and prepared a feast for them. As Nā-niu-a-'ō'ū strained the 'awa in the *kānoa* ('awa bowl), Ka-Miki called upon *Kāhuli-'eli-papa-honua-mea*, and his female and male ancestor deities in a *mele pule* (prayer chant)—

<i>Iā 'Ōhi'a-nui-moe-awakea</i>	To 'Ōhi'a-nui
<i>Iā Kumakua-moe-awakea</i>	To Kumakua
<i>Iā Nā -wahine-moe-awakea</i>	The women (goddesses) who rest at midday
<i>Iā Ka-'ohu-kolo-mai-iluna-o-ka-lā'au</i>	To Ka-'ohu-kolo
<i>Iā Ka-uluhe-nui-hihi-kolo-i-uka...</i>	To Ka-uluhe...
<i>E ala e Haumea nui a ke aīwaiwa</i>	Arise great <i>Haumea</i> of mysterious forms
<i>E ho'ohānini a māninini ka wai a Kāne</i>	Let pour and flow forth the waters of <i>Kāne</i>
<i>E ola iā māua i nā pulapula</i>	That we two, your offspring might live.
<i>Nā pua kela i ke ao manamana</i>	The foremost flowers of the many faceted light
<i>Iā Ka-Miki a me Maka-'iole</i>	It is Ka-Miki and Maka-'iole
<i>'Eli'eli kapu, 'eli'eli noa</i>	Profound sacredness, profound freedom
<i>'Āmama, ua noa</i>	The prayer is finished, it is freed

Thus Ka-Miki called upon the deity which spanned the expanse of the land, the deity of clouds, rain, thunder, winds, earthquakes, lightning, great mysterious *Haumea*, and *Kāne* of the waters of life, to partake of the 'awa and food. All of the nature deity forms manifested themselves, and the people of the land were filled with terror, at seeing the calm broken. Clouds appeared to flow over the cliffs of Kahuku like flowing water —

'Oiai e mau ana kēia mau 'ōuli me ka ho'omaha 'ole, ke hāli'i mau ala ka 'ohu i nā kaka'i pali o Kahuku a me Manukā, a ke 'ike 'ia ala ka hiolo o ka wai o nā pali...Ke kokolo a'e o ka 'ohu i kumu pali a hekau iluna o nā lā'au...a he hō'ike kēia no ka māwehe a'e o ka 'ino.

(So it is that these signs remain without fail; if the mist is spread out, along the edges of the cliffs at Kahuku and Manukā, flowing like water over the cliffs ... and the mist then creeps along the base of the cliffs, while above in the trees all is calm...it is a portend that a storm is about to occur.)

The elder female ancestors of *Nu'umealani* descended with the mist form of *Ka-'ohu-kolo-mai-iluna-o-ka-lā'au* covering the land down to the shore with mists. The voices of *Kānehekili* and *Kāne-wāhilani* rumbled and lightning flashed. Nā-niu-a-'ō'ū then saw a multitude of mysterious formed deity all about his compound and throughout his plantation. Ka-Miki then called with a *mele pule* to *Ka-uluhe* (*Haumea*) —

<i>Eia ka 'ai e ke akua</i>	Here is your food o gods
<i>E Kāhuli, e Kahele</i>	O Kāhuli, o Kahele
<i>E Kauwila-nui-'eli-papa honuamea...</i>	O <i>Kauwila-nui</i> who digs the red (sacred) stratum of the earth...
<i>Kulukulu ka wai ke pākakahi nei</i>	Let the water flow here and there

*A hānini la, a hānini ua
Ka ua i ka 'ōnohi o Laniwahine
O Nu'umea-lani-a-lani-nu'u-i-ka-ua
I 'eli kapu, i 'eli noa – noa*

Flowing and pouring forth
The cherished rains of *Laniwahine*,
who is of *Nu'umealani*
The sacredness is profound, the
freedom is profound the prayer
is freed

Thus Ka-Miki called upon the multiple forms of *Ka-uluhe*, *Lani-pipili*, *Lani-nui-ku'i-a-mamao-loa*, the forms of *Haumea*, *Kāmeha'ikana*, *Hina*, *Pele*, and the host of gods and *Kāne* forms. When Ka-Miki ended his prayer, *Lani-papanu'u-i-ka-ua*, *Lani-ka'ahale-i-ka-ua*, *Kāne-nui-ākea*, and *Kāne-i-ka-wai-ola mā* caused the rains to fall. Water flowed from the mountain to the sea, and those who had ridiculed *Nā-niu-a-'ō'ū* met with much tribulation, and they repented.

During the time of the storm, *Nā-niu-a-'ō'ū* and Ka-Miki *mā* remained within *Nā-niu-a-'ō'ū*'s house, where they ate and drank 'awa, for there was a period of *kapu* till the night passed. Only the thunder and the winds stirred outside. *Kānehekili-wāhilani-nui-a-nu'u*, the thunderer brother of *Hilina[na]* and *Hilinehu-i-ka-maka-o-ka-ua-koko*, and *Ka-'ōnohi-'ula-ku-hai-i-ka-moana*, who were the elder spirit-wind body formed brothers of *Haumea-nui-niho-wawaka-a-ke-aīwaiwa* moved about.

When the calm returned, after this great storm passed, the people of *Kapu'a* looked to *Nā-niu-a-'ō'ū* with new respect, and followed his suggestions willingly. The lands were cleansed and peace spread across the land. All forms of verdant growth sprouted from mountain to shore, and in this way, the extensive taro plantation of *Pu'epu'e* came to be planted, and it remained viable till recent days.

Now this great plantation's full name was *Pu'epu'e-ku'u-kalo-i-amo-'ia-kiola-'āina-'ia-a-koekoena-kiola-'ia-i-ka-mauna-a-me-ka-moana* (My taro, planted in mounds was carried and spread [thrown] across the land, and what remains was spread [planted] from mountain to sea). The plantation extended across the region, from Kaulanamauna to Kukuiopa'e.

As Ka-Miki and Maka-'iole prepared to depart, *Nā-niu-a-'ō'ū* warned them about the feared 'ōlohe; Omoka'a, Okoe, their children, and Manukā. These 'ōlohe waylaid and killed many travelers. Whenever possible, the natives of the surrounding districts avoided traveling the *ala loa*, choosing instead to journey by canoe. *Nā-niu-a-'ō'ū* suggested that Ka-Miki and Maka-'iole might be better off taking a canoe, and returning to land once past Kalae, near Kaumaea. But the brothers told *Nā-niu-a-'ō'ū* that they had come in search of those people who dishonored their gods and practices. They described the depth of their own 'ōlohe training and sling fighting practices, including the techniques of *Kaueleau*, and *Ki'ilenalena*. They then departed and sought out *Okoe* and *Omoka'a*.

Okoe was the 'ōlohe wife of Omoka'a, and mother of 'Ōpu'u-ka-honua, 'Ōmu'o-ka-honua, 'Ōlau-ka-honua, 'Ōlika-ka-honua, and 'Ōmole-ka-honua, all of whom were notorious 'ōlohe.

Ka-Miki and Maka-'iole arrived at the compound of Omoka'a and Okoe *mā*, and indeed the famed *imu* in which they baked their victims glowed red hot with its fire. Omoka'a sat on the *mauka* side and Okoe on the *makai* side of the *imu*, and upon seeing Ka-Miki *mā* they both reached for their tripping clubs. The four competitors exchanged taunts and riddles. And Ka-Miki warned the couple that they would be the ones baked in their own *imu*. Seeing that Ka-Miki *mā* were versed in riddling, Omoka'a and Okoe started their efforts at defeating Ka-Miki *mā*, in hopes of baking

them in the *imu*. Okoe started the riddle contest using a form of riddle chants (*mele nanenane*):

<i>O hānau ka honua</i>	The earth was born
<i>A mole ka honua</i>	The earth's foundation set
<i>O kokolo ke 'a'a</i>	The 'a'a lava creeps along
<i>ka weli o ka honua...</i>	Causing the earth to be afraid...

The riddle contained the names of Okoe's children, and as the chant ended, Okoe called out, "'O wai? 'O wai lā? 'O wai ho'i lā?" (Who? Who is this? Who indeed is this?) Ka-Miki chanted in response answering correctly, stating that the riddle described the creation of the earth in the account of *Wākea* and *Papa*; The layering of sky and earth strata; and the genealogy of Okoe, Omoka'a and their family.. He chanted —

<i>O hānau ka moku, a kupu, a lau,</i>	The island was born, sprouting,
<i>A loa, a mu'o, a 'ike,</i>	spreading,
<i>Ka moku iluna o Hawai'i,</i>	Lengthening, budding, and seen,
<i>He pūlewa ka 'āina, naka Hawai'i</i>	Hawai'i is the island which is above
<i>E lewa wale ana no i ka lani lewa,</i>	The land sways, Hawai'i shakes
<i>Hono-ā mai, e Wākea pāhono 'ia,</i>	Floating above in the heavens,
<i>Mali o ke a'a o ka moku me</i>	Bound together, bound by <i>Wākea</i>
<i>ka honua,</i>	The root of the island was tied to
<i>Pa'a 'ia lewa e lani, i ka lima akau</i>	the earth
<i>o Hawai'i,</i>	And held fast in the heavens by
<i>A pa'a Hawai'i la, a la'a Hawai'i la,</i>	the right hand of Hawai'i
<i>'ikea he moku</i>	Hawai'i was set firm and consecrated,
<i>O ka moku la ho'i auane'i.</i>	the island is seen
<i>ko lalo nei..</i>	Indeed it is the island which
	is below...

Surprised that Ka-Miki answered their riddle, Okoe and Omoka'a told the brothers that they were indeed clever. Omoka'a and Okoe then called upon their riddling god *Kāne-iki-pa'ina* (*Kāne* who assumes the form of a click bug) to assist them.

As the competition continued, comparisons were made to the casting of a net to ensnare one's catch. Ka-Miki warned Okoe *mā* that if they were not careful, they would end up like *Luanu'u-a-nu'u-pō'ele-ka-pō* of the nine fold cliffs of *Waipi'o* — caught in the supernatural net *Ku'uku'u* which belongs to *Ka-uluhe*. Ka-Miki then chanted a *mele pule kānaenae ho'o'ulu mana 'e'ehia* (Prayer chant supplication to increase his supernatural power):

<i>Iā Ku'uku'u ka 'upena</i>	<i>Ku'uku'u</i> is the net,
<i>Hei mai ka i'a</i>	A snare which catches the fish,
	Binding it like —
<i>O ka pulelehua</i>	The butterfly,
<i>O ka pokipoki</i>	The sow bug,
<i>O ka nananana</i>	The spider,
<i>O kini o ke akua</i>	The 40,000 gods
<i>O ka mano o ke akua</i>	The 4,000 gods
<i>O ka lehu o ke akua</i>	The 400,000 gods,
<i>O ka puku'i o ke akua...</i>	The assembly of gods...

Understanding the power of the prayer which Ka-Miki chanted, Okoe *mā* began another form of riddling and asked —

"Aia Ia! Aia ho'i! Ku'u imu a'ohe ahi , ku'u imu uwahi 'ole, ku'u imu ho'okāhi no pōhaku, ku'u imu 'elua no pe'a kauwawe, ku'u imu e ...!" (Behold, behold indeed! My *imu* has no fire, no smoke, my *imu* has one stone, and two ti leaf bundle covers, yet it is my *imu* ...!)

Ka-Miki responded:

"He *imu* manini ko kai, a'ohe ahi pau no na'e ka manini i ka 'ai 'ia. He *imu* mai'a ko uka ua mo'a pala kāpule iloko o ka lua, a'ohe ahi pau no na'e i ka 'ai 'ia..." (The rock mound an *imu* [also called *umu*] for the *manini* in the sea, has no fire, yet it is consumed. The smokeless *imu* is in the uplands, is an over ripened banana, and it too is consumed...)

Once again, Okoe and Omoka'a agreed that Ka-Miki won the contest. Okoe then presented a riddle about the name of the plantation of Pu'epu'e. The full name of this plantation is *Pu'epu'e-ku'u-kalo-i-amo-'ia-kiola-'āina-'ia-a-koekoena-kiola-ia-i-ka-mauna-a-me-ka-moana* (My taro planted in mounds was carried and spread [thrown] across the land, and what remained was spread [planted] from mountain to sea). She called out —

[Note: numbers in the following narrative have been inserted at key points by the translator, to indicate where points in the riddle correspond with the answer.]

^[1] He *kalo* ku i ka *mauna*, i *pu'epu'e* 'ia; ^[2] i *amo* 'ia a ^[3] *koe*, ^[4] *lino* 'ia a *pa'a*, ^[5] *ho'ō'ia* apau, ^[6] *kiola* 'ia i ka ^[7] *mauna*, ^[8] *hali* 'ia i ka ^[9] *moana*, ^[10] *ku ka puna* i uka, ^[11] *ua kolo* a ^[12] *pae he kukui ka 'āina*. (The taro placed upon the mountain, planted in mounds, carried to where it remains, securely bound (*lino*), all set in place, thrown to the mountain (by Haumea); carried and spread to the ocean, [reaching] to where the spring is in the uplands, and where the *kukui* cling upon the land.)

Okoe then told Ka-Miki, "Answer the riddle or your eyes shall become the food of our riddling god *Kāne-iki-pa'ina*." Ka-Miki answered in a riddle of his own, describing many of the lands of the Kapalilua region —

Aia Ia, aia Ia, aia Ia! O ke kalo a ku'u mau kūpunawahine i kanu ai i ka hei, i ka manomano wai, i ka lā'au kala'ihī o'o i kanahēle o Mahiki, i ka mauna anuanu ko'ūa, he ahi ke kapa e mehāna ai, e lala ai mākou i uka o 'Ōma'olālā e - 'oia — ^[1] He Helemauna ke kalo i pu'epu'e 'ia; O ^[2] Kapu'a ia - I amo 'ia a koe; O ^[3] Omoka'a ia me ^[4] Okoe - He mau 'okana i pili ana me Kapu'a, 'oia no ho'i ko 'olua mau inoa; Lino 'ia a pa'a; o ^[5] Honomalino ia; Ho'ō'ia apau; o ^[6] Ho'opūloa ia; Kiola 'ia i ka mauna; o ^[7] Kiolaka'a a me ^[8] Kaulana mauna; Hali 'ia i ka moana; o nā ^[9] 'Ōpihiali a me nā ^[10] 'Ōlelomoana; Ku ka puna i uka; o ^[11] Ka'apuna ia. O kolo a pae he kukui ka 'āina; o ^[12] Kolo ia a me ^[13] Kukuiope; he mau ali'i 'ai ahupua'a lākou apau...

Behold! It is the taro which my ancestresses planted with exceptional skill (*hei*), with the multitudinous waters (deep knowledge), at the forest of Mahiki with the rigid trees on the cold damp mountain — where the fire is the only blanket which warms one, indeed we were warmed at 'Ōma'olālā.

^[1] *Helemauna* is the taro which was planted in mounds at ^[2] Kapu'a, so the plantation became called Pu'epu'e; *amo* (carried) is ^[3] Omoka'a; to where it *koe* (remains) is ^[4] Okoe, these are 'okana (land districts) which are near Kapu'a; *lino* 'ia (securely bound) is ^[5] Honomalino (cf. *lino*); *ho'ō'ia* (set in place) is ^[6] Ho'opūloa; *kiola* (tossed or thrown) is ^[7] Kiolaka'a; to the *mauna* (mountain) is ^[8] Kaulanamauna; *hali* 'ia (carried) is ^[9] 'Ōpihiali); to the *moana* (sea) is ^[10] 'Ōlelomoana; [reaching] to where (*ku ka puna i uka*)

the spring in the uplands) is ^[11] Ka'apuna; the *kukui* is ^[12] Kukuiopa'e; and *kolo* (cling upon the land) is ^[13] Kolo; and all of these lands are named for the chiefs who control the district resources.

Thus Ka-Miki answered the riddle of Okoe and told her that if she denied the accuracy of his answers; her eyes would be pierced by coconut mid-ribs, and the juices would be used to fill sacred cups *Laukapalili* and *Hikiaupe'a* of *Ka-uluhe*, and be served as the *pūpū 'awa* ('awa drink condiment) for Ka-Miki, *Kahuolo-ku*, and their riddling gods.

Omoka'a told Ka-Miki that he was indeed correct. Ka-Miki then asked Okoe and Omoka'a if they were finished, and stated that if they were, "only their children remained to be bound in the mesh of *Kanikawi* and *Kanikawā*; the mysterious net of our ancestress *Lani-nui-ku'i-a-mamao-loa*, from which there was no escape." Ka-Miki then chanted about the nature of their riddling god and knowledge – *mele*:

<i>I Tahiti ka pō e Niho'eleki</i>	Niho'eleki – is in the antiquity of <i>Tahiti</i>
<i>I hana ka pō e Niho'eleki</i>	– was formed in antiquity
<i>Mākaukau ka pō e Niho'eleki</i>	– is prepared in all antiquity
<i>Lawalawa ka pō a Niho'eleki</i>	Niho'eleki's understanding is more than enough
<i>lā 'akāhi ka pō e Niho'eleki</i>	<i>Niho'eleki</i> – understands the first level of meanings,
<i>lā 'alua ka pō e Niho'eleki</i>	– understands the second level of meanings,
<i>lā 'akolu ka pō e Niho'eleki</i>	– understands the third level of meanings,
<i>lā 'ahā ka pō e Niho'eleki</i>	– understands the fourth level of meanings,
<i>lā 'alima ka pō e Niho'eleki</i>	– understands the fifth level of meanings,
<i>lā 'aono ka pō e Niho'eleki</i>	– understands the sixth level of meanings,
<i>Pa'i wale ka pō e Niho'eleki</i>	– understands all levels of meanings,
<i>Pono, a'o wale e Niho'eleki</i>	It is correct, taught only by <i>Niho'eleki</i>
<i>Aia! Aia ho'ī! Aia ia!</i>	Behold! It is so! It is so!

Okoe, Omoka'a and Ka-Miki *mā* then exchanged taunts about the depth and nature of their knowledge. Seeing that they could not win, Okoe and Omoka'a agreed to stop the riddling contest, lest they ended up in their own *imu*. Now this couple kept many weapons in waiting, and they expected their children to return from fishing at Honomalino soon. With their help, they planned to kill Ka-Miki and Maka'iole with other forms of competition, for Omoka'a and Okoe *mā* were knowledgeable in all manner of fighting and were compared to the lofty peaks of Hā'upu, Kaua'i, and the distant leeward islands of Ni'ihau, Ka'ula, and on to *Kahiki*.

Omoka'a met with Ka-Miki in hand to hand combat but his leg was broken, and he was nearly thrown into his own *imu*, but Ka-Miki laid him to the *imu* side waiting till the contest was finished. Okoe covered her body with *kukui* and coconut oil, and wore a *pā'ū* of the 'eokahaloa variety, worn in a tightly twisted form. This *pā'ū* was tied so as to entangle her opponents. Maka'iole called to Okoe that she should take heed lest her *pā'ū* be shredded by the fierce *uhu* (parrot fish; himself) the cherished *uhu* of *Ka-uluhe*. Maka'iole then offered a name chant for *Ka-uluhe* – *mele*:

<i>O Kaulua ka lā</i>	The assembly of gods... [the season of <i>Kaulua</i> when the star Sirius is above]
<i>Kaulua ka ua</i>	O <i>Kaulua</i> of the rains
<i>Kaulua ka makani</i>	O <i>Kaulua</i> of the winds

<i>Kaulua ke kai</i>	O <i>Kaulua</i> of the [rough] seas
<i>Kaulua ka 'ino</i>	O <i>Kaulua</i> of the storms
<i>Kaulua ka hōkū e kau nei</i>	O <i>Kaulua</i> [when] the star is set above
<i>E Ka-uluhe-nui-hihi-kolo-i-uka-e</i>	O <i>Ka-uluhe-nui</i> ...
<i>Eō mai ana i ko inoa</i>	Answering to your names

Ka-uluhe responded from *Kalama'ula* with a greeting chant – *Mele*:

<i>A'u kama iluna o ka 'Ōhi'a-moe-awakea</i>	My child who is there upon the deity, 'Ōhi'a which reclines in the midday sun
<i>Lehua 'ula i ka wā a ka manu</i>	The red <i>lehua</i> blossoms around which the birds sing
<i>Manu hulu weoweo i ka uka o Kalama'ula</i>	The birds with the red glowing feathers in the uplands of <i>Kalama'ula</i>
<i>He 'ula leo kēia e hōlio nei</i>	This is a voice offering to you, the one who is always in my thoughts
<i>'Ano'ai no a, 'Ano'ai wale ho'i!</i>	Greetings, greetings indeed!

Upon completing the chant, the wind roared breaking the forest, and Okoe leapt to attack *Maka'iole*, though she was exceedingly skilled, she was beaten. *Omoka'a* leapt to assist *Okoe*, but both 'ōlohe were bound in the net *Halokumuka'aha* (also called *Ku'uku'u*). Seeing their complete defeat, both *Omoka'a* and *Okoe* surrendered to *Ka-Miki* and *Maka'iole*. 'Ka-Miki and *Maka'iole* agreed not to bake them in their own *imu* after the couple promised that they would no longer attack people traveling along the *ala hele*. *Omoka'a* went to fetch 'awa and food items with which to serve *Ka-Miki mā*.

Okoe saw her children returning from *Honomalino* where they had been fishing. The children were carrying nets filled with *pā'ou'ou*, *hilu*, *weke*, *moano*, *anahulu*, and *maomao uli* (*Thalassoma*) and other fish. *Okoe* explained the days events and told the children that there was no victory for them, that they must take *Ka-Miki mā* as companions to save their own lives. 'Ōlau, 'Ōliko, and 'Ōmole, the three younger children agreed with their mother that they should not attempt to fight.

'Ōpu'u and 'Ōmu'o refused to listen, and they recounted their 'ōlohe nature and the background of their family (their grandparents lived in *Kahiki* with the chief *Ke'e* (written *Kowea* Jan. 28, 1915), ward of *Olokea* and *Olomea*, the mysterious *kūpua* of *Kahiki-kū*).

Omoka'a, *Okoe* and their children returned to the compound where *Ka-Miki mā* awaited. Upon seeing *Ka-Miki mā*, 'Ōpu'u and 'Ōmu'o put their heads down, realizing that they would be no competition for *Ka-Miki*. *Omoka'a* prepared the food and 'awa, and all participated in a feast. As the new day arrived, *Ka-Miki* and *Maka'iole* prepared to continue their journey, and *Okoe* told them about *Manukā*, and his skills... (Kihe et al., In *Ka Hōkū o Hawai'i*, October 29, 1914-February 5, 1915; Maly, translator)

As the *mo'olelo* comes to a close, readers are referenced once again to South Kona, and told the name of the champion of the chief *Kīpāhoehoe*:

...*Ka-Miki* and *Maka'iole* completed their journey around the island of *Hawai'i*, they returned to their home at *Kalama'ula*, on the slopes of *Hualālai*. The sound of contests at *Hinakahua* (in *Puapua'a*), rose up the mountain slopes, and upon hearing them, *Ka-Miki* descended to the contest arena, where two of the champions of *Pili*, were competing on the field. One contestant was *Ho'olaemakua*, an expert in the arts

<i>Kaulua ke kai</i>	O <i>Kaulua</i> of the [rough] seas
<i>Kaulua ka 'ino</i>	O <i>Kaulua</i> of the storms
<i>Kaulua ka hōkū e kau nei</i>	O <i>Kaulua</i> [when] the star is set above
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of combat, who resided at Kailua. The other contestant was Kauhi-'ai-a-manō, who was the—

"Koa kua makani o nā 'okana o nā Kapalilua o Kīpāhoehoe me ka 'ōhi'a e 'oni i ke kai la!" (the warrior of the wind-swept mountain slopes in the region of Kapalilua, at Kīpāhoehoe with the 'ōhi'a trees that seem to move down to the sea) [April 5 & 19 1917].

***He Moololo Kaa no Kekuhaupio,
Ke Koa Kaulana o ke Au o Kamehameha ka Nui***

In another native account, *"He Moololo Kaa no Kekuhaupio, Ke Koa Kaulana o ke Au o Kamehameha ka Nui"* (A Tradition of Kekuhaupio, the Famous Warrior in the time of Kamehameha the Great), published in *Ka Hōkū o Hawai'i* between December 16, 1920 to September 11, 1924, the tradition of *'ōlohe lua* (experts in Hawaiian martial arts) is further described. This *mo'olelo* commemorates Kekūhaupi'o, perhaps the most famous of the warriors who mentored and stood beside Kamehameha I, and the subsequent rise of Kamehameha to power.

Reverend Steven L. Desha, editor of the paper, along with several of his peers (such as J.W.H.I. Kihe, John Wise and Julia Keonaona), prepared the rich native text, embellished by many localized accounts, not available elsewhere. The narratives were translated by Frances Frazier, and published in 2000⁵.

In the section of the texts that reference Kapalilua, in the early days of Kekūhaupi'o's life (ca. 1700), the native authors wrote that:

...Lands in the region of Kapalilua were known as lands with little food, a place of starvation, but Kekuhaupi'o was sent to learn from Koai'a, the master *'ōlohe* instructor of Kapalilua. Among those things taught him were all manner of fighting techniques, and that such knowledge was not to be used to cause harm to people, but only for use in the battlefield. Following completion of his training, Koai'a had Kekūhaupi'o catch and fight with a *niuhi* (great white shark) off of Nāpu'uapele. Having successfully caught the *niuhi*, Kekuhaupi'o offered one of the sharks' eyes to *Kāne* and *Lono* in a temple above the bay of Kapu'a, and the other eye was mixed with the *pūpū 'awa* ('awa drink condiment) and eaten by Kekūhaupi'o to commemorate his graduation... [December 23, 1920 to February 3, 1921]

⁵ As a part of our research in Hawaiian language newspapers, Maly began translating portions of the Kekūhaupi'o tradition in 1991. In 1992, he learned that Frances Frazier had all but completed her work on the series, except for a section missing from the microfilms. The missing section covered the period between May to September 1923, which Maly located in print at the Hilo Public Library. Maly informed Ms. Holly McEldowney of the State Historic Preservation Division of their existence, and she in turn forwarded copies to Ms. Frazier, enabling her to complete her work.

HISTORICAL JOURNALS AND LETTERS— FOREIGN VISITORS AND RESIDENTS DESCRIBE KAPALILUA (INCLUDING KĪPĀHOEHOE AND NEIGHBORING LANDS)

The following narratives provides readers with some of the earliest and most detailed descriptions of the Kapalilua-South Kona region, and include several descriptions of Kīpāhoehoe village (on the shore) up to the 1850s. These historical accounts were generally penned by foreign visitors and residents, and were found in journals and letter communications. The narratives cover the period between 1778 to the 1930s, and while specific reference to Kīpāhoehoe is found in only a few of the narratives, the larger collection of texts provide us with important descriptions of the land and communities of Kapalilua. The narratives describe practices of residency and land use (from sea to mountain), and the rapid changes that were occurring in the native communities.

The authors of the cited narratives were explorers, missionaries, and travelers, and their observations often include important descriptions of features that make up the cultural landscape (e.g., villages, *heiau*, trails, and agricultural fields), the nature of land use, and transitions in the Hawaiian communities. The narratives are presented in chronological order and grouped by the source or type of information being recorded (such as journals; mission station letters and reports; and government records).

Captain James Cook—Voyages of Discovery (1776-1780)

Captain James Cook first saw the Hawaiian Islands of O'ahu and Kaua'i on January 18, 1778. On January 17, 1779, Cook and his ships arrived at Kealahou Bay, where he was entertained as the returning god Lono. Suspicions concerning Cook's divinity arose, and following an attempted "kidnapping" of King Kalani'ōpu'u, Cook was killed on the flats of Ka'awaloa on February 14, 1779.

The narratives cited below were recorded by Commander Charles Clerke and Lieutenant James King (Beaglehole 1967) who accompanied and survived Cook. King and Clerke provide readers with the earliest recorded descriptions of life in the South Kona region. Among the features they described, was the occurrence of extensive plantations (some of which were more than 6 or 7 miles inland), and among the crops seen were the taro, sweet potatoes, breadfruit, plantains (cooking bananas), and *wauke* (the "cloth" plant). The plantation system was formally laid out, and in many instances bounded by walls.

Also, as a result of excursions to the mountain lands, Cook's crew reported that most residences were situated near the shores, and that only "temporary huts" were observed inland. While in the forests, various activities and features were observed as well — among them were canoe making, bird catching, and the occurrence of trails. They also noted that the Hawaiians demonstrated a knowledge of upland resources and travel to the mountain lands.

January 26, 1779 — King identifies members of party who set out on a journey to Mauna Loa from Kealahou (the goal was not achieved):

[At Kealahou] ...leave was ask'd & granted for a party to go into the country & to attempt reaching the Snowy Mountain;

This Party consisted of the Resolutions Gunner, Mr. Vancouver, a young gentleman of the Discovery, Mr. Nelson sent out by Mr. [page 513] Banks to botanize; the Corporal we had on Shore, & three other men, they carried no arms of any kind, & set out at ½ past 3 this Afternoon with 4 of the Natives... [Beaglehole 1967:514]

...I shall before we go any farther, give a description of what was seen in the Country about it; (in the doing of which I am oblig'd to those who took the excursion up

towards the Mountain)... I was never myself above 3 miles into the body of the Country; for [page 520] the first 2 ½ miles it is compos'd of burnt loose stones, & yet almost the whole surface beginning a little at the back of the town, is made to yield Sweet potatoes & the Cloth plant. One then comes to breadfruit trees which flourish amazingly. The ground was very uneven & although there was a tolerable Soil about the trees, yet there was constant breaks in the land & large bare, burnt rocks; in the bottoms that these made were planted the Sweet Potatoe roots with earth collected about them; my occupation at the Observatory hinder'd me always proceeding farther. If I had I should have come to the extensive cultivated spots that are visible at the Ships beyond the grove of bread fruit trees: I shall therefore relate the Journey of the party of seven & 4 guides who set out on the afternoon of the 26th.

They travell'd 3 or 4 miles & found the Country as above represented, after which were the regular & very extensive plantations. The Plantain trees are mixed amongst the breadfruit trees & did not compose any part of the plantation except some in the Walls: these walls separate their property & are made of the Stones got on clearing the Ground; but they are hid by the sugar cane being planted on each side, whose leaves or stalk make a beautiful looking edge. The Tarrow or Eddy root & the sweet Potatoe with a few cloth plants are what grow in these cultivated spots. The party stopt for the Night at the 2d hut they met on this ground, they then judged themselves 5 miles from our Village, or at the top of the first hill as seen at the Ship. The Prospect was delightful: they saw the Ships in the bay: to the NW a continuation of Villages by the Sea shore & to the left a thick wood, to the right cultivated ground as far as they could see, & a thick wood on their back. The Potatoes & Tarrow are planted 4 feet from each other, the former is cover'd except the tops with about a bushel of light Mould, the latter is left bare to the roots, & the mould surrounding made in the form of a bason, in order to preserve the rain as this root is fond of & requires much humidity, it should be noted that the Tarro of these Islands is the best we have ever tasted. They foresaw, from the few Cottages scattered about & the poverty of the one they took their residence in, that their trade would not be able to ensure them provisions... [page 521]

On the 27th in the Morning they set out & fill'd their Calabashes at an excellent well about ½ a mile from their hut & enter'd the wood by a foot path, made, as they understood, by those who fetch wild or horse Plantans, & who go to Catch birds; it was either Swampy or else Stoney, also narrow, & made still worse by large trunks of trees laying across it, there was no proceeding on either side of the path for underwood; as far as the Wild plantains grew, intermixt amongst the trees, were at Certain distances white flags secur'd to poles, which they took for divisions of Property...

The 28th they march'd along the [page 522] Skirt of the Wood for 6 or 7 miles, & then enter'd again, by a path that went away to the Eastward. For the first 3 miles they pass'd thro a wood compos'd of high trees, interspers'd with Plantations of Plantains, for the next three miles were dwarfish trees, much underwood, & growing amongst broken burnt Stones. They then came again to a pleasant wood... In this wood they pass'd many Canoes, half finish'd, & a hut also, but since their first entering of the different Woods could find no water, of which they began to feel the want, they proceeded on about 3 miles in this last Wood, when coming to two huts that was convenient for holding their whole party, they stopped; heartily fatigued with their day's Journey, having walk'd as they thought 20 miles this day, but they were oblig'd to separate into parties in search of water, & at last found some rain water in the bottom of a Canoe, which although the Colour of red wine, was to them a very agreeable sight... [page 523]

March 1779. Clerke's notes of the Kealakekua region — describing agricultural development and native "towns," and practices observed from near shore to the upper mountain slopes — concur with those of King and add some additional site and resource descriptions:

...The Towns of the Natives are built along the Sea side... At the back of the villages...are their plantations of Plantains, Potatoes, Tarrow, Sugar Canes &c, each mans particular property is fenced in with a stone wall; they have a method of making the Sugar Cane grow about the walls so that the stones are not conspicuous at any distance, but the whole has the appearance of fine green fences. These Plantations in many places they carry six or seven miles up the side of the hill, when the woods begin to take place which diffuse themselves from hence to the heights of the eminences and extend over a prodigious track of ground; in these woods are some paths of the Natives and here and there a temporary house or hut, the use of [page 592] which is this; when a man wants a Canoe he repairs to the wood and looks about him till he has found a tree fit for his purpose and a convenient spot for his work; having succeeded thus far, he runs up a house for his present accommodation and goes to work upon his Canoe, which they in general completely finish before it's moved from the spot where its materials had birth. Our people who made excursions about the Country saw many of these Canoes in different states of forwardness, but what is somewhat singular, if one of their vessels want repairing she is immediately removed into the woods though at the distance of 5 or 6 miles. These woods abound with wild Plantains which though not equal to the cultivated, are far from being a bad fruit. The poorer sort of People here make a very general use of them. Upon the highest hills our people could ascend, the burnt rocks were in many places bare or only covered with a little moss with numberless Chasms blown in them by the violence of the volcano, though just by, there would be soil enough to hold large trees very firm... [Beaglehole 1967:593]

The Journal of William Ellis

Following the death of Kamehameha I in 1819, the Hawaiian religious and political systems began undergoing radical changes. Just moments after his death, Ka'ahumanu proclaimed herself "*Kuhina nu'i*" (Prime Minister), and approximately six months later, the ancient *kapu* system was overthrown in chiefly centers. Less than a year after Kamehameha's death, Protestant missionaries arrived from America (see I'i 1959, Kamakau 1961, and Fornander 1973). In 1823, British missionary William Ellis and members of the American Board of Commissioners for Foreign Missions (ABCFM) toured the island of Hawai'i seeking out communities in which to further the work of the growing Calvinist mission. Ellis' writings (1963), generally the earliest detailed accounts (written in 1825) of settlements around the island of Hawai'i, offer readers important glimpses into the nature of native residency and history at the time.

During the visit, Ellis and his traveling companions walked through and canoed along the shore of Kapalilua-South Kona. While Kīpāhoehoe is not specifically named—the stones called Ka'uleonānāhoa (also called Nāpōhakuōloa), are situated in the sea fronting Kīpāhoehoe—members of the party walked the *alaloa* through the *ahupua'a*. The following excerpts described the landscape extending from sea to the upland field systems and areas of residence in the lands between Kalāhiki and Kapu'a, as they relate to our general understanding of the cultural-historical landscape of the period. It will be noted that Ellis and his associates, found little good to say about the nature of the land—it was almost impossible for them to procure any water or food. Like the observations made by Captain Cook's men, Ellis and party also observed that it was the custom in these lands, for people to live near the shore, and keep cultivated fields miles above the coast in the forests:

Change Effected by Missionaries

...We took leave of the friendly people of Kalahiti about nine a.m. on the 25th. Messrs. Thurston, Bishop, and Goodrich, continued their journey along the shore, and I went in the canoe in company with Mr. Harwood.

The coast, along which we sailed, looked literally ironbound. It was formed of steep rocks of porphyritic lava, whose surface wore the most rugged aspect imaginable.

From Kalahiki to Kapua.

About two p.m., we reached Taureonanahoa [Ka'uleonānāhoa or Nāpōhakuoloa], three large pillars of lava, about twenty feet square, and apparently sixty or eighty high, standing in the water, within a few yards of each other, and adjacent to the shore. Two of them were united at the top, but open at their base. The various coloured strata of black, reddish, and brown lava, being distinctly marked, looked like so many courses of masonry. We sailed between them and the main land; and about five in the afternoon landed at Kapua, a small and desolate-looking village, on the southwest point of Hawaii, and about twenty miles distant from Kalahiti. Here we had the canoe drawn up on the beach until our companions should arrive.

After leaving Kalahiti, Messrs. Thurston, Goodrich, and Bishop, proceeded over a rugged tract of lava, broken up in the wildest confusion, apparently by an earthquake, while it was in a fluid state. About noon they passed a large crater [Kaluaolapauila, on the boundary of Kukuioapa'e and Kolo]. Its rim, on the side towards the sea, was broken down, and the streams of lava issuing thence, marked the place by which its contents were principally discharged. The lava was not so porous as that at Keanaee, but, like much in the immediate vicinity of the craters, was of a dark red, or brown ferruginous colour, and but partially glazed over. It was exceedingly ponderous and compact, many [pg. 124] fragments had quite a basaltic shape, and contained quantities of olivine of a green and brown colour.

Canoeing Through the Surf

For about a mile along the coast they found it impossible to travel without making a considerable circuit inland; they therefore procured a canoe, and passed along the part of the coast where the sea rolled up against the naked rocks; and about one p.m. landed in a very high surf. To a spectator on the shore their small canoe would have seemed every moment ready to be buried in the waves; yet, by the dexterity of the natives, they were safely landed with no other inconvenience than a slight wetting from the spray of the surf.

Camping at Honomalino

Mr. Thurston preached to the people at the place where they landed. After which they took some refreshment, and kept on their way over the same broken and rugged tract of lava till about six p.m. when they reached Honomalino. Here they were so much fatigued with the laborious travelling of the past day, that they were obliged to put up for the night. They procured a little sour *poē*, and only a small quantity of brackish water. Having conducted family worship with the people of the place, they laid themselves down to rest on their mats spread on the small fragments of lava, of which the floor of the house was composed.

Early the next morning the party at Honomalino proceeded to Kapua, and about eight a.m. joined those who had slept there.

A Barren and Desolate Country

At this place we hired a man to go about seven miles into the mountains for fresh water; but he returned with only one calabash full; a very inadequate supply, as our whole company had suffered much from thirst, and the effects of the brackish water we had frequently drank since leaving Honaunau.

Nothing can exceed the barren and solitary appearance of this part of the island, not only from the want of fresh water, but from the rugged and broken tracts of lava of which it appears to be entirely composed.

Unwilling to spend the Sabbath in the desolate and almost forsaken village of Kapua, we prepared for a long day's journey, as we knew of no village before us containing more than five or six houses for nearly thirty miles' distance.

Before we left Kapua, we were so favoured as to procure water enough to fill our canteens, and about 10 a.m. resumed our journey. Messrs. Thurston, Bishop and Goodrich, walked on by the sea-side. [pg. 125] About noon they reached Kaulanamauna, and shortly after left Kona, and entered Kau.

A General Description of Kona

Kona is the most populous of the six great divisions of Hawaii, and being situated on the leeward side, would probably have been the most fertile and beautiful part of the island, had it not been overflowed by floods of lava. It is joined to Kohala, a short distance to the southward of Towaihae bay, and extends along the western shore between seventy and eighty miles, including the irregularities of the coast.

The northern part, including Kairua, Kearake'kua, and Honaunau, contains a dense population; and the sides of the mountains are cultivated to a considerable extent; but the south part presents a most inhospitable aspect. The population is thin, consisting principally of fishermen, who cultivate but little land, and that at the distance of from five to seven miles from the shore. [Ellis 1963:126]

The Journal of Chester S. Lyman (A Visit to Kīpāhoehoe Village in 1846)

In 1846, Chester S. Lyman, "a sometime professor" at Yale University visited the island of Hawai'i. His narratives provide readers with important documentation pertaining to the native villages and landscape in Kona, and decline of the native population in the region. The original type-written manuscript (919.69 L 98), was viewed in the collection of the Hawaiian Mission Children's Society Library. The following excerpts penned by Lyman, describe his journey by a foot path near the shore, from Kapu'a to Kīpāhoehoe. At Kīpāhoehoe Lyman hired a canoe from the residents and continued his journey by sea to Kealakekua. Lyman's notes, are the earliest and most detailed description of Kīpāhoehoe found by this author, to date—

September 3rd, 1846. ...The road most of the way was no road at all, but an exceedingly blind foot path, winding in various directions among the grass and lava, and utterly impossible to follow by any but a native eye. It seemed to grow rougher and rougher, and the path was very little if any "worked" or improved by leveling and laying flat stones to step on. The country generally seemed to be formed of flows of the roughest kind of clinkery lava, the irregularities being of all sizes from pebbles to up to hillocks. The way seemed long and weary, and when the sun had disappeared behind the ocean, and the shades of night were thickening around, we had but just attained a rough eminence from which Kapua was visible still some 3 or 4 miles distant...The great advantage of traveling over clinkery lava by night is that the darkness makes the path all appear smoothe and even, and you are saved the trouble of selecting places for your feet... At 8 o'clock I reached Kapua, which is rather pleasantly situated on a cove of the sea. It is on one of the clinkery flows, and the region around is very rough. I proceeded at once to the beach, and enjoyed the luxury of a bath, after which I went to the house where I was to stop near the beach, and took my supper and made preparations for sleeping... I here for a real (12 ½ cents) bought a fine watermelon, which was delicious and refreshing...

