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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
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HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCES MANAGEMENT

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February 7, 2001

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, Hawaii 96813

Dear Ms Salmonson:

Subject:

Negative Declaration Determination and Final Environmental Assessment for Lana'ihale Watershed Protection and Forest Restoration Forest Stewardship Project, TMK 1-4-9-02-001, Lana'i, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the comments received during the 30-day public comment period that ended on December 8, 2000 concerning the Draft Environmental Assessment for the subject project. We have determined that, according to the significance criteria established according to the Department of Health Rules, the project will not produce a significant environmental impact.

(1) **The project involves no irrevocable commitment to loss or destruction of any natural or cultural resources:** The primary objective of this project is to restore and protect native forest resources, both natural and cultural, associated with the Lana'ihale watershed. Although the project requires that deer be excluded from the project area with a perimeter fence, public access will be afforded for all traditional land uses, with the exception of deer hunting, through gates and deer guards to be maintained by Lana'i Company. Lana'i residents have agreed that areas outside of the proposed fence will provide for ample deer hunting opportunities. All proposed fence construction and tree-planting activities will be carried out so as not to disturb any existing native vegetation - or any culturally significant resources - only after detailed maps and surveys determining the optimal fence line and reforestation locations are finalized.

(2) **The project will in no way curtail the beneficial uses of the environment:** The only land use that will be curtailed is deer hunting, which is

considered to be an unsustainable, and therefore detrimental land use for Lana'ihale, by Lana'i residents and the many agency experts consulted in planning for this project. If the Lana'i's deer population is not excluded from the Lana'ihale as proposed by this project, it's watershed and forest values will likely be irrevocably lost.

(3) The project is clearly consistent with the State's long-term environmental policies, goals and guidelines as expressed in Chapter 344, HRS - and any revisions thereof and amendments thereto, court decisions or executive orders.

(4) The project will not substantially affect the economic or social welfare of the community or state: As stated previously, Lana'i residents have agreed that areas outside the fence will provide ample continued deer hunting opportunities. Public access for all other currently permissible land uses will continue to be afforded through gates and passable deer guards. Much more important to Lana'i's economic and social welfare, is the protection and conservation Lana'ihale's value as the only significant forested watershed on Lana'i. Lana'i residents and state and county agencies agree that the only way to protect and conserve Lana'ihale's natural, cultural and hydrologic watershed values is to immediately exclude deer from the area.

(5) The project will not substantially affect public health: Again, it is clear that the project's only impacts on public health will be positive. Restoration and protection of the watershed will serve to ensure the long-term provision of clean water to Lana'i's residents.

(6) The project does not involve any substantial secondary impacts, such as population changes or effects on public facilities.

(7) The project does not involve any degradation of environmental quality. This project can in fact only serve to enhance the environmental quality of Lana'i.

(8) The project does not involve a commitment for larger actions or a considerable cumulative affect on the environment: Once the fence has been constructed and the planned areas have been reforested - the project will move into a maintenance and observational phase. Input requirements will taper off as the environmental benefits achieved as a result of the perimeter fence and planting/weed control efforts will begin to accrue.

(9) The project will not substantially affect a rare, threatened or endangered species or its habitat: As stated previously, all fence construction and planting activities will be carried out so as not to disturb native plant or wildlife resources - or any culturally significant sites on Lana'ihale. This project will be implemented in complete collaboration with the Lana'i Biodiversity Working Group and under the auspices of the Lana'i Forest and Watershed Partnership (final draft agreement pending official signatures) whose participants include the Lana'i Company, the DLNR Division of Forestry and Wildlife, the Maui Board of Water Supply, Hui

Malama Pono o Lana'i, the Nature Conservancy and the U.S. Fish and Wildlife Service. Certain threatened or endangered species are currently being protected and fostered within the proposed project area, in intensively managed, smaller exclosures.

(10) **Project activities will not affect air or water quality or ambient noise levels.** As stated previously, the project is likely to eventually improve the water quality on Lana'i, through restoration and protection of the watershed's hydrologic function.

(11) **The project is not likely to affect or suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, geographically hazardous land, estuary, and freshwater or coastal waters.** Some of the upper slopes within the project area are currently erosion prone due to years of deer traffic that has destroyed protective vegetation and created trails that can channel overland flow. The intent of the project is to mitigate this impact, and thus the potential for substantial future erosion.