September 4th. Rose a little after 5 – the thermometer being at 78°, the sky clear and the air fresh and balmy... Our path was now over clinkers of the roughest sort, and as I was lame from a sore on my foot, I found walking exceedingly difficult.

A mile from Kapua we passed the little village of Koa [Okoe] and mile or two further on, passing Honomalino, we came to Milolii, where there is an extensive and beautiful sand beach covered by a fine grove of coconuts. Here I took breakfast under their shade.

Starting on at 7:30 I passed the village of Kalihi, and at 8:30 reached Hoopuloa, where I purchased some coconuts and found their water very refreshing, as the sun shone hot and the morning was sultry.

In one of the villages of this region I noticed a neat Catholic church, built in the native style, with a small cross erected on the front corner of the roof... After two hours and a half of laborious and hot walking, I reached at 11:30 Kipahoehoe, a small village in a rough lava region about 9 or 10 miles from Kapua.

At this place there are three columns of lava [Napohakuloloa] separated from the shore, close together, and two of them leaning on each other – the rest of the bed of lava of which they doubtless once formed a part being washed away by the action of the sea. The height of these was I should judge over 50 feet. The strata of the original lava bed were distinctly marked. Here I found myself too lame to proceed with any comfort by land, and after taking a bath in the sea and eating dinner I hired a canoe and two men to take me to Kealakekua, about 25 miles distant.

At a quarter past one the canoe was ready, and we all embarked. The launching of the canoe in the surf is a difficult thing and one which the natives perform with great skill. Sticks of wood are laid down a few feet apart from the canoe house to the water, and over these the canoe is pushed till it reaches the surf, where luggage is put on board, and then at the right moment in relation to the rollers, which a native thoroughly understands, it is shoved off and the next moment is floating safely in deep water. The wife of my canoe-man, a short, fleshy woman, swam out several rods to see us off, and while the sail was got in order and preparations made for sailing, she was swimming around – till the light land breeze filling our white cotton sail, we shot out of the cove; and the last I saw of the woman, she was still in the water paddling towards the shore.

Our canoe was a nearly new one, finely made, about 20 or 30 feet long, and in the widest part about 12 or 15 inches broad. It has an outrigger, as is always the case with Sandwich Islands canoes, and one man was stationed on the stick joining this with the canoe to counterbalance the action of the wind on the sail and prevent the canoe's upsetting. My other Kau man, with the two belonging to the canoe, did the paddling, while a light land breeze shoved us through the water at the rate of 5 knots or so an hour. The water was nearly smooth, and the trip a pleasant one bating a little feeling of seasickness, which however was not sufficiently violent for the entertainment of the fishes...

About 6 miles from Kipahoehoe we passed a crater [Kaluaolapauila] on the shore, one side of which had been cut down by the section of the sea, leaving two hills or prominences a short distance apart... [Lyman Ms. 1846:19-21]

One additional observation by Lyman, that is of interest to the present study, are his notes regarding the depopulating of the South Kona region, as a result of a severe drought. He raises the issue while describing the diminished congregation of the Kealakekua church —

One reason for the smallness of the congregation appears to have been the dispersion of the people in consequence of the great famine which prevailed on this side of the island for a year past. There has been a continual drought during that time, reducing every vegetable substance to tinder, in consequence of which the whole country was overrun by fire, presenting a most sublime spectacle by night and destroying many habitations.

The natives have suffered exceedingly for want of food and have been obliged to subsist on a species or two of roots, scarcely fit for food, and the few fish they could get from the sea... [Lyman Ms. 1846:23]

One of the foods described above, was the *uhi* or a yam which through the 1930s, was still collected in Kapalilua by native residents as a food supplement (pers comm., Hannah Kiwaha).

Records of the Hawaiian Mission Station – South Kona, Hawai'i

In April 1824, the year following Ellis' visit, the first South Kona Mission Station was established on the flats of Ka'awaloa by Reverend James Ely. The station was situated on land provided for that purpose by chiefess Kapi'olani and her husband, Haihā Nāihe. It was from the Ka'awaloa Station, and later the Kealakekua Station (to which the Ka'awaloa branch was relocated), that activities of the South Kona churches were directed.

Four years after his arrival, James Ely departed from Ka'awaloa (October 15, 1828), and was replaced by Samuel Ruggles (who transferred from the Kailua Station). On May 17, 1832, Cochran Forbes arrived in Hawai'i to take up residence at the Ka'awaloa (South Kona) Mission. Mark Ives also settled in the South Kona Station with Forbes, and in 1835, they established the Keālia-Kapalilua out-station of South Kona. Under Forbes' tenure, the Ka'awaloa Station relocated to the Kepulu vicinity of Nāpo'opo'o (location of the present-day Kāhikolu Church), in 1839, and became known as the Kealakekua Station. Forbes remained in Kona until 1845, and Ives remained until 1847. In 1848, J.F. Pogue took up residency in the Kealakekua station and remained there till 1851, when he was transferred to Lahaina Luna. In 1852, John D. Paris relocated from Wai'ōhinu, Ka'ū, to the Kealakekua Station. Reverend J.D. Paris remained in his Kona parish until he passed away in 1892.

Early in the mission history, it became the goal to have a school (for both formal education and spread the Christian word) in each native village. Nearly every *ahupua'a* had a school with a native teacher. Among the schools established was one on the shore at Kīpāhoehoe, which apparently remained in use through at least 1852, when the school lot was surveyed by the Government for transfer to the Board of Education. While the lot was surveyed, no subsequent communication regarding attendance or use of the school was found. This is in part due to the fact that, the families of Kīpāhoehoe were diminishing, and as a result, funding for the schools in the area settled at three locations, Pāpā, Miloli'i and Ka'ohe.

It is from the writings of the missionaries mentioned above, that we find important descriptions of the native communities and population at and in the neighboring lands of the Kapalilua region. Selected excerpts from missionary letters and station reports (viewed in the collection of the *Hawaiian Mission Children's Library*), and selected government records pertaining to affairs of the Minister of Education, are cited below. The narratives provide readers with insight into the history of the region, and transitions in residency. Underlining of place names and emphasis given in selected narratives are used by the author of this study to draw attention to specific narratives —

1833 - C. Forbes, at Ka'awaloa:

...At our last general examination in May we visited every school as near as practicable...we found only about 1,300 readers among 36 schools. This examination does not include Kau or the south point of the Island where there are about 5,000 inhabitants 25 schools & probably 1,200 readers... Probably no Station on the

islands is worse situated for access to the people than is Kaawaloa. There is no way of getting from village to village south of the bay, but in canoes, unless we climb over vast shaggy beds of lava, and the people mostly coming under our charge are strewn along a shore probably 40 miles in length, besides some 5,000 who live on the south point of the Island...

Probably 1000 may be said to come directly under Missionary influence which leaves 9 or 10,000 destitute as the whole district includes 10 or 12,000 souls... [C. Forbes Ms. 1833:2-3]

November 8, 1835 – C. Forbes, writing from Kuapehu, reported:

...Our station embraces the coast delineated on the map from Kainaliu on the north west, to Puna on the southwest; a coast of nearly 90 miles⁶. Two weeks is the very least in which the whole field can be hastily visited by simply preaching at the more important villages... [MHM – 266.858 M69; Missionary Letters 1830-1836; Vol. 8:2317]

July 23, 1836 – C. Forbes, writing from Kaawaloa, reported:

Last fall I had every house numbered and its inhabitants from the borders of the Kailua Station [Kainaliu], southward & round to the borders of this station on the southeast, and found the whole population of my field to be as follows. This part of Kona 3,536 adults; 1,473 children...total 5,009... Kau adults 3,365...children 1,401...total in Kau 4,766... (Vol. 8:2330; MHM – 266.858 M69; Missionary Letters 1830-1836; Vol.'s 4 & 8)

Among the letters of Cochran Forbes, is a "Journal of occurrences showing my manner of spending my time" (October 10-26, 1836); the original handwritten letters are in the collection of the ABFCM-Hawaii Papers, Houghton Library, Harvard (a photocopy was viewed in the collection of Hawaiian Mission Children's Library).

On October 10, 1836, Forbes sailed from Ka'awaloa, beginning his tour of the southern portion of his mission station. His journal offers readers a description of the villages he visited, the conditions of the schools, churches, and circumstances of the people, and conditions in the region. While Forbes at times wrote with a prejudice, his first-hand accounts are of value in understanding the historic landscape of the period.

On October 12th, Forbes traveled by canoe from Keālia along the coast of Kapalilua to Kapu'a. He then traveled north by foot and canoe along the coast to various villages back towards Keālia. His journal entries provide readers with descriptions of the region, and nature of the scattered settlements along the way:

This morning we left Kealia before daylight in order to avail ourselves of the land breeze. Had a pleasant sail a fair wind to Kapua, some 20 miles, where we have just arrived. Perhaps there are 40 souls in all in this village, almost as dark as 20 years ago. Their children of 3 to five years old are running as stark naked as they were born...

I came by foot to the next village (Okoe) where I got together about 30 souls and I have just closed my meeting. They are civil but alas do not seem to feel their need of Christ... I have two more villages to visit & preach at tonight... Left for this place (Milolii) where a few collected in the teacher's house... Oct. 13th Left Milolii this morning by daylight and came on here to Hoopuloa the nearest village. The residents are all absent – gone up in the country for food. But found some forty here from a

⁶ Map is not available in collection.

distant village. They have come here to get kukuis to pay their tax, laid by Gov. Adams, to finish the Kailua church. Collected them & preached to them and have just distributed tracts, they were careful to ask tracts for all their absent friends who are gone back into the country for food...

After preaching and breaking our fast on a roast fish & piece of bread we pursued our course to the next village, but the sea was so rough we could not get ashore and were obliged to pass by that and three other villages when we came to Opihali, where with much difficulty I got ashore and preached Christ to them and distributed tracts... Leaving Opihali we came on to Oielomoana and Kolo, two villages close together but could not get ashore for the surf.

The origin of the names of these villages is worthy of notice. The first is called "Olelo moana" ie. "word of the ocean." Some fishermen of that village, a number of years ago consulted while out fishing, how they might take two helpless old men who lived along on the same land, but up back from the seashore, and make fish hooks of their bones! Thence the village was called "word or consultation of the ocean." The two old men got intelligence however before hand of the designs of their neighbors and left their dwelling, and not being able to walk, from age, they crawled to the next houses upon another land. That land received the present name ("Kolo" ie to "crawl") from that circumstance. One land is therefore called "word of the ocean" and the other "crawl." And it was the custom to make fishhooks of human bones in old times, especially of the bones of those offered in sacrifice, whose flesh was also taken for bait! ... We next came to Kaohe a small village as inaccessible as Opihali...

I ought to say that all these villages are destitute of regular schools, tho I found in all of them a number who can read & in some cases almost the whole village could read. The teachers who had taught them that much, have deserted their posts and gone, many of them, after chiefs. They being the most capable men of their villages, in many cases, have been greedily courted by the chiefs, for headmen or for men to wait about their persons, and a prospect of earthly gain is as attractive to these poor heathens as any... nor indeed can I blame them. But we must now have better teachers to supply their place. I found the people in all of the villages remarkably kind & docil & believe they would generally be glad to have schools if they had competent teachers. The above remarks apply to most every village from Honaunau, 10 miles south of us to Kau... [Forbes Ms. 1836:9-10]

On May 6, 1841, Mark Ives, who oversaw the Kapalilua (Keālia to Kapu'a section) of the South Kona Station reported that "the condition of the schools has fluctuated...the chiefs have had the teachers and students out working the *koele* (planting fields)..." (M. Ives Ms. 1841:4); and that there was a total of "34 schools with 1,837 students" found in the district (M. Ives Ms. 1841:5a).

April 1, 1842 – C. Forbes reported on activities and events during 1841-1842, describing the Ka'ū and South Kona fields, which had been divided into three sub-districts, one of which was Kapalilua:

...II) I come now to the part of this field in which Bro. Ives has spent most of his labors the past year, which by itself forms a field of labor large enough for any one man. It commences at Kealia and extends to the borders of Kau & is 15 or 20 miles in extent. The population is near 2000.

In this district which is called Kapalilua there are 10 schools containing 400 scholars all which are now in an interesting condition. There are 450 church members in Kapalilua including Kealia. They have lately been set off from this chh. to form a separated church by themselves... Kealia is about 8 miles by water and ten or 12 by land over a bad road from this place... [Report of the Mission Station at Kealakekua – MHM Kealakekua 1839-1857; Mss 2a H31 Kealakekua. Forbes 1842:4-5]

April 4, 1842 – M. Ives added a section to the Report of the Mission Station at Kealakekua, describing circumstances in Kapalilua (South Kona):

My labors have been confined mostly to Kapalilua. The population in that district is not quite 2000...The field at Kapalilua extends along a sea coast of 20 miles & sometimes 4 to 8 miles inland up a mountain. The villages there can be reached only by canoe & there is doubtless no place in consequence of bad landing where a meeting house will ever be built except near the two extremities of the field. Kealia lying entirely at this [northern] extremity is the most convenient place where the people may assemble... That is the spot where one would build. I could not think of reaching from that place the people some of whom live 25 miles distant without being from home much of the time... [Ives Ms. 1842:1-3; MHM Kealakekua 1839-1857; Mss 2a H31 Kealakekua]

April 1843 – C. Forbes reported:

Here we are with two churches scattered over a country 40 miles in extent, very bad travelling, only a part of it accessible on horseback and only two feeble missionaries for the whole field, where there is work enough to exhaust the energies of 4 hale men... [Ives Ms. 1843:3; MHM Kealakekua 1839-1857; Mss 2a H31 Kealakekua]

May 9, 1846 – M. Ives' report from the Mission Station at Kealakekua for 1845-1846 includes descriptions of events at Kealakekua, Kealia, and Kapalilua. He also described the devastating impacts of a drought, fires, and then heavy rains upon the native population and landscape of South Kona. In the period between February 15th to December 18th, 1845, there was no rainfall, then on December 18th, there was "a terrific conflagration." Ives reported—

The drought aforementioned was followed by the epidemic common to all the island & by a scarcity of provisions scarcely before known even at Kealakekua. The consequence was that numbers flocked to Kau & other places where they found sustenance... It is now impossible for many of the natives to get taro & potatoe tops to start their plantations; such has been the devastation. A spark of fire dropped into the leaves would immediately kindle & the consequence was that the country from Onouli to Kapua & onwards a distance of 30 miles including all our arable land except here and there a small patch where the owner with uncommon vigor defended it, was burnt over & the food thoroughly baked. Often the man after watching his plantation a whole night would leave it supposing it past danger when some sudden turn of the wind would change the direction of the fire, & before he could again reach it, his whole plantation be consumed.

There has been a decrease of children in our field the last 5 years, upwards of 250... The population in our field is diminishing. There is no place probably among us where it is on the increase. Kaawaloa which in 1835 numbered 460 inhabitants has now only 160 either on the land or considered as belonging to it... The famines too are thinning off our inhabitants.

There are two or three vessels constantly plying between our place & Oahu & every vessel that left for several weeks was loaded down with passengers so as scarcely to afford a foot room for the captain. But a part of these will never get back. They are trusted for their fare to Oahu & when they return they are required to pay the fare for both ways. Their lands in the mean time, lying uncultivated, they will have nothing to eat should they return... [M. Ives Ms. 1846:2-5; MHM Kealakekua 1839-1857; Mss 2a H31 Kealakekua]

1855 – J.D. Paris (Station Report). Paris described the reorganization of the South Kona Mission Station, giving the boundaries of each out-station, and the population therein, beginning at Hōkūkano in the north, and extending to Miloli'i-Kapu'a in the south. The following narratives focus on the Miloli'i

section of the station, where Paris describes the custom of living near shore, while maintaining upland cultivated lands, some three to five miles above the shore. By this time, places of worship at some areas were shifting upland (accessed by the *mauka* Government Road), while the schools along the coast continued to be used (under the Office of Public Instruction). Paris wrote—

Mr. Paris' Report 1855

Since our last Annual Report our Church in S. Kona has been reorganized or divided into six branches... This arrangement while it greatly augments the labors of the Pastor or Miss. Is nevertheless we think, as this people are scattered over a large extent of country, & can never all meet together, greatly beneficial to them.

The first of these Churches extends Geographically from Hokukano on the North to Onouli on the South... The other two Churches one at Kaohe & the other at Milolii. The former has 101 members the latter 140. Both these Chhs have comfortable houses to worship in. The one at Kaohe is of thatch, the one [at] Milolii is stone.

These Chhs are made up of the poor of this world & of the poor of Hawaii. Most of [the] people get a lively hood (!) principally by fishing – their villages are mostly near the sea shore on the barren lava. Their food is cultivated back from the sea shore, the distance of from three to five miles, where the land is generally fertile & with proper culture would produce abundantly. During the year we ordained two Deacons at Milolii & one at Kaohe.

We have some good warm hearted Christians at Kaohe, who are lights in the midst of surrounding darkness.

At Milolii. We have some good people & some of whom we stand in doubt. A few living epistles known & read of all men – some whose light shines more dimly & through many clouds & others whose light is darkness... The No. of Births in this District has been greater than in the two preceding (!) years & No. of deaths Smaller:

Births	81	—	Deaths	57...
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The health of the native population & foreign residents in South Kona has been during the past year unusually (!) good. We have had no Epidemics & but little sickness of any kind & comparatively but few deaths. It has been a year of peace & plenty. Our hills & valleys have been watered abundantly with the showers of heaven. The Earth has yielded its increase & the ocean abounded with fish. Some of our people we think are more diligent & industrious than in years past. More patches have been cultivated – more fields fenced – more trees planted more houses built & repaired, & more roads & paths made than in years past. In some of our Villages there is a very marked improvement about the houses & yards every thing wearing a more cheerful aspect.

We have no field waving with golden harvests (as on some other islands) but our people are multiplying their Coffee patches, & the number of Orange trees loaded with golden fruit, are rapidly increasing.

Some of the "thousand hills" are dotted over with cattle & horses; - and vast fields of barren lava, fertilized with streams of living goats... [Report of the Mission Station at Kealakekua – MHM Kealakekua 1839-1857; Mss 2a H31 Kealakekua. Paris 1855]

1863 – J.D. Paris' Station Report for 1863, included an overview of the history of the Ka'awaloa-Kealakekua Station. Of interest to lands in the Kapalilua region, are descriptions of the three primary church-school stations at the time, and that mission efforts in the region focused on the coastal region until the improvement and re-opening of the mountain road in 1852-1855 (see section on trails and roads in this study) —

...Kaohe. The Chh. in this district is also very poor... & its members scattered over a still larger extent of country mostly *pahoehoe* & *aa*. When the Chh. was organized in 1854 – they had a large & very comfortable meeting house on the sea shore. But since the opening of the mountain road there are more inducements for cultivating the soil & the people are gradually moving inland & they are now bending all their energies to erect a good house of worship... Mean time they have thrown up two rude thatched houses which serve the double purpose of school & meeting house... The chh. now numbers 168 in regular standing.

Milolii & Kapua. This Chh. has its station & house of worship at Milolii on the sea shore about 35 or 40 miles from the Miss. Station at Kaawaloa. They have a rough but good stone meeting house...on the sea shore, & another at Kapua 5 miles beyond, & another as far distant inland... The Chh. was organized in 1855 with 90 members, it now numbers... 180... [Paris Ms. 1863:1-5]

MĀHELE 'ĀINA (LAND TENURE DEFINED)

In pre-western contact Hawai'i, all land, ocean and natural resources were held in trust by the high chiefs (*ali'i 'ai ahupua'a* or *ali'i 'ai moku*). The use of land, fisheries and other resources were given to the *hoa'āina* (native tenants) at the prerogative of the *ali'i* and their representatives or land agents (*konohiki*), who were generally lesser chiefs as well. By 1845, the Hawaiian system of land tenure was being radically altered, and the foundation for implementing the *Māhele 'Āina* (a fee-simple right of ownership), was set in place.

As described by native writers in traditional accounts, and by foreign visitors and residents (cited in the preceding sections of the study), we know that native tenants made their home and sustained themselves upon the land of Kīpāhoehoe, and in the larger Kapalilua region. What is not clear, is what happened to those residents, as they are almost absent from records of the *Māhele 'Āina* (Land Division) of 1848.

Proceedings and Requirements of the Māhele 'Āina

On December 10th, 1845, the king, Kūikeyouli, Kamehameha III signed into law, a joint resolution establishing and outlining the responsibilities of the Board of Commissioners to Quiet Land Titles. The primary actions called for, and laws to be implemented were:

ARTICLE IV. — OF THE BOARD OF COMMISSIONERS TO QUIET LAND TITLES.

SECTION I. His Majesty shall appoint through the minister of the interior, and upon consultation with the privy council, five commissioners, one of whom shall be the attorney general of this kingdom, to be a board for the investigation and final ascertainment or rejection of all claims of private individuals, whether natives or foreigners, to any landed property acquired anterior to the passage of this act; the awards of which board, unless appealed from as hereinafter allowed, shall be binding upon the minister of the interior and upon the applicant.

SECTION II. Said commissioners shall, before acting, take and subscribe an oath to be administered to them by the minister of the interior...

SECTION III. It shall be the duty of said board of commissioners to select one of their number as president...

SECTION IV. The president of said board shall, at least once in each month, from the date of their first convention, report their proceedings to the minister of the interior—the number of claims then pending before them—the number to that date confirmed or rejected, and the reasons for confirmation and rejection of any particular claim to land, with all the evidences adduced to and reduced before them.

SECTION V. It shall be the special duty of board to advertise in the Polynesian newspaper, during the continuance of their sessions the following public notice, viz.:

TO ALL CLAIMANTS OF LAND IN THE HAWAIIAN ISLANDS.—The undersigned have been appointed by His Majesty the king, a board of commissioners to investigate and confirm or reject all claims to land arising previously to the — day of —, 18— [Dec. 10, 1845]. Patents in fee simple, or leases for terms of years, will be issued to those entitled to the same, upon the report of which we are authorized make, by testimony to be presented to us.

The board holds its stated meetings weekly at —, in Honolulu, island of Oahu, to hear the parties or their counsel, in defense of their claims; and is prepared, every day to receive in writing, the claims and evidences of title which parties may have to offer, at the —, in Honolulu between the hours of 9 o'clock A.M. and 3 o'clock P.M.

All persons are required to file with the board specifications of their claims to land, and to adduce the evidence upon which they claim title to any land in the Hawaiian Islands, before the expiration of two years from this date, or in default of doing so, they will after that time be forever barred of all right to recover same, in the courts of justice.

SECTION VI. The said board shall be in existence for the quieting of land titles during the two years from the first publication of the notice above required, and shall have the power to subpoena and compel the attendance of witnesses by discretionary fine...

SECTION VII. The decisions of said board shall be in accordance with the principles established by the civil code of this kingdom in regard to prescription, occupancy, fixtures, native usages in regard to landed tenures, water privileges and rights of piscary, the rights of women, the rights of absentees, tenancy and subtencancy, — primogeniture and rights of adoption; which decisions being of a majority in number of said board, shall be only subject to appeal to the supreme court, and when such appeal shall not have been taken, they shall be final.

SECTION VIII. All claims to land, as against the Hawaiian government, which are not presented to said board within the time, at the place and in the manner prescribed in the notice required to be given in the fifth section of this article, shall be deemed to be invalid, and shall be forever barred in law, unless the claimant be absent from this kingdom, and have no representative therein.

Section IX. The minister of the interior shall issue patents or leases to the claimants of lands pursuant to the terms in which the said board shall have confirmed their respective claims, upon being paid the fees of patenting or of leasing (as the case may be)...

SECTION X. The minister of the interior shall have power in concurrence with the privy council, and under the sanction of His Majesty, to issue to any lessee or tenant for life of lands so confirmed, being an Hawaiian subject, a patent in fee simple for the same, upon payment of a commutation to be agreed upon by his Majesty in privy council.

SECTION XI. The patents and lease issued in accordance with the award of said commissioners, shall be recorded at the expense of the patentee or Lessee, as prescribed in the third part of this act, in a book to be kept for that purpose by the minister of the interior.

SECTION XII. The said board shall not have power to entertain any claims to lands set up by any private person or persons until the claimant shall have deposited with the minister of finance a bond conditioned to defray the costs and expenses incident to the proposed investigation... and a certificate thereof shall be given to the claimant who shall exhibit the same to the minister of finance, whose certificate of full payment, together with the award of the commissioners, shall authorize the delivery of the awarded patent or lease to such confirmed claimant, by the minister of the interior, and not without.

SECTION XIII. The titles of all lands claimed of the Hawaiian government anterior to the passage of this act, upon being confirmed as aforesaid, in whole or in part by the board of commissioners, shall be deemed to be forever settled, as awarded by said board, unless appeal be taken to the supreme court, as already prescribed. And all claims rejected by said board, unless appeal be taken as aforesaid, shall be deemed to be forever barred and foreclosed, from the expiration of the time allowed for such appeal. [In the Polynesian; January 3, 1846:140]

As the *Māhele* evolved, it defined the land interests of Kauikeaouli (King Kamehameha III), some 252 high-ranking *Ali'i* and *Konohiki*, and the Government. As a result of the *Māhele*, all land in the Kingdom of Hawai'i came to be placed in one of three categories: (1) Crown Lands (for the occupant of the throne); (2) Government Lands; and (3) *Konohiki* Lands (cf. Indices of Awards 1929). The "Enabling" or "*Kuleana Act*" of the *Māhele* (December 21, 1849) further defined the frame work by which *hoa'āina* could apply for, and be granted fee-simple interest in "*Kuleana*" lands (cf. Kamakau in *Ke Au Okoa* July 8 & 15, 1869; 1961:403-403). The *Kuleana Act* also reconfirmed the rights of *hoa'āina* to access, subsistence and collection of resources necessary to their life upon the land in their given *ahupua'a*. The *Kuleana Act*, which remains the foundation of law pertaining to native tenant rights, sets forth the following:

August 6, 1850

An Act confirming certain resolutions of the King and Privy Council passed on the 21st day of December 1849, granting to the common people allodial titles for their own lands and house lots, and certain other privileges.

Be it enacted by the Nobles and Representatives of the People of the Hawaiian Islands in Legislative Council assembled;

That the following sections which were passed by the King in Privy Council on the 21st day of December A.D. 1849 when the Legislature was not in session, be, and are hereby confirmed, and that certain other provisions be inserted, as follows:

Section 1. Resolved. That fee simple titles, free of commutation, be and are hereby granted to all native tenants, who occupy and improve any portion of any Government land, for the land they so occupy and improve, and whose claims to said lands shall be recognized as genuine by the Land Commission; Provided, however, that the Resolution shall not extend to *Konohikis* or other persons having the care of Government lands or to the house lots and other lands, in which the Government have an interest, in the Districts of Honolulu, Lahaina and Hilo.

Section 2. By and with the consent of the King and Chiefs in Privy Council assembled, it is hereby resolved, that fee simple titles free of commutation, be and are hereby granted to all native tenants who occupy and improve any lands other than those mentioned in the preceding Resolution, held by the King or any chief or *Konohiki* for the land they so occupy and improve. Provided however, this Resolution shall not extend to house lots or other lands situated in the Districts of Honolulu, Lahaina and Hilo.

Section 3. Resolved that the Board of Commissioners to quiet Land titles be, and is hereby empowered to award fee simple titles in accordance with the foregoing Resolutions; to define and separate the portions belonging to different individuals; and to provide for an equitable exchange of such different portions where it can be done, so that each man's land may be by itself.

Section 4. Resolved that a certain portion of the Government lands in each Island shall be set apart, and placed in the hands of special agents to be disposed of in lots

of from one to fifty acres in fee simple to such natives as may not be otherwise furnished with sufficient lands at a minimum price of fifty cents per acre.

Section 5. In granting to the People, their House lots in fee simple, such as are separate and distinct from their cultivated lands, the amount of land in each of said House lots shall not exceed one quarter of an acre.

Section 6. In granting to the people their cultivated grounds, or *Kalo* lands, they shall only be entitled to what they have really cultivated, and which lie in the form of cultivated lands; and not such as the people may have cultivated in different spots, with the seeming intention of enlarging their lots; nor shall they be entitled to the waste lands.

Section 7. When the Landlords have taken allodial titles to their lands the people on each of their lands shall not be deprived of the right to take firewood, *aho* cord, thatch, or ti leaf from the land on which they live, for their own private use, should they need them, but they shall not have a right to take such articles to sell for profit. They shall also inform the Landlord or his agent, and proceed with his consent. The people shall also have a right to drinking water, and running water, and the right of way. The springs of water, and running water, and roads shall be free to all should they need them, on all lands granted in fee simple. Provided, that this shall not be applicable to wells and water courses which individuals have made for their own use. Done and passed at the Council House, Honolulu this 6th day of August 1850. [copied from original hand written "Enabling Act"⁷ – HSA, DLNR 2-4]

The most important source of documentation that describes native Hawaiian residency and land use practices — identifying specific residents, types of land use, crops cultivated, and features on the landscape — is found in the records of the *Māhele 'Āina* (Land Division). The "Land Division" gave the *hoa'āina* an opportunity to acquire fee-simple property interest (*kuleana*) on land which they lived and actively cultivated, but the process required them to provide personal testimonies regarding their residency and land use practices. As a result, records of the *Māhele 'Āina* present readers with first-hand accounts from native tenants generally spanning the period from ca. 1819 to 1855. The lands awarded to the *hoa'āina* became known as "*Kuleana Lands*" and all the claims and awards (the Land Commission Awards or LCA) were numbered ("*Helu*"). The LCA numbers remain in use today to identify the original owners of lands in Hawai'i.

The work of the Land Commission was brought to a close on March 31, 1855. The program, directed by principles adopted on August 20, 1846, met with mixed results. In its' statement to the King, the Commissioners to Quiet Land Titles (George M. Robertson, March 31, 1855) summarized events that had transpired during the life of the Commission:

...The first award made by the Commission was that of John Voss on the 31st March 1847. The time originally granted to the Board for the hearing and settlement of all the land claims in the kingdom was two years, ending the fourteenth day of February, 1848.

Before the expiration of that term it became evident that a longer time would be required to perform a work... Accordingly, the Legislature on the 26th day of August 1847, passed an Act to extend the duration of the Board to the 14th of February, 1849, adding one year to the term first prescribed, not however, for the purpose of admitting fresh claims, but for the purposes of hearing, adjudicating and surveying

⁷ See also "*Kanawai Hoopai Karaima no ko Hawaii Pae Aina*" (Penal Code) 1850.

those claims that should be presented by the 14th February, 1848. It became apparent to the Legislature of 1848 that the labors of the Land Commission had never been fully understood, nor the magnitude of the work assigned to them properly appreciated, and that it was necessary again to extend the duration of the Board. An act was accordingly passed, wisely extending the powers of the Commissioners "for such a period of time from the 14th day of February 1849, as shall be necessary for the full and faithful examination, settlement and award upon all such claims as may have been presented to said Board."

...During the ten months that elapsed between the constitution of the Board and the end of the year 1846, only 371 claims were received at the office; during the year 1847 only 2,460, while 8,478 came in after the first day of January 1848. To these are to be added 2,100 claims, bearing supplementary numbers, chiefly consisting of claims which had been forwarded to the Board, but lost or destroyed on the way. In the year 1851, 105 new claims were admitted, for Kuleanas in the Fort Lands of Honolulu, by order of the Legislature. The total number of claims therefore, amounts to 13,514, of which 209 belonged to foreigners and their descendants. The original papers, as they were received at the office, were numbered and copied into the Registers of the Commission, which highly necessary part of the work entailed no small amount of labor... The whole number of Awards perfected by the Board up to its dissolution is 9,337, leaving an apparent balance of claims not awarded of say 4,200. Of these, at least 1,500 may be ranked as duplicates, and of the remaining 2,700 perhaps 1,500 have been rejected as bad, while of the balance some have not been prosecuted by the parties interested; many have been relinquished and given up to the Konohikis, even after surveys were procured by the Board, and hundreds of claimants have died, leaving no legal representatives. It is probable also that on account of the dilatoriness of some claimants in prosecuting their rights before the Commission, there are even now, after the great length of time which has been afforded, some perfectly good claims on the Registers of the Board, the owners of which have never taken the trouble to prove them. If there are any such, they deserve no commiseration, for every pain has been taken by the Commissioners and their agents, by means of oft repeated public notices and renewed visits to the different districts of the Islands, to afford all and every of the claimants an opportunity of securing their rights... [Minister of Interior Report, 1856:10-17]

It has been calculated that the total amount of land awarded to *hoa'aina* equaled approximately 28,658 acres (see Governor's report 1902:7).

Disposition of Kīpāhoehoe and Neighboring Lands in the Māhele

In the year 2000, *Kumu Pono Associates* digitized the entire collection of records for the *Māhele 'Āina* (that is, all volumes of the Register, Testimony, Mahele Award Books and Royal Patent Books). Most of the records were recorded in Hawaiian, and until recently they have not been completely indexed. Also, flaws in transcription and translations (from the records readily available to researchers) have prevented an accurate depiction of the records in the *Māhele*. Generally, we have found that many more claims and descriptions of land use were recorded, than are indexed in the Indices of Awards (1929). Unfortunately in the case of Kīpāhoehoe, almost no records have been found, and those cited below, represent the *Ali'i* awardees, and not the descriptions of residency and land use that would have been recorded by *hoa'aina* (as is the case for several claims in neighboring lands).

In the "*Buke Kakau Paa no ka Mahele Aina*" (Land Division Book), between Kamehameha III and his supporters, we learn that on January 28, 1848, the *ahupua'a* of Kīpāhoehoe was relinquished by William P. Leleiōhōkū to King Kamehameha III (*Buke Mahele* 1848:23-24; copy of 1864). On March 8, 1848, the King in turn, transferred his interest in Kīpāhoehoe to the Government, thus making the

ahupua'a a part of the Kingdom's land inventory (ibid.:179). Thus, while conducting the present study, a few communications regarding the disposition of Kīpāhoehoe, in the period leading up to, and as a part of the *Māhele* were located. They include the following records:

1843

(Wm. P. Leleiohoku, heir of Gov. J.A. Kuakini);
to Keoni Ana (Minister of the Interior):

Lands Released on Hawaii, during one year, 1842 to 1843... ..Alika, Kona...
Kīpāhoehoe, Kona... These being the lands released and given by the King to me. But of the said lands, during the time of Kuakini, the years were rotated, one year for the King, and one year for Kuakini. These however are not all given in this statement, because I have not gotten all of them. I shall again look for a man (to describe the lands). [HSA Interior Department Lands; translation modified by Maly]

Interior Department Document No. 391 (ca. 1848)

(Regarding Disposition of Various Lands Leading up to the Mahele 'Āina):
...Kīpāhoehoe. Acquired by the King... [HSA Interior Department – Land Files]

The authors have conducted a detailed investigation of the original handwritten communications from the *Māhele*, and unfortunately no native tenant claims that specifically named Kīpāhoehoe have been located. From records of the South Kona Mission Station and Department of Public Instruction, we know that several families were living at Kīpāhoehoe in the period from the 1840s to 1855. Two family names are found, both in association with school records — (1) Kukala was the teacher at the Kīpāhoehoe school in 1852; 14 students were in attendance (HSA - Series 262 School Agent Reports); and (2) Kama's house lot was situated on the north west boundary of the Kīpāhoehoe school lot, by survey of November 1854 (HSA – DAGS 6 Vol. 36:16).

Because only limited records for Kīpāhoehoe from the period of the *Māhele* were located, we have included selected narratives from claims for lands adjoining Kīpāhoehoe (Ka'apuna to the north and 'Alikā to the south), or claims of individuals whose names appear in records of Kīpāhoehoe. These claims help fill out the records of nineteenth century residency and land use practices in the Kīpāhoehoe vicinity. Indeed, it is likely that the claimants knew and traveled through Kīpāhoehoe, and even undertook similar practices as described in their testimonies from neighboring lands, in Kīpāhoehoe. It is also very likely that these claimants (or their families) attended school at Kīpāhoehoe (it was required, and was the closest school). Again, it is unclear as to why the families of the 14 students recorded as attending school at Kīpāhoehoe (see HSA - Series 262 School Agent Reports) did not submit claims. The additional information recorded in the following claims describes residency and land use in a regional context for this section of Kapalilua, and also establishes the boundaries of Kīpāhoehoe. The cited claims, include a digitized copy of the original handwritten records, and translations of the Hawaiian narratives to English, prepared by Maly.

Most of the claimants stated that their rights of residency dated from the 1840s, and land use practices included:

- Residency – near shore.
- Development of formal planting fields (some distance from the main area of residence, and including those outlined by walls).
- Cultivation of Crops: *kalo* (taro), *'uala* (sweet potatoes), *mai'a* (bananas), and *uhi* (yams).

Additional native terms cited in text include: "*pahale*" (house lot); "*kihapai*" and "*mala*" (dryland gardens); "*ahupuaa*" (a land division extending from sea to mountain); and "*ili*" (a small land division within an *ahupua'a*).

8948 Kahinalua Alike January 26, 1848
 He kahi ake nei au i ke ano o kahi pahale i kahi, 66 kapuni i ka lā,
 24 kapuni i ka lāho, oia ma ke ano o kahi pahale, he kahi ake nei
 ui i ka uka o ka ika i ka lāho o ka lāho o ka lāho, o Alike he ahupuaa.
 Oia ma ke kōhōhōhō, ma Kamakamaule mai kahi ake nei, a me ka
 ma kōhōhōhō i ka lāho, a eia au ma kahi o ka lāho o ka lāho o ka lāho
 ma kahi o ka lāho, o ka lāho o ka lāho i ka lāho, o kahi ake nei i ka
 ili o ka lāho, o ka lāho o ka lāho, o kahi ake nei ma ka ili o ka lāho o ka lāho
 ma kahi o ka lāho. Nā i na Kahinalua.

Kahinalua – Helu 8948 (Native Register 8:539)
January 26, 1848

Alike Awarded

I tell you here about the characteristics of my *pahale*, it is 66 feet long and 24 feet wide. That is the nature of my *pahale*. That is what I tell you, the Commissioner to Quiet Land Titles. Alike is the *ahupuaa*. I am the *konohiki* (overseer). My land came from Kamakamaule, when he died, Kaeo inherited it, and I reside here through Kaeo to this time. The things done with my hands are, 1 *kihapai kalo* in the *ili* of Kaahunalii, and 3 *kihapai uala* in the *ili* of Kahehenanui.
 For me, Kahinalua.

Helu 8948 - Kahinalua
 Keawehiku Keawehiku. Oia ma ke ano o ka lāho o ka lāho o ka lāho
 Ma o Pīlāuhina ma kahi o ka lāho o ka lāho o ka lāho o ka lāho
 Ma kahi o ka lāho
 Ma kahi o ka lāho
 Ma kahi o ka lāho
 Ma kahi o ka lāho o ka lāho

Kahinalua – Helu 8948 (Native Testimony 8:516)

Alike

Keawehiku sworn: I know his land. Parcel 1 is in the *ili* of Pīlāuhina at Alike *ahupuaa*. Given to him by Kanihomauole in 1844. Parcel 2 is a *pahale* in the *ili* of Makalaaunui. The boundaries are surrounded on all sides by the land of the *Konohiki*.

<u>6235</u>	<u>Kapaakea</u>	<u>Honolulu Oahu</u> 28 Januasi 1848.
O.	<p style="text-align: center;">i Aloha oukou e ua Luma Hoona. Kuleana. He hoike pololei akeu nei au ia oukou i koin mau kuleana aina a ene koin mau kuleana ma pa.</p> <p style="text-align: center;">Eia malalo nei na inoa, koin mau aina Maalikahana Ahupuaa Koolauloa Oahu Kaapuna " " Kona Hawaii</p> <p style="text-align: center;">Eia malalo nei koin mau kuleana pa maluna o na manu aina la He manu Kula waiho wale He manu Koele He manu laau hooinalu He manu ia hooinalu Ua loa ia iai koin mau kuleana aina, mai ka mo'i mai ana ka Inahala ana o via Aina. Oia na aina i hoike ia mai nei e</p>	

**Kapaakea – Helu 6235 (Native Register 5:263-264)
January 28, 1848**

Not Awarded

Greetings to you, the Commissioners to Quiet Land Titles. I hereby correctly describe to you my land claims and house lot claims...

Kaapuna Ahupuaa Kona...
There are open fields.
There are *Koele* (fields planted for the chief) planting fields.
There are protected woods.
There are protected fish...

...I received these property rights from the King, in the Division of the Lands. They are the lands conferred to me by the King...

By K. Kapaakea

[see next page for continuation of Kapa'akea's claim]

ka Mo'i. He man huleana loi huleana
 oia ma kaahi eae. E hiki no ke ana pono
 ia ma keia hope aken i akaaka ka loa a
 ure ka lula, no ka mea, ma akaaka, ma
 ana palena a pau oia man huleana, aole
 ma i ana ponoia.

Eia malalo nei ka inoa, hoi
 huleana pa ma Oahu nei ma ke kula-
 na kaula o Honolulu.

Koalokele. Eia malalo
 nei ma palena o ma pa la, o ke kula
 pa ma ka Hikiina Akau e pili mai ana
 ke Kaula pa a me ka hale e pili mai
 ana ma kei, ke Alani pili i Paaoa ke
 pili mai ana ma ke Kaula, o ke
 Alani a me ma palena o ka pa o Keke-
 keole ma kei. Oia ma palena. Aloha
 oukou. O man no me ka Malalo.

Ma Ke Kapaakea
 He man hoi no ke keia huleana pa
 a me kei huleana oia.

Continuation: Kapaakea - Helu 6235 (Native Register 5:264)
 [see translation on preceding page]

10216 K. Makaulia Lihououne Feb 4 1848
 I ma lina lona kuleoune aia
 he hoi ake nei ou i hoi kuleoune aia
 kuleoune fakate ma Palapala, 6 hoi ma
 Palanii, hokahi pa 18 hoi e moou aia e
 kumu ake, he kule Makahi, fakate
 i Palanii ma lona lona. I lona
 puua, Kaapuna e pili a me Opihali
 ma Kahi Paha, lona aia i Kuleoune
 a me lona lona
 Ka Makaulia

10221 Makaulia Lihououne Feb 8 1848
 Aloha oukou ma lona lona
 he hoi ake nei ou he ahupuaa e
 Kaapuna ma lona lona, e hoi
 mahala a ka lona i kaoune ma
 ni a kaoune lona
 Eia hokahi ma lona lona
 he maou lona i lona, he wahi puua i lona
 maou lona i lona, he wahi kuleoune
 lona, a he kumu lona ma Palapala
 he ili i Lihououne, a pili a me hoi
 ma Palanii, he pa me ma lona he 12

K. Makaulia Helu 10218 (Native Register 6:516-517) Feb. 4, 1848
 ...At Kona Hawaii, I have two adjoining Ahupuaa, Kaapuna and Opihali... for
 Makaulia.

Makaulia Helu 10221 (Native Register 6:516-517) Feb. 8, 1848 (Awarded)
 ...I hereby tell you of my Ahupuaa, Kaapuna at Kona, Hawaii. It is my division, given
 by the King, who set it aside from his (land)...

by K. Makaulia

GOVERNMENT COMMUNICATIONS DOCUMENTING RESIDENCY, LAND USE AND DISPOSITION OF LAND

This section of the study provides readers with detailed descriptions of land use—including: residency; the native school system; travel; industry; and livelihood—as documented through communications between residents, land- and public-agents, and government officials. The documentation is presented in several sub-categories by the kind of records being reported.

With the exception of the few records of the *Māhele 'Āina*, no letters regarding disposition of Kīpāhoehoe were located for the period between ca. 1850 to 1866. Records also inform us that by 1864, discrepancies regarding the sale of Government lands in Kona (under land agent, H. Sheldon) had arisen. As a result, on June 14, 1864, S. Spencer (Minister of the Interior) instructed Preston Cummings (Deputy Sheriff of Kona) to collect receipts from several claimants for grants in the region. Among the subject claimants was Kahinalua (a *Māhele* awardee in 'Alikā), who had claimed land in 'Alikā and Pāpā. The 'Alikā section reportedly being sold for \$50.00 and the Pāpā 2nd section being sold for \$72.00 (HSA – ID Letter Book Vol. 7b:548-549). In September 1865, S.C. Wiltse (Government Surveyor and Land Agent) reported to F.W. Hutchinson (Minister of the Interior) on the status of Government Lands in several Districts on Hawai'i. Included in his report was a description of a portion of 'Alikā that had been sold to Kahinalua *mā* (and not patented at the time). Wiltse wrote:

...In conformance with your request of the 23rd ult. I have made out and now forward to you, the names and descriptions of the unsold Government lands in the Districts of "Hamakua, Kohala, & Kona." As far as I am acquainted with them. Likewise those sold but not patented... Nearly all of the best lands have been sold, or rather given away, on average at about 50 cts. pr Acre.

The forest lands as a general thing have been well preserved, and should be as a regulator of the climate.

A law was passed by the Legislature of 1862 requiring that the Boundaries to all the Private Lands not Patented, should be established by Survey or otherwise, within five years from that time. Three years have passed, and hardly a commencement has been made on this Island. It is highly important that this law should be enforced as the old Kamaainas are fast dying off, and in a very short time the establishing of Boundaries will be a mere matter of guess work. When the Boundaries of the Private lands are established, then will be known what belongs to Government – and not until then...

...Alikā

This land contains at least 2000 ac. I have surveyed 867 ac. of the lower part for Kahinalua and the others, all of whom live on this land. They had bargained with Sheldon for it they say at 25 cts. per ac. & paid him \$50. which I see is credited to them by the Court.

I should value the *mauka* 300 ac. of this survey at 50 cts. per ac., the balance at 25 cts. The forest part is well timbered with *ohia*... [HSA Interior Department – Land Files, September 5, 1865]

In the same communication, it was reported that the *makai* portion of the neighboring land of Pāpā 1st had been sold to Keliūna, and that the upper section of the land extended into an area of the forest that contained "first rate Koa timber." Royal Patent Grant No. 3049 B was not issued to Keliūna (Keliiluna) until 1867. Also, Keli'ikuli (who from the late 1870s, held a lease on Kīpāhoehoe), had received Royal Patent Grant No. 2738, for a portion of Hoopuloa Ahupua'a (Wiltse 1865:7-8). In 1866, G.P. Ulualoha, applied for a lease-hold interest in Kīpāhoehoe, but a subsequent letter from the South Kona Land Agent, reports that Kīpāhoehoe had not been disposed of.

Government Leases and Land Sales in Kīpāhoehoe and Vicinity

The following communications provide readers with a chronological history of land tenure and land use in Kīpāhoehoe and vicinity (as documented in government land records) through 1900. In the letters, we see that by 1870, 1500 acres of Kīpāhoehoe had been leased for pasturage, though the lessee(s) was not named; records also report that the lease had ended by 1876. Additionally, in 1874 H.N. Greenwell applied to purchase all government lands in the *ahupua'a* of Kīpāhoehoe and 'Alikā for ranching. The application was not approved, and in 1879 Keli'ikuli secured a pasturage lease on Kīpāhoehoe. By 1889, three individuals held leases on portions of Kīpāhoehoe, two for pasture land, and one for the cultivation of 'awa (*Piper methysticum*).

February 24, 1866

G.P. Ulualoha, to F.W. Hutchinson (Minister of the Interior):

...I, the undersigned, a subject of Hawaii, desire to lease the land of Kipahoehoe, situated in South Kona, for the sum of ten dollars per annum.

For twenty years or more, and I will give the yearly rental on the last day of the year... [HSA Interior department Land File]

April 25, 1866

J.H. Kalaiheana, Land Enumerator; to Interior Department

Lands of the King and Government.

Names of the lands of South Kona:

...Kaapuna, an Ahupuaa of Makaulia.

Kipahoehoe, an Ahupuaa of the Government, not disposed of.

Alika, an Ahupuaa of the Government, not disposed of.

Papa 1, an Ahupuaa of the Government, not disposed of.

[HSA – Interior Department Land Files]

April 16, 1870

J.H. Kalaiheana; to Minister of Interior:

Disposition of Government lands in South Kona.

...Kipahoehoe 1500 acres, land owners to lease the pasture land, \$10.00

from the month of January 1, 1869,

Alika 1000 acres... [HSA – Interior Department Land Files]

July 27, 1874

G.N. Greenwell, to W.L. Green (Minister of the Interior):

...The lands of Alika and Kipahoehoe South Kona, Hawaii, are leased for the present year for \$30 per annum, and until lately these brought in no revenue to the Government.

On Kipahoehoe there are, unless I have been misinformed, no residents what ever, and on Alika, but very few.

I proposed either to lease these two (2) lands for 20 years, or to buy them; and I beg to offer \$40 per annum for the two, or to purchase them for \$500; if the latter, the confirmed survey would fall on me, which compared to the value of the land would be very large... [HSA Interior Department Land File]

August 22, 1874

C.T. Gulick (Interior Department Clerk), to H.N. Greenwell:

...I am directed by his Excellency the Minister of Interior to acknowledge receipt of your letter of the 27th July, asking to purchase or rent the lands of Alika and Kipahoehoe in South Kona, Hawaii — and to say in reply that he will be prepared at

an early day to put these lands up at auction, at an upset price of \$500. — purchaser to pay the expense of survey. Mr. R. A. Lyman, the Com. of Bounds. has been instructed to settle the Boundaries of these lands as soon as convenient... [HSA Interior Department Book Vol. 12:535]

August 22, 1874

**C.T. Gulick (Interior Department Clerk),
to R.A. Lyman (Commissioner of Boundaries):**

...You are also desired to settle the boundaries of the Govt. Lands of Alika and Kipahoehoe in South Kona — that is the outside boundaries — as both lands belong to the government it would be a useless expense to settle the boundary between them... [HSA Interior Department Book Vol. 12:535; see also follow up communication of Jan. 25, 1875]

January 25, 1875

**C.T. Gulick (Interior Department Clerk),
to R.A. Lyman (Commissioner of Boundaries):**

...I am directed by His Excellency the Minister of Interior to request you to settle the boundaries of Keauhou, Alika and Kipahoehoe, lands in Kona, Hawaii, as early as possible. Applications are now in this office for lands which cannot be definitely answered until these boundaries are settled.

Your attention is respectfully called to a letter from this office to you on this subject under the date of Aug. 22nd 1874... [HSA Interior Department Book Vol. 12:634]

February 16, 1876

H.N. Greenwell, to C. Gulick (Interior Department Clerk):

...Your letter of January 23rd requesting me to "make up a list of the remaining Government Lands not sold or leased" was duly received, and I beg to furnish herewith on the following sheet a List for the use of his Excellency...

South Kona:

...The Ahupuaa of Kipahoehoe... [HSA Interior Department Lands]

April 1 to December 31, 1877

Gov. Sam'l. Kipi, to Minister of the Interior

(Regarding Lease Payments on Government Lands):

South Kona, the balance of —

Papa \$3.

Kipahoehoe\$12... [HSA Interior Department Lands]

February 15, 1878

D.H. Nahinu to J.M. Smith

...Below is an explanation of the lands remaining to the Government and lessees, in South Kona.

Kumualii and Holi	Papa	\$3.00
Kuilipule	Alika	\$3.00
<u>Keliikuli</u>	<u>Kipahoehoe</u>	<u>\$12.00...</u>

...Some people have set aside their lease, and others have leased through you, thus the decrease (reported) this year...

April 8, 1879

D.H. Nahinu (South Kona Land Agent), to S.G. Wilder (Minister of Interior):

Report of the Remnants of Government Lands (leased) in South Kona, Hawaii —

Papa	Kumualii	\$4.00	
Alika	Ahuna (a Chinaman ⁹)	\$4.00	
<u>Whole land of Kipahoehoe with Keliikuli</u>		\$12.00...	[HSA Interior Department Lands]

January 6, 1881

J.A. Hassinger (Interior department Clerk), to Mr. Keliikuli:

I am directed by His Excellency the Minister of the Interior to say that a report has been received at this office, that you have goats running on the Government land of Kipahoehoe, and that you are paying \$12 a year to the Agent, D.H. Nahinu. Be good enough to state the facts concerning this matter.

I am further directed to say that if you desire to lease this land, you must send your application, stating the number of years, and the rental you would be willing to offer... [HSA Interior Department Book Vol. 19:54]

December 1889

J.W. Kuaimoku (South Kona Land Agent),

to L.A. Thurston (Minister of Interior):

Receipts for the year 1889 from the Government Lands of Kona—

Land	Lessee	Used For	Paid
Papa	Kuaimoku	<i>Ai</i> (taro)	\$2.00
Papa	Jos. Holi	<i>Ai</i>	\$2.00
Papa	Kawaauhau	<i>Ai</i>	\$1.50
Papa	Hilo	<i>Ai</i>	\$2.00
Papa	Paulo	<i>Ai</i>	\$2.00
Papa	Akoe (Pake)	<i>Awa</i>	\$5.00
Papa	Akona (Pake)	<i>Awa</i>	\$5.00
<u>Alika</u>	<u>Apu (Pake)</u>	<u><i>Awa</i></u>	<u>\$5.00</u>
<u>Alika</u>	<u>Ahuna (Pake)</u>	<u><i>Awa</i></u>	<u>\$5.00</u>
<u>Kipahoehoe</u>	<u>Mahina (Pake)</u>	<u><i>Awa</i></u>	<u>\$5.00</u>
<u>Kipahoehoe</u>	<u>Kaikaka</u>	<u>Animal pasturage</u>	<u>\$4.00</u>
<u>Kipahoehoe</u>	<u>Kuaana</u>	<u>Pasture</u>	<u>\$4.00...</u>

[HSA Interior Department Land File]

⁹ The father-in-law of interviewee Mrs. Mary Ahuna, and great grandfather of interview participants Flora, Henry and Glenn Ahuna.

**Boundary Commission Proceedings—
Ka'apuna, Kīpāhoehoe, 'Alikā and Vicinity:
Kama'āina Testimony on Boundaries, Practices, and Features**

In 1862, a Commission of Boundaries (the Boundary Commission) was established in the Kingdom of Hawai'i to legally set the boundaries of all the *ahupua'a* that had been awarded as a part of the *Māhele*. Subsequently, in 1874, the Commissioners of Boundaries were authorized to certify the boundaries for lands brought before them (W.D. Alexander in Thrum 1891:117-118). Rufus A. Lyman served as the Commissioner of Boundaries for the Third Judicial Circuit—the island of Hawai'i.

The primary informants for the boundary descriptions were old native residents of the area being discussed. For lands in the Kapalilua region of which Kīpāhoehoe is a part, many of the informants stated that they were either born on one of the lands being described, or that they had lived there most of their lives. All of the witnesses had learned of the boundaries from elder residents, and they described the landscape by the nature of the terrain, the presence of resources, land use, and features which were of significance to the residents of the land.

The oldest informants were born around 1795, by association with events described at the time of their birth, and the youngest, born around 1812. The native witnesses usually spoke in Hawaiian, and their testimony was translated into English and transcribed as the proceedings occurred. Readers here will note that there are often inconsistencies in spelling of particular words such as place names, people names and natural or man-made features.

Because Kīpāhoehoe was retained by the King, and subsequently transferred into the Government Land inventory, specific testimony for Kīpāhoehoe is found in the descriptions of neighboring lands such as Ka'apuna and 'Alikā. Not all of the documentation provided by each witness is repeated here, though primary documentation regarding the *ahupua'a* boundaries, and narratives regarding native customs, practices, and cultural features are cited ¹⁰. Underlining and square bracketing are used by this author to highlight particular points of historical interest in the narratives.

Register Map No.'s 1282 (J.S. Emerson, ca. 1892) and 2468 (G.F. Wright, 1909) identify the boundaries of various lands, including some of the locations (natural and manmade) described in the testimonies. Unfortunately, the maps of surveys made as a part of the proceedings of the Boundary Commission, could not be located in public collections.

**Boundary Commission Volume B – Hawaii,
June 4, 1874**

The Ahupuaa of Kaapuna, District of South Kona, Island of Hawaii. 3rd J.C.

Testimony

Kama¹¹ Sworn:

I was born in Puna, Hawaii at the time of Kiholo [1810], when I was young I came to Kaapuna. I came there before I was old enough to cook food and have lived there ever since, am a *kamaaina* of the land. Kapuuaho my Father's *kaikoeke* [brother-in-law] told me some of the boundaries and showed them to me. Commencing at an Ahupuaa [land division altar] on the South side [at] Kipahoehoe bounded at the shore by Haleokane, a point extending into the sea boundary in the middle of the point thence mauka along Kipahoehoe to Pohakaka an old Kihapai [dryland planting area];

¹⁰ Measurements of degrees and chains etc., recorded as a part of the metes and bounds in surveys for the various lands are not reproduced in the Boundary Commission records cited in this study (measurements will be found in original records). Volumes from which documentation was excerpted is indicated at beginning of each land record, and page numbers as recorded in the original "Folio" of recordation are cited in brackets.

¹¹ An individual by the name of Kama was identified in the 1854 survey of the Kīpāhoehoe School Lot, as having a house on the Ka'apuna side of the school (see notes of survey in this study).

boundary running through it. This place is some distance *makai* of the Government road. From the shore to this point the boundary follows along the base of a *kualapa* [ridge]. Thence up the *kualapa* to Keahupuaa, a pile of stones on the *makai* side of the road, on the South side of the *awaawa* [gulch or grotto]; thence direct *mauka* to Kawahapele quite a large hole in *Uluhi* [*uluhe*]. Thence along the *awaawa* to the north side of Ahinui, a cave on Kipahoehoe this is outside of the woods, between two points of *koa*. Thence to Kilohana an *auwai* [water course] near the edge of the woods, thence to Umi's road. (This is not Umi's road that runs way up on the mountain, but it is the road that comes from Kahuku running past Ohialele; not the one from Halepohaku). Kipahoehoe ends a little above Kilohana, and from thence Honomalino bounds Kaapuna to Umi's upper road. I have not heard the name of the place where it strikes the road; thence *mauka* to Humuula a place opposite Puukeokeo. I have only heard of this place. I have never been there. I have never heard what sort of a place Humuula is. From the seashore to Umi's lower road is what I have seen, *mauka* of that point is what I have heard. At Humuula, Kaapuna is cut off by Kahuku and Keauhou, thence *makai* along Keauhou to Ahu o Umi and the upper Umi's road I have heard that there are two Ahu o Umi there and that that point is the *mauka* corner of Kaohe, belonging to Kaopua, thence along Kaohe to *mauka* corner of Kukuiope. (I have never been there). Thence to a point of *koa* woods; thence to Kahiwawa a *koa* with two branches, the land of Opihale joins on the north side of the grove. I have been there. Thence the boundary follows down the Kau side of a point of *ohia* woods that runs down on the *pahoehoe* between the *koa* woods, to a place called Mawae, where banana trees are growing, thence along the Kau base of a *kualapa*, with *ohia* trees on it to Keahupuaa, at the Government road thence along land sold to Kapuumaka [?] a *puu pahoehoe* [*pahoehoe* hillock] ail cracked up, at the shore. Bounded *makai* by the sea. Ancient fishing rights extending out to sea. CX'd.

[cross] I have heard that in olden times Kaapuna and Honomalino joined in the *koa* above Alika. Know a place called Puueleele, it is on Kipahoehoe close to the Government road. I do not know of a place called Puueleele or Pohakuloa, *mauka* of the woods. Birds *mauka* of the woods used to belong to Honomalino, and those on the mountain to Kahuku and Keauhou, the birds in the woods belonged to Kaapuna. I do not know how they were divided on the mountain. I do not know anything of Pauewalu kaha kanaka. I have been on the mountain twice after sandalwood I do not know of any place called Kakaiokaha or Hanamauloa. I have never been up Umi's road. [pages 198-200]

Kimo Sworn:

I was born at Opihale soon after the death of Kamehameha I [ca. 1820], have always lived there. Know the land of Kaapuna and a little about the boundaries. Kailele my *makua* told me boundaries. I went in the bush [*nahele* – forest] with him. He told me the boundaries between Kipahoehoe and Kaapuna. At that time we had to do different *koefe* [planting in chief's garden] work for the *konohiki* of these two lands. The boundary at shore is in the middle of Haleokane; thence *mauka*, following up a *kualapa* to Pohakaka; thence to Keahupuaa at the Government road; thence to Kawahapele, a big hole thence to a cave above the woods, called Ahinui. This cave is on the north side of a *koa* grove. Thence to Naahuaumi, two stone ahus at the road. I have heard that Kahuku cuts off Kipahoehoe at Naahuaumi. I have heard that Kahuku and Keauhou cut Kaapuna off at Naahuaumi, at lower Umi's road. My parents told me this. I think I can point this place out. I do not know the boundaries in the woods, between Opihale and Kaapuna.

Kaapuna is bounded from the seashore to the lower edge of the woods by land sold on Opihale. My *makua* took me to this side. I have testified to but not to the other side. I cannot give those boundaries. CX'd

I never heard that Kaohe joins Kaapuna or that Honomalino joins Kaapuna. Heard that the birds on the mountain belong to Keauhou and Kapapala. Puueleele is a hill towards the mauka edge of the woods, on Kipahoehoe. Pohakuloa is a large rock above the woods, on Kipahoehoe. Have never heard of Kaahakanaka or Kakaiokaaha.

Case adjourned to Honaunau on the 5th inst. RA Lyman Commissioner of Boundaries 3rd J.C... [pages 200-201]

Honaunau South Kona June 5th, 1874
Case opened according to adjournment on the 4th inst. Present D. Kahaulelio and J.G. Hoapili.

Kaa Sworn:

I was born at Kaapuna, at the time of the battle of Nuuanu [ca. 1795], always lived there until this present year when I moved to Honaunau. I am a *kamaaina* of the land, and know the boundaries. Makaukea my brother and others (all dead) told them to me, they were canoe makers, and I used to go into the woods with them.

Kaapuna is bounded on the South side by Kipahoehoe, the boundary at the sea shore is on the south side of Haleokane; thence up a kwalapa to Pohakaka; thence up the kwalapa on the Kau side of an awaawa to the Government road, to Ahupuaa, a pile of stones at that place thence up the kwalapa to Puueleele, a large hill covered with trees. The place called Kawahapele is on Kipahoehoe; thence out of the woods to Ulupapai where, Kipahoehoe is cut off by Honomalino; there are three ahus there, two belonging to Honomalino and one to Kaapuna. This place is about as far mauka of the woods, as from here to the mauka Government road; thence to Kilohana an ahua [stone mound or hillock] with one ahu [cairn] Kau side of the koa grove called Ahinui. Ahinui is on Kaapuna. Thence to Nahuakanai a big pile of stones about a mile from the mauka edge of the woods thence towards Kona; to Keanapaakai a cave where people sleep. In former years I have heard that this land ran mauka to a place called Humuula and that it was there cut off by Kahuku. Humuula is a lei [Aina lei alii – Crown Land] at Hamakua. Kahuku does not quite reach there, but it bounds Kaapuna at Alanui o Umi. Heard Kaapuna extends to the top of Maunaloa. I do not know whether Keauhou extends to Mokuweoweo or not. Opihale bounds Kaapuna on the north side. Bounded from shore to woods by land sold to Kuhia. The mauka corner of Kuhia's land is at Keahupuaa a little mauka of the Government road, thence mauka to Keeielelele a kihapai the boundary is on the north side of it. Thence mauka through the woods to Keanapaakai. I have heard that Opihale ends at the lower edge of the koa and from there Kukuiopae bounds Kaapuna bounded makai by the sea fishing rights extending some distance out, and these cut off by Honomalino. CX'd

The birds on the *pahoehoe* above Keanapaakai belong to Kahuku and not to Keauhou. I used to go on the mountain with Kuluahi, Keakaikawai's father. Kuluahi's brother and Kaanaoa. We used to go to Kukai a cave on the road, near the aa belonging to Honaunau. I do not know much about bird rights.

Applicant states that he does not wish to claim land way outside of the woods, but only as far as the *koa* trees extend.

Case continued till further notice.
R.A. Lyman
Commissioner of Boundaries [pages 201-202]
[Certificate not located]

*Boundary Commission Volume B – Hawaii.
The Ahupuaa of Alika, District of South Kona, Island of Hawaii 3rd J.C.
(For Petition see Folio 457, Book A)*

Testimony
Kahinalua¹² Sworn:

I was born at Manuka, Kau Hawaii at time *Kui wai ma ka Lae* [ca. 1812]. Now live at Alika Kona. Moved to Opuloa [Ho'opūloa] when I was quite young and have lived there and at Alika. Pio now dead, a *kamaaina* of Kipahoehoe told me the points on the boundary of the land. Kipahoehoe bounds Alika on the Kona or north side. Papa Government, sold to Kaliluna on Kau side, from shore to *mauka* of *mauka* Government road. Saw the road that was out on boundary of his land for the chain, and was told that his land run to the *hapu* (*pulu* fern), but have not been there. There is an *ahu* on boundary of Papa in *hapu*, think that is as far as lands sold run. I do not know the boundaries of South side above this point. Bounded *makai* by the sea, *Pali* called Kahoolewalewa in the boundary at shore between Alika and Kipahoehoe.

There is a rock marked K. I think land surveyed by Wiltse. I was the *kamaaina* and pointed out boundaries. We went from above across *aa* to Kona side of Kahuku some way off from boundary. Thence to Hale o Lono an *ili aina* on Alika near boundary. Thence *mauka* crossing [pg. 322] *mauka* Government road to Kaukahapu a pile of stones at *mauka* corner. This is as far as I know boundaries. I have not heard where Alika ends or what lands cut it off. CX'd.

Makia Sworn:

I was born at Papa, South Kona Hawaii, at time of Kamehameha 1sts' war Mokuohai at Keei [ca. 1782]. Now live at Alika a land joining Papa. Am a *kamaaina* of *makai* part of land, but have not been on the mountain. My *makua* and others told me boundaries. Did not go with them. Papa 1st bounds Alika on Kau side, sold to Holi & Kaililuna [Kaliuna] from sea to *mauka* of Holi's house in the *hapu* below woods. There is an *ohia* tree marked. Alika runs to upper edge of *koa* woods, all the Kona lands are cut off by Kahuku and Keauhou. So I have always been told. I have never been up above woods, but only as far as they make canoes. I do not know which lands cut Alika off, Kahuku or Keauhou. Have never heard that Honomalino cuts it off. Do not know the boundaries between Papa and Alika in the woods. Bounded *makai* by sea, Kipahoehoe bounds it on Kona side from shore to *mauka* end. Boundary at shore is at Kahoolewalewa a *pali* at shore. The rock is marked. Thence boundary runs *mauka* to lower road to place called Puainako an *oioina* [trail side resting place]. Thence to the *ahu* at the *mauka* Government road, used to be an *ahu kaupuaa* [a boundary altar at which pigs were placed] in time of K.I. Place called Haleolono and Kaulu are on the middle of Alika, and, not on the boundary. From Government road the boundary runs to Kaukahapu, as far as the land surveyed runs. This is as far as I know the boundaries. There is a large stone marked there. The land was surveyed on boundary from shore to this point. The old road used to run up in the woods on Kipahoehoe and not on Alika. CX'd. [pg. 323]

No more witnesses on hand.
Case continued till further notice.

R.A. Lyman
Com of Boundaries 3rd J.C.
Copied by Jas. B. Castle

¹² Kahinalua is described in the Māhele proceedings as having been Konohiki of 'Alikā, and an applicant for *kuleana* land in the *ahupua'a* as well.

The above is a true copy of evidence of Boundaries of Alika and Kipahoehoe taken Nov. 10th, 1874. R.A. Lyman

Department of Interior
Honolulu, Sept. 27th, 1875

R.A. Lyman, Esq.
Hilo, Hawaii:

...Your two letters of the 21st July and 15th August came duly to hand, while the Minister of the Interior was inland from town, and consequently the issuing of the Patent you devised was delayed for his signature.

I enclose the Patent No. 5707. I am desired by the Minister of the Interior to request you to determine as soon as possible the boundaries of the land of Alika, South Kona, Hawaii. A portion of this land was sold some time since to one Makia and others now living on the land, and they have had a survey of the portion sold to them paid the survey into the office, and are only awaiting the settlement of the Boundaries of the land in order to get the Royal Patent. Makia is quite an old man, and the konohiki desired me to make the application for the settlement of the boundaries for him. You will therefore please consider this as coming from Makia in due form.

I have the honor to be you obdt. servt.,

Chas T. Gulick
Chf. Clk.

See folio 167 Liber I. No. 80 Certificate of Boundaries of portion surveyed by D.H. Hitchcock for Makia & others. The land of Alika. Government lands being each side of it. R.A. Lyman... [pg. 324]

Boundary Commission Volume 1 No. 3 – Hawaii
For Testimony of Alika
See folio 322 Book B
Land Boundary Commission
No. 80
Hawaii 3rd J.C.

Certificate of the boundary of a portion of Alika District of South Kona, Island of Hawaii 3rd J.C.

Upon the application of the Minister of the Interior in the person of his Clerk, and by virtue of the authority vested in me by law, as sole Commissioner of Land Boundaries for the Island of Hawaii 3rd J.C. I hereby decide and certify the boundaries of a portion of the *ahupuaa* of Alika situated in the District of South Kona, Island of Hawaii, to be as hereafter set forth.

Given under my hand at Hilo, Hawaii. This nineteenth day of January A.D. 18__ [year not given]
R.A. Lyman
Commissioner of Land Boundaries, Third Judicial Court

Boundaries of a portion of Alika
Commencing at South West corner at rock marked "X" jutting into the sea and running along sea coast to line of Kipahoehoe. Thence up said line as follows;
1. North 18° West 70.00 Chains.

2. North 62 ½ ° East 76.50 Chains.
3. North 84° East 33.90 Chains. [pg. 167]
4. South 8p° East 25.00 Chains to Govt. road & rock marked "X"
5. North 73 ½ ° East 33.00 Chains.
6. North 89° East 25.00 Chains to N.E. corner and rock marked "X"
7. South 25° East 75.00 Chains to S.E. corner of *Ohia* marked "K"
8. South 76 ½ ° West 49.50 Chains along line of Papa 1st to land sold to Kaliuna & Holi. Thence along said line Sea.
9. South 73.45° West 110.00 Chains.
10. South 81° West 52.50 Chains to point of commencement and containing an area of 1032.00 acres more or less. Magnetic variation E. 8.29°... [pg. 168]

Boundary Commission Volume B – Hawaii
The Ahupuaa of Papa 2nd District of South Kona, Island of Hawaii

Testimony

Kuakahela Sworn:

I was born at Hoopuloa at the time Palake stopped at Honaunau to make the *kiamoku* [sailing ship]. I have always lived here and know a little about the land of Papa. The boundary at shore between the two Papa's is at Keawemoku. I know the *mauka* corner of Kaliuna's and Holi's lands; it is a marked *ohia* tree *mauka* of the Government road; can point out this place as I used to have a food ['*ai* or *kalo*] patch there. Thence *mauka* to Pohoo a *punawai* [spring]; the boundary follows an old trail to this place. The trail on which we used to go after water. This is as far as I know the boundaries on that side. I have heard that Papa runs to *makai* of Ohialele to a place called Kokoolau. I have heard Honomalino cuts it off there. There is *koa* on this land fit to make canoes, but the most of the *koa* is on Honomalino.

Anapuka bounds it on the South side of a point called Namakahuki. The boundary runs up a line of deep holes from shore into the *koa* woods where Hoopuloa cuts Anapuka off and joins Papa, and bounds it to Kokoolau; the *mauka* end [page 193] bounded *makai* by the sea. Ancient fishing rights extending out to sea.

There is a remnant at Government road between Keliikuli's land and Papa 2nd where a Chinaman has an *awa* patch.

Holi Sworn:

I was born at Pakini, Kau. I have lived here since the time of Kuiwai, and on Papa for over twenty years and am a *kamaaina* of the land. Last witness told me the boundaries commencing at the *mauka* corner of my land at an *ohia* tree marked K. There is a pile of stones at the foot of the tree. I have heard that Papa runs to Kokoolau, have heard that it is cut off by Kahuku and Keauhou, but I do not know of where they join. I have heard that these two lands cut off all Kona lands. The boundary on the South side from the sea shore to the mountains is a cave with holes through to the surface. I have seen these holes above and below the Government road. Know the lands of Keliikuli and Hoopuloa, they do not reach to Papa. I do not know the boundaries in the woods or whether Anapuka extends through or not. CX'd

Makia Sworn: (Same witness as on Kapua)

Keoi my father showed me the boundaries I went all over them with him. Know the *mauka* corner of Holi's land, the boundary runs between the Papa's from the *ohia* tree to Pohoo, there is an *iwi pohaku* [stone wall] along there. Thence to the *koa* trees and from thence to Kokoolau *mauka* of the *koa* trees and the *mauka* corner of the land. I do not know for certain what lands cut Papa off. I have heard that Keauhou of Kona, Kahuku and Kapapala cut it off. Anapuka bounds it on the South

side at a large *puka* on the south side of Kamakahiki; thence *mauka* along a line of cracking or holes to the woods. I have always been told that Anapuka runs to Koolau. Sea bounds it on the *makai* side. Ancient fishing rights as far out as you can see bottom. CX'd. [page 194]
CX'd

Kaiawalu Sworn:

I was born at Manuka at the time of Palake, now live at Hoopuloa. I was living at Papa at the time of the small pox [1853]. I saw Keliikuli's land surveyed, it was surveyed along Puka's land from shore to the Government road. At the shore the survey of Keliikuli's land takes in the whole of Anapuka to a place called Namakahiki, from a large hole called Kapohohau to the Government road. There is a remnant of Anapuka between the land surveyed and Papa, at the Government road. This remnant is very narrow, this is where the Chinaman's *awa* patch is.

Mulei is the name of the boundary at the Government road. This is all I know about the boundaries. CX'd.

Kaona Sworn:

I saw Fuller survey Keliikuli's land Hoopuloa the last witness who is my father saw it surveyed from Kapohohau a *lua* [pit or hollow], to the shore. The land was surveyed along the line of Papa taking in all Anapuka, we did not come to any *lua* below the road before Poholoa. This is all I know of the boundaries of Papa. CX'd.

Case continued till further notice to all interested parties.

R.A. Lyman, Commissioner of Boundaries [page 195]
[Certificate No. 149 issued in Volume C-4:26-27 and confirmed in Volume D-5:8-9.]

Kapalilua in Hawaiian Government Survey Records

Among the historic Government records for lands in the vicinity of the study area are the communications and field notebooks of Kingdom Surveyor, Joseph S. Emerson. Born on O'ahu, J.S. Emerson (like his brother, Nathaniel Emerson, a compiler of Hawaiian history) had the ability to converse in Hawaiian, and he was greatly interested in Hawaiian beliefs, traditions, and customs. As a result of this interest, his letters and field books record more than coordinates for developing maps. While in the field, Emerson also sought out knowledgeable native residents of the lands he surveyed as guides and informants. Thus, while he was in the field he often recorded traditions of place names, residences, trails, and various features of the cultural and natural landscape. Among the lands that Emerson worked in was Kīpāhoehoe and neighboring *ahupua'a* of the Kapalilua region.

Emerson's field books also contain detailed sketches with annotations, that bring the landscape of the period to life. In a letter to W.D. Alexander, Surveyor General, Emerson described his methods and wrote that he took readings off of — "every visible hill, cape, bay, or point of interest in the district, recording its local name, and the name of the *Ahupuaa* in which it is situated. Every item of local historical, mythological or geological interest has been carefully sought & noted..." (Emerson to Alexander, May 21, 1882; Hawai'i State Archives – DAGS 6, Box 1). Thus, the field book sketches and the Register Maps which resulted from the field work provide us with a glimpse of the country side of more than 110 years ago.

The following notes are excerpted from Field Book No. 256, "KONA HAWAII Primary Triangulation, 1883-4. VOL. VI", and Field Book No. 257 "Primary Triangulation Kona, Hawaii; Vol. VII – 1884" (viewed in the collection of the State Survey Division). The numbered sites and place names cited from the field books coincide with the locational references in the annotated sketches. It is of importance to note that while in neighboring lands, Emerson at times referenced or cited off of houses of native residents, in Kīpāhoehoe, there are no such references (taken by the author to mean that he found no residences by the time of his field work).

Emerson's descriptions of the terrain provide us with a dramatic record of the difficulty encountered while traveling through lands of the Kīpāhoehoe vicinity—covered in some areas by almost impenetrable forests, and in other areas by treacherous 'a'ā lava. His notes also tell us that there were *kama'āina* who were familiar with native lore and past practices in the area. Indeed, he provides us with one of the most important collections of documentation describing native traditions and practices, as well as historic residency and subsistence in Kīpāhoehoe and neighboring lands of the Kapalilua region.

Emerson recorded accounts pertaining to several important features and traditions in Kīpāhoehoe and vicinity. Among the accounts he recorded are— a description of an ancient 'a'ā (dense basalt stone) paved trail, attributed to the chief Kulukuloku, that passes through the coastal lands of Kīpāhoehoe; an event that occurred during the construction of the trail, that gave rise to the name of Po'okāhoahoa Bay in Kīpāhoehoe; the occurrence of a "pōhaku akua" (stone god) at the place named Makaihuwa'a (or Mokuihuwa'a); the reason the Waha Pele eruption occurred, causing the 'a'ā lava to vast tracts of land from Kīpāhoehoe to Manukā; how Pele killed the chief 'Alikā, his wife Kapihea, and her lover, Pōhaku'ekaha; and about the presence of an ancient *hōlua* (sledding track) at Kapapakōhōlua (see also Register Map No. 1282; Emerson, ca. 1891, for locations of selected sites).

Field Letter Communications:

September 30, 1883

Govt. School Papa, S. Kona

J.S. Emerson; to W.D. Alexander:

The past week has been dark and dismal with rain nearly every afternoon and night. In spite of the difficulty of seeing our signals and of studying our surroundings, we have set a primary signal every day save one, when the horrible nature of the Kīpāhoehoe aa was too much for us, and we postponed setting a signal on the spot we had selected until our return to that spot with fresh courage to meet the inevitable. The signals are located as follows:

Kalapa hill *mauka* of Govt. road in Keokea
Hoohila hill *mauka* of Govt. road in Honokua
Kaholo hill near sea bluff in Pahoehoe 2
Waikakuu rising ground by road in Waikakuu
Waha Pele aa hill edge of woods below road in Kīpāhoehoe
(Kīpāhoehoe aa hill edge of woods below road not set)... [HSA – DAGS 6, Hawaiian Govt. Survey]

March 30, 1884

Napohakuloloa Station [Kīpāhoehoe]

J.S. Emerson; to W.D. Alexander:

...On Saturday Mar 22 we left Kukuioape early in the morning and landed at Lae o Heku at 7:30 A.M. This station we hurried through with all possible expeditions, it is a ragged and jagged mass of aa, and finished it up to my entire satisfactions on Wednesday morning, Mar. 26. Thence we came to this ill starved spot, arriving here at noon the same day. Dark clouds and rain have hindered the work at this place. On Friday afternoon the rising surf warned us to move the boat to a place of greater safety. It was accordingly anchored in Alikā Bay, where it remained the next day. The last that was seen of it was about 9 or 10 o'clock Saturday night when it seemed to be all right. This morning early I was awakened by a native who came to tell me that the boat had disappeared... I trusted my *kanaka* sailor that it was all right, and did not attend to it in person. The man whom I had engaged to take charge of the boat at Hookena failed me and I took another man, Keoni Miki, in his place. He is a good sailor and a faithful man and was guided in selecting the anchorage by advice of kamaainas... [HSA – DAGS 6, Hawaiian Govt. Survey]

April 9, 1884

Puu Nahaha, Kona

J.S. Emerson; to W.D. Alexander:

...It is with pleasure that I report the safe return of my runaway whale boat, none the worse for a thirty hours excursion out to sea. About 7 or 8 A.M. on Monday Mar. 31 a fisherman named Kaleimoku, living in Kaulanamauna, the last hamlet in S. Kona, was sitting down to his dish of fish & poi, when he noticed a white speck upon the horizon, rising & falling with the waves. Thinking it may be a canoe drifting with the tide, he quickly launched his own canoe, and with his wife & boy started in pursuit. When they had gone so far out to sea that they could no longer see the surf beating against the shore, his wife became very much afraid and tried to turn him back.

But he would hear no such timid proposal & pushed boldly on. As at length they neared what now they saw to be a whale boat, the woman's fears again arose, that there was a corpse on board and that they would be "tapu'd." But the prize was too great even for her superstitious fear, and soon they all sprang aboard & drew in the anchor which was still hanging from the bow and dragging by a long chain...

As I had finished up Napohakuloloa station on the day previous we at once started after breakfast, for Hanamalo reaching there before noon on Friday... [HSA - DAGS 6, Hawaiian Govt. Survey]

September 14, 1890

Kukuiope (on the Gov't. Road)

J.S. Emerson; to W.D. Alexander:

...I have mastered the situation. The problem of how to locate Ka Lae and carry the Kona triangulation into Kau is solved. Success has crowned my efforts to get over or through the great forest belt and tie up Puu o Keokeo on the Δ ~ station to the north of Kapalilua. Aided by the best men I knew of, we found a hill in Kaapuna overlooking the great forest and commanding a view of the following stations, viz. Puu Ohau, Keawekaheka, Palemano, Makolehale, W. Hualalai, Kapukawaa, Puu Nahaha, Hanamalo, Hanakeaumoe & the coast south as far as Kawili. This gives me the line joining the Kaapuna station and Hanamalo as a fine vase line to carry the triangulation up and on. By three intermediate points, all commanding a view of Hanamalo, and the coast to Hanakeaumoe, I pass from Kaapuna over the forest to Puu o Keokeo...

Great praise is due my native men who have enabled me to accomplish all that I have attempted. Splendid fellows they are who have done fine work under the greatest difficulties and hardships. Their names are Chas. Ka, Lapauila & Solomon Hu besides Kanakanui.

The territory over which we have been travelling these three weeks might be called "a petrified section of Hill." You know what Kona rocks are. We have experienced the meanest, roughest and most treacherous portion of Kona... Nearly all our drinking water was from the rain caught on the fly. The rain and mist allowed us but a brief portion of each day to study the country. But for the knowledge of the country possessed by my guides, we could have made almost no headway in such weather...

My plan is now to hire a boat and reset all the needed coast signals as far as Ka Lae. Then with fresh animals set three signals to the north of Hookena and begin instrumental work at Kaapuna station. From Kaapuna I hope to occupy the stations in & above the woods in order as far as Puu o Keokeo... [HSA - DAGS 6, Hawaiian Govt. Survey]

October 15, 1890
 Kaapuna Station¹³

J.S. Emerson; to W.D. Alexander:

...I left Hookena on Thursday morning Oct. 2 with four men, including Kananui, and 4 pack mules. Late Friday P.M. we camped as near to our station in Kaapuna woods as possible. Very early Saturday morning we hurried, on foot, with my light transit to Puu Ahinui Δ Station, and by dint of hard work, reached it a little after 8 A.M. While I was occupying the station, my men cut a road through the jungle and moved up the camp... The following table gives the results of 5 days work at Puu Ahinui Δ Station [Figure 3].