(12) **The project will not affect scenic vistas and view planes identified in county or state plans or studies.** At 7.5 feet tall, and considerably down slope from the Lana'ihale summit, it is unlikely that the proposed fence will interfere with any view planes - or even be visible to most public using the area. Reforestation plantings will be designed so as to mimic natural, native vegetation spatial arrangements and thus they will enhance view planes and the natural aesthetics of the area.

(13) **The project will not require substantial energy consumption.**

As we have deemed no environmental impacts to be significant, we declare a Finding of No Significant Impact for this project and we ask that you publish this determination in the February 23 edition of your Environmental Notice. We have enclosed a completed OEQC Publication Form and four copies of the final EA. You should already have a copy of the project summary on disk, which we submitted with the original draft EA. Please call Karl Dalla Rosa, at 587-4174 if you have any questions, or if you require an additional copy of the project summary.

In addition to this Environmental Assessment, we are awaiting approval of a Conservation District Use Application for this project and we will also be preparing a Forest Stewardship Contract Agreement for review and approval of the Board of Land and Natural Resources.

Sincerely,



Michael G. Buck
Administrator

2001-02-23-LA-FEA-

~~FEB 24 2001~~
FEB 23 2001

FILE COPY

Final Environmental Assessment
For
The State of Hawai'i Forest Stewardship Program
(Lana'i Forest Stewardship Project)
Lana'ihale, Island of Lana'i
TMK 1-4-9-02-001

Applicant: Lana'i Company Inc.
P.O. Box 630310
Lana'i, Hawaii 96763-0310
Telephone: 808-565-7041

Location of Project: Lana'ihale (3,588 acres)TMK: 1-4-9-02-001
State land use designation: Conservation

Approving Agency: Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street, Room 325
Honolulu, Hawaii 96813
Contact: Karl Dalla Rosa (808-587-4174)

Prepared by: Darrell Stokes
Conservation Department Manager
Lana'i Company Inc.

February 7, 2001

Applicant

Lana'i Company Inc. (LCI), Darrell Stokes, Conservation Manager, P.O. Box 63010,
Lana'i City, Hawaii'i 96763-0310, (808) 565-7041.

Approving Agency

State Department of Land and Natural Resources, Division of Forestry and Wildlife
(DLNR/DOFAW), Karl Dalla Rosa, Forest Stewardship Program Coordinator, 1151
Punchbowl Street, Room 325, Honolulu, Hawaii'i 96813, (808) 587-4174.

Lana'i Public Community and Agencies Consulted

Through years of discussion and open public community meetings with the Lana'i Water Working Group, and the Lana'i Bio-Diversity Partnership, the following organizations along with the public finally agreed that the only way to effectively protect and restore the Lana'ihale watershed, and it's ecological and cultural resources, is through the construction of a perimeter fence, and an aggressive hunting program that will effectively exclude deer from the project area. Several alternative fence designs were considered and it was agreed by all involved, that option four (attachment B) is the most viable alternative at this time.

The following agencies and organizations, as well as the general Lana'i resident public were consulted numerous times through several public meetings:

- * The Lana'i Community (public invited)
- * The Lana'i Water Committee/Working Group
- * The State of Hawaii (DOFAW/DOCARE/NRCS)
- * Maui County Board of Water Supply
- * The County of Honolulu (Dept. of Water)
- * The U.S. Fish & Wildlife Service
- * Hui Malamapono O Lana'i
- * The Nature Conservancy of Hawaii
- * The Lana'i Company

General Project Description

This project is being proposed as a state Forest Stewardship Plan, and as such, it has already been reviewed and approved by Hawaii's Forest Stewardship Advisory Committee during its quarterly meeting on September 21, 2000. The primary intent of this ten-year project is to protect, restore and enhance the Lana'ihale watershed in a

manner which has been agreed to by Lana'i residents, several state and county agencies and the approving agency. The complete, approved Forest Stewardship Plan (attachment A) provides a detailed project background and description, and thoroughly explains all technical management prescriptions. Project maps, which illustrate all considered alternatives, can be found in attachment B.

The project area is the only remaining predominantly forested area on Lana'i which is also the sole watershed for the island. The proposed fenced in area will consist of 3,588 acres and is the most critical recharge area for replenishment of Lana'i's aquifer.