Station	Average 275 ft			Average 275 ft			Final average			Difference
	16.12	16.12	16.12	16.12	16.12	16.12	16.12	16.12	16.12	
Puu Ahinui	0	0	0	0	0	0	0	0	0	
Keolu	3	16	32	41	40	3	41	36	5	5
Keolu	40	37	16	39	18	46	37	17	9	9
Keolu	19	35	47	35	47	17	35	48	13	13
Keolu	126	35	32	35	26	124	35	29	5	5
Puu Ahinui	126	5	19	5	21	126	5	20	1	1
Keolu	135	55	48	55	50	135	55	49	1	1
Keolu	234	36	57	36	52	234	36	55	3	3
Hanalei	356	0	0	355	59	52	355	57	57	2

Figure 3. J.S. Emerson Table of South Kona Stations (October 15, 1890)

...As my entire work for this campaign depends on the accurate location of Puu Ahinui Sta., I feel that I have only done justice to the work by keeping at it... Since my coming into the woods this trip I have suffered not a little pain of body and anxiety of mind. The prolonged and unusual exposure to dampness and rain, with the fatigue of footing it day after day over aa and through the wet jungle, during my preliminary trip, was altogether too much for me...

Address - Care of Moses Hu, Kukuiopae, S. Kona. [HSA - DAGS 6, Hawaiian Govt. Survey]

February 1, 1891

J.S. Emerson (Surveyor), to W.D. Alexander (Surveyor General)

In camp at Ohepuupuu, Kapua:

Since leaving the mountain I have occupied two very important stations, viz. Puu Nahaha & Hanamalo 2 with the best of results.

¹³ Emerson's field notes and Register Map No. 1282, and subsequent Register and HTS maps place the Ka'apuna Station in Kipāhoehoe, above Pu'u Ahinui, and accessed by the mauka-makai trail that runs out of Ka'apuna, into upper Kipāhoehoe, then back into Ka'apuna and Kahuku (see Register Map No. 2468).

The weather is magnificent, the mountain signals clear and distinct and almost free from clouds all day... Puu Ohau & Makolehale signals have been remarkably distinct for such a great distance. Keawekaheka, since leaving Puu Nahaha has sunk from view... I feel rested and refreshed with a supply of proper food after some days of scanty fare. The few natives about here live on fish & a wretched substitute for *poi* made of wheat flour. I had to live on sweet potatoes, squash & dry fish for a week, while waiting for supplies... There are no decent stores this side of Hookena. It is exceedingly dry weather, so the natives say, and all my fresh water has to be packed long distances from the few water holes up in the woods. May they not give out yet a while.

The following primary stations are yet to be occupied, viz. Ohepuupuu, Hanakeaumoe, Kapukawaa, Milolii, Puu Ki (by boat), Na Puu a Pele (by boat), Keawekaheka, Puu Ohau and Makolehale. I expect to finish up my work by the last of January... before I leave and go to work on homesteads in S. Kona... [HSA DAGS 6 Hawaiian Government Survey]

Further records and notes of survey are described in the sections of this study, documenting the Land Grant and Forestry programs in Kapalilua.

Field Book Documentation & Sketches:

Kona, Hawaii

Primary Triangulation

J.S. Emerson 1883-4

Vol. VI Reg. No. 256

[see Figures 4, 5, 6, 7, & 8 for locations of cited points]

Kapukawaa

Feb. 20, 1884

s5	Lae o Kamimi	Alika...
w5	Kakakohola Rocks about 200 feet from coast Two natives chased by a whale fled towards the shore. Their canoe striking upon this sunken rock, it was mistaken for the whale & they pummeled it lustily with their paddles until they were broken into pieces ere their mistake was discovered.	Hoopuloa
x5	Lae o Kapukawaa This place so called because of a passage for canoes between it & shore... [page 39]	Hoopuloa

Feb. 25, 1884

...u6	Puueleele [page 59]	Alika...
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Mar. 20, 1884

q8	Mokuokaihu Rock	Kaapuna
r8	Ka Lae o Kaapuna	Kaapuna
r5	Lae o Heku	Kipahoehoe
s8	Rock in sea = Hale o Kane, off Lae o Heku [page 157]	Kipahoehoe

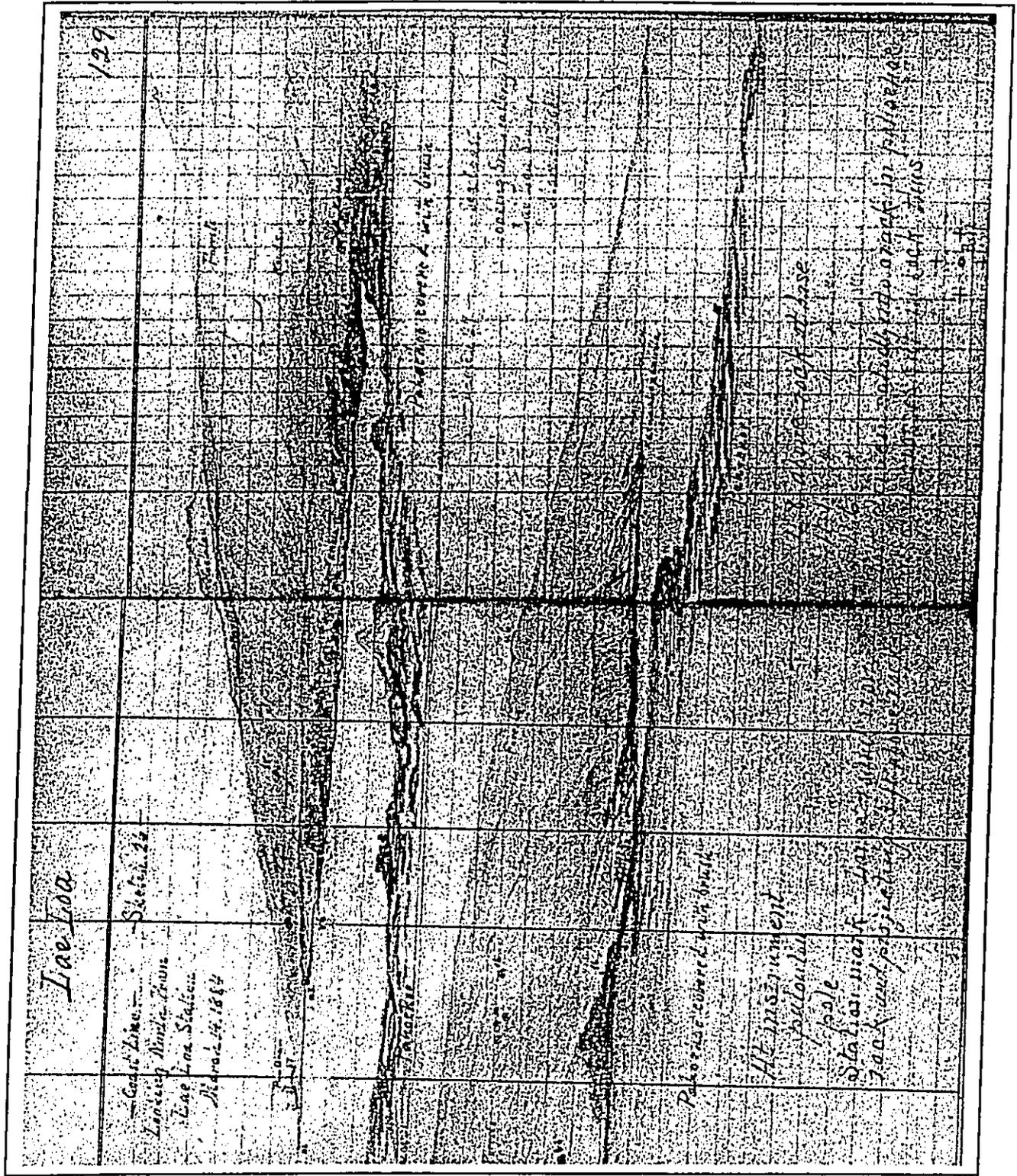


Figure 4. J.S. Emerson Sketch 27, Mar. 15, 1884; Register Book No. 256:129
(State Survey Division)

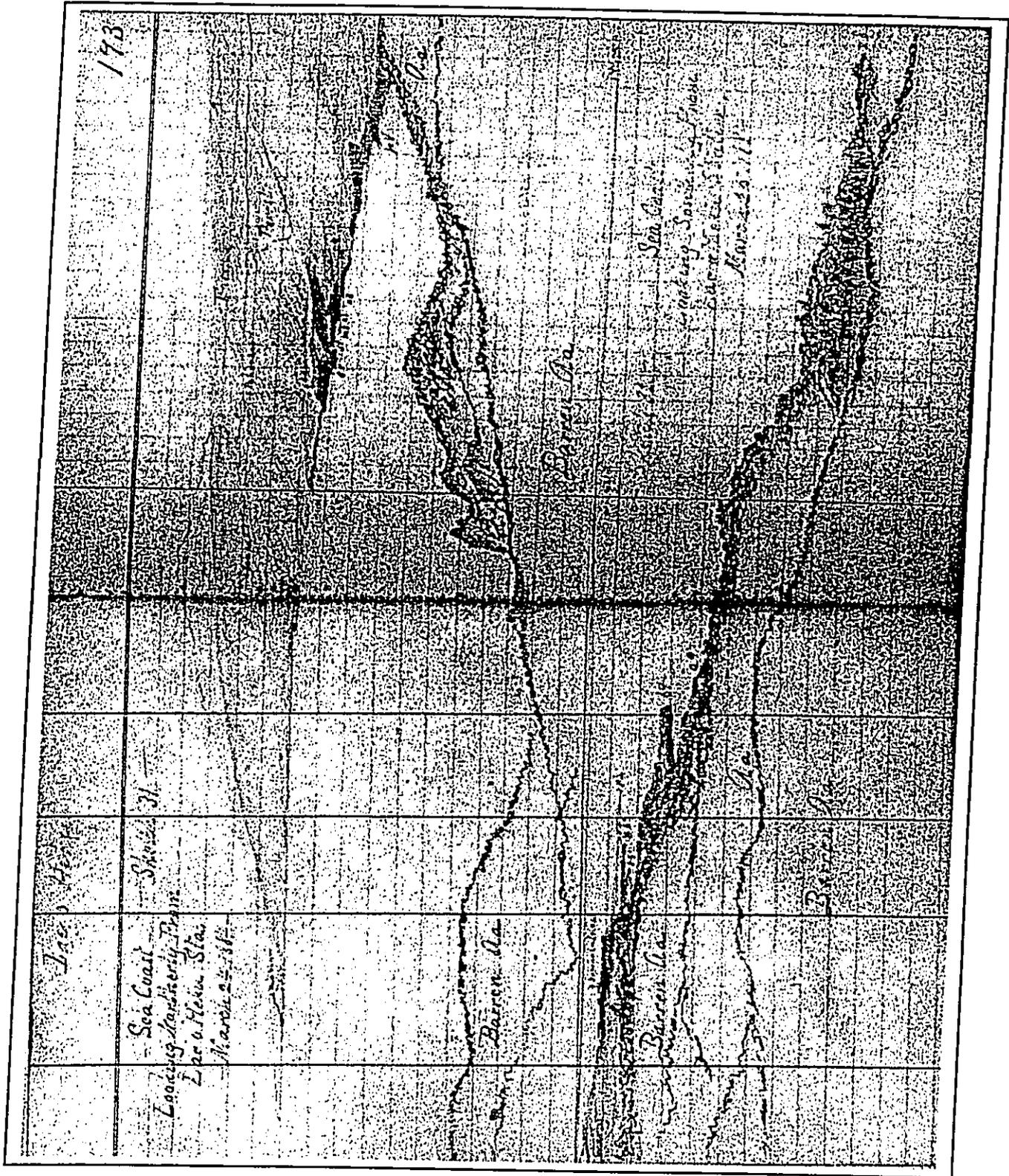


Figure 6. J.S. Emerson Sketch 31 & 32, Mar. 24 & 25, 1884; Register Book No. 256:173
(State Survey Division)

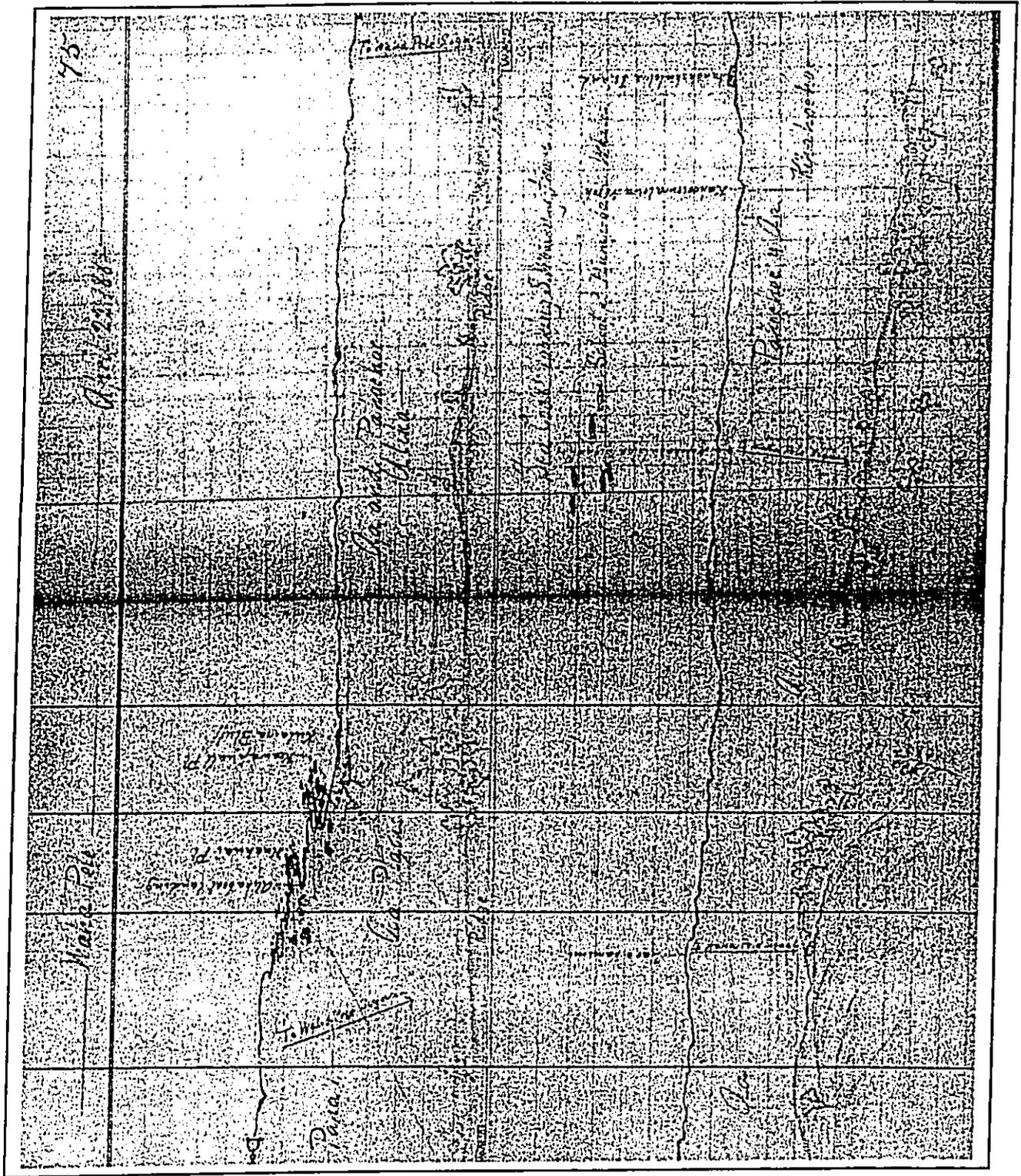


Figure 9. J.S. Emerson, Apr. 22, 1884; Register Book No. 257:75 (State Survey Division)

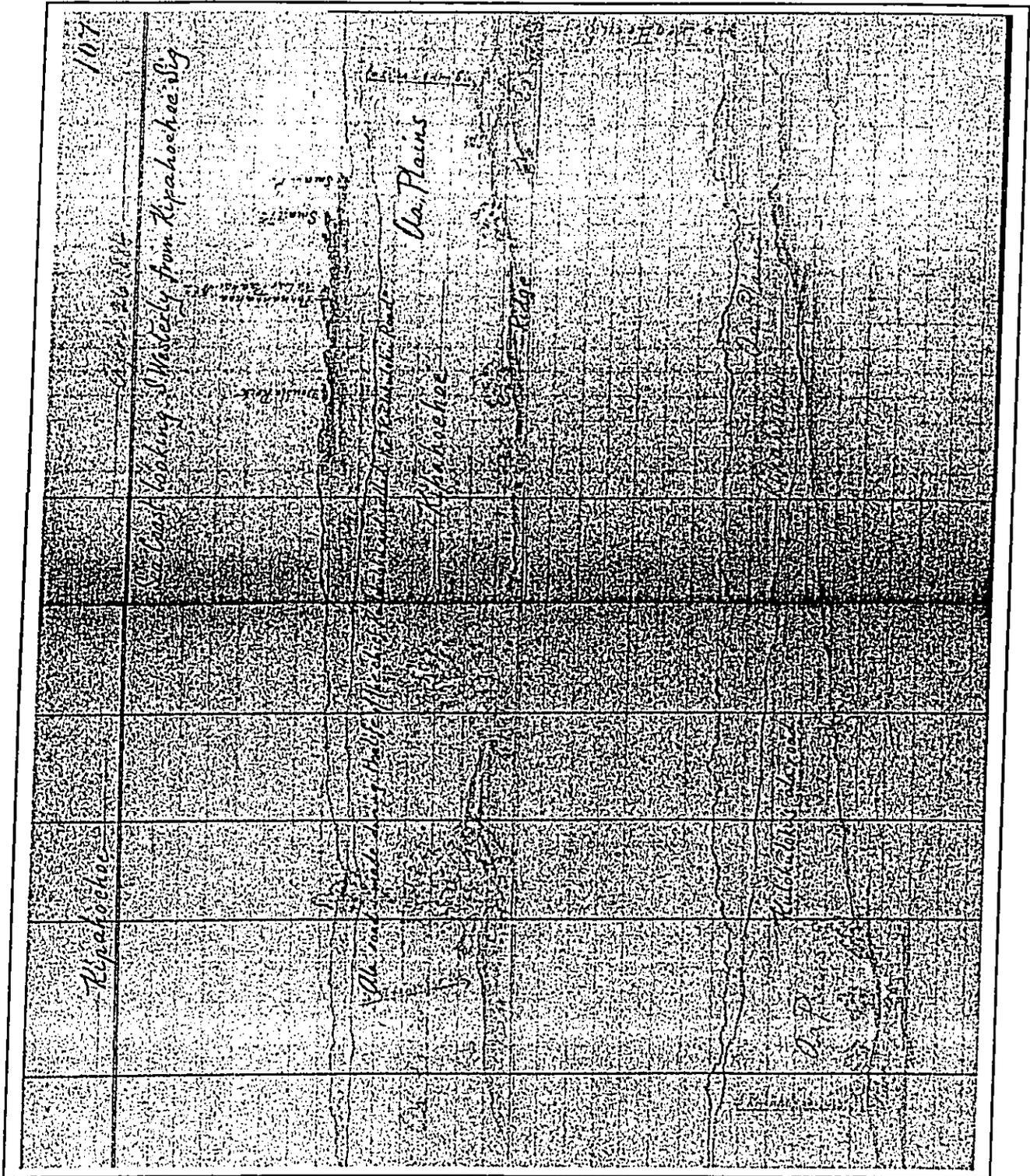


Figure 12. J.S. Emerson, Apr. 26, 1884; Register Book No. 257:107 (State Survey Division)
 Note: "Ala [dense basalt rock paved] road made during the life of the chief Kulokuloku,
 and called the "Kulokuloku Road."

<u>Kapapakoholua</u>	Kipahoehoe
Puu Eleele No. 2	Alika
Puu Koa Divisions between Papa & Anapuka	
Kaapuna coconut grove. 6 trees.	Kaapuna
<u>Hale o Kane</u> , top of bluff by sea. Division between Kaapuna & Kipahoehoe	
<u>Kahapaakai</u> rock in sea (about 5 fathoms from shore).	Kipahoehoe
<u>Ka Lae Humuhumu</u> . Rock in sea.	Kipahoehoe
<u>Ka Lae Pipi</u> Kipahoehoe Pipi is the mode of fishing for Ulua. Towards evening the line is attached to a large pole, fastened in the rocks and is watched by the fisherman.	
<u>Makaihuwaa</u> rock, about 6 fathoms from shore This is a " <i>pohaku akua</i> ." From the remotest times up to the death of Kamehameha 1 st , this rock is said to have glowed with volcanic light in the night time.	Kipahoehoe
<u>Nopohakuloloa</u> Island	Kipahoehoe
<u>Kahoolewalewa</u> notch. Boundary per D.H.H. of Kipahoehoe & Alika... [page 87]	
...Huahuai Pt. of rocks in sea. Div. between Alika & Papa. Just south of Alika boat landing in the reign of Kaleiopuu & Keawemauhili, there lived just above Puu Eleele (<i>Makai</i> of Govt. Road), the woman Kihapea, her husband Alika, and paramour Pohakuekaha. They vowed to eat their potatoes with Pele, but failed to do so. Pele enraged, pursued them. Alika was slain just above Puu Eleele, where his body still lies, face up, a mass of <i>pahoehoe</i> . Kihapea and her lover were overtaken at the shore. She was turned into rock and became the cave mentioned on page 54. Her lover was turned into the rock " <i>Pohakuekaha</i> " just <i>mauka</i> of Huahuai Pt.	
The entire coast, from Kipahoehoe to Manuka is the terminus of one continuous lava flow, mostly aa, which poured down from Mauna Loa in the reign of the two kings above mentioned... [page 89 ¹⁴]	
April 30, 1884 <u>Puu Eleele</u> . <i>Mauka</i> of Government Road Kupihea, one of Kamehameha first's generals, reached a point in the <i>Alaloa</i> just below this hill with his forces at dark.	Kipahoehoe

¹⁴ Emerson records that the source of this flow is Waha Pele; the Station Mark being in the *ahupuaa* of Alika, and commanding a fine view of the country in all directions" (Emerson, Reg. No. 257:103).

The next morning he joined in battle with Keoua and at noon was slain by Kaiena, of Keoua's warriors, with an "ihe."

Kapapakoholua. Head of an ancient *holua* [sledding track] [page 131]

Kipahoehoe...

May 3, 1884

...Poonahoahoa Bay

When Kulokuloku was building his road one of the men, bearing an *ala* stone on his shoulder, stumbled and fell. His fractured skull is the origin of the name... [page 145]

Kipahoehoe

Government Schools of Kapalilua

In the early years of the Hawaiian Mission, schools and public instruction generally fell under regional mission stations. By the late 1840s, this was changing, the result of several factors — (1) the diminishing native population; (2) the cost of maintaining the schools; and (3) establishment of the Department of Public Instruction as a branch of the Kingdom. Early records of the Minister and Department of Public Instruction, include important documentation pertaining to population and residency. And in these records, we learn that there was a school near the shore of Kīpāhoehoe until at least 1852, and a school lot was set aside to the Minister of Public Instruction in 1854. The records also tell us that by the time schools were organized under a government board, the Kīpāhoehoe School had all but closed, and the population in the Kapalilua region was apparently in rapid decline, or transition.

One of the earliest reports describing schools in Kapalilua, was written in 1847. Titled "*Papa Hoike Kula Ap. 3 Hawaii*," school overseer, G.W. Lilikalani, listed the school at Kīpāhoehoe, named the teacher and described the financial resources of the school:

<u>Ahupuaa</u>	<u>Kumu Ao (Teacher)</u>	<u>Dala Waiwai (Assets)</u>	
25. Kipahoehoe	Kamakanui	10 ½ Yards of cloth	2.12
		1 Malo	.13
		1 Lole mumuku	.75
		2 Mamaki (kapa)	.50
		Change	2.

In 1848, Mataio Kekuanāo'a, the Minister of Public Instruction, ordered an inspection of schools on Molokai, Maui, and Hawaii. The inspector (not identified in the original journal) recorded the following report on schools of the Ka'ū and Kailua, Kona section of the field. In 1848, there were —

...29 Protestant schools in this district, embracing about 964 children; and 4 Catholic schools embracing about 80 children... Many of the children & youth appeared well on examination & reflected much credit upon their teachers, while others appeared to have made little or no improvement.

The qualifications of teachers need to be raised every where. I am more & more impelled with this necessity. The superintendent of this district is very inefficient... [Public Instruction Series 261 –Box 1:12-13]

While Kīpāhoehoe was not specifically mentioned, school agent reports tell us that a school was in operation. The last School Agent Report found, that included a report from the Kīpāhoehoe School covered the period between October to December 1852. The report lists Kukala as the teacher, and 14 students attended school (HSA - Series 262 School Agent Reports).

In 1854, a government school lot was surveyed at Kīpāhoehoe and transferred to the Minister of Education, but it does not appear that it was used after the granting of the lot. The metes and bounds of the school lot were approved on November 16, 1854:

School House at Kipahoehoe Ahupuaa at South Kona, District 4, Hawaii

[Figure 13]:

...Beginning at the western, shoreward corner, adjoining the house lot of Kama, a stone marked X, running –
South 17° 30' East 242 links to the Konohiki's land
South 82° 30' East 437 links along the Konohiki's land
North 11° 00' West 360 links along the Konohiki's land
South 81° 31' West 438 links to the point of commencement
There being 1 25/100ths Acre. [HSA – DAGS 6 Vol. 36:16; Maly translator]

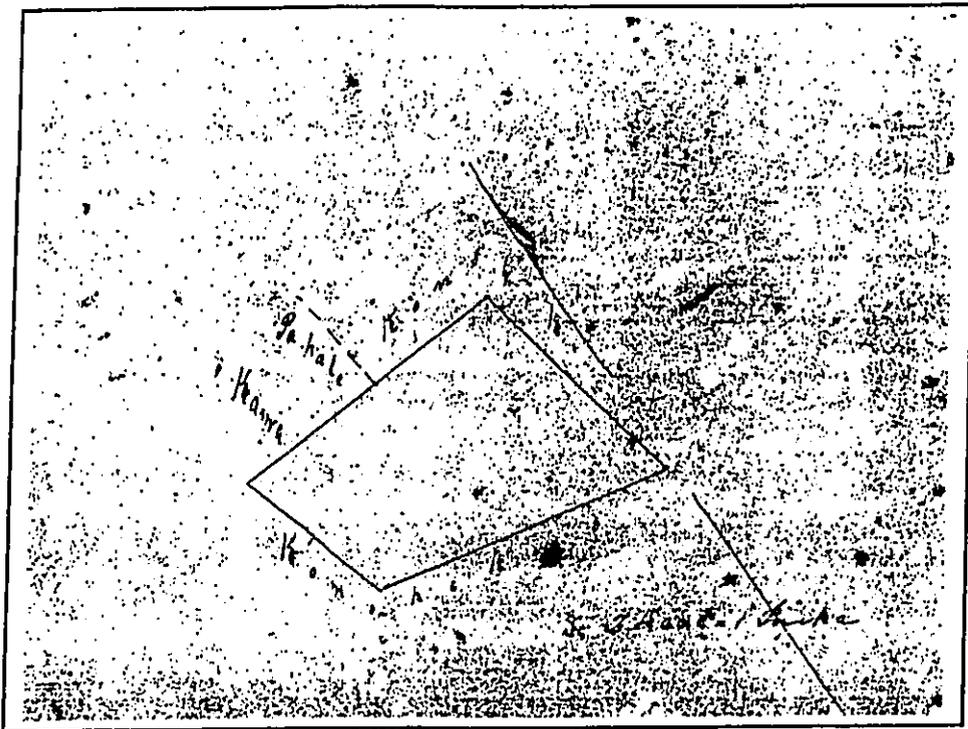


Figure 13. Kahua Hale Kula ma Kipahoehoe (School House Lot at Kipahoehoe)

It is of particular importance to note that an individual (or family) by the name of Kama, was identified as a resident of Kīpāhoehoe at the time of survey. Descendents of Kama remain in Kona to the present day.

School agent reports also name a Keli'ikuli as the teacher in the Catholic School situated at Ho'opūloa, as early as July 1852, and he is listed again in 1855 (HSA - Series 262 School Agent Reports). The survey records also grant a lot for the Catholic School in 'Alikā, bounded *makai* by the sea and on the south by the *kuleana* of Makia (HSA – DAGS 6 Vol. 36:17). Subsequently in the 1870s, Keli'ikuli was granted a lease interest in the Government land of Kīpāhoehoe.

Additional records in the Public Instruction series of the Hawaii State Archives allow us to track changes in residency, and the relocation of population centers. The following letters, are among the communications which describe the Ka'ohe to Kapu'a section of Kapalilua:

1865

Report of Inspection of Schools on Island of Hawaii:

South Kona.

Arriving too late at Kapua to examine the school which is held at Okoe, and passing by Milolii which lies too far out of the way, by the shore, I arrived at Papa; a school situated between Hoopuloa and Alike. A new school house of stone was in course of erection by the parents on government land. I approved their enterprise, improved their design and in virtue of the resolution of the Board touching the erection of school houses, I promised them assistance to furnish the school with floor, door and windows, the parents furnishing the other materials, and labour. The school numbered some twenty scholars of passable progress.

Opihihale. 28 scholars on the register, but only 11 attending. School held in the Protest. chapel on private ground. The original school lot lying *makai*, unoccupied. This school was badly kept...

Kaohe. A stone abomination, standing on private land, the original school lot lying *makai* unoccupied. 28 scholars... [HSA – Series 262 Public Instruction Reports; Hawaii, 1865:28]

Kauhako

April 14, 1866

D.H. Nahinu; to the Honorable M. Kekuaanoa:

...I strived these past few days searching for sureties for myself and they were obtained, if approved by the Board of Education. P. Palea from Waiea in this district and G.W. Maele from Milolii were the persons I had sought. They signed their names in the bond. If these sureties are approved then could the Board be patient to send some school books for the schools in this district. The schools are very needy, so say the teachers... [HSA – Series 261, Box 9]

July 7, 1868

D.H. Nahinu to A. Fornander

(Reporting on Schools of the South Kona Region):

School at Papa. Ekekiela is the teacher. There are 39 students, 23 boys and 16 girls. There are 12 students in reading, 12 in arithmetic, 12 in penmanship and 12 in geography. The reading in this school is good, they made some progress in arithmetic...

School at Opihali. Makaimi is the teacher. There are 12 students, 11 boys and 1 girl. There are 7 in reading, 7 in arithmetic, 12 in geography, 7 in penmanship and 9 in music... [HSA Series 261, Public Instruction Box 10]

May 1869

Memorandum of School Houses, South Kona.

1. Papa. Land place, "Hoopuloa." Size of house 22 x 14, 9 ft. posts. The parents have found sills, plates, and posted.

Wanted: Rafters, Batting & Shingles, rough boards siding and stringers; also battens (1/2 inch) for siding; 1 door, 3 windows, floor joists and floor board rough), nails (assorted)... The Bd. of Ed. will pay the freight from Honolulu, but the parents will drag the lumber up the mountain, and they have paid into Greenwell \$18.—...

2. Kaohe. [same as above]... [HSA Series 261, Public Instruction Box 11]

April 28, 1877

H.R. Hitchcock, to C.R. Bishop (President of the Board of Education):

(reporting on schools on Hawaii);

...The five schools strung along the upper road in the southern extremity of South Kona, are, as formerly, rather poorly taught. The school houses are in good condition, but need some furnitures. The neglect of the parents to supply their children with books is a great source of inefficiency of the schools. The pupils have cultivated the school lots, and made a little money, but as a general thing, they find no sale for their produce, and therefore consume it themselves... [HSA Series 262, Public Instruction - Hawaii]

Schools at Pāpā (along the Alanui Aupuni-Māmalahoa Highway), and at Miloli'i Village served children of this region, through the 1950s. Following closure of these two outlying schools, the 'Ala'ē School, and subsequently the Ho'okena School filled the need. Throughout this time the schools were maintained as one-room school houses with children from first to eighth grade participating in studies together. Upon completion of eighth grade, the children then went to Kona Waena High School. Many of the children left home and went to stay with relatives residing nearer to the high school during those years.

Trails (Ala Hele) and Government Roads (Alanui Aupuni) of the Kapalilua-South Kona Region

Alahele (trails) and *alaloa* (regional thoroughfares) are an integral part of the cultural landscape. In Kīpāhoehoe, we find that the 'alā paved road of Kulokuloku and Po'okāhoahoa Bay are examples of this "storied" aspect of trails on the landscape. The *alahele* provided access for local and regional travel, subsistence activities, cultural and religious purposes, and for communication between extended families and neighboring communities. Trails were, and still remain important features of the cultural landscape today.

Historical accounts describe at least two primary trails of regional importance in Kapalilua-South Kona. One trail crossed the *makai* (near shore) lands, linking coastal communities and resources together (the primary route described by early visitors above). The other major trail was known as "Keala'ehu" (The path of 'Ehu), which passes through the uplands (in the vicinity of the Māmalahoa Highway). This trail comes out of Ka'ū, passes into North Kona, and continues on to Ka'ūpūlehu, where it then cuts *makai* to Kīholo (meeting with the *makai* alignment of the *alaloa*). The *alaloa* then continues into Kohala, passing through Kawaihae and beyond. This route provided travelers with a zone for cooler travel, and access to inland communities and resources. The trail also allowed for more direct travel between North and South Kona (see Malo 1951; I'i 1959; Kamakau 1961; Ellis 1963).

In addition to the *alahele* and *alaloa*, running laterally with the shore, there are another set of trails that run from the shore to the uplands (*makai* to *mauka*). By nature of traditional land use and residency practices, every *ahupua'a* also included one or more *mauka-makai* trail. In native terminology, these trails were generally known as — *ala pi'i uka* or *ala pi'i mauna* (trails which ascend to the uplands or mountain). One such trail known by *kama'āina*, and identified on maps, is the Ka'apuna-Kīpāhoehoe Trail (see Register Map No. 2469). By this trail, in the 1900s, families traveled between upland and lowland destinations to hunt, gather resources, drive cattle, and haul materials between the uplands and the highway. It was also reported in the Boundary Commission proceedings cited above, that "The old road used to run up in the woods on Kipahoehoe and not on Alika" (see testimony of Makia in this study).

Along such trails are found a wide variety of cultural resources, including, but are not limited to residences (both permanent and temporary), enclosures and exclosures, wall alignments, agricultural complexes, resting places, resource collection sites, ceremonial features, *ilina* (burial sites), petroglyphs, subsidiary trails, and other sites of significance to the families who once lived in the vicinity of the trails. The trails themselves also exhibit a variety of construction methods,

generally determined by the environmental zone and natural topography of the land. "Ancient" trail construction methods included the making of worn paths on *pāhoehoe* or 'a'ā lava surfaces, curbstone and coral-cobble lined trails, or cobble stepping stone pavements, and trails across sandy shores and dry rocky soils.

By the 1820s, the growing missions and business interests, sought the improvement of routes of access around the islands—primarily to facilitate travel by horses and other hooved animals, and wheeled carts. In most cases, the native trails were not safe or even usable for such methods of travel. By the late 1840s, the major thoroughfares (such as the *alaloa* – Keala'ehu) became a part of a system of "roads" called the "*Ala Nui Aupuni*" or Government Roads. Work on the roads was funded in part by government appropriations, and through the labor or financial contributions of area residents and prisoners working off penalties.

In the Kīpāhoehoe section of Kapalilua, Keala'ehu (the inland regional trail), was modified by widening and smoothing in places, and realignment (straightened out) in some areas, while other sections were simply abandoned for newer more direct routes by the 1850s. Generally, the *mauka-makai* trails in individual *ahupua'a* were maintained by the residents for their use (as protected by the Kingdom through Kuleana Act of 1850). And only selected *mauka-makai* trails were made into formal government roads. This does not imply that the right of access for native tenants (as provided for in the Kuleana Act of 1850) in *ahupua'a* such as Kīpāhoehoe were not protected, it simply means that the Kingdom chose to expend funds on primary routes of benefit to the larger public. In Kapalilua, such areas as Ho'okena, Pāpā, and Miloli'i served the government's needs for access between the *mauka Alanui Aupuni* and ports of call.

The following communications are a part of a collection of records from native residents and government officials regarding travel through the Kapalilua region. The letters identify residents of given lands, the nature of trails and roads, and the evolution of travel in the region through 1900. Underlining of place names and emphasis given in selected narratives are used by the author of this study to draw attention to specific narratives —

August 13, 1847

George L. Kapeau (Governor, Hawai'i), to Keoni Ana (Minister of the Interior)
(excerpts regarding roads in the South Kona section of Hawai'i):

...I have a few questions which I wish to ask you. Will the police officers be required to pay, when they do not attend the Tuesday (*Poalua*) labor days? How about parents who have several children? What about school teachers and school agents? Are they not required to work like all other people when there is Government work on the roads and highways?

...The roads from Kailua and down the *pali* of Kealakekua, and from Kailua to Honokohau, Kaloko, Ooma...are now being surveyed. When I find a suitable day, I will go to Napoopoo immediately, to confer with the old timers of that place, in order to decide upon the proper place to build the highway from Napoopoo to Honaunau, and Kauhako, and thence continue on to meet the road from Kau... The width of the highways around Hawaii, is only one fathom, but, where it is suitable to widen where there is plenty of dirt, two fathoms and over would be all right... If the roads are put into proper condition, there are a lot of places for the strangers to visit when they come here. The Kilauea volcano, and the mountains of Maunaloa, Maunakea, Hualalai... [Interior Departments Roads Hawaii; translation revised by Maly]

March 29, 1852

Hudsonville (Onouli), Hawaii

T.H. Paris (Road Supervisor, S. Kona) to L. Kamehameha (Minister of Interior):

...I received a letter from your chf. clerk, S. Spencer Esq., requesting me to forward a report respecting the road tax in my district. I hasten a reply and will give you the

information referenced so far as I can. The balance of cash in my hands from last year is \$18. The whole amount rec'd. the past year was \$78.

The probable receipts for the next two years will not in my opinion, exceed two hundred dollars, and may be much less. The probable expenditures which should be made, during the next two years would not be less than two thousand dollars but we would be glad to get a less sum. I have been opening a new road, or rather an old one that has been closed for fifteen or twenty years past, which is the only practicable route to Kau. This can be made a good road with a little help from government, but will take a long time if we have to rely entirely on the road tax. I have worked hard the past year I have not depended on native lunas but have been with the men myself. More than this I am still willing to do all in my power to improve the road if you will only encourage us a little with your help.

The tools that I have are few and in need of repair. I have not enough of money on hand to repair the tools for this years work. Please excuse the freedom I take in begging you to consider the matter and give us a little help... [Interior Department Roads Hawaii]

In the following communication from Geo. Kalaau, South Kona Road Supervisor, readers learn of road work in the district; with specific reference to Division 8, as the section in which Kīpāhoehoe is situated. Kalaau also gives the number of residents in the division eligible to work on the road.

December 22, 1854.

**Geo. B. Kalaau (South Kona Road Supervisor),
to Keoni Ana (Minister of the Interior):**

...I report to you the matters pertaining to the Road Tax of this District during this year, as follows:

1. The number of persons subject to Road Tax in this District. When I counted the persons from 16 years up to forty years and over, there were six hundred and forty-one persons, including foreigners and native Hawaiians.
2. The number of days worked by these persons, under the law of 1853, six days work by each, that being the full payment for the one year ending on the last day of December, 1854; and if these six days are multiplied with the six hundred and forty-one persons, the result will be three thousand eight hundred and forty-six, the number of days. But, I divided the work up in the nine divisions, as follows:

Division 1, from Puuohau to Onouli 1; Division 2, from Onouli 2 to Kealakekua; Div. 3, from Kiloa to Keei 1; Div. 4, Keei 2 to Honaunau; Div. 5, Keokea to Kealia 2; Div. 6, Hookena to Waiea; Div 7, Honokua to Kaohe; Div. 8, Kukuioape to Hoopuloa; Div. 9, Milolii to Kapua.

If the count of the days is by districts, it will be fifty-four days, because, I have given six days to each division, the same to all the sections...

6. Money disbursed and the balance. I paid out the sum of eight dollars, of the road tax, for a part between Hoopuloa and Milolii. A very bad place, plenty of rocks, therefore, I gave that money in order to fix up that place. There is no money balance...

The total number of people who required to contribute to the Road Tax in the District of South Kona:

From Honokua to Kaohe, the people in this division, 94.
From Kukuiope to Hoopuloa, the people in this division, 65.
From Milolii to Kapua, the people in this division, 44...
[Interior Department Misc. Box 146]

May 1859

Bureau of Public Works Report on Expenditures:

...For the Road from Manuka to Kahuku \$500.
For the Road from Kukuiope to Milolii \$500...
[HSA Interior Department Lands]

1869

**Petition of J.W. Maele and 97 native residents of South Kona,
to F.W. Hutchinson (Minister of Interior):**

...We, the people whose names are below, petition to you about the Road Supervisor of Kona. We desire that S.W. Papaula be made the Road Supervisor of South Kona. That a straight road be opened from Kaulanamauna to Kealakekua, and that the places which are bad and in disrepair be made good, like the work (by Thomas Martin) on the road of Kau.

Please kindly consider our request to you. In truth of this request, we sign our names below... [Interior Department, Roads Hawaii Folder 6; translated by Maly]

August 30, 1869

R.A. Lyman to F.W. Hutchinson (Minister of the Interior):

...The old road at Kahuku can be reopened for about \$200.00 so as to be a good road. Most of the people go on the old road, some parts of the road in North and South Kona are being well worked. The new road from Kona to Kahuku is almost finished, and is a good road, except that it goes up & down the hills too straight, so that it will wear out quick on the rises... [Interior Department, Roads Hawaii Folder 5]

August 1, 1871

**Henry Cooper (South Kona Road Supervisor),
to F.W. Hutchinson (Minister of the Interior):**

...I beg to inform you in regards to the roads in South Kona. I have worked the roads for about 18 miles from North to South, say from your Highness' place to Kukuiope, the roads thus far are in fairly good order.

I have remade two miles of road on the beach across the lands of Keei & Honaunau, this improvement was much required as the road had become almost impassable. From Kukuiope to Kapua there is some 12 miles of bad road which I think can be done for (150) One hundred & fifty dollars p. mile. T. Martin says he will contract for two hundred dollars p. mile, but by shipping men or letting it out by contract it can be done for less. I would also say that on the newly made piece of road before mentioned, the natives allow their goats to run at large thereby doing more damage in one month than would be done by ordinary travel in a year. I have posted notices without effect, and would ask your Excellency's instructions upon the subject... [HSA Interior Department, Roads Hawaii Folder 8]

July 21, 1877

**Henry Cooper (South Kona Road Supervisor),
to J.M. Smith (Minister of the Interior):**

...As you are aware from the report of the Royal Commissioners the roads in South Kona are not very good. From Kealakekua to Kukuiope about 18 miles the *mauka* road is not so bad but beyond that the road is bad until the boundary of T. Martin's road in the district of Kau. Nothing can be done on this road without assistance from the Government appropriation.

I think a good road 5 feet wide may be made for two hundred dollars a mile & I would suggest to your Excellency that one mile of said road be made by contract. The present formation is clinkers & very rough, uneven *pahoehoe* for near 15 miles... [HSA Interior Department, Roads Hawaii Folder 10]

October 28, 1889

**S. Kekumano (South Kona Road Supervisor),
to L.A. Thurston (Interior Department):**

...Work on the road to Kapua has ended. If the money is sent I will immediately go over the road to Kapua. The road from Pahoehoe to Honaunau has been put in good order, leaving only the section that runs to North Kona to be done.

I received a petition from the people of Papa and Hoopuloa, asking that this Road Board work on the road that runs up from the landing of Hoopuloa to the uplands at Papa; that One hundred dollars be sent to repair the areas that are in the worst condition. This road is the means of their livelihood, and how they transport their goods to the landing. There are 23 names on the petition... [HSA Interior Department Roads – Hawaii; Maly translator]

Hookena

November 8, 1890

**D.H. Nahinu (South Kona Road Board), to C.N. Spencer (Interior Department)
(Reports that Road Board has appointed Cantoniers for South Kona):**

...Here also is a list of the size and different sections of the roads, their mileage and the people who are responsible to work them, and the pay that is considered right. There only remains the road that descends to the shore at Kaawaloa. If it is determined that the work should be done, it will be started immediately.

The Divisions are thus:

...Section 6. Pahoehoe to Kaapuna, 5 miles. The roads needs improvement. J.W. Kuaimoku, cantonier. \$25.00 per month.

Section 7. Kaapuna to Honomalino, 5 miles of road in this section. Kalaimoku, cantonier. \$25.00 per month

Section 8. Honomalino to Kaulanamauna, adjoining Kau, 6 miles. Kalaimoku, cantonier. \$25.00 per month...

Here also is a diagram [Figure 14] which I have drawn of the road. It is perhaps not exactly right, but by it you can see the length of the road is 43 ½ miles... [HSA Interior Department Roads, Box 41; Maly Translator]

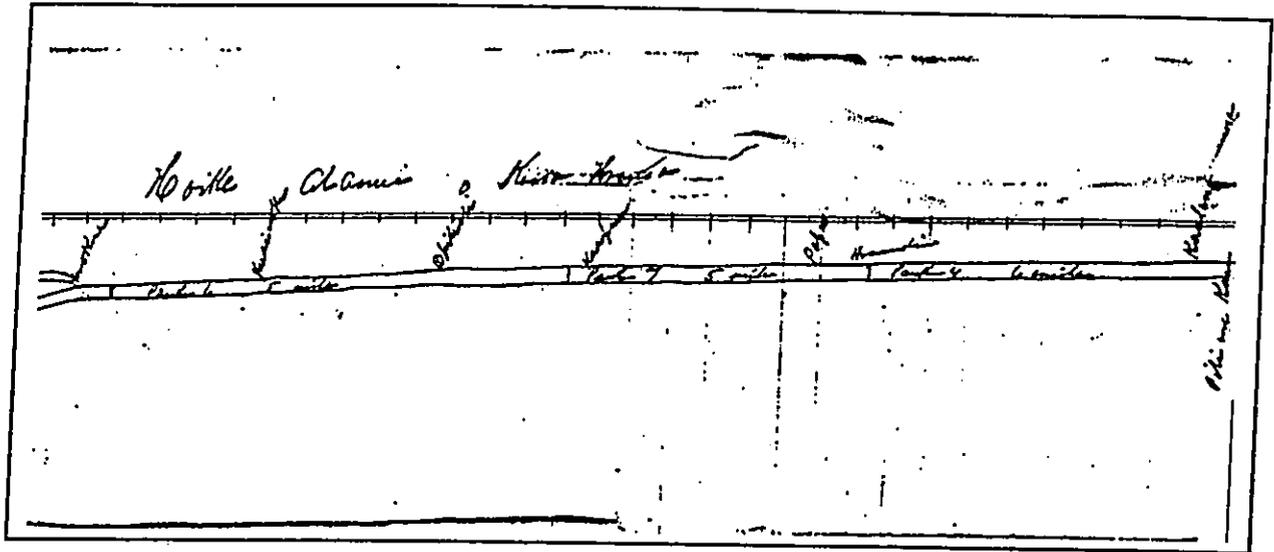


Figure 14. Portion of "Road Exhibit of South Kona" Showing Section between Honokua to Boundary of Ka'ū – Section 7 from Kaapuna to Honomalino.

Dec. 3rd, 1890

Geo. W.R. King; to H.W. McIntosh Esq., Supt. of Public Works

(Report on findings of Inspection on Roads, Island of Hawaii):

...I herewith present my report of the work entrusted to my care while acting under your letter of instructions dated Nov. 12/90 relating to the new roads in North and South Kona.

Arriving at Hookena I delivered the money I had in charge (amounting to \$5752.40) to Mr. Kalanipoo the road *luna* and subsequently assisted him in paying it off. I have already returned to you, the pay rolls duly receipted and witnessed. In cases where men were unable to sign their names but made a mark I have added my own initials as a guarantee.

As regards the Hookena Road, I will say that I consider it a fine piece of work and Mr. Kalanipoo deserves the credit of being a very competent man for the work he has in charge. I can also say that I found him universally liked and respected in the community, no complaints of any serious nature being made against him. In my last visit to this road made Nov. 28th/90 the work was practically completed to stake No. 173, making 17300 ft. finished to date to which must be added 450 ft. finished from the landing to where the grade line began. This leaves 3150 ft. yet unfinished to join the old *mauka* road... ..In regard to the matter of road damages I will say that the owners of Waiea and Honokua claim something, but if the branch road before mentioned is opened up no claim will be made by the owners of Kalahiki. A company is now being formed composed mostly of natives who propose buying the land and cultivating coffee etc.; Mr. W.C. Achi of Honolulu, has the matter in charge...

...One matter to which my attention was called, was the wharf at Hookena, which is inadequate to the needs of the place. At low water a loaded boat has to be pulled alongside by ropes, and at common high tide the water washes over the structure. In brief, it wants length and height... [HSA Interior Department Roads, Box 41]

March 31, 1892

Report of C.N. Spencer, Minister of the Interior

(Regarding new road being built between Hookena and Kahuku):

About five miles of this road is completed, and is certainly one of the best in the Kingdom. It will run for about thirty miles towards Kahuku, from which place to the Volcano a good road will be finished during the present period.

The completion of a road which shall encircle Hawaii is a matter of impossibility as the work of a single period, but by doing a little each two years and not suffering what has been made to go to ruin, we shall have at length, by means of other roads running through the interior of the Island, and serving as it were, as tributaries to the belt road, opened up to cultivation and prosperity large and valuable tracts of land, at present of little use and scarcely known. [HSA Interior Department Report, 1892:284]

Bureau of Survey

Aug. 10th, 1894

Frank S. Dodge, Assistant – H.G. Survey; to Hon. Jas. A. King, Minister of Interior:

...Having recently returned from a tour of inspection of the Government roads of Hawaii, through the Districts of North and South Kona, Kau, Puna, Hilo, Hamakua and a portion of South Kohala, I would submit my report upon the same, with certain recommendations, and suggestions.

In company with Mr. W.E. Wall of this Bureau, I landed at Kailua, Kona, July 21st and proceeded southward as far as Kaawaloa that day, and thence on to Honomalino on the following day. Mr. Wall took observations for altitude, with a barometer – at many points along the line, and the results are now on file in this office, and will be of considerable value in case a detailed survey is to be made.

From my observations of the needs of the Kona District, and the evident progress now being made in its development, I should recommend that steps be taken at the earliest possible date for the improvement of the main road through the whole district, making it passable for loaded vehicles. A road twelve feet in width, with frequent turnouts would be a vast improvement over the present trail – and assist greatly in opening a large section of country. The general line of the present *mauka* road should be followed – with a few changes necessary to overcome excessive grades...

At Hookena, I had an opportunity of examining the new road constructed a few years ago from the harbor to the *mauka* road, and found it in good condition, and needing very slight repairs. It is one of the best roads on Hawaii, and shows conclusively what can be done with the materials close at hand, all through Kona.

At Papa, Hoopuloa and Honomalino there is a very general demand for better facilities for reaching the landing at Hoopuloa, and there is nothing in the way of construction except the elevation to be overcome, which is about seventeen hundred (1700) feet – requiring about four (4) miles of road on an 8% grade.

With the main road completed as a wagon road throughout the district, and the various roads to the steamer landings as above recommended, the two Konas would be far more accessible than at present, and their development much more rapid.

From Honomalino to the Kahuku Ranch the only road is about as bad as it can be, especially where it crosses the lava flows of 1868 and 1887, and it needs reconstruction over its entire length. Most of the land along this section of road is a barren waste and of little value for cultivation, but the main road should be built, as a very important link in the chain around the island... [HSA Interior Department Roads, Box 41]

December 31, 1897

T.H. Wright (South Kona Road Supervisor), to J.A. King (Minister of Interior)

(Reports on conditions of roads in South Kona) :

...Hoopuloa Road in fine condition with an exception of a Rock about ¼ mile from the landing; order has been given to Member Buckholtz to remove same.

Road from Papa I to Honomalino fair.

Road from Honomalino to Kaheawai "boundary" very bad, portions overgrown by Lantana, Guavas, etc. etc., dangerous. Needs fixing, but is impossible for the Road Board to do so.

Road from Papa to the termination of S.W. Waiau Road [in Waikakuu vicinity] under repair by Road Board.

S.W. Waiau Road, known to the Konas by the name of Lazaro Road, lately built. It's one of the poorest built roads ever was constructed. Banks decaying in some places, hardly any surface dressing. Very sharp turns, large hole on the sides where gravel has been dug... The other day portion of the banks by "Mr. Monsarratt's Plantation" caved, hardly any filling... [HSA Interior Department Roads, Box 41]

January 12, 1901

Kukuiopae, S. Kona

S.M. Kanakanui; to W.D. Alexander:

My traverse is now at Alike today, and I expect to pass Papa by Tuesday, which time I think to take our supplies to Kapua. The condition of the road at this end is pretty poorly laid out and built, there are lots of dirt and loose rocks on the way, obstructing the travel, bends being too sharp that it takes professional drivers to pass with wagon load... [HSA - DAGS 6, Hawaiian Govt. Survey]

The Hawaiian Land Grant and Homesteading Programs

In 1850, concurrent with the formalization of native tenant rights in the *Māhele*, the government initiated a program of selling parcels of land to interested residents. The land base came from the reserve of Government lands—those lands given outright by the King, or commuted to the Government in lieu of paying for other parcels retained by the *Konohiki* awardees of the *Māhele*. The fundamentals for the issuance of Royal Patents (*Palapala Sila Nui*) on these grant lands were set forth in the Kuleana Act of 1850 (cited earlier in this study). The intent of the program was to further encourage native tenants to acquire fee-simple parcels of land. Initially, native tenants were allowed to take up parcels by grant, ranging in size from a few acres to 50 acres, with land sold at an average cost of 25 to 50 cents per acre. Generally, the people who applied for homestead lots were long-time residents of the *ahupua'a*, or tenants lands neighboring that which they applied for.

As a part of the grant program foreign residents and natives of some means were also able to secure many hundreds, and at times, thousands of acres (entire *ahupua'a*) through a Royal Patent Grant. Also, as it was in the *Māhele*, when the sales were agreed to, Royal Patents were issued to the purchasers, which were recorded by a numerical system that remains in use today.

No Royal Patents were issued for land in the *ahupua'a* of Kīpāhoehoe, though several applications were made by native and foreign residents from 1866 to 1889 (see communications below). Ka'apuna (bounding Kīpāhoehoe on the north) was awarded as a *kuleana* land, thus it was not a part of the government inventory. But in 'Alikā (bounding Kīpāhoehoe on the south), several applications were made by native tenants (Kahinalua and Makia, who were also *Māhele* awardees in 'Alikā) for grant parcels. Of the two primary applicants, Grant No. 3153 was issued to Makia and Keaweikaliko in 1876. The grant parcel takes in the entire southern boundary of Kīpāhoehoe, from an area above

Māmalahoa Highway to the shore. D.H. Hitchcock's survey of September 20, 1875, provides the following description of Grant No. 3153 (Figure 15)

Boundaries of a portion of Alikā

Commencing at South West corner at rock marked "X" jutting into the sea and running along sea coast to line of Kipāhoehoe. Thence up said line as follows;

1. North 18° West 70.00 Chains.
2. North 62 ½ ° East 76.50 Chains.
3. North 84° East 33.90 Chains. [pg. 167]
4. South 8p° East 25.00 Chains to Govt. road & rock marked "X"
5. North 73 ½ ° East 33.00 Chains.
6. North 89° East 25.00 Chains to N.E. corner and rock marked "X"
7. South 25° East 75.00 Chains to S.E. corner of *Ohia* marked "K"
8. South 76 ½ ° West 49.50 Chains along line of Papa 1st to land sold to Kaliuna & Holi. Thence along said line Sea.
9. South 73.45° West 110.00 Chains.
10. South 81° West 52.50 Chains to point of commencement and containing an area of 1032.00 acres more or less. Magnetic variation E. 8.29°... [Land Division – Grant Packet No. 3153]

In the 1880s, the Hawaiian Kingdom undertook a new program of forming Homestead lots on Government lands; a primary goal of the program being to get more Hawaiian tenants, and growing numbers of foreign residents in possession of fee-simple property (Homestead Act of 1884). The Homestead Act allowed for lots of up to 20 acres, but in arid, volcanic areas, the lands were described as "insufficient to live on in every respect." And because of the rocky nature of the land, goats were the only animals which could be raised in an effort to make a living. Thus, native residents in arid regions of the island requested that larger parcels be set aside for grazing purposes (cf. HSA—Land File, December 26, 1888; and Land Matters Document No. 255).

While the homesteading program was underway by 1885, lands in the remote region of Kapalilua were not set up for homesteading until the late 1890s. In 1895, the Land Act was revised, and the Right of Purchase Lease (RPL) program for larger tracts of land was set in place. By 1899, various government *ahupua'a* such as 'Alikā, Pāpā, 'Ōpihiali, 'Ōielomoana and Kukuiope'e, were being surveyed and lands set aside for the Homesteading and RPL programs. Once again, Kīpāhoehoe was not made available for purchase.

On March 31, 1902, S.M. Kanakanui reported to W.E. Wall (Territorial Surveyor) that the descriptions of the Homestead Lots at Pāpā were almost completed (HSA – DAGS 6, Hawaiian Govt. Survey). As a result of the survey, 18 Homestead lots were set aside at Pāpā. The Pāpā Homestead Road also extended along the *mauka* boundary of the Makia-Keaweikaliko parcel (Grant 3153), from the homestead lots into 'Alikā, where five RPL parcels, totaling some 2,905 acres had been set aside as well.

In 1902, S.B. Dole, Governor of Hawai'i, had compiled a list of "public lands" on the island of Hawai'i. He reported that Kīpāhoehoe and 'Alikā totaled 7,500 acres. From that land, 2,150 acres had been set aside for "Settlement Purposes," it being a "rocky grazing land" (HSA Exec. Dole 1902, Doc. No. 359). Later in 1902, J.L. Boyd (Commissioner of Public Lands), wrote to Governor Dole regarding applications for land in 'Alikā, and noted that the land had a beautiful forest on it, and that wild cattle were running on the land:

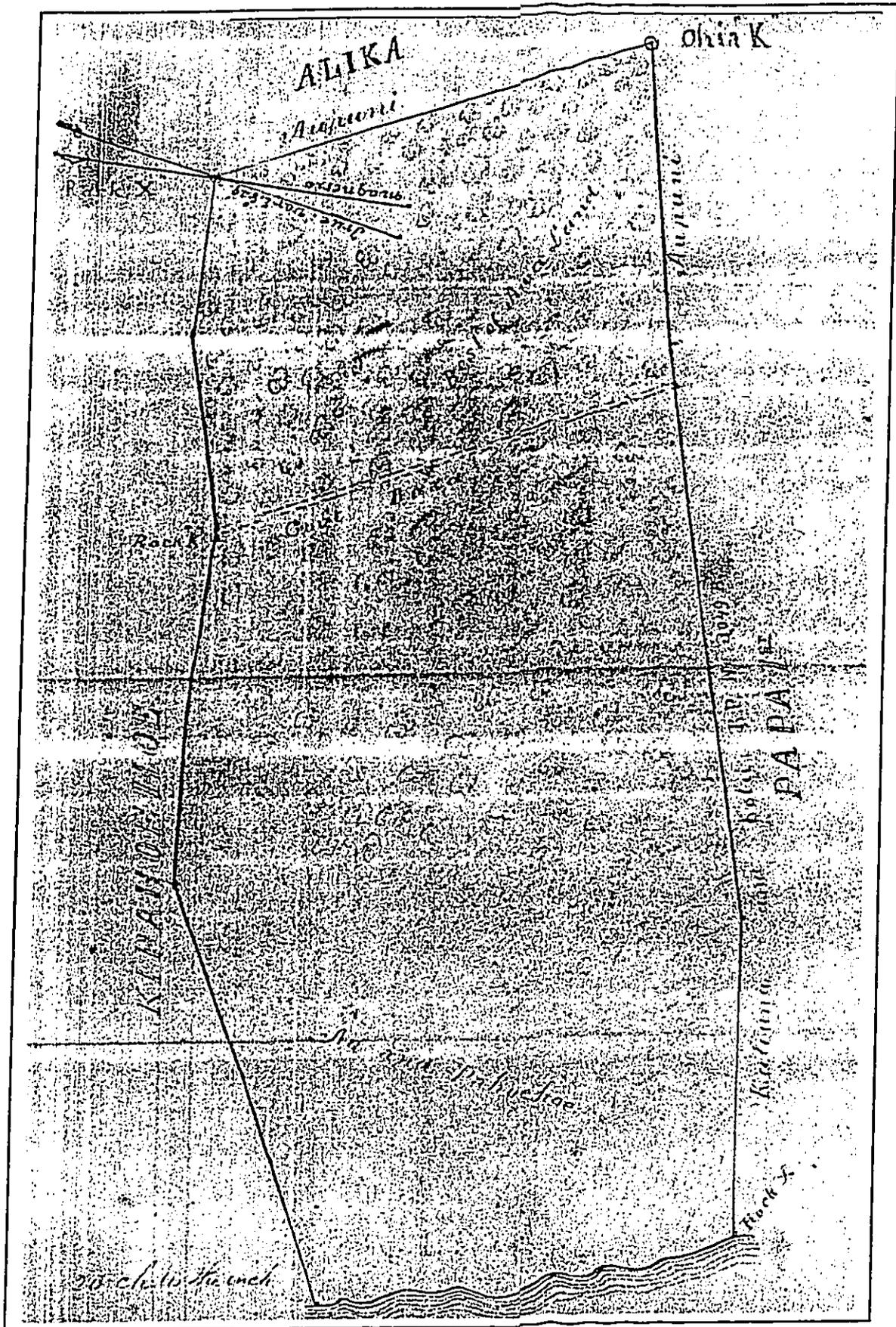


Figure 15. D.H. Hitchcock's Map of Grant 3153, Sold to Makia and Keaweikaliko (Sept. 1875)

June 12, 1902

...Application of Jose G. Henriques for 1000 acres of land in Alika, S. Kona, Hawaii, under Right of Purchase Lease, offers \$1.00 per acre. This land adjoins that of Bucholtz, recently awarded [at Pāpā], evidently our granting Bucholtz a large area of land in that tract, has made him an applicant for a like grant (there are 4 other applicants, but I only brought this one up for action).

It was finally decided that the application be declined for the present, as it was not wise to dispose of this land at a whole sale rate, and might be a source of serious injury to the beautiful forest that is now on the land, other applications were also declined...

Several applications have been received at this office to shoot wild cattle in Alika, S. Kona, Hawaii; but as numerous protests have been made against the granting of same, they were denied... [HSA Exec Dole, 1902]

Resolution of the forest issue and other matters was apparently reached, as in 1903, J. Deniz took an RPL agreement on Lot No. 1, adjoining Kīpāhoehoe and containing 669 acres (subsequently sold as Grant 5045); and W. Arnemann took an RPL agreement for Lot No.'s 2 and 3, containing 1,118 acres (subsequently sold as Grant 5098). No land in Kīpāhoehoe was granted.

The Deniz parcel was patented in 1907 as Grant No. 5045 (*Figure 16*), with the following description:

Right of Purchase Lease No. 40.

Second Class Pasture Land.

Improvements: 2 houses made of roof iron and 2 wooden tanks and 3 small iron tanks; taking into consideration the cost in taking the iron into the mountains, I would value the whole at about \$125.00 to \$150.00. The lands is fenced complete with a wire fence.

Maintenance of a Home: The Occupant claims that it has been continuous, that the only times that he has left the place is when he went to Church and when he went to his father's place to get provisions.

Cultivation: Being pasture land it was not required for him to cultivate...

Patent Grant No. 5045
To Joaquin Deniz
in Consideration of \$669.00

August 13, 1907

Alika, South Kona, Hawaii

Com. Pub. Lands

February 4th, 1903

Alika Homestead Lots. S. Kona, Hawaii. Lot 1

Beginning at a  in stone, marked by an *ahu*, on the Eastern boundary of Grant 3153 to Makia and Keaweikaliko, which is the Southwest corner of this lot and the Northwest corner of Lot 2, the coordinates from Puu Nahaha being N 26644.8 feet, E 8658.4 feet, as shown on Government Survey Registered Map No. 2171, and running by true bearings:

1. N 14° 00' W 652.0 feet along Grant 3153 to Makia and Keaweikaliko, to large *ahu* at Northeast corner Grant 3153 on Kipahoehoe South boundary;
2. N 76° 47' E 23364.0 feet along Kipahoehoe to large *ahu* on Kahuku Boundary the coordinates from Pualehua  being S 3355.3 feet, W 3657.2 feet;

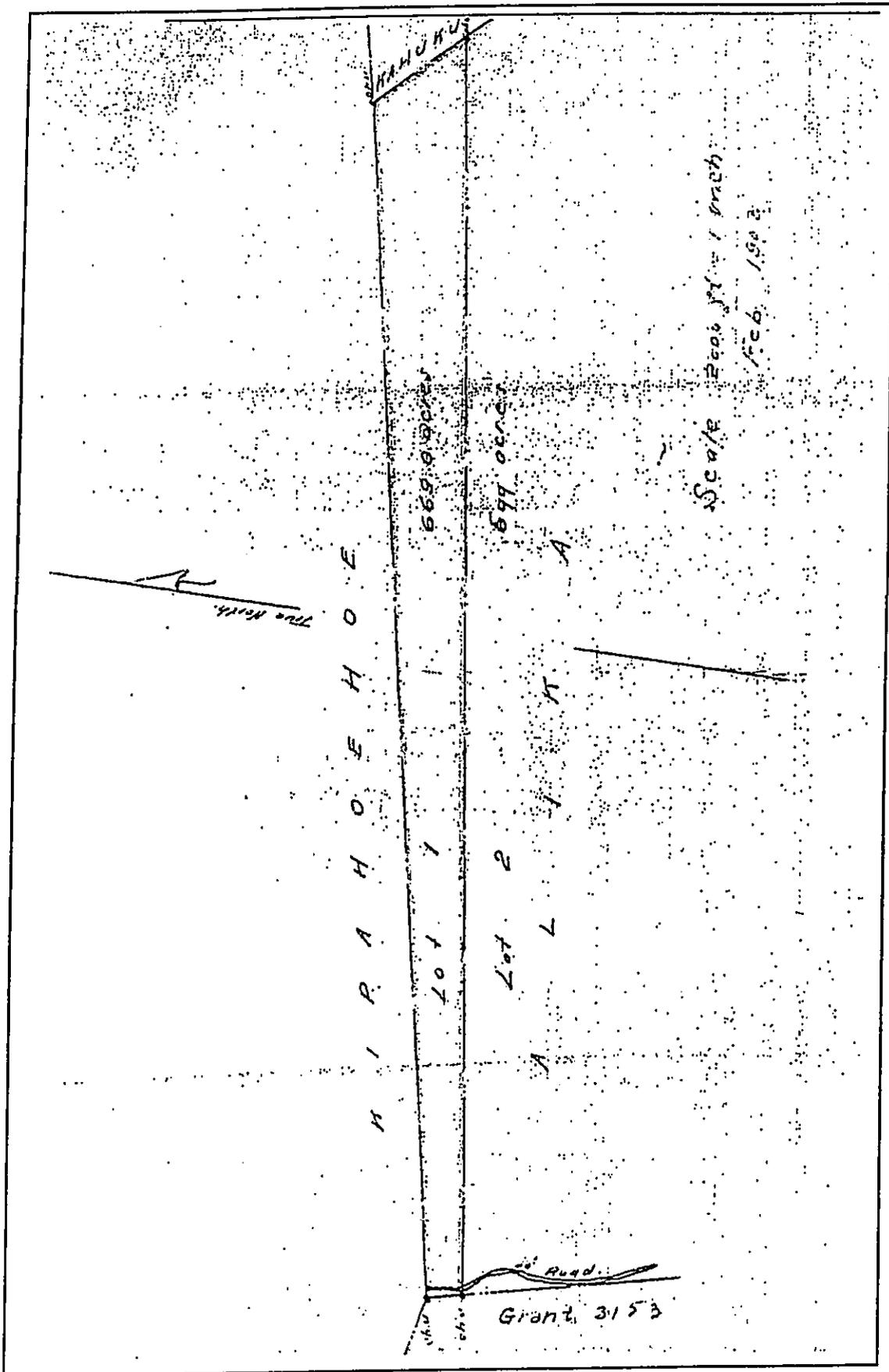


Figure 16. G.T. Wright's Map of Grant No. 5045 to J. Deniz; Lot No. 1 Alika (Feb. 1903)

3. S 45 03' E 2135.1 feet along Kahuku to *ahu* at Northeast corner lot 2;
4. S 79° 30' W 24508.6 feet along Lot 2 to initial point.

Reserving however from the above a 40 foot roadway near the western boundary of this lot, and leaving a net area of 669.0 acres.

Geo T. Wright
Assistant Government Surveyor

By the 1920s, C.Q. Yee Hop purchased the remainder of 'Alikā, which were combined with the lands of Ka'apuna and 'Ōlelomoana, and made a part of the Olelomoana Ranch which was founded in 1907. As the ranching interests were being developed, C.Q. Yee Hop & Company also entered into lumber milling operations, harvesting vast quantities of *koa* and '*ōhi'a* from their various South Kona lands. By 1942, the milling operation of C.Q. Yee Hop, based out of two mills in 'Alikā, ran seven days a week, cutting and shipping '*ōhi'a* logs to Pearl Harbor as a part of the war effort (see interviews with Yee and Ahuna family members). Communications cited in the following sections of the study provide detailed descriptions of forestry and ranching activities in Kīpāhoehoe and neighboring lands.

THE SOUTH KONA FOREST RESERVE AND KĪPĀHOEHOE NATURAL AREA RESERVE

Early in the nineteenth century, Kamehameha III, his ministers, and many residents (both native and foreign) began to recognize the significant threat posed by wild animals to the Hawaiian landscape. Little relief from the threat had been realized, and on September 19, 1876, King David Kalākaua signed into law, an "Act for the Protection and Preservation of Woods and Forests." By that Act, the Minister of the Interior was authorized to set apart and protect from "damage by trespass of animals or otherwise, such woods and forest lands, the property of government...best suited for the protection of water resources..." (Hawaii Laws Chapter XXX:39). The Minister of the Interior was authorized to appoint a superintendent of woods and forests:

...who shall, under the direction of said Minister, enforce such rules and regulations as may be established to protect and preserve such reserved woods and forest lands from trespass. Said superintendent shall have charge of the construction of fences and barriers required to protect the said woods and forest lands, and shall be responsible for their being kept in good condition... (ibid.).

The above Act was further defined by an Act of the Legislature of the Hawaiian Kingdom, approved by Queen Lili'uokalani on January 4, 1893, which established the Bureau of Agriculture and Forestry. Among the Bureau's goals was the "preservation of forests." On June 14, 1900, the members and functions of the Bureau were absorbed by the Board of Commissioners of Agriculture and Forestry (Hawaii State Archives – Com 2, Box 11). It is under this board, that we see the establishment of Forest Reserves around the Hawaiian Islands, including the South Kona Forest Reserve, covering the lands of Ka'ohe 1-5, Waikaku'u, Kukuiope'e, Kolo, 'Ōlelomoana 1-2, 'Ōpihiali 1-2, Kīpāhoehoe, Honomalino, Kapu'a, Kaulanamauna, and a portion of Manukā (Ka'Ō), as established by Executive Order on May 17, 1911.

A Historical Overview of Forestry in South Kona

The following narratives, provide readers with a history of forestry development and conservation programs in the Kapalilua-South Kona Region. It will be observed that significant effort between Government Agencies, private land owners, and members of the public were made during the time of forest reserve development (Figure 17).

July 6, 1910

WAIEA-KIPĀHOEHOE FOREST RESERVE.

South Kona, Hawaii.

Beginning at the Government Survey Trig. Station "Kipāhoehoe" (marked by an iron bolt) the true azimuth and distance to "Lae o Heku" Trig. Station being 117° 15' 04" 5188.1 feet and to "Waha Pele" Trig. Station being 6° 12' 53" 8280.7 feet, as shown on Government Survey Registered Map No. 2468, and running by true azimuths:-

1. 208° 11' 2212.0 feet along Kipāhoehoe remainder to an orange tree marked "K" at Pohakaka on the Kipāhoehoe-Kaapuna Boundary;
2. 272° 22' 2007.0 feet along Kaapuna to a small iron pin and large *ahu* on the on the *mauka* side of Government belt road and on the South side of small gulch;
3. 214° 32' 3241.0 feet across the land of Kaapuna to a + on set stone and *ahu* at the Southeast corner of Lot 12, Olelomoana Homesteads;
4. 194° 30' 1300.0 feet along Olelomoana Homestead Lot 12 to a + on set stone and *ahu*;

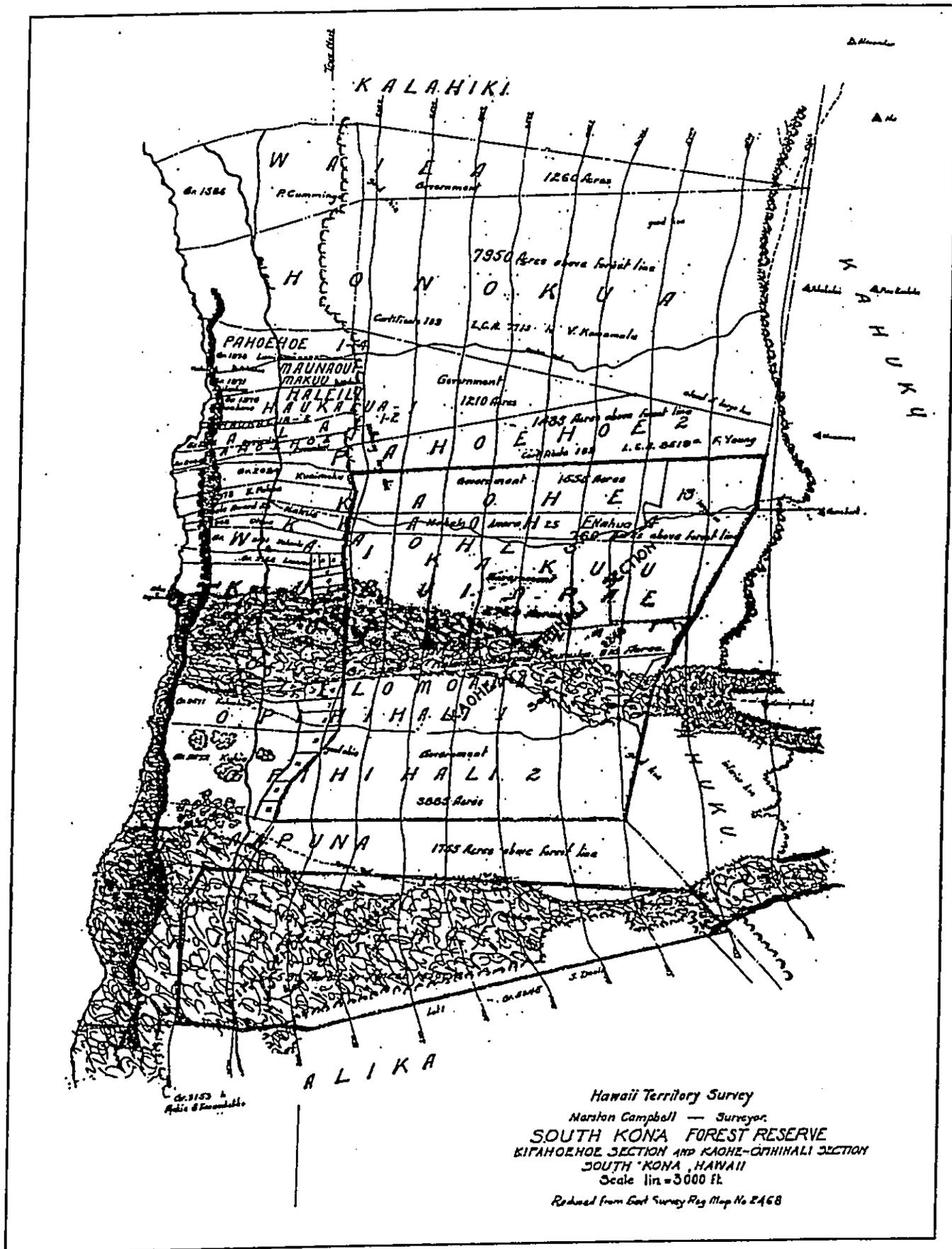


Figure 17. C.S.F. 2245 South Kona Forest Reserve, Waiea-Kīpāhoehoe Section; 1910 (State Survey Division)

5. 207° 57' 1325.0 feet along Olelomoana Homestead Lot 12 to spike in *pahoehoe* and *ahu*;
6. 224° 20' 2290.0 feet along Olelomoana Homestead Lot 10 to *ahu*;
7. 219° 23' 1641.0 feet along Olelomoana Homestead Lot 9 to a + on set stone and *ahu*;
8. 182° 10' 972.0 feet along Olelomoana Homestead Lot 8 to a + on set stone and *ahu*;
9. 190° 00' 859.0 feet along Olelomoana Homestead Lot 7 to a + on set stone and *ahu*;
10. 188° 00' 30.0 feet across road to a + on set stone and *ahu*;
11. 182° 30' 1105.0 feet along Olelomoana Homestead Lot 6 to an unmarked point on the boundary between Olelomoana 1st and 2nd;
12. 176° 43' 1520.0 feet across the land of Olelomoana 1st to an unmarked point on the boundary between Olelomoana 1st and Kolo;
13. 180° 00' 2855.0 feet along Grant 3607 to J.M. Monsarrat to a + on set stone and *ahu*;
14. 85° 40' 2188.0 feet along Grant 3607 to J.M. Monsarrat to a [mark] on set stone and *ahu*;
15. 213° 27' 254.0 feet along Grant 1975 to Maele to a + on set stone and *ahu*;
16. 201° 49' 204.0 feet along Grant 1975 to Maele to a + on set stone and *ahu*;
17. 190° 50' 230.0 feet along Grant 1975 to Maele to a + on set stone and *ahu*;
18. 263° 05' 1930.0 feet along Kukuiopae Homestead Lot 7 to a + on set stone and *ahu*;
19. 172° 44' 2577.0 feet along Kukuiopae Homestead Lots 7-6-5-4 roadway and Lot 3 to a + on set stone and *ahu*;
20. 191° 40' 762.4 feet along Government land to an unmarked point;
21. 187° 00' 551.0 feet along Grant 2368 to Ohua to a + on set stone and *ahu*;
22. 187° 05' 1065.6 feet across the land of Kaohe 4 to a + on set stone and *ahu* at the Southeast corner of Grant 1973 to Pahua, the true azimuth and distance to "Eleele" Trig. Station being; ...
23. 194° 36' 1345.0 feet along Grant 1973 to Pahua to a + on set stone and *ahu* by large *ohia* tree;
24. 106° 33' 145.2 feet along Grant 1973 to Pahua to a + on set stone and *ahu*;
25. 169° 00' 564.3 feet along Grant 2024 to Kuaimoku;
26. 173° 30' 143.9 feet along Grant 2024 to Kuaimoku;
27. 168° 00' 309.0 feet along Grant 2024 to Kuaimoku;
28. 172° 00' 85.8 feet along Grant 2024 to Kuaimoku;
29. 171° 30' 1525.0 feet across the land of Pahoehoe 2nd to a [mark] on set stone and *ahu* at the Southeast corner of Grant 2025 to Pumealani;
30. 165° 48' 465.3 feet along Grant 2025 to Pumealani to a + on set stone and *ahu*;
31. 162° 06' 402.6 feet along Grant 2025 to Pumealani to a + on set stone in old *ahu* at point of small ridge;
32. 251° 10' 360.0 feet along Grant 2036 to Beniamina to spike in + on stone and *ahu* on small ridge;

CORRECTION

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

5. 207° 57' 1325.0 feet along Olelomoana Homestead Lot 12 to spike in *pahoehoe* and *ahu*;
6. 224° 20' 2290.0 feet along Olelomoana Homestead Lot 10 to *ahu*;
7. 219° 23' 1641.0 feet along Olelomoana Homestead Lot 9 to a + on set stone and *ahu*;
8. 182° 10' 972.0 feet along Olelomoana Homestead Lot 8 to a + on set stone and *ahu*;
9. 190° 00' 859.0 feet along Olelomoana Homestead Lot 7 to a + on set stone and *ahu*;
10. 188° 00' 30.0 feet across road to a + on set stone and *ahu*;
11. 182° 30' 1105.0 feet along Olelomoana Homestead Lot 6 to an unmarked point on the boundary between Olelomoana 1st and 2nd;
12. 176° 43' 1520.0 feet across the land of Olelomoana 1st to an unmarked point on the boundary between Olelomoana 1st and Kolo;
13. 180° 00' 2855.0 feet along Grant 3607 to J.M. Monsarrat to a + on set stone and *ahu*;
14. 85° 40' 2188.0 feet along Grant 3607 to J.M. Monsarrat to a [mark] on set stone and *ahu*;
15. 213° 27' 254.0 feet along Grant 1975 to Maele to a + on set stone and *ahu*;
16. 201° 49' 204.0 feet along Grant 1975 to Maele to a + on set stone and *ahu*;
17. 190° 50' 230.0 feet along Grant 1975 to Maele to a + on set stone and *ahu*;
18. 263° 05' 1930.0 feet along Kukuiopae Homestead Lot 7 to a + on set stone and *ahu*;
19. 172° 44' 2577.0 feet along Kukuiopae Homestead Lots 7-6-5-4 roadway and Lot 3 to a + on set stone and *ahu*;
20. 191° 40' 762.4 feet along Government land to an unmarked point;
21. 187° 00' 551.0 feet along Grant 2368 to Ohua to a + on set stone and *ahu*;
22. 187° 05' 1065.6 feet across the land of Kaohe 4 to a + on set stone and *ahu* at the Southeast corner of Grant 1973 to Pahua, the true azimuth and distance to "Eleele" Trig. Station being; ...
23. 194° 36' 1345.0 feet along Grant 1973 to Pahua to a + on set stone and *ahu* by large *ohia* tree;
24. 106° 33' 145.2 feet along Grant 1973 to Pahua to a + on set stone and *ahu*;
25. 169° 00' 564.3 feet along Grant 2024 to Kuaimoku;
26. 173° 30' 143.9 feet along Grant 2024 to Kuaimoku;
27. 168° 00' 309.0 feet along Grant 2024 to Kuaimoku;
28. 172° 00' 85.8 feet along Grant 2024 to Kuaimoku;
29. 171° 30' 1525.0 feet across the land of Pahoehoe 2nd to a [mark] on set stone and *ahu* at the Southeast corner of Grant 2025 to Pumealani;
30. 165° 48' 465.3 feet along Grant 2025 to Pumealani to a + on set stone and *ahu*;
31. 162° 06' 402.6 feet along Grant 2025 to Pumealani to a + on set stone in old *ahu* at point of small ridge;
32. 251° 10' 360.0 feet along Grant 2036 to Beniamina to spike in + on stone and *ahu* on small ridge;

33. 242° 46' 376.0 feet along Grant 2036 to Beniamina to [mark] on set stone and *ahu*;
34. 169° 50' 543.7 feet along Grant 2036 to Beniamina to a + on set stone and *ahu*;
35. 177° 12' 224.4 feet along Grant 2036 to Beniamina to [mark] on set stone and *ahu*;
36. 180° 21' 376.5 feet across the Government land of Haukalua 2nd to a + on set stone and *ahu* in center of Makole Water Hole (now dry) at the Southeast corner of Grant 1970 to G.B. Kalaau Kane, the true azimuth and distance to Makole Trig. Station being; ...
37. 186° 23' 30" 1292.6 feet along Grant 1970 to G.B. Kalaaukane to old *ohia* tree on small hill;
38. 184° 19' 735.6 feet along Grant 1971 to Keliiahue to an 1 inch pipe and *ahu*;
39. 164° 06' 757.0 feet along Grant 1971 to Keliiahue to old + on *ohia* tree at corner of fern fence;
40. 173° 10' 30" 1650.0 feet along Grant 1974 to Lumilumi to [mark] on set stone and *ahu*;
41. 183° 09' 7144.0 feet across the land of Honokua, Boundary Certificate 103, L. C. A. 7713 to V. Kumamalu [sic] to the Southeast corner of Grant 1586 to Preston Cummings;
42. 181° 05' 462.0 feet along Grant 1586 to Preston Cummings;
43. 169° 35' 244.0 feet along Grant 1586 to Preston Cummings;
44. 185° 20' 264.0 feet along Grant 1586 to Preston Cummings;
45. 176° 20' 356.0 feet along Grant 1586 to Preston Cummings;
46. 177° 20' 792.0 feet along Grant 1586 to Preston Cummings;
47. 162° 05' 363.0 feet along Grant 1586 to Preston Cummings;
48. 166° 20' 330.0 feet along Grant 1586 to Preston Cummings;
49. 175° 05' 369.0 feet along Grant 1586 to Preston Cummings;
50. 176° 05' 1102.0 feet along Grant 1586 to Preston Cummings;
51. 278° 31' 26350.0 feet along the land of Kalahiki to a point marking the junction of the lands of Hookena, Kalahiki, Waiea and Honokua at Kahuku Boundary;
52. 7° 48' 18140.0 feet along Kahuku Boundary to an unmarked point on the North side of a small gulch, the true azimuth and distance to "Kamakaili" Trig. Station being: 275° 45' 3760.0;
53. 27° 52' 11753.0 feet along Kahuku Boundary to a "W" marked on stone set in Hitchcock's old *ahu* on the old Kukuiope trail through *kipuka*;
54. 11° 41' 2720.0 feet along Kahuku Boundary to Hitchcock's old *ahu* on aa flow in a small *kipuka*;
55. 8° 45' 5280.0 feet along Kahuku Boundary to an unmarked point;
56. 315° 56' 5629.0 feet along Kahuku Boundary to a buried bottle in the center of Hitchcock's old *ahu* in *kipuka* on aa flow near edge of forest;
57. 317° 92' 3244.0 feet along Kahuku Boundary to an unmarked point;
58. 76° 47' 24624.0 feet along Alike Homesteads Lot 1, Grant 5045 to J. Deniz, to fence corner on site of old corner *ahu*;
59. 99° 03' 1570.0 feet along Grant 3153 to Makia and Keaweokaliko to a + on set stone and *ahu* on edge of aa;

60. 83° 23' 2190.0 feet along Grant 3153 to Makia and Keaweokaliko to old "K" marked on solid *pahoehoe* rock at old Government Road;
61. 100° 59' 1638.0 feet along Grant 3153 to Makia and Keaweokaliko to a + on solid *pahoehoe*;
62. 93° 32' 2182.0 feet along Grant 3153 to Makia and Keaweokaliko to a + on solid *pahoehoe* near edge of *pali*;
63. 180° 15' 6816.0 feet across Kipahoehoe to the point of beginning. Area 28020 Acres.