Project activities include the construction of a perimeter fence around the Lana'ihale watershed's primary forest and water recharge area, an aggressive hunting campaign to effectively remove deer from the area, and a planting program aimed at restoring native forest vegetation and increasing fog-drip on the watershed summit. Much native forest vegetation has been lost as a result of several years of deer browsing and traffic, and prolonged drought conditions that have favored the spread of invasive nonnative vegetation into continuously disturbed areas.

Specific project objectives, as further described in the attached Forest Stewardship Management Plan include:

- Water Resource/Fog Drip protection and enhancement
- Native species-forest/wildlife protection and enhancement
- Soil Protection/Erosion Control
- Control of undesirable nonnative species-plants/feral animals/rodents/insects
- Educate community and visitors on conservation and preservation of our natural resources

The primary management objective is to protect and restore the Lana'ihale watershed and forest for the people of Lana'i and to preserve the remaining native flora and fauna of the area for all of Hawaii.

The project will utilize existing Lana'i Company office and nursery facilities which are incorporated into the project budget as in-kind operational expenses.

The project will commence when all agreements, approvals, and permits have been processed and approved, and following the review and approval of this Forest Stewardship Project by the Board of Land and Natural Resources, hopefully, sometime in November 2000. Any delays in the approval process will result in further disturbance and degradation of the watershed, requiring many more years of recovery and restoration effort and expense.

A projected project budget and State & Federal Funding summaries are shown below as table 1.

Projected Budget and State & Federal Funding: Table 1

Year	State Stewardship Program Share	**U.S. Fish & Wildlife Service	State Dept. of Health	Lana'I Company Matching Share	Total
1	\$ 75,000	\$ 120,000.00	\$ 25,000.00	\$ 170,813	\$ 390,813
2	\$ 75,000		\$ 25,000.00	\$ 100,000	\$ 200,000
*3	\$ 75,000			\$ 75,000	\$ 150,000
*4	\$ 75,000			\$ 75,000	\$ 150,000
*5	\$ 75,000			\$ 75,000	\$ 150,000
*6	\$ 75,000			\$ 75,000	\$ 150,000
*7	\$ 75,000			\$ 75,000	\$ 150,000
*8	\$ 75,000			\$ 75,000	\$ 150,000
*9	\$ 75,000			\$ 75,000	\$ 150,000
*10	\$ 75,000			\$ 75,000	\$ 150,000
Total	\$ 750,000	\$ 120,000	\$ 50,000	\$ 870,813	\$ 1,790,813

*Additional share cost funding will be pursued through grants for years, 3 to 10 for operational budget.

**U.S.F.&W. funding will be applied toward pre-planned enclosure fence with the balance of funding applied to the "Fish" fence (total funding at this time = \$120,000).

Breakdown of U.S.F.&W. funds:

1. Planned enclosure for rare wet forest plants and tree snails - 3 to 4 hectares at summit of Lana'I Hale.
U.S.F.&W. share = \$27,500
Lana'I Company share = \$9,213
2. Balance of U.S.F.&W. funds will be applied toward the summit "Fish" fence.
U.S.F.&W. share = \$92,500
Lana'I Company share = \$61,600

Affected Environment and Community Impact

The Lana'ihale cloud forest (proposed fence area) ranges from about 2,100' to the summit at about 3,370'. Because of the low elevation of this forest, it contains a strong mix of mesic species, and is immediately surrounded by mesic forest and shrub land. Predominant plant communities are the *Metrosideros polymorpha* (Ohi'a), *Dicranopteris* spp. (Uluhe), *Dodonea viscosa* (A'ali'i), *Styphelia tameiameia* (Pukiawe), *Diospyrus sandwicensis* (Lama), and *Sophora chrysophylla* (Mamane). Present yet sometimes rare are *Aleurites moluccana* (Kukui), *Erythrina sandwicensis* (Wiliwili), *Bobea elatior* (Ahakea), *Clermonita* spp. (Oha-wai), *Pleomele* spp. (Halapepe).

The project site is the critical water recharge area of Lana'i. It also contains of the highest concentrations of remaining native mesic and wet forest species on the island. About 345 native Hawaiian vascular plants have been recorded in Lana'i, of which 205 are listed as endemic or indigenous. About 70 plant species are known to have disappeared, while another 64 are either listed as endangered, candidate or species of concern. Of eight species of forest birds once native to Lana'i, only one remains. Of 472 endemic and indigenous arthropods, 38 are extinct, listed, or candidate species for listing. Roughly 71 species of terrestrial mollusks have been recorded on Lana'i, most of which are endemic, either to Lana'i or to Hawai'i.

Loss of vegetative cover on Lana'i has led to severely eroded landscapes, with soil loss estimates upwards of 2,200 tons per year on the estimated 200 acres of denuded lands in the target area alone. This progressive loss of cover and of soil can also be expected to result in tremendous sediment deposition into near shore waters and reefs.

These problems are exacerbated by high fire hazard conditions in certain areas. Drought-ridden Lana'i is especially vulnerable to watershed loss by fire. This loss of plant cover has been progressive over the past century, and without remedial action, loss of vegetative cover will likely spread until virtually all of Lana'i's remaining forest cover is gone.

Aside from high soil loss, sediment loading to near shore waters, and loss of biodiversity, there is another compelling reason to preserve remaining forested areas. That reason is drinking water. Lana'i has the smallest sustainable yield of any of the 6 major islands. And this fresh water resource is directly threatened by the loss of forest cover. According to the numerical model prepared by the State Commission on Water Resource Management, "A Numerical Ground Water model for the Island of Lana'i, Hawaii", (Roy Hardy & Patricia Shade; CWRM-1, 1995), a reduction of forest cover would affect ground water levels drastically. The loss of fog drip, which is intercepted primarily by vegetation near or at the Hale summit would likely lead to a 50% reduction in the water level of the central regional aquifer.

Lana'i's summit is roughly 3,370' high. It was created by a single shield volcano, built by eruptions along three or possibly four rift zones. Lanai's lava are theolitic basalt's, igneous rocks composed of calci plagioclase feldspar and pyroxene, relatively rich in silica.

The affected area receives about 35" of rain per year. However, reports by the State Land Bureau in 1967 noted that the vegetation and soils were more typical of a forest receiving 60" or more of rain per year. They attributed this apparent anomaly to continuous cloud cover. Lana'i is in the rain-shadow of its larger neighbor, Maui, and has been particularly

affected by droughts of recent years.

The hydrogeology of Lana'i is unusual, in terms of the predominance of high level water, including the presence of high-level brackish water in at least one location, accompanied by geothermal heating. Numerous dike and fault boundaries have introduced some difficulty in monitoring and understanding the shape of the aquifer and fresh water / saltwater interface. The south side of the island has essentially no cap rock, but alluvial deposits or possibly cap rock on the north side may serve to deter discharge of water to the ocean.

The numerical model prepared by the State Commission on Water Resource Management, "A Numerical Ground Water model for the Island of Lana'i, Hawaii", (Roy Hardy & Patricia Shade; CWRM-1, 1995) indicates that fog drip has a major role in observed water levels. Loss of fog drip from the forested Lana'ihale, especially if combined with continued pumpage, would adversely affect water availability for the island of Lana'i.

Unfortunately, the hydro geology of Lana'i is also unusual in that it has less than 10% of the sustainable yield of its neighbor Molokai, and less than 2% that of its neighbor Maui. Virtually all of the fresh water available is contained in the central aquifer, overlain by the watershed.

The relationship of fog drip, which essentially is a form of surface water, to recharge, is discussed above, and is confirmed by Report CWRM-1, "A Numerical Ground Water model for the Island of Lana'i, Hawaii", Roy Hardy & Patricia Shade; 1995. It appears that on the order of 50% of the island's fresh water, located exclusively in the central aquifer region, is dependent upon fog drip. Other evidence of ground and surface water interactions are indicated by taro lo'i still found in the Maunalei Gulch, though there is currently no stream running. Lawrence Gay in his True Stories of the Island of Lana'i, 1965, notes that taro production in the Maunalei stream had to be discontinued in the late 1800s because goats had so denuded the cliffs above that it had become dangerous to work below. Gay also reported that the stream traveled only a mile from its source in his day, though older Hawaiians remembered it flowing to the sea. George C. Munro also reported hearing from old Hawaiians that Maunalei stream once ran to the ocean. Stearns (1938, 1940) also noted that Maunalei Stream was still perennial prior to the development of Maunalei tunnel in 1940, although it no longer flowed to the ocean.