Geo T. Wright, Assistant Government Surveyor.

Memorandum of Areas and Ownerships of the lands included within the Waiea-Kipahoehoe Forest Reserve, South Kona, Hawaii:

<u>Lands</u>	<u>Owners</u>	<u>Area</u>
Waiea	(Government)	1260
Honokua	(Hui Land)	7950
Haukalua-Pahoehoe Tract	(Government)	1210
Pahoehoe 2 nd	(Ontai Bros.)	1485
Kaohe Tract	(Government)	1555
Kaohe 4 th	(W.R. Castle)	760
Kukuiopae Tract	(Government)	2760
Olelomoana 1 st	(W.R. Castle)	810
Olelomoana-Opihiali Tract	(Government -- Lease 572)	3885
Kaapuna	(Ontai Bros.)	1755
Kipahoehoe	(Government) 4590... [State Survey Division]	

November 21, 1910

**R. S. Hosmer, Superintendent of Forestry,
to Board of Commissioners of Agriculture and Forestry
(Regarding establishment of the South Kona Forest Reserve):**

...I have to submit a report with recommendations in regard to the creation of a forest reserve in the District of South Kona, Island of Hawaii. The area proposed to be set apart include. The greater part of the section of forest land from the land of Waiea to and including the land of Manuka, just over the boundary line in the Kau District, lying between the upper limit of the area that has been cleared for agriculture and the boundary of the land of Kahuku, well up on the slope of Mauna Loa. For convenience in description this proposed reserve has been divided by the surveyor into two sections, Waiea-Kipahoehoe and Kapua-Manuka. These are separated by a block of privately owned land, in part homesteads, that it is not deemed advisable to include at present in the proposed reserve. For these two areas I propose the name South Kona Forest Reserve.

The proposed South Kona Forest Reserve is made up of both government and privately owned land. The total area is 50,612 acres. Of this, 31,730 acres, or 63 percent, belongs to the Territory. A considerable part of the government land (13,915 acres) is not under lease so that it can be set apart at once unconditionally. The remainder will come into the fully reserved class upon the expiration of the existing leases. So far as it has been possible to ascertain the owners of private lands within the proposed reserve are generally in favor of the forest policy of the Government and intend to manage their holdings in general conformity with the plans proposed by the Territorial Government. In particular, the Bishop Estate, owners of the land of Kapua, have already, in a recently executed lease, made provision for the reservation

of the forest on that land within the boundaries recommended in the present report. As elsewhere in the Territory, the private owners in South Kona are unwilling to turn the management of their lands over to the Government until a definite system of administration has been inaugurated.

The accompanying table, compiled along with the technical description by Mr. Geo. F. Wright, when in the employ of the Territorial Survey Office, gives the ownership and area of the lands in the proposed reserve.

The boundaries of the South Kona Forest Reserve have been so drawn as to include practically all the valuable forest still belonging to the Government in South Kona, with such private tracts of like character as lie between the strips of Government land.

From a glance at the map showing Government holdings it will be seen that with the exception of one or two small pieces in the center of the district, the Government lands in Kona are pretty much together at the south end. But they are not in a continuous block, being instead a series of strips, alternating with other lands of varying width in private ownership.

The main Government road in South Kona runs at an elevation of from 1200 to 1500 feet, gradually rising toward the South. The lower edge of the woods, which is also the upper line of the land that has been cleared for agriculture is a little less than 2000 feet in elevation from Waiea to Kipahoehoe. On that land and also on Kalanamauna [Kaulanamauna] and Manuka in Kau the forest comes farther down. But these three last named lands are covered in large part by old aa flows, so that, except in kepukas [*kīpuka*] of varying size where the soil is good, there is little agricultural land. The forest, principally of *Ohia Lehua*, grows on the aa flows. As much of it is of excellent quality, the *makai* line of the proposed reserve has been brought down below the Government road to include these stands.

The upper boundary of the reserve follows the boundary of the great land of Kahuku which is in private ownership. The elevation varies from 5000 to 6000 feet. Above the boundary on Kahuku are a considerable number of groves of small sized *Koa* trees, and also an open stand of short and scrubby *Ohia*, that extends well up onto the slope of Mauna Loa. there is, however, little or no forest of commercial value on this portion of Kahuku, which is to be ranked as indifferent grazing land.

The forest in the proposed South Kona Forest Reserve consists of two sharply defined belts. From the lower boundary up to about 4000 feet, *Ohia Lehua* is the predominant tree, in mixture with others of the less important native species. In spots and strips, especially toward the south end of the district, usually on old aa flows, are pure stands of *Ohia*, of good size and height and excellent quality. The trees in these stands are usually from 18 to 24 inches in diameter breast high and from 80 to 100 feet tall. Unfortunately these good stands are all limited in area. No exact survey of them has ever been made nor any careful estimate as to the yield per acre.

Above the elevation of 4000 feet throughout South Kona—and the line is sharply marked—is a belt of nearly pure *Koa*. The trees are of good size, from 3 to 5 feet in diameter, and of fair height, 60 to 80 feet. This belt is approximately a mile wide. The large trees do not extend much above 5500 feet in elevation. Above that, on Kahuku, the forest is one of the character already described.

At the extreme south end of Kona and on Manuka there is a small section of great botanical interest, in that here are found trees and shrubs that occur only in one or

two other places in Hawaii. This area is similar in character but not as large as the section between Puuwaawaa and Huehue at the North end of the Kona District.

It is unfortunate, but true, that throughout the Kona District there are no streams and only a few springs that actually deserve the name. In the proposed South Kona Forest Reserve special attention was paid to locating all the known sources of water and Mr. Wright's original map shows the various waterholes. As a whole this forest is unexplored. For fifteen miles along the coast from Waiea to the Kau line, not more than eight trails go through the forest, and these are of the roughest sort and almost impassable in bad weather. With such inadequate means of access it is impossible to do much more than fix the outside boundaries of the forest.

A more intimate knowledge of it must be left till later. Personally I have seen as much of South Kona, as is now feasible without the cutting of special trails. This report is based on observations made during several visits at different times, as well as upon additional data secured by Mr. Wright at the time he fixed the forest boundaries.

Object of the Reserve.

The purpose of creating the South Kona Forest Reserve is essentially to bring these government forest lands under the department of the Territorial Government especially charged with caring for the forests, in order that plans for their wise use may the more easily and effectively be put into execution.

It goes almost without saying that the first need in South Kona as in other Hawaiian forests is to safeguard in an adequate way all the present known sources of water, and also such localities as give promise of being possible of development. These areas should be kept permanently under a dense forest cover for their chief value is as producers of water.

In South Kona however, the chief value of the forest rests in wood rather than water. It is one of the few forest areas in the Territory where the Hawaiian trees have commercial value for lumber and where it is advisable that the forest be looked upon as a producer of wood rather than primarily as a protective cover. In earlier reports I have made clear the distinction between "protection" and "commercial" forests, and have done all I could to establish it as a policy that wherever water was to be got, the right thing to do was to hold the area strictly intact as a "protective forest."

Now, just as most of our already established forest reserves, especially on the windward side of the islands, are of the protective class, so the proposed South Kona Forest Reserve stands as a type of the commercial class. Judiciously handled I believe that when the right time comes, this forest should be logged, provided of course that the work is done under careful restrictions and in accordance with forestry methods. This can best be accomplished if the area is set apart now as a forest reserve.

It is not necessary at this time to go further into the matter of how logging operations should be conducted. If the lands are set apart now, plans for the wise utilization of the timber on them can follow. It need only be said here that in all such work the ultimate object is to put all the land to the best use. If some of the area now under forest proved to be agricultural in character and was so located that it could be opened up to advantage, the policy of wise use would require that it be taken out of the forest reserve and so developed. If it were land that because of its character can produce trees better than other crops or that for other reasons was more needed in forest, the thing to do is to manage the forest so that one stand of trees may be succeeded by another. This area, set apart as a forest reserve will be in a position .

where plans for its wise use—be it by protection or by conservation utilization—can more effectively be put in force.

Believing then, that the best interests of the Territory will be served by the setting apart of these lands as a forest reserve, I do now recommend that the Board of Agriculture and Forestry approve this project and call upon the Governor of the Territory to hold the required hearing and thereafter, by proclamation, to create the South Kona Forest Reserve.

Accompanying this report is the technical description of boundary, illustrated by blueprint maps prepared by the Government Survey Office...

List of Lands

Included in the South Kona Forest Reserve (Waiea-Kipahoe Section)

Name	Owner	Area	Lessee	Lease Expires
Waiea	Government	1260	—	—
Honokua	Hui Land	7950	—	—
Haukalua-				
Pahoehoe Tract	Government	1210	—	—
Pahoehoe 2 nd	Ontai Bros.	1485	—	—
Kaohe tract	Government	1555	—	—
Kukuiope Tract	Government	2760	—	—
Olelomoana 1 st	W.R. Castle	810	—	—
Olelomoana-				
Opihiali Tract	Government	3885	572	Gouveia & Ontai (June 9, 1926)
Kaapuna	Ontai bros.	1755	—	—
Kipahoe	Government	4590	—	—

[HSA GOV 3-1 - Forestry]

Minutes of a Public Hearing... Of the Territory and the Office of Commissioners of Agriculture and Forestry... January 28, 1911:

...South Kona Forest Reserve.

The Governor opened the hearing by asking Mr. Hosmer to explain the situation.

Mr. Hosmer states that the object of the hearing was to consider the creation of a large forest reserve in the southern part of the South Kona District, Hawaii, including as well one or two lands over the boundary in Kau. The idea is to reserve the section of Government forest, with certain privately owned lands, within boundaries which he pointed out on the map. The value of this forest is primarily because of wood which it contains. Unfortunately in South Kona there are very few permanent springs and no running streams. Watershed protection is therefore unnecessary. This forest is to be considered from the standpoint of commercial value. In fact the South Kona forest is one of the comparatively few areas of native Hawaiian forest that belong to and are typical of what has locally been termed the "commercial forest class." The forest contains a great deal of *Ohia* and *Koa* timber which, no doubt will, in time, have considerable market value, and ought to be conservatively lumbered. The proposition of making this section a forest reserve is that when that right time comes, it can be handled by, and be in the control of, the technically trained forest officials of the Territorial Government. The total area of the reserve is 50,612 acres—63 percent—belongs to the Territory. Of that area, 13,915 acres are now under lease. The leases expire at various times...

[describing the proposed South Kona Forest Reserve]

Mr. Hosmer said it was one of the few forests in Hawaii that can be considered from the commercial instead of from the water-bearing standpoint. The water-bearing forests make up nine-tenths of these Islands. This South Kona area is typical of the other tenth...

The Governor asked if much of this area were fenced.

Mr. Hosmer replied that but very little was now fenced. There are however some fences to be built. Mr. W.R. Castle has stated that he intends to do considerable fencing in the near future.

Mr. Castle said that he intended to fence the Papa and Alika lands. And too, he wished to add, that the Government must not forget in an inadvertent moment that the finest *Koa* forest is right there. The trees are anywhere from three to six and eight feet in diameter. The trunks are very tall and not much broken by branches.

The Governor then asked what he (Mr. W.R. Castle) thought ought to be done with it.

Mr. Castle answered that there is no reason why the Government should not derive considerable revenue from the forest, under proper methods of lumbering, that is, taking care that the small trees are not broken down. With a traction engine such as Mr. Bolte now runs, almost all of it can be made accessible.

The Governor asked if Mr. Bolte had a license from the owners of the private lands where he is now operating.

Mr. Castle said "Yes, he has."

The Governor asked what the lumber was.

Mr. Castle replied that just now it was *Ohia*, but he went up there to cut *Koa*. "I am sorry to say that I had nothing to do with this license. It was made before I acquired Papa. The supposed arrangement I put a veto on immediately."

The Governor asked how much of this land was homesteaded.

Mr. Castle replied "The Alika pieces which you see cut into 559 acre lots. Mr. Arnemann has established himself and done some actual farming and work of that kind. Mr. Domkowics has a place next to him and has a few cattle. The soil there is good — very rich."

Mr. Castle further stated that he was present, as well as to represent his own lands, in the interest of Mr. On Tai who owns the land of Kaapuna and leases certain other tracts.

The Governor asked if Mr. On Tai expected to fence his land.

Mr. Castle responded that he believed he did not.

The Governor asked if there were other private owners.

Mr. Hosmer replied that Mr. W.R. Castle owns more than anyone else in that section. So far as J.B. Castle interests are concerned, they wish to cooperate with the Government in its forest program of reserving these lands. "One of the largest private holdings is the Hui land of Honokua. There are a good many owners in Honokua. I think there are 28 shares, of which Mr. J.B. Castle now owns 15 or 16. I think he recently got two more, which makes the 16 shares. He would like very much to have the forestry proposition carried out and the lands reserved."

Mr. Castle said Kapua was a fine land and worth something now. There is now a wagon road leading up instead of a trail, which he had made.

The Governor asked if there was any objection to setting this land apart.

Mr. Hosmer said that no formal objection had been received but that Mr. T.C. White, Local Land Agent in Kona had informed him that homestead applications were pending on Waiea and Pahoehe.

Mr. White thought this was a desirable thing that these people should be given a chance to get this land. Mr. White had expected to see the people and have them send down a letter to be read at the meeting this morning. No letter has come. But Senator Baker is present and he represents one at least of these associations.

Mr. Hosmer stated that there was no especially fine timber on these lands desired for homesteads, but rather a good stand. "It should be said in this connection that all through this portion of South Kona, especially as one gets near the southern boundary, there are some remarkable stands of *Ohia*. The trees are from 18 inches to two feet in diameter and 100 feet tall. With the exception of one other spot in Kau, it is unquestionably the best *Ohia* in the Territory. But it is all in pockets. There is no continuous forest of fine trees."

The Governor asked about the soil there.

Senator Baker said that the higher parts were perhaps a-a, that he had not been there, but he knew that the lower lands consisted of very good soil.

Mr. On Tai stated that about a mile from the Government road and extending a good way *mauka*, the soil is generally very good.

Mr. Castle stated that the lower forest line was the upper edge of the cultivated land, that he had ridden through Kona on the Government road and was very much surprised in going up into the forest that the moisture and heat there has had its natural effect, in forming soil on fairly recent lava flows. There is a tremendous lot of arable land up there, but of course it is mostly over 2000 feet in elevation.

The Governor asked what, if anything, could be raised up there?

Mr. Castle stated that he had tried planting tobacco 2000 feet up and it grew wonderfully well. A variety of things grow very well indeed. Cotton is also being tested there and is doing well. Fodder grasses grow well and potatoes and celery.

Mr. On Tai stated that he would like to speak of his South Kona land and the rocks it has. They are planting Tobacco on smooth rocks. In South Kona the

pebbles are sharp rocks. They are smoother in North Kona. "In South Kona we found it very rough. I used to plant taro there. In some places I could stick a cane-knife in the ground almost its entire length. After being cultivated you will find the soil begins to disappear and as the time goes on the rocks all stick up again. That is why the lands in South Kona, 1000 feet and below, contain so many loose rocks. In the taro patches around South Kona, you can see the rocks creeping up. Years ago this used to be soil land. Actual cultivation will probably prove fatal."

Mr. Hosmer said that he understood Mr. J. B. Castle was gradually getting control of the Hui land of Honokua.

Mr. Castle replied that he had had nothing to do with it until recently. He bought out Freidlander.

Mr. Hosmer stated that there is unquestionably a lot of good land in the proposed reserve, which ought in time to be opened up. The policy of this Board has been, and of late it has been established as the policy of the Territory, that potentially agricultural land, covered by forest, should be lumbered before the title passes from the Territory, the revenue so derived being a Government realization. This should be done here. After the lumbering, this land could be opened up.

The Governor said "Your idea would be, then, to keep it not as a forest, but for the purpose of agriculture—cutting the big trees."

Mr. Hosmer replied that there was a great deal of land in South Kona which never can grow anything but trees.

The *a-a* makes it very rough, but out of certain *a-a* fields grows a very good stand of *Ohia*. This sort of land should be kept permanently in the forest reserve. Where there is agricultural land, it should, sooner or later, be opened up.

The Governor asked if there were any persons that want to cut timber now; is it the policy of the Board to grant licenses for the near future; or are there definite applications?

Mr. Hosmer said that some time ago Mr. J. B. Castle made a blanket application for all the Government forests in Kona; Mr. C. C. Bolte had also made some tentative propositions. But neither of these companies have come to a point where they are ready to do anything definite.

The Governor asked if it would not be well to make the boundary stop at Kaohe 1-3. There might be applications for homesteading in the near future. There is not much forest on it. At the time that this investigation was made the proposition to homestead these lands had not come up.

Mr. Hosmer said that some time ago an application was made for a lease of Waiea for grazing. This had been denied.

Mr. On Tai said that they had been trying to develop their lands for pasture, that they had spent a lot of money for seed from the coast and a lot of money for fencing, and that they would like to have their land excluded from the reserve. If it is made a reserve it will simply knock them out altogether.

Senator Baker said "We do not have water on this land, and it is dry, and we should like to have some protection. It would not effect your lands, it would merely be a recommendation.

Kau Forest Reserve... [HSA Board of Agriculture and Forestry Hearing Minutes; Com 2 Box 9]

May 17, 1911
Governor W.F. Freer

**PROCLAMATION OF FOREST RESERVE IN THE DISTRICTS OF
SOUTH KONA AND KAU, ISLAND AND COUNTY OF HAWAII.**

Under and by virtue of the authority vested in me by the provisions of Chapter 28 of the Revised Laws of Hawaii, as amended by Act 65 of the Session Laws of 1905, and by Act 4 of the Session Laws of 1907, and of every other power hereunto enabling, I, Walter F. Frear, Governor of Hawaii, with the approval of a majority of the Board of Commissioners of Agriculture and Forestry, having held the hearing of which notice has been duly given as in said acts provided, do hereby recommend and approve as a Forest Reserve to be called the "South Kona Forest Reserve," those certain pieces of government and privately owned land in the Districts of South Kona and Kau, Island of Hawaii, which may be described roughly as being the area of forest lying between the upper edge of the section of cleared land along the Government Road and the western boundary of the land of Kahuku, extending from the land of Kaohe to the land of Manuka, inclusive and containing an area of 36,952 acres, more or less, in the Districts of South Kona and Kau, Island and County of Hawaii, Territory of Hawaii, more particularly described by and on maps made in August, 1910, by the Government Survey Department of the Territory of Hawaii, which said maps are now on file in the said Survey Department marked Government Survey Registered Maps Nos. 2468 and 2469 and "Waiea-Kipahoehoe Forest Reserve" and "Kapua-Manuka Forest Reserve" respectively, and a description accompanying the same in three parts numbered C.S.F. 2211, 2245 and 2246, which said description now on file in the said Survey Department, is as follows:

1. 208° 11' 2412.0 feet along Kipahoehoe remainder to an orange tree marked K at Pohakaka on the Kipahoehoe-Kaapuna boundary;
2. 272° 22' 2007.0 feet along the land of Kaapuna to a small iron pin and large *ahu* on the *mauka* side of Government belt road and on the South side of a small gulch;
3. 272 50' 26130.0 feet along the land of Kaapuna to a buried bottle in the crater of Hitchcock's old *ahu* on the *aa* in a *kipuka* near the edge of the forest;
4. 317° 02' 3244.0 feet along the Kahuku boundary;
5. 76° 47' 24624.0 feet along Alike Homesteads, Lot 1, Grant 5045 to J. Deniz to fence corner on site of old corner *ahu*;
6. 99° 03' 1570.0 feet along Grant 3153 to Makia & Keaweikaliko to a + on set stone and *ahu* on edge of *aa*;
7. 83° 59' 2190.0 feet along Grant 3153 to Makia & Keaweikaliko to an old K marked on solid *pahoehoe* rock at old Government road.
8. 100° 59' 1638.0 feet along Grant 3153 to Makia & Keaweikaliko to a + on solid *pahoehoe*;
9. 93° 32' 2182.0 feet along Grant 3153 to Makia & Keaweikaliko to a + on solid *pahoehoe* near edge of *pali*;

10. 180 15' 6816.0 feet across the land of Kipahoehoe to the point of beginning. Area 4590 Acres... Area 4590 Acres.

...And as provided by law, subject to the existing leases, I do hereby set apart as parts of the South Kona Forest Reserve those portions of the government lands known as Kaohe Tract (1555 acres), Kukuiope Tract (2760 acres), OIelomoana-Opihahali Tract (3885 acres), Kipahoehoe (4590 acres), Honomalino (2540 acres), and Kaulanamauna (2060 acres) in the District of South Kona and Manuka (11,870 acres) in the District of Kau, altogether an area of 29,260 acres, more or less, that lie within the metes and bounds of the above described South Kona Forest Reserve. IN WITNESS WHEREOF, I have hereunto set my hand and caused the Great Seal of the Territory of Hawaii to be affixed. Done at the Capitol in Honolulu, this 17th day of May, A.D. 1911.

W.F. FREAR
Governor of Hawaii.

The following letter from 1936, describes conditions in the South Kona Forest Reserve at the time, and recommendations by Forester Judd, that *mauka* portions of the government lands (including 130 acres from Kipāhoehoe) should be withdrawn from the reserve because of cattle trespass, and existing fencing. Importantly, Judd also describes trails across the uplands, naming the "Papa Trail" as the one which passes through Kipāhoehoe to Ka'ohē.

October 7, 1936

**Report on Hawaii Inspection Trip, by Territorial Forester (July-August 1936);
to Board of Commissioners of Agriculture and Forestry:**

...South Kona Forest Reserve

Working out from the Manuka Ranger Station, where I spent the previous night, I made a 13 hour mule trip through very rough country to the upper lands in the South Kona reserve to ascertain the extent of cattle trespass.

Going up the old road to the abandoned Yee Hop *koa* mill, I rode across and along the *mauka* boundary of this reserve at the general elevation of 5,000 feet on the Papa Trail crossing the government lands of Kipahoehoe, OIelomoana-Opihahali, Kukuiope and Kaohe 1-3, coming down the Kaohe Ranch trail, one of the steepest and worst trails in the Territory.

When this reserve was originally set aside, on the recommendation of my predecessor 25 years ago, there was an existing government lease on the OIelomoana-Opihahali tract of 3,885 acres. All of this land was not grazed; only the *mauka* section of about 1145 acres. This was fenced off so that the cattle could not wander down the slope and get lost or go wild in the dense jungle lower down the mountain. This lease expired in 1926 but cattle are still at large on this land and adjacent government lands within the forest reserve boundary.

On the other government lands in forest reserve in this section which were never under lease, the upper portions have been and still are being grazed in conjunction with better grazing land leased from Kahuku Ranch just above the forest reserve further up the slopes of Mauna Loa. These grazing lands (mostly low *ohia* trees with a ground cover of *amaumau* fern) are separated from the heavy forest down the slope by a wire fence, now somewhat out of repair because of rotted posts.

The logical location for the upper forest reserve boundary is this fence. The wire is still sound and all that is needed to make it stock proof is to replace the posts, timber for which is at hand.

To insist on retaining the upper limits of the government lands as the forest reserve boundary and build a fence on the present line would require thousands of dollars for a survey and many more for the building of a fence in this most inaccessible region. The land simply is not worth this expense.

The sensible thing to do is to throw out all proclaimed forest reserve land above this existing fence and use this fence as the new *mauka* boundary of the South Kona Forest Reserve and I so recommend.

This would mean turning back to the Commissioner of Public Lands a total of about 1,207 acres, now in the forest reserve, to be placed under lease for grazing purposes. This total area is divided as follows:

Government Lands to be Eliminated From the South Kona Forest Reserve	
Kipahoehoe	130 acres
Olelomoana-Opihiali	114 "
Kukuiope	590 "
Kaohe 1-3	375 "

At present the portions of these government lands above the fence, as listed above are being trespassed upon by cattle. It would be far better to eliminate these from the forest reserve so that they may be returned to the jurisdiction of the Land Office and leased to bring some revenue into the Territory... [Hawaii State Land Division]

C.S.F. No. 8557

PART 2 [Figure 18]

April 19, 1938¹⁵

**Withdrawal – Portion of the Kipahoehoe Section
of South Kona Forest Reserve South Kona, Hawaii**

Being portion of the Government Land of Kipahoehoe:

Beginning at the east corner of this parcel of land on the boundary between the lands of Kaapuna and Kipahoehoe, the coordinates of said point of beginning referred to Government Survey Triangulation Station "Kamakaili" being 21875.9 feet South and 7973.2 feet West, as shown on Government Survey Registered Map 2468, and running by azimuths measured clockwise from true South:-

1. 79° 00' 1000.0 feet along portion of the land of Kipahoehoe;
2. 71° 05' 1585.0 feet along same;
3. 88° 36' 3297.8 feet along same;
4. 110° 10' 1600.0 feet along same;
5. 121° 00' 1260.0 feet along same to the Kaapuna-Kipahoehoe boundary;
6. 272° 50' 8370.0 feet along the land of Kaapuna to the point of beginning.

AREA 130 ACRES more or less

James M. Dunn

Assistant Cadastral Engineer [Hawaii State Survey Division]

¹⁵ Regarding the final configuration of the 130 acre Kipāhoehoe withdrawal (as described above) see also a letter from R.D. King to L.W. Bryan, dated April 20, 1938.

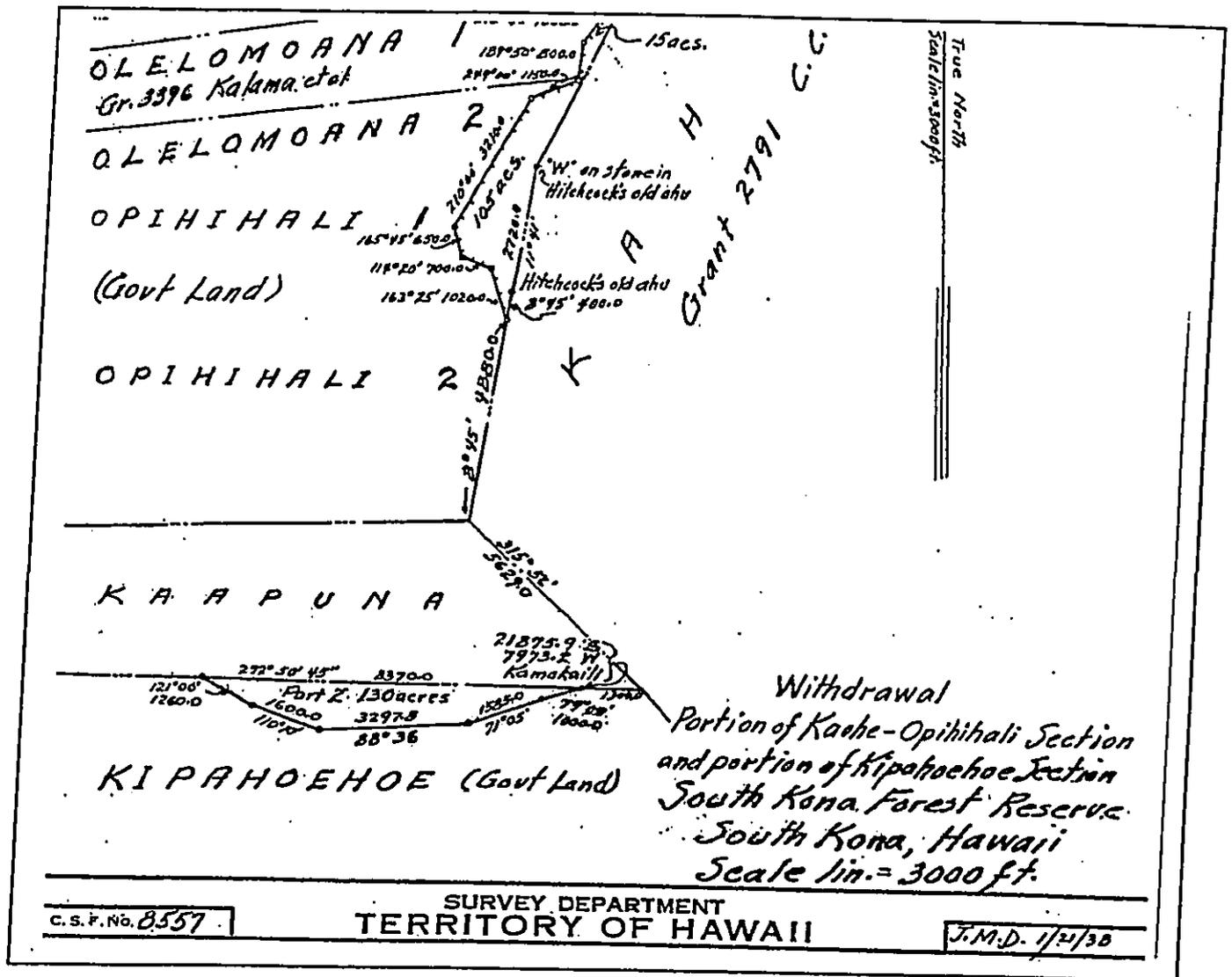


Figure 18. Por. C.S.F. 8557 - Part 2. Withdrawal of 130 Acres from Kipāhoehoe Section of the South Kona Forest Reserve (Jan. 21, 1938) (State Survey Division)

C.S.F. No. 2245
 April 28, 1941
 Kipahoehoe Government Tract
 Being portion of the Government Land of Kipahoehoe South Kona, Hawaii
 Being lands formerly within the South Kona Forest Reserve, Kipahoehoe Section:

Beginning at the Government Survey Trig. Station "Kipahoehoe" (marked by an iron bolt) the true azimuth and distance to "Lae o Hoku" Trig. Station being $117^{\circ} 15' 04''$ 5188.1 feet and to "Waha Pele" Trig. Station being: $6^{\circ} 12' 53''$ 8280.7 feet, as shown on Government Survey Registered Map No. 2468, and running by true azimuths:-

...KIPAOEHOE SECTION.

Including the greater portion of the Government land of Kipahoehoe.
 C.S.F. 2245

Beginning at the Government Survey Trig. Station "Kipahoehoe" (marked by an iron bolt) the true azimuth and distance to "Lae o Hoku" Trig. Station being: $117^{\circ} 15' 04''$ 5188.1 feet and to "Waha Pele" Trig. Station being $6^{\circ} 12' 53''$ 8280.7 feet, as shown on Government Survey Registered Map No. 2468, and running by true azimuths:

1. 208° 11' 2412.0 feet along Kipahoehoe remainder to an orange tree marked K at Pohakaka on the Kipahoehoe-Kaapuna boundary;
2. 272° 22' 2007.0 feet along the land of Kaapuna to a small iron pin and large *ahu* on the *mauka* side of Government belt road and on the South side of a small gulch;
3. 272 50' 26130.0 feet along the land of Kaapuna to a buried bottle in the crater of Hitchcock's old *ahu* on the *aa* in a *kipuka* near the edge of the forest;
4. 317° 02' 3244.0 feet along the Kahuku boundary;
5. 76° 47' 24624.0 feet along Aika Homesteads, Lot 1, Grant 5045 to J. Deniz to fence corner on site of old corner *ahu*;
6. 99° 03' 1570.0 feet along Grant 3153 to Makia & Keaweikaliko to a + on set stone and *ahu* on edge of *aa*;
7. 83° 59' 2190.0 feet along Grant 3153 to Makia & Keaweikaliko to an old K marked on solid *pahoehoe* rock at old Government road.
8. 100° 59' 1638.0 feet along Grant 3153 to Makia & Keaweikaliko to a + on solid *pahoehoe*;
9. 93° 32' 2182.0 feet along Grant 3153 to Makia & Keaweikaliko to a + on solid *pahoehoe* near edge of *pali*;
10. 180 15' 6816.0 feet across the land of Kipahoehoe to the point of beginning. Area 4590 Acres... Area 4590 Acres.

Compiled from surveys and map of George F. Wright, by H.E. Newton
Assistant Government Surveyor. [Hawaii State Survey Division]

Since the establishment of the South Kona Forest Reserve, land use in the *ahupua'a* neighboring Kīpāhoehoe, has included ranching (formalized in 1907) and milling of Hawaiian hardwoods (formalized in the 1930s). In Kīpāhoehoe, conservation and protection of the forest resources have been the primary objectives, though agreements between the Territory (later the State) of Hawai'i and C.Q. Yee Hop, have led to portions of Kīpāhoehoe being used for grazing and the harvesting of *'ōhi'a* and *koa*.

Little information regarding access, and use of resources in Kīpāhoehoe was recorded in the land files of the Land Division. Though there are a number of communications between government agencies and C.Q. Yee Hop, regarding access, fencing, boundaries, and grazing in Kīpāhoehoe and neighboring lands. In 1935, several letters of interest, regarding collection of *koa* logs for canoes were written. David Kaupiko, a native of Miloli'i applied for permission to take two logs from Kīpāhoehoe with which to make racing canoes. The letters follow:

June 13, 1935

David K. Kaupiko; to C.T. Bailey (Commissioner of Public Lands):

Please let me hear from you. I wish to have (2) *Koa* Logs on government land at Kipahoehoe, South Kona, Hawaii, for racing canoe purposes only. How much do you want for it. Hoping to hear from you, if you please... [Hawai'i State Land Division Files – Kipahoehoe]

July 17, 1935

C.L. Murray, Sub Land Agent, Hawaii;

to C.T. Bailey, Commissioner of Public Lands:

...Replying to your letter of July 16th re the application of David K. Kaupiko for two *Koa* trees in Kipahoehoe, please be informed that this land is in Forest Reserve.

Mr. W.L. Bryan of the Forestry Department here informs me that he has no objections to letting Mr. Kaupiko have two *koa* trees for a very nominal sum. Before he can cut the trees, he will have to get a permit from Mr. Bryan:

Will you therefore inform Mr. Kaupiko what to do in the matter...? [Hawai'i State Land Division Files – Kipahoehoe]

July 20, 1935

C.T. Bailey, Commissioner of Public Lands; to Mr. David K. Kaupiko:

...I understand that the trees which you wish to secure for making canoes are located in the forest reserve, which is under the control of the Board of Agriculture & Forestry.

In order to secure permission to cut these trees, you should see Mr. L.W. Bryan of the Forestry Department, whose office is at Hilo... [Hawai'i State Land Division Files – Kipahoehoe]

No further communications on this matter were located in the Land Division files, though the application implies that such practice occurred at Kipāhoehoe in earlier times (members of the Kaupiko and Kawā'auhau-Paulo family lines recall elders members making canoes through the 1930s).

In 1970, the State of Hawai'i passed the Natural Area Reserves Law (HRS 195-1), setting forth the mechanism for development of the Natural Area Reserves. The purpose being to "preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites of Hawaii." General Lease No. S-4003) for portions of Government Tracts of Ka'ohe 1-3, Ka'ohe 5, 'Ōlomoana 2, 'Ōpihiali 2 and Kipāhoehoe, to C.Q. Yee Hop was cancelled on November 3, 1971. The Kipāhoehoe Natural Area Reserve was established in October 1982, for protection of natural features and native ecosystems occurring within the reserve, and was described as:

The entire Kipahoehoe Section, South Kona Forest Reserve, and the unencumbered State land within the lower portion of the land of Kipahoehoe between the coastline and the lower boundary of the forest reserve is proposed to be designated as a natural area.

This parcel extends from sea level to 5,600 feet elevation totalling 5,540 acres in size and contained barren lava flows throughout its entire length; low elevation and high elevation type scrub forests; large saw timber *ohia*, *koa* and *ohia-koa* type forests.

The lower portion includes ancient Hawaiian ruins and an extremely well preserved section of the Mamalahoa trail.

As this proposed parcel crosses the belt highway at around 1,500 feet elevation, provisions should be made for the realignment of the presently very narrow and winding road, existing power line and telephone line. Also continued use without realignment of the C.Q. Yee Hop access road in the *mauka* portion must be allowed.

This parcel takes care of natural, native forest type preservation in the South Kona, Manuka and Kahuku areas. [DLNR-DOFAW NAR files]

For further records on applications for, and land use in Kipāhoehoe, see detailed communications in the following section of study summarizing the history of C.Q. Yee Hop and Company operations in the region.

C.Q. YEE HOP-OLELOMOANA RANCH

One of the most influential aspects of historic land use in the Kapalilua region, falls under the ownership and leasehold interests of Chun Quon, who later became known as C.Q. Yee Hop. Chun Quon was born in China in 1867, at the age of 18 (1885), he traveled to America in search of his fortune. Shortly after his arrival in San Francisco, he learned about Hawai'i and sailed for Honolulu, where he opened a small market. In 1887, he started the Yee Hop Company, which was situated on Mauna Kea Street, and in 1902, he and his partners founded C.Q. Yee Hop & Company. In 1913, C.Q. Yee Hop entered into a partnership with the Ontai brothers, who had formed the Olelomoana Ranch. The ranch holdings included lands acquired from private owners (such as Ka'apuna), and by lease from the Commissioner of Public Lands. The private land holdings came to total some 25,000 acres in South Kona.

The general formation of the C.Q. Yee Hop ranching business, and types of business activities undertaken are described in records of the Bureau of Conveyances. Among which are two conveyances between the Ontai Brothers and C.Q. Yee Hop and Company:

June 30, 1913

Mortgage between Carl Ontai et al. to C.Q. Yee Hop, for:

...All of the land described in L.C. Awards 10218 and 10221 to Z. Makaulia, situated at Kaapuna, South Kona, Island of Hawaii...conveyed by deed of the Hawaii Coffee Plantation Ltd., dated July 31, 1905...

All the land described in Royal Patent 2572 to Keliikuli, situated at Opihihale...conveyed to Carl Ontai by deed of Susie F. Cartwright, dated Sept. 1, 1904...