The project area of Lana'ihale is being used recreationally and aesthetically for:

- Gathering of lei making materials
- Recreational 4wheel driving by residents and visitors via Munro trail

- Hunting (damage control/access to other hunting areas)
- Hiking (residents/visitors)
- Biking (residents/visitors)
- Picnicking (residents/visitors)
- Sightseeing (residents/visitors)

It is expected that the implementation of the project will not adversely affect any of these functions, with eventually the exception of hunting (following the removal of deer) within the fenced area.

Identification and Summary of Impacts and Alternatives Considered

It is expected that the implementation of the project will not adversely affect any of the characteristics or functions described above, with the exception of hunting (following the removal of deer) within the fenced area on Lana'ihale. Public access will continue to be afforded for all other uses through gates and deer guards to be maintained by Lanai Company. Lanai residents have agreed that the area outside of the fence will provide ample hunting opportunities and that the value of the hunting opportunities foregone on Lana'ihale is far outweighed by the environmental, economic and social values that will be protected and enhanced by this project. The project manager will also design and implement educational programs for residents and visitors for the purpose of protection, conservation (wisely used), and preservation (not used) of the project area and its resources.

The practices of this project will not have any present or commutative negative cultural, environmental, or community impacts. In fact, it can be said with reasonable confidence, that the future welfare of the environment and the people of Lanai depends upon the timely success of this project. The restoration of native forest vegetation and the protection of Lana'i's only significant watershed s community are essential to continued quality of life and culture on Lana'i for present and future generations.

Among the various options presented (see maps in attachment B) at public meetings, a consensus was reached on Option four as the most sensible solution.

Reasons for selection of Option 4 include:

- Project area is most critical recharge area
- Deer control/removal most feasible given area size and phased fencing approach
- Project area contains highest concentration of native species
- Workable area size will result in highest impact of concentrated effort

Two committees representing multiple community members and agencies have been meeting for years to determine the best course of action to protect Lana'i's watershed, and Lana'i's remaining biodiversity. Although these committees met independently, both came to very similar conclusions, selecting option four and they have now presented those conclusions together at larger public forums, inviting input and discussion.

In the course of these meetings it has become clear that the residents of Lana'i are very alarmed at the loss of watershed and also at dry conditions in recent years, and determined that the past/present method of deer control hunting on Lana'ihale has proven unsuccessful as a forest protection/restoration method. Due to the continuous deer damage, numerous restoration planting effort through the years have experienced a very low success/survival rate.

Through further discussion and review with resource management agencies and community members, it has been made clear that the most important element of any watershed restoration plan on Lana'i is the construction of a fence around the most critical watershed area. The purpose of this fence is to prevent vegetative loss from trampling and browsing by deer or other feral animals, and to enable vegetation to recover. Early on in the process of starting the watershed protection chapter for the Water Use & Development Plan, nearly 30 resource managers were polled as to what was the most critical measure for protecting remaining the watershed on Lana'i. A strong consensus was that the fence was the keystone measure, without which all other measures were likely to fail.

Proposed Mitigation Measures

The only possible negative impacts of this project are: the restriction of public access to the Lana'ihale, resulting from the perimeter fence: the reduction in area available for public hunting on Lanai; and possible disturbance of soil and native vegetation during fence construction.

Vehicular, foot, and horseback access to Lana'ihale via Munro trail/road will be afforded through the installation of specially designed deerguard entrances at both ends of the trail/road. Smaller type gates will be installed strategically throughout the fenced area to provide access to and from hunting/gathering areas. The community, Lana'i Biodiversity Partnership, and Lana'i Company will be consulted in deciding upon the exact location of these gates.

A complete detailed survey and mapping will be done prior to any installation of the fence to minimize impact on the environment or any existing native vegetation. Existing roadways and trails will be utilized for fencing wherever possible. Helicopter drops will

be utilized in remote and otherwise inaccessible areas.

Existing Lana'i plant species will be utilized for seed and other propagation methods for reforestation efforts. Although some desired species native to Lana'i are now extinct, consultation with DOFAW will be utilized before planting any off island species or seed sources.