All the land described in Royal Patent 8127 L.C. Award 8519-B Pahoehoe part 3 to fanny Young, South Kona...being the land conveyed by Kapiolani Estate Ltd. to Henry van Gieson by deed dated April 25, 1907...and by him conveyed to said Ontai Bros. by deed dated July 10, 1909...

All the land leased from the land leased from the Territory of Hawaii, General Lease No. 572, situated at South Kona, Opihihale...containing an area of 2400 acres.

Together with all the cattle, horses, mules, buildings and all improvements situate on all or any of the above lands... [Bureau of Conveyances, Liber 374:454-456]

August 21, 1913

Agreement between Carl Ontai et al., and C.Q. Yee Hop & Co.:

...Whereas said parties of the first part are engaged at South Kona aforesaid in the business of ranching and the raising of livestock and general ranch products for the Hawaiian market, and are desirous of entering into a contract to furnish certain livestock and ranch products to said parties of the second part for business reasons and also to further secure said parties of the second part for advances made by them to said parties of the first part to said parties of the second part dated June 30, 1913...

Now therefore the said parties of the first part, in consideration of the premises and of the covenants herein after contained to be kept and performed by said parties of the second part, do hereby covenant and agree with said parties of the second part that, for and during the term of ten years from the date of these presents, they will supply said parties of the second part, at the current market prices, with all cattle and calves raised by them in the district of South Kona aforesaid and such other livestock there

raised by them as the parties of the first part may require or select either for their own use or for purposes of sale... [Bureau of Conveyances, Liber 456:70-71]

Ranching was to have been the primary business, but in 1947 Chun Quon (C.Q. Yee Hop) observed that as a result of —

"the discovery of countless *Koa* and *Ohia* trees on my property, I accidentally stumbled into a new industry, woodcraft, and promoted the Hawaiian Hardwood Company. Our trees supplied the materials for thousands of sets of *Koa* furniture which today adorn the homes of many here and on the mainland. During the last War [World war II], shiploads of *Ohia* Keel blocks hastened the repair of Uncle Sam's fighting ships...¹⁶ [C.Q. Yee Hop, 1947:3]

C.Q. Yee Hop, employed a number of the native families of Kapalilua in the ranching and milling operations. By the 1920s the company came to hold the grant lands of 'Alikā (on the south boundary of Kīpāhoehoe), and had acquired by ca. 1913 the land of Ka'apuna and other *ahupua'a* further north.

In 1929, the University of Hawaii published a "Survey of Livestock in Hawaii" by L.A. Henke. Henke provided readers with background information pertaining to the history of livestock and the operation of ranches in the islands. The excerpts below, come from Henke's 1929 research publication, reporting on the "leading beef ranches of the Territory," including documentation on the Olelomoana Ranch:

Olelomoana Ranch, located in South Kona, Hawaii, has a total area of about 8,000 acres. The ranch carried 900 beef cattle with Hereford and Shorthorn blood predominating, 25 Holstein cows, 35 heavy and 10 light horses of mixed breeding and 5 mules.

Cattle are marketed at about three years of age, when they average about 700 to 850 pounds live weight. About 120 are marketed annually.

This ranch was started in 1907, and James On Tai has been associated with the ranch since its beginning. Carl On Tai was connected with the ranch from 1907 to 1916 and C.Q. Yee Hop from then till the present. [Henke 1929:35]

Kīpāhoehoe and Neighboring Lands in Communications Between Government Land Agents and C.Q. Yee Hop & Co., Ltd., Olelomoana Ranch Co., Hawaiian Hardwood Co. Ltd., and Yee Hop Realty

The following communications were viewed in the land files of the State Land Division, and provide readers with a chronological overview of land use (including activities on Kīpāhoehoe) under C.Q. Yee Hop's tenure.

December 14, 1926

***Norman K. Lyman, Attorney for Olamoana [sic] Ranch Co., Ltd.;
to C.T. Bailey, Commissioner of Public Lands***

(Regarding boundaries and issuance of Patent on Kaapuna):

...As per our various verbal communications relative to the boundary lines of the land of Kaapunana [sic], South Kona, Hawaii, I submit here with under separate cover map and description of the *Ahupuaa* of the land at South Kona, Hawaii [records not

¹⁶ For further details on the C.Q. Yee Hop milling operations, see oral history interviews with members of the Yee and Ahuna families in this study.

attached to Land Division file], which is held and owned by C.Q. Yee Hop and Carl Ontai.

The descriptions of this land has been surveyed by W.A. Wall, surveyor. We have also taken testimony from old time kamaainas in Kona, as to where the boundaries of this land is supposed to run and find that the description herein given is the same as is shown on the government books in the land office [see Boundary Commission testimonies and survey cited earlier in this study].

As soon as the government surveyors have completed checking the descriptions and boundary lines, I respectfully request that the patent be issued to the Olomoana [sic] Ranch Co., Ltd., owned by C.Q. Yee Hop & Co., and Carl Ontai, jointly...

December 24, 1929

C.Q. Yee Hop, President, Ololomoana Ranch, Ltd.;

to C.T. Bailey, Commissioner of Public Lands

(Regarding cutting of road between Kaapuna and Alika, across Kipahoehoe, to transport logs to mill in Alika):

...I am operating a koa saw mill on my lands of Alika, South Kona, at an elevation of approximately 4,500 feet above sea level. I am also the owner of the lands known as Kaapuna which has on it considerable standing timber. In order to get my timber from Kaapuna to my mill on Alika it will be necessary for me to cross the government lands of Kipahoehoe at a contour of approximately 5,000 feet elevation. I will require a road for caterpillars or trucks about twelve feet in width.

I therefore respectfully make application that I be permitted to have a temporary right of way across Kipahoehoe at approximately said elevation and in this connection I will undertake to construct my road so as to in no wise injure the growing trees on Kipahoehoe or other Territorial property.

In view of the fact that this right of way will be of no loss to the Territory, but on the other hand will greatly convenience me in my endeavor to build up a lumber industry at South Kona, I feel I may reasonably ask that my applications for a right of way be granted...

January 4, 1930

C.T. Bailey, Commissioner of Public Lands;

to Ololomoana Ranch, Ltd. c/o Mr. James L. Coke

(Granting permission of right-of-way across Kipahoehoe):

...In accordance with your request of December 24th, you are hereby granted the right to cross the Government land of Kipahoehoe, South Kona, Hawaii, at approximately the 5,000-foot elevation with a road for hauling timber from your lands of Kaapuna to your mill on Alika, it being understood that the road will be constructed so as to nowise endanger growing trees in this forest reserve, and that suitable gates will be maintained on any intervening fences so as to exclude cattle from the reserve...

June 23, 1938

L.M. Whitehouse, Commissioner of Public Lands;

to C.Q. Yee Hop & Company, Ltd.

(Regarding 130 acre parcel of Kipahoehoe—adjoining Kaapuna—released from the Forest reserve):

...We understand that due to your interest in ranch lands at Kona, Hawaii, the Board of Agriculture and Forestry has released from the South Kona Forest Reserve

approximately 1550 acres of land, 130 acres of which adjoins your land of Kaapuna, which in turn adjoins your other land of Kahuku, adjoining which latter is the remainder of the area released from the Forest Reserve, containing some 1420 acres... [see Figure 18]

In order that you may legally possess the use of these Government areas released from the South Kona Forest Reserve, we ask that you submit application for lease for pasturage purposes covering same...

July 19, 1938

**L.M. Whitehouse, Commissioner of Public Lands;
to Charles Otani, Subagent (Lands), Hawaii**

(Regarding the 130 acre parcel of Kipahoehoe and other associated lands):

...We submit herewith white print whereon is shown, in green, areas in South Kona which were recently removed from the South Kona Forest Reserve. These areas adjoin land owned by C.Q. Yee Hop whereon he operates a ranch and which we understand that these Government Areas have been used or are being used by C.Q. Yee Hop.

We have written C.Q. Yee Hop informing him that these areas are now available for leasing for pasture purposes, but we have had no reply. We are writing him again and trust that we will receive an application for lease shortly. In the meantime however, we ask that you contact the foreman [Yee Chee] at Kona and inquire of him whether he could use these areas...

December 19, 1938

**C.S. Judd, Territorial Forester;
to L.M. Whitehouse, Commissioner of Public Lands**

(Regarding trespass of C.Q. Yee Hop cattle on Kipahoehoe and neighboring government lands):

...Your attention is respectfully called to the fact that the Olelomoana Ranch Company, owned by C.Q. Yee Hop & Co., is allowing its cattle to trespass on unleased lands of Kipahoehoe, Kukuioape, Olelomoana, Opihiali and Kaohe 1-3, in South Kona, Hawaii, on approximately 1,550 acres of government lands which were withdrawn from the South Kona Forest Reserve on May 2, 1938.

It is hoped that you may be able to effect a lease of these lands so that the fence on the lower boundary may be required to be repaired by the lessee to prevent these cattle from wandering down the slope into the adjacent forest reserve...

October 15, 1940

**C.Q. Yee Hop, President, Hawaiian Hardwood Company, Ltd.¹⁷;
to L.M. Whitehouse, Commissioner of Public Lands**

(Regarding lease of Kipahoehoe and other lands of South Kona for cattle grazing):

...We thank you for your letter of October 9, 1940 regarding the lease of certain lands in South Kona Hawaii.

We hereby enter our formal application for leasing the following lands for a period of twenty-one years:

¹⁷ The Hawaiian Hardwood Company, Ltd., was formally incorporated on January 27, 1938, and remained on Department of Commerce Books until January 27, 1988 (DoCC # 2815 D1).

1 – Kaohe 1-3, 1550.00 Acres	\$125.99 a year
2 – Kaohe 5 – Kolo, 2760 Acres	\$125.00 a year
Olelomoana-Opihiali Remnant, 120 Acres	\$125.00 a year
3 – Kipahoehoe, 4590 Acres	

A total of 9025 Acres.

It is hereby understood that should the above areas of lands be leased to us, they will be used for grazing purposes only and we have no intention of cutting any timber from said areas.

We would appreciate your submitting this application before the Land Board at its meeting on October 19, 1940...

October 24, 1940

**L.M. Whitehouse, Commissioner of Public Lands;
to Hawaiian Hardwood Company, Ltd.**

(Regarding lease of land as specified in letter of October 15, 1940):

...The Land Board, at its meeting on October 19, 1940, has approved your application for a 21 year lease of the 9025 acres applied for.

You are hereby notified that the sale of this lease will be advertised at the next advertisements for sale of leases on Hawaii.

You are also notified that the land is to be used for pasturage purposes only, as per your letter...

May 14, 1941

L.M. Whitehouse, Commissioner of Public Lands; to Survey Office

(Regarding misunderstanding about lands to be leased to Hawaiian Hardwood Company, Ltd.):

...Please withhold further work in connection with our request of February 17, 1941, for descriptions and blueprints of four parcels of land at South Kona, which application to lease was made by Hawaiian Hardwood Company, Ltd. There seems to be some misunderstanding as to which of these portions of government lands can be leased...

October 6, 1943

Memo of A.A. Dunn, Acting Commissioner of Public Lands;

**(Regarding lease of lands described in letter of October 15, 1940—
already being used—to C.Q. Yee Hop):**

Mr. Marks discussed the matter of C.Q. Yee Hop's application to lease government lands in the South Kona Forest Reserve and our previous requests to the Board of Agriculture to release all of the government lands in the South Kona Forest Reserve for leasing purposes in as much as C.Q. Yee Hop is using all of these lands anyway, together with his adjoining privately owned lands, at which time a map of the South Kona Forest Reserve area was handed to him. He stated that he would look up the records in his office on this matter and would inspect these lands when the subcommittee on Forestry of his Board goes to Hawaii on the 20th of this month...

November 11, 1943

**C.G. Lennox, President, Board of Agriculture & Forestry;
to A.L. Marks, Commissioner of Public Lands
(Regarding C.Q. Yee Hop's use of Government Lands of the
South Kona Forest Reserve):**

...The entire area in question was set aside on May 17th 1911 as the South Kona Forest Reserve by the Governor.

On November 5th 1936, this department recommended that certain sections be withdrawn from the forest reserve and turned back to the Commissioner of Public Lands for purposes of leasing. The areas outlined in red on the attached map [see Figure 18] were accordingly withdrawn by proclamation on May 2nd 1938. We presume that this area is now leased to Mr. C.Q. Yee Hop for grazing purposes, as our ranger reports that he has recently completed the rebuilding of the fence along the *makai* boundary of Part 1 and is grazing between 100 and 150 head of cattle in this section. Our ranger also reports that Part 2 consisting of 100 acres is all raw lava and not suitable for grazing. The vegetative growth on Part 1 is fern and poor quality grazing land.

The ranger also reports that in the past it was only in rare instances that the cattle moved into the forest reserve lands *makai* of Part 1 as the forest cover is too dense to furnish attractive grazing land and now that the fence has been rebuilt he has no further trouble on this score...

December 15, 1943

C.Q. Yee Hop, Hawaiian Hardwood Co., Ltd.;
to A.L. Marks, Commissioner of Public Lands;
(Reapplies to lease portions of Kipahoehoe and other government lands):

...I hereby make application for a 21 year lease, for pasturage purposes, of that portion of the South Kona Forest Reserve adjoining the land of Kahuku, withdrawn from the South Kona Forest Reserve by the Board of Agriculture and Forestry for leasing purposes. The areas involved are as follows:

Portion of Kaohe 1 and 3,	containing 430 acres
Portion of Kaohe 5-Kolo,	containing 605 acres
Portion of Olelomoana-Opihiale,	containing 105 acres
Portion of Kipahoehoe,	containing 130 acres

A total of 1270 acres for which I offer the upset rental of \$120.00 per annum...

C.Q. Yee Hop-Hawaiian Hardwood Co., Ltd., chose not to bid on the lands described above, when they became available. On July 1st 1944, Joaquin S. Ramos received General Lease No. 3034, covering the released lands. Subsequently, on February 28th 1954, C.Q. Yee Hop & Company purchased the remainder of the lease period from Ramos, as described below:

April 2, 1954

K.D. Chun, Vice President, Yee Hop Realty, Limited;
to M. Ashford, Commissioner of Public Lands:

...As requested by your department, we have already notified you that at the time we purchased General Lease No. 3043 from Joaquin S. Ramos on February 28th, we paid him \$2,400.00. In order that your records and information may be complete, that \$2,400.00 was not paid to Ramos because we felt the lease was worth that type of premium or bonus.

If you will check the records of the District Court of South Kona, you will find that on Friday, January 29, 1954, a complaint entitled "Territory of Hawaii vs. Robert Pestano, Joseph Lucio Ferreira and Michael Halowaty" was filed in the Court. The charges were "Trespass." If you will refer to a map of the lands owned by Yee Hop Ltd. near the lands covered by General Lease No. 3043, you will notice that the only means by which the lessee of that lease can get to the territorial lands is through a government trail--not a road--simply an old horse trail which runs through Yee Hop, Ltd.'s lands most of the way. On December 19, 1953, the three defendants, on horseback, with five (5) dogs and a 30/30 rifle went up through the trail, apparently to go into the Ramos lease. Tamos [Ramos] subsequently advised us that he had told these three men that they could go onto his leased land. There is no question in our own minds that they not only "wandered" off the trail and trespassed on our lands but that they also used our very precious water out of one of our own water tanks for their horses and dogs. We also discovered, afterwards, a leg of freshly killed pork near a camp site of these three men on our own lands. The Trespass charge was subsequently *nolle prosequed* by the County Attorney's office because that office claimed there was insufficient proof of criminal trespass...

Because of the trouble which we felt had resulted and would result from the use of the trail to the territorial lands, and not because of the intrinsic value of the leased lands themselves, we entered into negotiations with Ramos which resulted in our buying the lease. The \$2,400.00 does not represent the use value of the lease to us. The most of it went to prevent future trouble. If we had felt seven years ago that the leased lands were of any basic use value to us, we would have at that time bid upon them rather than let them go to Ramos at their upset price. What we felt we were buying at this time was simply insurance against trouble with trespassers in the future...

On July 1st 1965, General Lease No. 3034, was turned over to Revocable Permit No. S-3786, and payable at a monthly rental of \$31.00. As with the earlier lease, the permit was for pasturage, and covered remnants of the lands of Kīpāhoehoe, 'Ōlelomoana, 'Ōpīhali 1, Por. of Ka'ohē 5-Kolo, and por. of Ka'ohē 4. Remarks on the Permits observed:

General Lease No. 3043 covering the subject premises and held by the applicants expired on June 30, 1965. The original lease commanded a rental of \$120.00 per annum.

The 1,270 acres is comprised of four non-contiguous parcels of land located several miles from the highway in rugged hill country that typify [sic] North [sic] Kona.

There is absolutely no feasible public access to these areas except over Yee Hop fee lands.

In view of the Boards policy regarding the sale of leases at public auction without access, the staff suggests that a revocable permit be issued the applicants retroactively, effective June 30, 1965. (Rental recommended by I. Hutchinson.) [Land Division Files, S-3786]

The revocable permit held by C.Q. Yee Hop was transferred into General Lease No. S-4003, covering portions of the government tracts of Ka'ohē 1-3, Ka'ohē 5, 'Ōlelomoana 2, 'Ōpīhali 2 and Kīpāhoehoe, was cancelled on November 3, 1971. The Kīpāhoehoe Natural Area Reserve was established in October 1982, for protection of natural features and native ecosystems occurring within the reserve.

HISTORIC DESCRIPTIONS OF ARCHAEOLOGICAL RESOURCES

Archaeological studies in Kīpāhoehoe and neighboring lands of Kapalilua are very limited. Among the earliest compilations of historical references to sites, and limited field work date from 1908 to 1930. The earliest accounting of *heiau* on the island of Hawai'i was compiled and published by Thos. Thrum in 1908. He apparently found no references to *heiau* in Kīpāhoehoe, or then neighboring lands of Ka'apuna and 'Alikā (Thrum 1908). Likewise, J.F.G. Stokes, who conducted detailed field work on the Island of Hawai'i in 1906-1907, on behalf of the Bishop Museum, also made no reference to *heiau* in the Kīpāhoehoe area (Stokes & Dye 1991).

In 1929, J. Reinecke was contracted by the Bishop Museum to conduct an archaeological survey of sites in the District of Kona (Reinecke ms. 1930). Reinecke's work included not only *heiau*, as in the work of his two predecessors, but also descriptions of sites and features of the larger cultural landscape. Like those before him, Reinecke's field work focused on the near-shore flats, and did not extend to the uplands. The following sites—including references to house sites, trails, petroglyphs, shelters, graves, enclosures and a charcoal kiln—described by Reinecke, cover the lands of Ka'apuna, Kīpāhoehoe and 'Alikā:

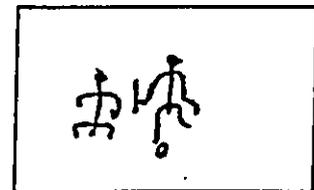
Site 56. Kaapuna: timber-loading causeway similar to that at Kolo, but larger. Charcoal kiln, modern. A modern house platform and cistern; two more modern house platforms; two small modern house platforms with pens around them; pen for horses. At the beginning of the path across the *a-a*, one house site and several small puoa.

Site 57. House platform with *ilili*.

(Kīpāhoehoe)

Site 58. Side trails leading to a house site with floor of smooth stones [situated on a cove, makai of the *alaloa*, in line with the lower Kīpāhoehoe trig stn.]. A very tiny patch of *ilili* on the ridge overlooking it. Probably modern. The path across the *a-a* is beautifully paved [the "Kulokuloku Road" described by Emerson in 1884].

Site 59. Kīpāhoehoe: thirteen house sites [situated near the Kīpāhoehoe-'Alikā boundary], five of them doubtful; three pens, one with a house site and one with a grave; some fine shelters; a path running mauka; a petroglyph on a small rounded stone.



(Petroglyphs at Kīpāhoehoe on rounded stone, summit between the figures.)

In connection with the petroglyph it is well to mention that there are practically no *papamu* on this coast; south of Lepeamoā I saw only two, both on stones in yards, and in bad condition.

A little south is a house site, probably a fisherman's shelter.

Site 60. Alikā: Small square platform, probably, a grave; a low pen; a shelter cave. Then several rods broken by two cocopalms. About the present dwelling are grouped the following: two house sites in a yard; a very fine, smooth *ilili*-strewn house site in the next yard; an old house site (?) makai; four more house sites, three of them modern; three well-built

grave platforms; a pen contained several graves; and one containing but one grave... [Reinecke ms., 1930:168-169]

Around the time that Reinecke was working in Kona, Theodore Kelsey (who at times worked with the Bishop Museum) was also collecting ethnographic notes from elder kama'āina. The following note was found in his collection:

Names of Lands of South Kona, Hawaii
From Kalokuokamaile of Napoopoo, S. Kona. By Theodore Kelsey,
Feb. 15, 1933
...Kipahoehoe. For the *awaawaa* (uneven), *alualua* (pitted with holes). There, put on the *lona* [rollers] to pull the canoes (Kipoupou [push] the stones to make them alike). A large land from upland to sea. Kipahoehoe, a spring in the bay. The water is sweet. The people of Kaapuna got it, as their water was bitter... [In notes curated by June Gutmanis]

It is interesting to note the discussion on "*lona*" (wooden rollers) which were used to land and launch canoes on the rocky shore. This method of canoe landing was still used into the 1940s at Kipāhoehoe by members of the Kawā'auhau family (see interviews with Hannah Grace-Acia and family in this study).

No other archaeological work has been done in Kipāhoehoe to date, though in 1990, as a part of the studies conducted in conjunction with the realignment of section of the Hawaii Belt Road, some field work was undertaken. That study (Davidson & Pantaleo 1990), covered portions of the lands of 'Alikā, 'Ōpihali 2 and Kukuiopa'e 2, near the present-day road alignment. The field work was limited, and few sites were described. These generally included walls, stone mounds, and a historic roadway (the 1800s *Alanui Aupuni*) (Davidson & Pantaleo 1990).

SUMMARY OF DOCUMENTATION RECORDED IN ORAL HISTORY INTERVIEWS AND HISTORICAL RECORDS

Since 1996, the author has worked with several native families of the Kapalilua region, translating documents, and conducting oral history interviews with elder family members. Those interviews, along with others conducted more recently, represent families with generational attachments to lands from Ka'ohē to Kapu'a. Interview and consultation participants include members of the Ahuna, Ka'iawe-Hao, Grace, Makia-Kawā'auhau, Paulo, Kaupiko, Kaliuna, Keli'ikuli, and Kelepolo lines. Additionally, Amoi Yee, wife of the late Yee Chee (resident manager of the C.Q. Yee Hop & Company, South Kona operations from the 1920s to 1960s), and her son Norman, kindly agreed to participate in interviews and a field visit to the Ka'apuna-Kīpāhoehoe-'Alikā *mauka* lands. The collections of interviews and notes cover a wide range of native practices, and knowledge of the land and seascapes of Kapalilua (including Ka'apuna, Kīpāhoehoe and 'Alikā), and descriptions of historic ranching and lumbering operations. Selected narratives from the interviews may be read in *Appendix A* of this study.

The interviewees shared that in their youth, native families—some on their own land, and others, tenants of larger ranch land owners—cultivated extensive fields of taro, bananas, sweet potatoes, and other crops such as 'awa at various locations throughout Kapalilua. While some gardens for short term cultivation were near the residences (generally near the *Alanui Aupuni* or Government Road), large fields were maintained a mile or more above Māmalahoa Highway. Some of the fields were enclosed with stone walls to keep cattle out of the planting areas.

Crops were cultivated in cycles to allow for harvesting throughout the year, though the primary planting season fell in the period from around November to May. Planting fields were cleared of 'āma'uma'u ferns and other growth, with some over-story left for shade, and the mulch cuttings used to keep moisture around the cultivated plants. Plantings were made in *mākālua* (planting pits), *pu'epu'e* (mounds), and *mahina 'ai* (open planting areas), sometimes walled or terraced.

While most of the cultivation was done for family subsistence, one of the important economic crops of Kapalilua was 'awa, which was actively cultivated for commercial purposes from the 1870s till around 1920. Large fields of 'awa were cultivated in the forested areas *mauka* of the Māmalahoa Highway (*Alanui Aupuni*). By the mid 1880s, a portion of Kīpāhoehoe had been leased by the Government to Mahina (a Chinese man married into the Kaliuna family) for cultivation of 'awa. And in neighboring 'Alikā, 'awa was planted by Ahuna (father-in-law of interviewee, Mary Ahuna). Elder interviewees also described platforms being built and used in the cultivating areas for drying and preparation of the 'awa. In later times, moveable roofs (similar to those used for coffee drying) were made over platforms to protect the drying 'awa from rain. The dried 'awa was then bagged and sent to Ho'okena landing for export to Europe. The primary market for the Hawaiian 'awa was Germany, where it was used in the manufacture of sedatives and other pharmaceuticals

When not working agricultural fields in the uplands, or tending to ranching operations, the families of 'Ōpihiali-Pāpā vicinity traveled the *mauka-makai* trails, and took up seasonal residences along the shore. This was particularly the case from around May through September, when fishing was at its peak, and salt making was best. Elder residents described various points of land, both on the mountain slope and near the shore as *ko'a* (fish station markers). Among these points on the land is Nāpōhaku'ōloa, the arched rock in the sea near the Kīpāhoehoe-'Alikā boundary, which was one of the important *ko'a* in this region. Members of the Kawā'auhau, Grace and Paulo families, descended from the Makia line which held Grant No. 3153 in 'Alikā, frequented coastal Kīpāhoehoe through the 1950s. *Lona* (wooden rollers), as described in traditional and early historical accounts, generally made of *hau* (*Hibiscus tiliaceus*), were still used by the families to land and launch canoes from the rocky shore.

Family members also recalled that there were old stone house sites near the Kīpāhoehoe-'Alikā shoreline, and the old paved *alaloa* ("Kulokuloku Road") in Kīpāhoehoe had been seen. None of the family members interviewed, recalled ever traveling further inland from the coast in Kīpāhoehoe (they had no need to do so). Likewise, except for traveling across Kīpāhoehoe in the upper reaches, or along the Māmalahoa Highway, as a part of the C.Q. Yee Hop & Company operations, no one described spending time in, or collecting resources from Kīpāhoehoe. This is not surprising, when we consider the fact that the *ahupua'a* Kīpāhoehoe was not let out to lease after ca. 1900, and that by 1911, it had been incorporated into the South Kona Forest Reserve; years which pre-date the birth of most of the interviewees.

When speaking of David Kaupiko's letter of 1935, requesting permission to take two *koa* logs from Kīpāhoehoe, with which to make canoes, family members were very interested. *Kupuna* Sarah Kaupiko observed that David Kaupiko had been *Kahu* of the church, a school teacher, canoe maker, and at times, a politician. During the late 1920s and early 1930s, a period of revival in the sport of canoe racing, David Kaupiko and several others in the region were making canoes. It was suggested that the original log from one of the famous canoes of Miloli'i, the *Malolo*, may have come from the Kīpāhoehoe section of the forest. The Makia-Kawā'auhau family of 'Alikā, and the Keli'ikuli-Ka'anā'anā family of Ho'opūloa were also canoe makers.

Interviewees also confirm the absence of public trails and public activities in Kīpāhoehoe. Most users of Kīpāhoehoe, being resident employees of the C.Q. Yee Hop & Company. With the exception of David Kaupiko's 1935 request, interviewees observed that they had no personal reasons to go into the *mauka* lands of Kīpāhoehoe to gather plants or other materials, as their own *ahupua'a* were supplied with the resources they needed.

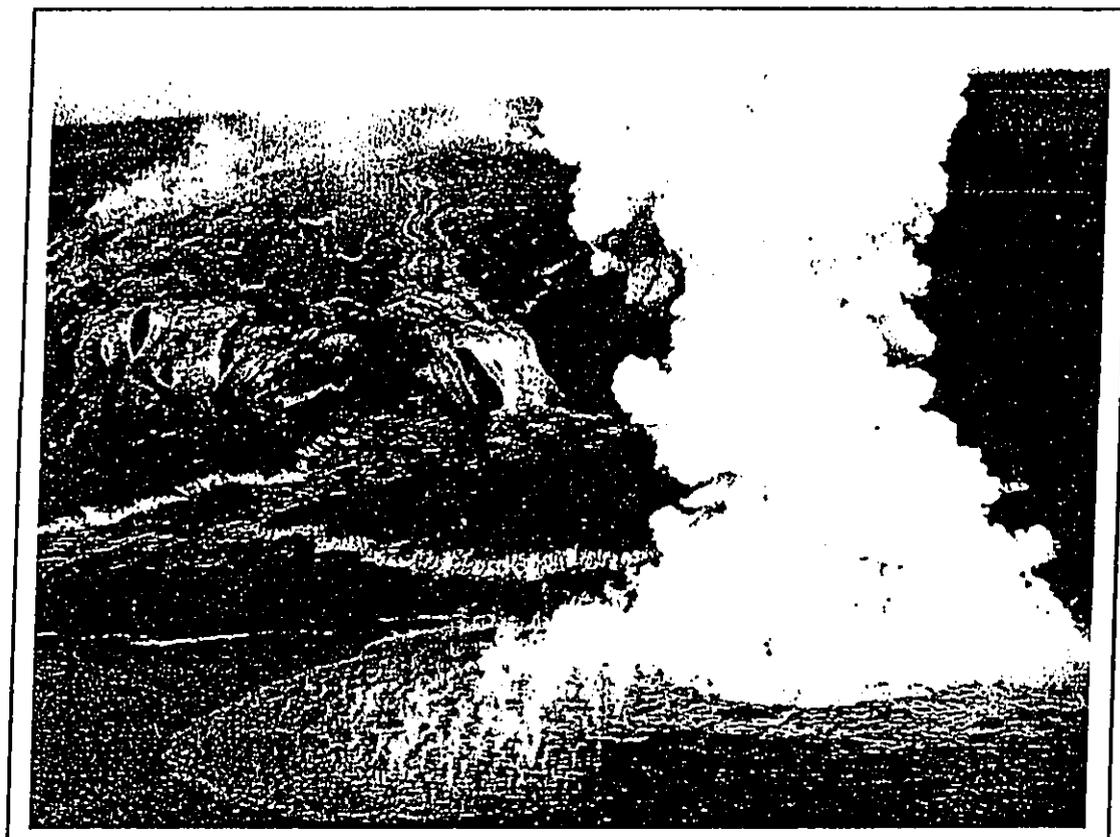
Families also record that they hunted pigs in various locations. But because C.Q. Yee Hop controlled lands on both sides of Kīpāhoehoe, and Kīpāhoehoe itself was a part of the forest reserve, no one had specific recollections of hunting in Kīpāhoehoe. The ranch families traveled the lands of the ranch, and others who were not associated with the ranch had to get permission to go hunting. It appears that it was easier for most interested hunters to go to the lands in which their residences were situated, or to which they had long-standing family ties.

Amoi Yee and her son, Norman, shared interesting descriptions of Yee Chee and ranch hands going hunting, and preparing the pork with Chinese seasonings. The pig, prepared in this manner was popular with the native families of the Pāpā-Miloli'i area. So whenever the Yees went *makai* to go fishing, they always took cuts of seasoned pork with them. And in the old style, exchange (*kuapo*) was made between the families, and fish were always brought back home to the mill camps.

Unlike neighboring lands in the Kapalilua region, Kīpāhoehoe was never privately owned, nor were parcels within it sold as Royal Patent Grants. Though at least one application to purchase Kīpāhoehoe was made by H.N. Greenwell in 1874, for reasons that are not specified, the *ahupua'a* remained in the Government Land inventory. Also, the land lease program, spanning the period from ca. 1860 to the 1970s, indicates that only limited activity took place in Kīpāhoehoe. Historic leases of Kīpāhoehoe, dating from 1869, are recorded as having been made for grazing of animals (on an area covering 1,500 acres), and later, smaller parcels for the cultivation of 'awa. The lease records identified as a part of this study indicate that the lessees gave up use of Kīpāhoehoe lease-hold interests prior to 1890; apparently in favor of use of their own land-holdings which were being granted through the 1890s.

Among the most significant events to occur in the lifetimes of the elder interviewees were the eruptions of 1919, 1926, and 1950, in which Mauna Loa lava flows changed large tracts of land. Interviewees recall hearing of "visits" by Pele prior to the 1926 eruption. In 1950, C.Q. Yee Hop Manager, Yee Chee, and ranch hands went *mauka* between 'Alikā and Ka'ohē to open paddock fences to try and save cattle and horses from the flow. Yee Chee himself, was later caught between two fingers of the flow, and only saved himself by running *makai* to the ocean, a distance of about six

miles through rugged terrain (*Figure 19*). Yee Chee was eventually picked up on the shore by a Coast Guard vessel. His family recalls that years later, Yee Chee regularly went back up to 'Alikā, where his vehicle had been lost, and left small *makana* (gift offerings) to Pele, in thanks for his safe return to his family.



*Figure 19. Mauna Loa Eruption of 1950 (Pāhoehoe Section)
(Air National Guard Photograph - 199th Fighter Squadron)*

Fencing the Kīpāhoehoe NAR

In regards to boundary fencing, it was a requirement placed upon neighboring land owners and lessees in the nineteenth century, and a requirement, as described in Department of Agriculture and Forestry communications cited in this study, from 1911, that land owners adjoining Forest Reserve lands, fence the boundaries in order to protect the reserve lands. *Kupuna* Lillian Kelepolo (Kahele) – Galieto, shared that from the late 1930s till about 1950, she personally worked on stonewalls and fence lines under C.Q. Yee Hop manager, Yee Chee. She observed that it was the practice of the ranch to work the boundaries and enclose areas for pasture. She also assisted with land clearing and pasture improvements within the ranch as a part of her work (pers comm. July 12, 2002).

All of the interviewees and their families expressed the thought that care of the land, cultural resources, forests and fisheries is important. Interviewees who were asked about the care of the Kīpāhoehoe forest believe that good stewardship of the Natural Area Reserve, will be of benefit to the region.

Nick Agorastos of the Natural Area Reserve Program has communicated with Maly, that he has walked all of the alignment of the proposed Kīpāhoehoe NAR fence line, and that he has not seen any evidence of modification or stone work in the alignment. NAR staff members, Lisa Hadway and Nick Agorastos, and a representative of the Department of Land and Natural Resources-State Historic Preservation Division (DLNR-SHPD) will meet with field crew members prior to undertaking work on the fence line. All field crew members employed on this project will be informed of Historic Preservation Guidelines, and made aware that if any stone features (such as walls, terraces, mounds, platforms, and boundary *ahu*) are found, work in the area is to be modified so as to minimize impact on such features. The NAR staff will also monitor all clearing as it is undertaken to ensure proper treatment of sites, should any be discovered.

The Hawai'i State Historic Preservation Statute (Chapter 6E), which affords protection to historic sites, including traditional cultural properties of ongoing cultural significance; the criteria, standards, and guidelines currently utilized by the DLNR-SHPD for the evaluation and documentation of cultural sites will be complied with. The Hawai'i Island Representative of DLNR-SHPD will be notified of any findings, should they be made.

If inadvertently discovered, burial remains will be protected in place, work in the immediate vicinity of the remains will be ceased, and the Hawai'i Island Representative of DLNR-SHPD will be notified of any findings. Final disposition of remains will be determined in consultation with DLNR-SHPD, and native Hawaiian descendants of the families associated with the lands of the Kīpāhoehoe vicinity. If any burial remains should be discovered, they will be treated on a case-by-case basis in concurrence with Chapter 6E-43 (as amended by Act 306).

O ka mea maika'i mālama, o ka mea maika'i 'ole, kāpae 'ial

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BENJAMIN J. CAYETANO
GOVERNOR



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

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

October 6, 2000

Mr. William Stormont
Division of Forestry and Wildlife
State of Hawai'i Department of Land and Natural Resources
P.O. Box 4849
Hilo, Hawai'i 96720

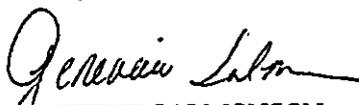
Dear Mr. Stormont:

We have reviewed the Draft Environmental Assessment for the Kipahoehoe Natural Area Reserve Management Plan, Tax Map Key (3) 8-8-01, 5, 6, 7, 8, 10, 11, 12, 13, South Kona. We submit the following comments for your response and consideration.

1. **THE MANAGEMENT PLAN AS AN INTEGRAL PART OF THE ENVIRONMENTAL ASSESSMENT:** Please ensure that the management plan is attached to the environmental assessment. The management plan contains the required maps, and detailed descriptions of the environmental setting.
2. **CULTURAL IMPACT ASSESSMENT GUIDELINES:** The DEA concludes that the project will have "no negative effects on cultural activities..." Please provide some analysis to buttress that conclusion. Please find enclosed a copy of Act 50, Session Laws of Hawai'i 2000, as well as a copy of the Cultural Impact Assessment Guidelines issued by the environmental council to assist you in your analysis.
3. **ANALYSIS OF SIGNIFICANCE:** We have been asking all applicants both private and government, to provide an objective and non-self-serving analysis of the the 13 significance criteria (see Section 11-200-12, Hawai'i Administrative Rules) in relation to their proposed actions. Please provide an analysis of significance under the section entitled "Findings and Reasons Supporting Expected Determination." An example analysis is attached for your use.
4. **OFFICE OF HAWAIIAN AFFAIRS:** Please consult the Office of Hawaiian Affairs.

Again we thank you for the opportunity to comment. If there are any questions, please call me or Leslie Segundo at (808) 586-4185.

Sincerely,


GENEVIEVE SALMONSON
Director

From: Mokulele Highway/Puunene Bypass final EA (1997)

DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

SIGNIFICANCE CRITERIA: According to the Department of Health Rules (I 1-200-12), an applicant or agency must determine whether an action may have a significant impact on the environment, including all phases of the project, its expected consequences both primary and secondary, its cumulative impact with other projects, and its short and long-term effects. In making the determination, the Rules establish "Significance Criteria" to be used as a basis for identifying whether significant environmental impact will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any one of the following criteria:

- (1) Involves an irrevocable commitment to loss or destruction of any natural or cultural resources;

The proposed project will not impact scenic views of the ocean or any ridge lines in the area. The visual character of the area will change from the current agricultural land to an improved 4-lane highway which is compatible with the surrounding land use plans and programs being implemented for the region. The highway corridor is comprised of "Prime" agricultural land which is an important resource. Development of drainage systems will follow established design standards to ensure the safe conveyance and discharge of storm runoff. In addition, the subject property is located outside of the County's Special Management Area (SMA).

As previously noted, no significant archaeological or historical sites are known to exist within the corridor. Should any archaeologically significant artifacts, bones, or other indicators of previous onsite activity be uncovered during the construction phases of development, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

- (2) Curtails the range of beneficial uses of the environment; - impacts on the W. Forest

Although the subject property is suitable for agricultural uses, the land area adjoining the Mokulele Highway is naturally suited for transportation purposes due to its location proximate to an existing highway system. To return the site to a natural environmental condition is not practical from both an environmental and economic perspective.

- (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; J.A.R. L.A.N.

The proposed development is consistent with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act.

- (4) Substantially affects the economic or social welfare of the community or state; J.D.

The proposed project will provide a significant contribution to Maui's future population by providing residents with the opportunity to "live and work in harmony" in a high quality living environment. The proposed project is designed to support surrounding land use patterns, will not negatively or significantly alter existing residential areas, nor will unplanned population growth or its distribution be stimulated. The project's development is responding to projected population growth rather than contributing to new population growth by stimulating in-migration.

- (5) Substantially affects public health

Impacts to public health may be affected by air, noise, and water quality impacts, however, these will be insignificant or not detectable, especially when weighed against the positive economic, social, and quality of life implications associated with the project. Overall, air, noise, and traffic impacts will be significantly positive in terms of public health as compared to the "no action" alternative.

- (6) Involves substantial secondary impacts, such as population changes or effects on public facilities

Existing and planned large-scale housing development projects within Wailuku-Kahului and Kihei will contribute to a future population growth rate that will require expansion of public and private facilities and services. These

UNOFFICIAL VERSION

HOUSE OF REPRESENTATIVES
TWENTIETH LEGISLATURE, 2000
STATE OF HAWAII

H.B. NO. 2895 H.D. 1

A BILL FOR AN ACT

RELATING TO ENVIRONMENTAL IMPACT STATEMENTS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. The legislature finds that there is a need to clarify that the preparation of environmental assessments or environmental impact statements should identify and address effects on Hawaii's culture, and traditional and customary rights.

The legislature also finds that native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the "aloha spirit" in Hawaii. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on government agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture.

The purpose of this Act is to: (1) Require that environmental impact statements include the disclosure of the effects of a proposed action on the cultural practices of the community and State; and (2) Amend the definition of "significant effect" to include adverse effects on cultural practices.

SECTION 2. Section 343-2, Hawaii Revised Statutes, is amended by amending the definitions of "environmental impact statement" or "statement" and "significant effect", to read as follows:

""Environmental impact statement" or "statement" means an informational document prepared in compliance with the rules adopted under section 343-6 and which discloses the environmental effects of a proposed action, effects of a proposed action on the economic [and] welfare, social welfare, and cultural practices of the community and State, effects of the economic activities arising out of the proposed action, measures proposed to minimize adverse effects, and alternatives to the action and their environmental effects.

The initial statement filed for public review shall be referred to as the draft statement and shall be distinguished from the final statement which is the document that has incorporated the public's comments and the responses to those comments. The final statement is the document that shall be evaluated for acceptability by the respective accepting authority.

"Significant effect" means the sum of effects on the quality of the environment, including actions that irrevocably commit a natural resource, curtail the range of beneficial uses of the environment, are contrary to the State's environmental policies or long-term environmental goals as established by law, or adversely affect the economic [or] welfare, social welfare[,], or cultural practices of the community and State."

SECTION 3. Statutory material to be repealed is bracketed. New statutory material is underscored.

SECTION 4. This Act shall take effect upon its approval.

Approved by the Governor as Act 50 on April 26, 2000



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
P.O. BOX 4849
HILO, HAWAII 96720
(808) 974-4221
FAX (808) 974-4226

September 4, 2001

Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawai'i 96813

Dear Ms. Salmonson,

Thank you for your letter dated October 6, 2000 where you submitted comments on the revised Kipahoe Natural Area Reserve Management Plan. We have revised portions of the plan and will be submitting the Final EA soon.

With regards to your comments we have made the following changes:

- 1) The Environmental Assessment will be attached to the Management Plan when the final document is published.
- 2) A Cultural Resources Specialist has been consulted for the preparation of a cultural impact assessment. Information provided by this will be included in the final EA.
- 3) The 13 significance criteria in the Analysis of Significance have been included in the EA following the prescribed guidelines.
- 4) The Office of Hawaiian Affairs was consulted in the original call for comments.

We would like to thank you for taking the time to review the Draft. The final version of the EA will be published shortly. Please feel free to contact me with any further comments or questions.

Sincerely,

Lisa Hadway
Natural Areas Specialist

For the protection of Hawaii's Native Wildlife

HAWAII AUDUBON SOCIETY

850 RICHARDS ST., SUITE 505 HONOLULU, HI 96813-4709
TELEPHONE (808) 528-1432 FAX (808) 537-5294

October 7, 2000

Dear Mr. Stormont,

The following comments are in regards to the Draft Environmental Assessment (DEA) for the Kipahoehoe Natural Area Reserve Management Plan. We hope they prove to be useful to this planning process.

The Hawaii Audubon Society (HAS) strongly supports the proposed actions described in the DEA. Until a more effective means of ungulate control is found, we strongly support the use of snaring as a control technique in remote locations, difficult or sensitive terrain, or when ungulate numbers are so low as to make hunting ineffective. We support the proposals to build completely closed fenced units. Using uluhe ferns as ungulate barriers poses too great a risk of future ingress of ungulates into rare plant communities should a fire or uluhe dieback occur in the uluhe tie-in areas.

We also support the proposal to expand public access into the NAR for recreational and educational purposes.

The DEA does not present a timetable or budget for the proposed actions. We would like to support the NAR program in its pursuit of adequate, dedicated funding from the State, but find it harder to do so without at least general timetables and budgets for projects which justify funding needs.

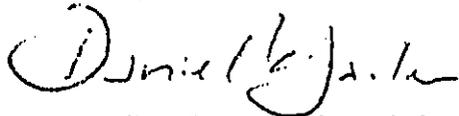
We also hope that a more formal rare plant and animal species management plan also be generated in order to secure the genetic safety of rare plants and animals in the NAR in the short and long-term.

We recommend that fuel breaks be created as needed, particularly during fence and road construction to avoid creating hazardous fuel loads from slash piles.

Lastly, we strongly urge seasonal suspensions of road and fenceline construction activities during the breeding and nesting seasons of any rare bird species observed along proposed roads and fencelines. Similarly, we also urge the seasonal suspension of construction activities if any roosting hoary bats are observed in construction areas particularly in warmer elevations below 4000 feet and during summer months of May through August when young may be born or lactating.

Thank you for your time and consideration. If we can be of any further assistance please feel free to contact us at our above address.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan Sailer". The signature is written in a cursive style with a large initial "D".

Dan Sailer, Conservation Chair
Hawaii Audubon Society

Cc: OEQC



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
P.O. BOX 4849
HILO, HAWAII 96720
(808) 974-4221
FAX (808) 974-4226

September 4, 2001,

Dan Sailer
Conservation Chair
Hawai'i Audubon Society
850 Richards St., Suite 505
Honolulu, Hawai'i 96813-4709

Dear Mr. Sailer,

Thank you for your letter dated October 7, 2000 in which you submitted comments for the revised Kipahoehoe Natural Area Reserve Management Plan on the island of Hawai'i. We appreciate your support for the project and will keep you informed on its progress.

With regards to budgeting and implementation, the Plan is designed to accommodate the limited staff and budget of the Natural Area Reserve Program. Fencing materials and labor will be drawn from existing fiscal budgets and no special funds, at this time, are assigned to Kipahoehoe specifically. This project will have to be funded over several fiscal years. With that in mind, our intentions are to get the maximum protection at all phases of the project, while using the most efficient means to build the fences. This entails using existing roadways and natural barriers. Natural barriers will provide adequate protection in the interim until the funds and resources are available for complete enclosure. Additional sources of funding will be sought to aid in the implementation of the management plan.

Roadways and fencelines will serve as fire breaks for the upper portion of the preserve. Upon the clearing of the 3600ft contour fence line, measures will be taken to ensure there is no build up of slash piles and weed control will also reduce fuel loading.

We will also avoid fence clearing and road construction in the peak of hoary bat breeding season (June-July). Most fencelines will follow old roads and many areas where boundary line fencing will occur was grazed at some point in the past and hence, minimal tree clearing will occur.

We would like to thank you for taking the time to review the Draft. The final version of the EA will be published shortly. Please feel free to contact me with any further comments or questions.

Sincerely,

Lisa Hadway
Natural Areas Specialist

Patrick Conant
P.O. box 1172
Volcano, HI 96785

September 19, 2000

Mr. William T. Stormont
Division of Forestry and Wildlife
P.O. Box 4849
Hilo, HI 96720

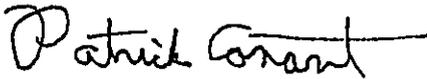
Dear Mr. Stormont,

Thank you for sending me copies of the Draft Environmental Assessment (EA) and proposed Management Plan for Kipahoehoe Natural Area Reserve for review. I found both to be well written and easy to understand. I would like to make a personal recommendation regarding the alternatives listed on page 4 of the EA. I would support alternative #1, the preferred alternative, only if the access road that is constructed to the upper reserve is not the "*makai* access road" described on page 14 of the Management Plan. I would prefer that you pursue establishment of the "*mauka* access road" route through Honomalino Nature Conservancy lands, Kahuku Ranch and Papa 1-2. If this effort fails, then access through the Yee Hop Ranch should be pursued, if there is some hope of solving problems encountered in the past.

As has been pointed out in the Management Plan on page 15, "The proposed *makai* access is entirely within the NAR, but could potentially create new problems due to increased public traffic in the reserve." Once feral ungulates are removed from the mauka kipuka after fencing is completed, there would be no opportunity for public hunting anyway. Therefore public access could be better regulated via a mauka access road. The threats of off-road vehicle damage and vandalism to the cabin and fences would be minimized.

I hope you find my comments to be useful in your effort to protect Kipahoehoe NAR from ongoing damage caused by feral animals. I commend your efforts to protect these threatened remnant kipuka that are an integral part of the native Hawaiian landscape of the Kona District. Please keep me apprized of the progress of the implementation of your Management Plan.

Aloha,



Patrick Conant



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
P.O. BOX 4846
HILO, HAWAII 96720
(808) 974-4221
FAX (808) 974-4226

September 4, 2001

Patrick Conant
P.O. Box 1172
Volcano, Hawai'i 96785

Dear Mr. Conant,

Thank you for your letter dated September 19, 2000 where you submitted comments on the revised Kipahoe Natural Area Reserve Management Plan on the island of Hawai'i. We appreciate your support for the project and will keep you informed on its progress.

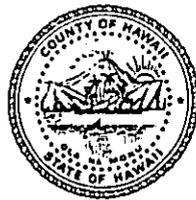
As you suggested, we will be pursuing the "Mauka Access Route" as the preferred access to the reserve. There has been some new road work on Kahuku Ranch that may allow us closer access to the Reserve than we initially anticipated. The prospect that Kahuku Ranch may get bought by a conservation organization is closer to becoming a reality. These factors will contribute to a more economical and logistically sound route to the Mauka portion of the Reserve where most of our management activities will take place.

We would like to thank you for taking the time to review the Draft. The final version of the EA will be published shortly. Please feel free to contact me with any further comments or questions.

Sincerely,

Lisa Hadway
Natural Areas Specialist

Stephen K. Yamashiro
Mayor



Virginia Goldstein
Director

Russell Kokubun
Deputy Director

County of Hawaii

PLANNING DEPARTMENT

25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-8742

September 13, 2000

Mr. William T. Stormant, Natural Areas Manager
Department of Land & Natural Resources
Division of Forestry & Wildlife
P.O. Box 4849
Hilo, HI 96720

Dear Mr. Stormant:

**Draft Environmental Assessment (DEA) for
Kipahoe Natural Area Reserve Management Plan
Kipahoe – Alike – Papa 1st, S. Kona, Hawaii Island
TMK: 8-8-01: 5, 6, 7, 8, 10, 11, 12, & 13**

Thank you for requesting our participation to review and comment on the above DEA. Our comments pertain to the state or county land use laws under the County's jurisdiction that apply to the project site. For your awareness, general information, only, is provided to note Special Management Area or shoreline setback requirements.

State Land Use (SLU): Conservation District. According to the DEA, the project location consists of eight parcels. Our research confirmed the DEA's description that seven of those lots: parcels 05, 06, 07, 10, 11, 12, and 13 are within the Conservation district and are therefore not subject to County land use jurisdiction.

SLU: Agricultural District. It appears, however, that parcel 08 (169 acs.) is within the SLU: Agricultural district and the County agricultural (A-5a) district. Consequently, land use activity on this parcel would be subject to County jurisdiction and the State agricultural land use law, generally Haw. Rev. Stat. secs. 205-2(d) and -4.5(a).

Suggestion. According to the Kipahoe Natural Area Reserve (NAR) proposed management plan, parcel 08 is not a part of the NAR. If future plans, however, are to

Mr. William T. Stormant, Natural Areas Manager
Department of Land & Natural Resources, Division of Forestry & Wildlife
Page 2
September 13, 2000

have parcel 08 included in the NAR, DLNR may want to consider the option of a boundary amendment to change the designation of this parcel to the Conservation district.

Special Management Area (SMA) Requirements. For future planning purposes, please note that a portion of parcel 7's coastline is within the County's SMA zone.¹ Despite the Conservation designation, SMA review and approval is required of projects or activities within the County's SMA zone. Procedurally, an SMA review and decision is required before approval of a State CDUA permit, according to the State Coastal Zone Management (CZM) law.

Shoreline Setback (SSB) Requirements. In addition, along parcel 7's coastline a forty (40) feet setback from the shoreline² is required of all new or *to-be-built* structures, including walls, fencing, improved or unimproved roads or trails, boat ramps, comfort stations, etc. However, the shoreline setback rules also provide for variance applications from the setback requirement. An application for a shoreline setback variance is made to the Hawaii County Planning Commission and requires compliance with public notice and hearing procedures.

Before undertaking any development or activity within the SMA or the 40 feet SSB, please consider consulting with Hawaii County's Planning Department. Our staff is available to review or discuss any proposals that would impact or trigger SMA criteria or the 40-foot shoreline setback requirement.

Thank you for allowing us to comment on this proposal. Any questions on our comments can be addressed to Earl Lucero of my staff at (808) 961-8288.

Sincerely,



f VIRGINIA GOLDSTEIN
Planning Director

EML:pak
P:\wp60\earl\letters\deakipahoe\hoeNAR
Enclosures

¹ See enclosed photocopy, por. of SMA South Kona District Map (effective: 12/1/75)(amended: 3/3/80).
² Haw. Rev.Stat. Chapter 205A Part III, Shoreline Setbacks & Hawaii County Planning Department Shoreline Setback Rule 11.

Mr. William T. Stormant, Natural Areas Manager
Department of Land & Natural Resources, Division of Forestry & Wildlife
Page 3
September 13, 2000

cc: West Hawaii Planning Office



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
P.O. BOX 4849
HILO, HAWAII 96720
(808) 974-4221
FAX (808) 974-4226

September 4, 2001

Chris Yuen
Planning Director
County of Hawai'i
Planning Department
25 Aupuni Street, Room 109
Hilo, Hawai'i 96720-4252

Dear Director Yuen,

This is in response to comments submitted in a letter from the Planning Department, dated September 13, 2000, regarding the revised Kipahoehoe Natural Area Reserve Management Plan. We have had a change in staff in our office since the DEA was written, so we apologize for the delayed response. In the letter it is noted that 7 of the 8 parcels referred to in our project are within the Conservation District and are therefore not subject to County land use jurisdiction. One section of the plan refers to a parcel that is within the Agricultural District (TMK: 8-8-01:08). This section of unencumbered State land will be considered for conversion to Conservation District at a later date. Until then we understand that it is subject to county jurisdiction and State agricultural land use law.

The final version of the EA will be published shortly. Please feel free to contact me with any further comments or questions.

Sincerely,

A handwritten signature in cursive script that reads "Lisa Hadway".

Lisa Hadway
Natural Areas Specialist



United States Department of the Interior

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

In Reply Refer To: GCS

OCT 10 2000

William T. Stormont
Natural Areas Manager
Hawaii Division of Land and Natural Resources
Division of Forestry and Wildlife
P.O. Box 4849
Hilo HI 96720

Re: Draft Environmental Assessment and Management Plan for the Kipahoe Natural Area Reserve, South Kona, Hawaii Island

Dear Mr. Stormont:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment (DEA) and Management Plan for the Kipahoe Natural Area Reserve (NAR), South Kona, Hawaii Island. The Management Plan calls for a variety of actions targeted to protect native ecosystems in six management areas within the NAR, and to improve infrastructure for undertaking management activities such as construction of maintenance shelters and access roads. Based on a review of the information provided to us, the Service offers the following comments.

The plan outlines a management strategy that executes natural resource management based on a prioritized list of management actions. The plan utilizes the Hawaii Volcanoes National Park's Special Ecological Areas (SEA) approach to prioritize management actions within areas of high biological value, and where efforts to protect and restore native species would be most feasible. Only portions of the reserve are designated as SEAs and little, if any management is planned for the remainder of the NAR. This approach is realistic because it focuses limited management resources within areas where they are most needed and can be most effective.

Mr. William T. Stormont
Page 2

We appreciate the opportunity to provide input on the proposed project. If you have questions regarding these comments, please contact Fish and Wildlife Biologist Gordon Smith at 808/541-3441.

Sincerely,

A handwritten signature in cursive script, appearing to read "Paul Henson".

Paul Henson
Field Supervisor
Ecological Services



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
P.O. BOX 4849
HILO, HAWAII 96720
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FAX (808) 974-4226

September 4, 2001

Paul Henson
Field Supervisor
U.S. Fish and Wildlife Service
Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawai'i 96850

Dear Mr. Henson,

This past October your office submitted comments on our Draft EA for the revised Kipahoehoe Natural Area Reserve Management Plan on the island of Hawai'i. We appreciate your support for the project and will keep you informed on its progress.

We would like to thank you for taking the time to review the Draft. The final version of the EA will be published shortly. Please feel free to contact me with any further comments or questions.

Sincerely,

Lisa Hadway
Natural Areas Specialist

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhikawa Building, Room 555
601 Kamehaha Boulevard
Kapolei, Hawaii 96707

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JANET E. KAWELO

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

August 28, 2000

MEMORANDUM

LOG NO: 26048 ✓
DOC NO: 0008PM18

TO: William T. Stormont, Natural Areas Manager
Division of Forestry and Wildlife

FROM: Don Hibbard, Administrator
State Historic Preservation Division 

SUBJECT: Draft Environmental Assessment and Management Plan for Kipahoehoe
Natural Area Reserve, Kipahoehoe, South Kona, Hawaii Island
TMK: 8-8-01-5, 6, 7, 8, 10, 11, 12, 13

Thank you for your Memo of August 4, 2000 and the opportunity to review and comment on the subject documents. We do not believe that any of the proposed management activities, including the construction and repair of access and boundary roads, and installation of fences, will have an effect on historic sites which apart from a couple of known trail remnants are probably few in number. If the idea of developing a public access trail incorporating the remnants of the historic trails built for foot and horse traffic should ever materialize our office should be consulted early in the planning process. If historic sites should be found during the course of one of the projects our office should be promptly notified and given an opportunity to assess their significance and need for mitigation, if any. Should human remains be found our burial program staff should be notified and all work halted immediately.

PM:amk



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
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(808) 974-4221
FAX (808) 974-4228

September 4, 2001

Don Hibbard
State Historic Preservation Division
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei Hawai'i 96707

Dear Mr. Hibbard,

This past August your office submitted comments on our Draft EA for the revised Kipahoehoe Natural Area Reserve Management Plan on the island of Hawai'i. We appreciate your support for the project and will keep you informed on its progress. In the event that we do discover any historic sites or remains in the course of the project, we will notify your office immediately. Prior to the development of a public access trail incorporating the historic trail on site, we will notify your office for assistance in the planning process.

The final version of the EA will be published shortly, and we would like to thank you for taking the time to review the Draft. Please feel free to contact me with any further comments or questions.

Sincerely,

Lisa Hadway
Natural Areas Specialist



U. S. Department of the Interior
U. S. GEOLOGICAL SURVEY
BIOLOGICAL RESOURCES DIVISION
PACIFIC ISLAND ECOSYSTEMS RESEARCH CENTER
Kilauea Field Station
PO BOX 52, Building 216
Hawaii National Park, Hawaii 96718
(808) 985-6072 FAX (808) 967-7153



September 27, 2000

William T. Stormont, Natural Areas Manager
Division of Forestry and Wildlife, DLNR
P. O. Box 4849
Hilo, Hawaii 96720

Dear Bill,

Thanks very much for sending me a copy of the proposed Kipahoehoe NAR Management Plan and the draft environmental assessment for the proposed management activities within the Reserve. Both documents are extremely well written and thorough. Both you and Bryon Stevens are to be commended for an excellent piece of work. I learned a lot about the NAR from reading the management plan and I particularly liked the detailed descriptions of the plant communities within the Reserve that explained the threats and needed management area by area. I hope someday to see more of the Reserve than I have to date, zooming by the forest botanizing at 45 mph.

I strongly support the proposed fencing, feral animal removal, and alien plant control proposed for the upper part of the Reserve that you have detailed in the Environmental Assessment (EA) as Alternative 1. Since the NARS staff has obviously spent more time in the area than anyone else, I'm sure the prioritization of the upper area as the area most needing immediate protection is a valid judgement. My only suggestions for improvement to the EA would be to detail the areas included in each of the fenced increments and provide acreage, an explanation for the sequence of fencing implementation, and a justification for building three exclosures rather than one large one. While the Alternative 2 considers building a fence around a larger single area of 4,000 acres, none of the alternatives address building a single fence around the highest priority 1,000 acres. I'm sure you have a good justification, and perhaps one sentence would explain it.

My second comment on the EA regards cultural collecting. The EA states that gathering is not now allowed because of the rules. I assume the rules and regulations will eventually reflect the relatively recent NARS policies, that do allow for permitting of cultural collecting in the NARS.

I was particularly impressed by the appendix to the Management Plan that lists rare plant species that may be suitable for reintroduction efforts in the Reserve. This is a well-thought out list and I would have no argument with any of these plant species being eventually restored or introduced to Kipahoehoe. In fact, I would add a few more, such as the endangered *Nothocestrum breviflorum*, which is known from Honaunau and other sites in South Kona. The subject of plant restoration probably deserves a plan of its own.

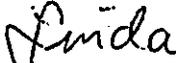
The question of introduction of plants to the NARS brings up an issue that I hope will be addressed in a general way by the NARS staff and the State Botanist. In light of the purposes of NARS spelled out in

Page 2 - September 27, 2000 Letter to Bill Stormont

Chapter 195 and the "new" NARS policies, there should be a set of guidelines to follow in determining the suitability of outplanting various species, including endangered ones, within the NARS. Because the NARS are intended to be "natural," the outplanting of endangered species (or other plants) not known from the Reserve might be deemed inappropriate by some botanists; the National Parks have faced this same question. At any rate, a general set of guidelines would solve potential problems and misunderstandings about appropriateness of plantings in the NARS.

Again, thanks for producing an excellent plan and EA and I look forward to the implementation of the management proposals for Kipahoehoe NAR. If there is any botanical work I can do in the future to help your management along, please let me know.

Sincerely,



Linda Pratt, Natural Area Reserves System Commission Chairperson



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
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September 4, 2001

Linda Pratt, Chairperson
Natural Areas Reserve System Commission
US Geological Survey
Biological Resources Division
PO Box 52, Building 26
Hawai'i National Park, Hawai'i 96718

Dear Linda,

Last September your office submitted comments on our Draft EA for the revised Kipahoehoe Natural Area Reserve Management Plan on the island of Hawai'i. We appreciate your support for the project and will keep you informed on its progress. This letter will also clarify some of the questions you posed in your comments.

With regards to the fencing and implementation, the Plan is designed to accommodate the limited staff and budget of the Natural Area Reserve Program. Fencing materials and labor will be drawn from existing fiscal budgets and no special funds, at this time, are assigned to Kipahoehoe specifically. This project will have to be funded through multiple fiscal years. With that in mind, our intentions are to get the maximum protection at all phases of the project, while using the most efficient means to build the fences which entails using existing roadways and natural barriers. Smaller fenced units also facilitate ungulate control, which would be far more costly and time-consuming in a single large unit.

The EA will be improved to include a better description of the areas to be enclosed by the fences and their acreages. I give a brief description here and have included a new map. Phase one of the project has already been completed which included 1200ft of fence along the existing 4400ft elevation contour road, protecting approximately 150 acres of the Middle Kipuka (See map enclosed). The Middle Kipuka is the best remaining piece of *Koa/Ohi'a mesic-dry forest* in the Reserve.

Phase two includes enclosing the area above the 4400ft contour road to the old Koa Mill Road. This unit would enclose approximately 350 acres and includes the top portions of the South, Middle and North Kipukas (*Koa/Ohi'a mesic-dry forest*). The area also includes *Ohi'a/Uluhe forest*. This Management Unit is referred to as Upper Koa Forest Unit.

The third phase of the project will include approximately 1 ¼ miles of fence along the North Boundary of the Reserve between the 4400ft contour road and the 3600ft road. The degraded North Kipuka will be protected by this fence. Natural barriers will serve as protection for this Kipuka along the makai and South sides until the bottom fence along the 3600ft contour is built. Before the 3600ft contour fence is built, 1 ¼ miles of fence along the South boundary of the Preserve will protect the South

Kipuka. Finally, the 3600ft contour fence will completely enclose the lower 1000acres between 4400ft and 3600ft. Once enclosed, this unit will be called the Lower Koa Forest Unit.

The fourth phase of fencing will occur in the top section of the Preserve enclosing approximately 250 acres. A portion of the East Kipuka (*Koa/Ohi'a mesic-dry forest*) will be protected by this fence along with *Ohi'a dry forest and montane shrubland*. This unit is called Mauka Shrubland Unit.

With regards to cultural collecting in NAR, the EA will be changed to remove the statement that collecting is prohibited and a provision will be added that says it is allowed with a special use permit.

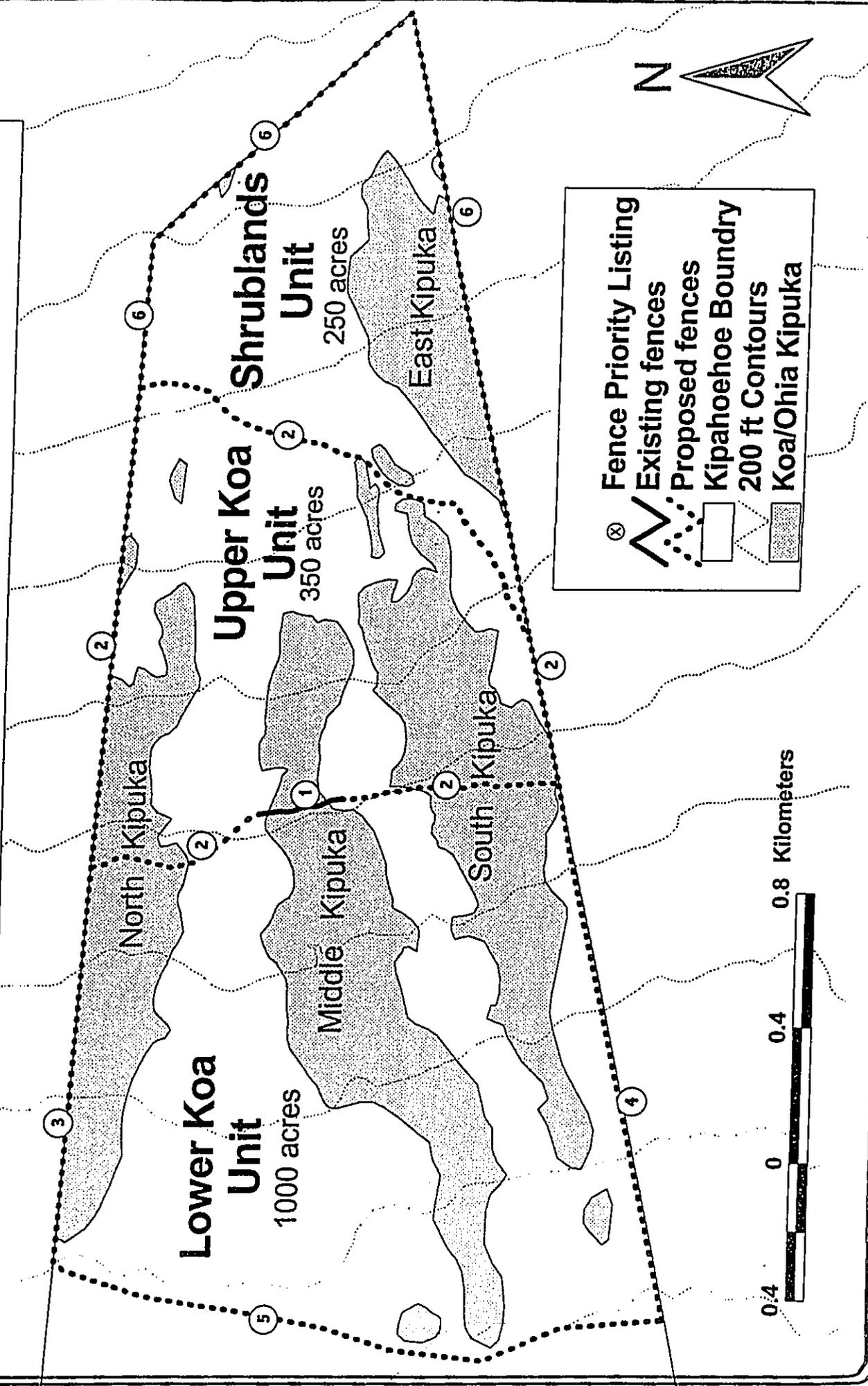
We would like to thank you for taking the time to review the Draft. The final version of the EA will be published shortly. Please feel free to contact me with any further comments or questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Lisa Hadway". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Lisa Hadway
Natural Areas Specialist

Kipahoehoe Natural Area Reserve Management Units and Fences



PHONE (808) 594-1888

FAX (808) 594-1865



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

August 24, 2000

Mr. William T. Stormont
Natural Areas Manager
Department of Land and Natural Resources
Division of Forestry & Wildlife
P.O. Box 4849
Hilo, Hawai'i 96720

EIS# 409

Subject: Draft Environmental Assessment and Proposed Management Plan for
the Kipahoehoe Natural Area Reserve on the island of Hawai'i
TMK: 8-8-01-5,6,7,8,10,11,12,13

Dear Mr. Stormont,

Thank you for the opportunity to review and respond to the above-referenced document. As with any project, the Office of Hawaiian Affairs is concerned that subsurface archaeological, historical and cultural remains may be impacted as well as the cultural integrity of the land.

At this time, the Office of Hawaiian Affairs has no comments to offer.

If you have any questions, please contact Ken R. Salva Cruz, Policy Analyst at 594-1847.

Sincerely,

A handwritten signature in black ink, appearing to read "Colin C. Kippen, Jr." with a stylized flourish at the end.

Colin C. Kippen, Jr.
Deputy Administrator

cc: Board of Trustees
Hilo CRS
OEQC
File



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
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September 4, 2001

Mr. Colin C. Kippen, Jr.
Deputy Administrator
Office of Hawaiian Affairs
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

Dear Mr. Kippen,

This past August your office reviewed our revised Kipahoe Natural Area Reserve Management Plan on the island of Hawai'i. The final version of the EA will be published shortly, and we would like to thank you for taking the time to review the Draft. Please feel free to contact me with any further comments or questions.

Sincerely,

A handwritten signature in cursive script that reads "Lisa Hadway".

Lisa Hadway
Natural Areas Specialist



U.S. Geological Survey
Pacific Island Ecosystems Research Center
PO Box 44, Building 344
Hawaii National Park, Hawaii 96718
(808) 967-7396 Ext 234 Fax (808) 967-8568
Email: thane_pratt@usgs.gov



6 October, 2000

William T. Stormont, Natural Areas Manager
Hawaii Department of Land and Natural Resources
Division of Forestry and Wildlife
P. O. Box 4849
Hilo, HI 96720

Dear Bill,

Thank you for the opportunity to read the Draft Environmental Assessment and proposed Management Plan for the Kipahoehoe Natural Area Reserve on the island of Hawai`i.

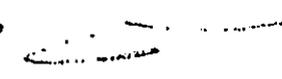
I have very little to contribute to this well-written and carefully thought out plan. As you know, my main interest and concern is with native forest birds, and I have this to add to what is already in the plan. The plan points out that the reserve is considered essential habitat for `Alala. Kipahoehoe is also identified as essential habitat for three species of endangered Hawaiian honeycreepers: the `Akiapola`au, Hawaii `Akepa, and Hawaii Creeper. These species are in special need of habitat on the Kona side of the island, because so much of the koa/`ohi`a forest there has been logged and converted to pasture, and because the `Akepa and creeper depend exclusively on old growth forest for their existence.

The Hawaii Forest Bird Survey in the 1970s found `Akiapola`au and Hawaii Creeper within one mile of Kipahoehoe -- a short distance, as the bird flies. There's a good chance these species survive on the reserve. The nearest `Akepa are on Waiea Tract to the north and on adjacent McCandles Ranch. It's interesting to note that this small population was discovered *after* the Hawaii Forest Bird Survey, inspiring hope that `Akepa could hang on in other well-forested kipuka, such as at Kipahoehoe. It was really encouraging to read that the reserve encompasses old growth koa/`ohi`a forest at elevations above the lethal mid-elevation zone where native birds encounter and die from mosquito-borne diseases.

If you would ever want assistance with bird surveys, we'd love to help! To my knowledge, this area has not been searched in many years.

With best success for your endeavors at Kipahoehoe,

Aloha,


Thane K. Pratt
Wildlife Biologist



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September 4, 2001

Thane K. Pratt
Wildlife Biologist
U.S. Geological Survey
Pacific Island Ecosystems Research Center
Biological Resources Division
PO Box 44, Building 344
Hawai'i National Park, Hawai'i 96718

Dear Dr. Pratt,

This past October you submitted comments on our Draft EA for the revised Kipahohoe Natural Area Reserve Management Plan on the island of Hawai'i. We appreciate your support for the project and will keep you informed on its progress. Per your comments, we will add to the plan that Kipahohoe is not only essential habitat for the 'Alala, but also for the Hawai'i Creeper, 'Akepa, and the 'Akiapola'au. We welcome your offer for help with bird surveys and will be in touch when the time comes for that work.

The final version of the EA will be published shortly, and we would like to thank you for taking the time to review the Draft. Please feel free to contact me with any further comments or questions.

Sincerely,

Lisa Hadway
Natural Areas Specialist



University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
2550 Campus Road • Crawford 317 • Honolulu, Hawai'i 96822
Telephone: (808) 956-7381 • Facsimile: (808) 956-3980

October 6th, 2000
EA: 0204

Mr. Bill Stormont
State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System
P.O. Box 4849
Hilo, Hawaii 96720

Dear Mr. Stormont:

Draft Environmental Assessment
Kipahoe'hoe Natural Area Reserve Management Plan
Hilo, Hawaii

The Department of Land and Natural Resources is proposing to construct a boundary and interior fences throughout the Kipahoe'hoe Natural Area Reserve (NAR). Additional proposals within the management plan include access roads that follow the fences, additional hiking trails, a small cabin, and native plant species restorations and re-introductions. The purpose of the fences are to keep out livestock and feral animals, from the interior reserve to alleviate stresses on native plants and sensitive areas. The hiking trail will increase public access into the area and promote environmental education. There are also plans to control non-native plant species along roadways by use of herbicides and hand-pulling.

This review was conducted with the assistance of Michael Graves, Archaeology; David Duffy, Botany; Theresa Menard, Zoology; and Renee Thompson, Environmental Center.

General Comments

This brief environmental assessment EA when taken together with the Kipahoe'hoe Natural Area Reserve Management plan adequately describes the projects and its impact. However, is somewhat difficult to have to go back and forth between the two documents to review this EA. We also note that there is no publication date for the management plan listed on the title page. Were the two documents developed in the same time frame?

On page 1 of the Kipahoe'ho Natural Area Reserve Management Plan it is noted that the coastal portion of the reserve will be developed at a later date. A supplemental EA may be prepared for this future development. It seemed to our reviewers that it would be better to prepare an EA on the total project at this time. Piecemealing or breaking up projects into smaller pieces in order to conduct environmental review is discouraged. Section §11-200-7 HAR states that a group of actions proposed by an agency or an applicant shall be treated as a single action when there are components or phases of a larger undertaking.

Section §11-200-10 HAR Contents of an Environmental Assessment requires the applicant to include the following information in the EA. "(11) List of all permits and approvals (State, federal, county) required." This draft EA does not contain this information. In addition, the use of page numbers in the EA would make reviewing and referencing this document much easier.

With regards to road construction, there seem to be several proposed roads and several ideas. The document is confusing as to what actual roads will be constructed. We suggest a more concrete definite plan be adopted.

Archaeological Sites

The EA refers to a recent field survey that was conducted in this area. Who conducted the survey? It would be helpful to reference the source of information on archaeological sites.

There is no indication that Forestry and Wildlife have done anything to document or record archaeological sites in the reserve. Work done elsewhere in this region shows that there is substantial archaeology to be expected, sometimes, even in the uplands. However, until and unless a bonafide archaeological contractor/consultant is hired, they are unlikely to notice very many sites.

The contention that the project will minimize impact to archaeological sites is unknowable, given that no archaeological surveys are reported or referenced. Just as the biologists would not expect archaeologists to be very competent naturalists, archaeologists are skeptical about the ability of biologists to identify, record, and establish the significance of archaeological sites.

Short Term Impact

Impact of tree removal for roads and fences.

The stated short term impacts on bats are associated with improvement of roads and construction of fences, which entail the "destruction of vegetation and ground disturbance" in a strip of "16 to 20 feet wide". As acknowledged, this action may disturb bats in the immediate vicinity, but it may also lead to the direct killing of bats if roosting bats are crushed in the falling of their roost trees. Attempts to mitigate for disturbance to bats include retaining trees greater than 12 inches diameter at breast height (dbh).

Mr. Sormont
October 6, 2000
Page 3

However, the extent to which this protects bats is uncertain since we know so little of their roost requirements. Factors such as the density of foliage are probably more important than tree girth (bats have been seen roosting in trees less than 12 inches dbh).

To reduce the impacts of tree cutting on the bat population, we recommend cutting trees outside the peak of the bats breeding season (which is June and July). Bat pups are at greater risk of being injured during cutting because they cannot fly until they are about 4 to 5 weeks old. Mothers are at risk because in attempting to move her pups to a new tree, she may be downed by the relatively large weight of her pups. If tree cutting occurs from August to May, this should go a long way in reducing impacts to mothers and pups.

Also, the plan should state what action NARs workers will take in the exceedingly rare event that a bat is seen roosting in a tree (e.g. a buffer zone will be established around the tree). And there should be some mention of the action that will be taken if an injured bat is found clinging to its downed roost tree (e.g. transport injured bat in a screen-covered styrofoam cooler with a stick for roosting to a local veterinarian).

Impact of barb-wire fencing.

Tail and wing membranes of bats can be caught on the barbs of wire fencing. There have been several known occurrences of this happening in Hawaii. Hawaiian hoary bats have been impaled on barbed-wire at heights ranging from 2 to 12 feet above ground level. This could be avoided by not using barbed-wire to fence. However, this conflicts with NARs objective of preventing ungulate ingress at the site. Perhaps a reasonable compromise between bat protection and ungulate deterrence is to minimize the amount of area to be fenced --which is exactly what alternative #1 proposes.

In monitoring the fenceline, NARs workers should be instructed to remove the remains of snagged bats from fences for delivery to the Bishop Museum. Much knowledge can be gleaned from these specimens, such as whether the bats are juveniles or adults.

Alternatives

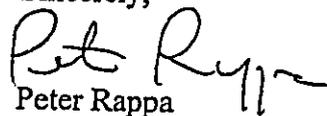
The alternative #1 discussed in the *Alternatives to Projects* sections is our preferred alternative. Alternative #1 maximizes resources and protection and restoration of native Hawaiian species. Other plans are biologically less justified.

Mr. Stormont
October 6, 2000
Page 4

Summary and Conclusion

We are concerned with the lack of information in the section on archeological sites. Given that the EA was prepared by the DLNR and that the historical site is a division within that department we would expect more information about this crucial aspect of this proposed project. While we generally favor projects that protect important state resources we believe that the level of environmental review should be as rigorous as other development projects. We would also like to see an EA, which addressed the full project including future plans that may not as yet be considered for implementation. Thank you for the opportunity to comment on this Draft EA.

Sincerely,



Peter Rappa
Assistant Environmental Coordinator

cc: Michael Graves, Archaeology
David Duffy, Botany
Theresa Menard, Zoology
Renee Thompson, Environmental Center.
OEQC



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
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September 4, 2001

Peter Rappa
Assistant Environmental Coordinator
University of Hawai'i
Environmental Center
2550 Campus Road, Crawford 317
Honolulu, Hawai'i 96822

Dear Mr. Rappa,

Thank you for your letter dated October 6, 2000 when you submitted comments on the revised Kipahoehoe Natural Area Reserve Management Plan on the island of Hawai'i. We have had a change in staff since the DEA was written, so we apologize for the delayed response. We have revised portions of the plan and will be submitting the Final EA soon.

With regards to your comments we have made the following changes:

1) General Comments:

We will include the EA and the Management Plan together in the Final version of the EA including page numbers.

The revised Management Plan was developed at the same time as the EA, based on documents written in the late 1980's by The Nature Conservancy of Hawai'i and the Natural Area Reserve System.

At this time no management activities are planned for the section of the Reserve below Highway 11. The limited staff and budget of the Natural Area Reserve Program requires that we prioritize our management activities in the most biologically diverse and threatened areas. This Special Ecological Areas (SEA) approach is also used by the Hawai'i Volcanoes National Park, and allows critical resources to be focused in the most valuable areas.

A list of all permits is required as part of the EA, this will be included in the final document. The County of Hawai'i was consulted on this matter. All of the proposed project falls within the State Land Use (SLU) Conservation District and no permits are required. If we use the unencumbered parcel of State land (TMK: 8-8-01:08) as an access route we will have to acquire a grubbing permit from the county (SLU: Agricultural District). We do not intend to build the management shelter in this parcel, so a building permit is not required.

There are two options presented in the EA for road construction. The first would be the "Makai Access" route that would construct a road from Highway 11 up to the existing contour road at 4400ft. The second option, or the "Mauka Access", would provide access through the upper Reserve by using existing roads on private land. In the short term this Mauka access may prove to be more economical and require less road to be built.

2) Archaeological Sites:

We are presently consulting with a cultural resource specialists for a more thorough cultural impact assessment. This information will be included in the Final EA. In addition, the Na Ala Hele Program has marked and surveyed historic trails through the area. It is important to note that Bryon Stevens, Natural Area Reserve Specialist at the time this document was written, has had extensive archeological survey experience working with the Bishop Museum.

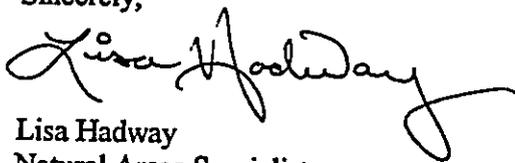
3) Short Term Impacts:

The DEA will be changed to include a limit on tree clearing during bat breeding season, the months of June and July. If a bat is found roosting on a line that is intended to be cleared a buffer zone will be established around that tree. Most of the fence construction will occur on existing roads, so tree clearing will not be in issue in these situations. Historically, much of the area was grazed, and hence the area is quite open. Fences constructed in these off road sites will involve minimal tree clearing due to past grazing. We will try to avoid clearing trees that are over 12 inches dbh. Trees of this size are important to bats and native bird populations in the area.

Alternative #1 remains the preferred fencing strategy. This will minimize the amount of fencing, while still providing protection for the most biologically diverse areas. Barbed-wire is a critical component of an ungulate proof fence. The presence of mouflon sheep in the area makes this even more critical, as these animal have been know to jump high fences. We are always looking for alternative fencing material. If another option to barbed-wire presents itself, we will consider switching our fencing protocol. If any bats are found in the fenceline they will be delivered to the Bishop Museum for further study. If one is found injured we will take it to a local veterinarian in a screen covered cooler, per your recommendations.

We thank you for taking time to review the Draft. The final version of the EA will be published shortly, and a copy will be sent to your office for review. Please feel free to contact me with any further comments or questions.

Sincerely,



Lisa Hadway
Natural Areas Specialist