Anticipated Determination

The objective of this project is the protection and enhancement of Lana'i's remaining native plant species and sole watershed in partnership with the State Forest Stewardship Program. It is determined that if successful, the project's outcome will be unanimously positive, having no cumulative negative impact on the community or the natural environment. Therefore, a finding of no significant impact (FONSI) is anticipated.

Environmental Assessment: Lanai'hale Forest Stewardship Plan

ATTACHMENT A
APPROVED
FOREST STEWARDSHIP MANAGEMENT PLAN

Forest Stewardship Plan

For

Lana'i Company Inc.
P.O. Box 630310
Lana'i City, Hawaii 96763-0310
(808) 565-7041

Location

Lana'ihale, Lana'i
TMK 1-4-9-02-001
3,588 acres

Prepared by

Darrell Stokes
Conservation Manager-Lana'i Company Inc.
P.O. Box 630310
Lana'i City, Hawaii 96763-0310
(808) 565-7041

August 28, 2000

Forest Stewardship Plan Signature Page

Professional Resource Consultant Certification. I have prepared this Forest Stewardship Plan on behalf of Lana'i Company the Landowner. I have consulted with other Resource professionals as appropriate to include additional input to the preparation of this plan. I have also utilized the Forest Stewardship Plan for Lana'i done in 1995 by Michael E. Robinson as a source of information.

Prepared by:

Darrell L. Stokes 9-13-00
Conservation Department Manager-Lana'i Company/ Date

Darrell L. Stokes
Conservation Department Manager Name

Applicant Certification: I have reviewed this Forest Stewardship Plan and hereby certify that I concur with the recommendations contained within. I agree that resource management activities implemented on the lands described shall be done so in a manner consistent with the practices recommended herein.

Prepared for:

Patrick J. Birmingham 9-13-00
Landowner's Signature/ Date

Patrick J. Birmingham
President - Lana'i Company, Inc.

State Forester's Approval: This plan meets the criteria established for Forest Stewardship Plans by Hawaii's Forest Stewardship Advisory Committee. The practices recommended in the plan are eligible for funding under the appropriate Stewardship Incentives or Forest Stewardship program.

Approved by:

Michael S. Bunch 10/10/00
State Forester's Signature/ Date

State Forester's Name

III. Stewardship Plan Preface

This stewardship plan describes the existing vegetation, soils, and wildlife of the property and addresses the opportunities for the protection and enhancement of all natural resources while assisting the landowner in meeting his objectives for the management of the property. It provides guidelines for a sound strategy which reflects the landowners commitment to a land stewardship ethic that focuses on integration of all resources to manage the property as a valuable legacy for future generations.

In addition to the vegetative, soil and wildlife resources, this plan addresses the enhancement of additional resource topics checked below. The plan may need to be revisited as the landowners objectives, conditions, and/or opportunities change.

Applicable Resource Areas Covered

Those checked are targeted by the landowners management objectives and are considered in this stewardship plan.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Water Quality | <input checked="" type="checkbox"/> Threatened/Endangered Species |
| <input type="checkbox"/> Agroforestry | <input checked="" type="checkbox"/> Forest Health |
| <input checked="" type="checkbox"/> Recreation | <input type="checkbox"/> Archaeological – Cultural Resources |
-

- No threatened or endangered species, cultural or historical resource, floodplain or wetland has been identified or is known to exist on this property.

This plan provides a strategy and action plan for sound integrated resource management of the property, and reflects the landowners commitment, to protect, enhance, and maintain all resources described in this management plan for the next ten years.

IV. Introduction

1. General Property Description:

- A map of the project area is shown as Option 4
- Proposed project area: 3,588 Acres
- *Primary vehicular access to the project area is a 4-wheel drive dirt road known as Munro Trail/Lana'ihale Summit Road which can be accessed at either the Koele or Manele sides of Lana'ihale. From the eastern shoreline of the island Awehi road connects to the summit road, although Awehi road has been improved and could serve as emergency access it is still a 4-wheel drive and a very rough road which is utilized mainly by hunters and fishermen. There are also several 4-wheel drive roads that run approximately half way up the mountain on the eastern part of the island. These roads are mainly utilized by hunters and connect to the summit road via foot trails on the upper half of the mountain.*
- Tax Map Key Number: 1-4-9-02-001
- State land use designation for proposed area: Conservation
- Topographic and rainfall data map included
- Records show that forest cover has predominantly utilized the soil in the proposed area. Being that the proposed area is the major watershed/native forest of Lana'i, it is not foreseen as being used for any other purpose. Soil types in the proposed area are mainly silty clay, and silty clay loam.
- The proposed area of Lana'ihale has been used for
 - Gathering of lei making materials
 - Recreational 4wheel driving by residents and visitors via Munro trail
 - Hunting (damage control/access to other hunting areas)
 - Hiking (residents/visitors)
 - Biking (residents/visitors)
 - Picnicking (residents/visitors)
 - Sightseeing (residents/visitors)

It is expected that the implementation of the project will not adversely affect any of these functions, with eventually the exception of hunting (following the removal of deer) within the fenced area. The project manager will design and implement educational programs for residents and visitors for the purpose of protection, conservation (wisely used), and preservation (not used) of the project area and its resources.

2. Management Objectives

- Implementation of this Forest Stewardship plan in conjunction with the State's Forest Stewardship Program
- Water Resource/Fog Drip protection and enhancement
- Native Species-forest/wildlife protection and enhancement
- Soil Protection/Erosion Control
- Control undesirable non-native species-plants/rodents/insects
- Educate community and visitors on conservation and preservation of our natural resources

V. Land and Resource Description

The Lana'ihale cloud forest (proposed fence area) ranges from about 2,100' to the summit at about 3,370'. Because of the low elevation of this forest, it contains a strong mix of mesic species, and is immediately surrounded by mesic forest and shrubland. Predominant plant communities are the *Metrosideros polymorpha* (Ohi'a), *Dicranopteris* spp. (Uluhe), *Dodonea viscosa* (A'ali'i), *Styphelia tameiameia* (Pukiawe), *Diospyrus sandwicensis* (Lama), and *Sophora chrysophylla* (Mamane). Present yet sometimes rare are *Aleurites moluccana* (Kukui), *Erythrina sandwicensis* (Wiliwili), *Bobea elatior* (Ahakea), *Clermonita* spp. (Oha-wai), *Pleomele* spp. (Halapepe).

The project site is the critical water recharge area of Lana'i. It also contains of the highest concentrations of remaining native mesic and wet forest species on the island. About 345 native Hawaiian vascular plants have been recorded in Lana'i, of which 205 are listed as endemic or indigenous. About 70 plant species are known to have disappeared, while another 64 are either listed as endangered, candidate or species of concern. Of 8 species of forest birds once native to Lana'i, only one remains. Of 472 endemic and indigenous arthropods, 38 are extinct, listed, or candidate species for listing. Roughly 71 species of terrestrial mollusks have been recorded on Lana'i, most of which are endemic, either to Lana'i or to Hawaii.

Loss of vegetative cover on Lana'i has led to severely eroded landscapes, with soil loss estimates upwards of 2,200 tons per year on the estimated 200 acres of denuded lands in the target area alone. This

progressive loss of cover and of soil can also be expected to result in tremendous sediment burden to nearshore waters.

These problems are exacerbated by high fire hazard conditions in certain areas. Drought-ridden Lana'i is especially vulnerable to watershed loss by fire.

This loss of plant cover has been progressive over the past century, and without remedial action, loss of vegetative cover will likely spread until virtually all of Lana'i's remaining forest cover is gone.

Aside from high soil loss, sediment loading to near shore waters, and loss of biodiversity, there is another compelling reason to preserve remaining forested areas. That reason is drinking water. Lana'i has the smallest sustainable yield of any of the 6 major islands. And this fresh water resource is directly threatened by the loss of forest cover. According to the numerical model prepared by the State Commission on Water Resource Management, "*A Numerical Ground Water model for the Island of Lana'i, Hawaii*", (Roy Hardy & Patricia Shade; CWRM-1, 1995), "predicts that the reduction of forest cover would affect ground water levels drastically", essentially indicating that the loss of fog drip would also lead to the loss of about 50% of water levels in the Central regional aquifer.

Lana'i summit is roughly 3,370' high. It was created by a single shield volcano, built by eruptions along three or possibly four rift zones. Lana'i lava are tholeiitic basalts, igneous rocks composed of calcic plagioclase feldspar and pyroxene, relatively rich in silica.

The affected area receives about 35" of rain per year. However, reports by the State Land Bureau in 1967 noted that the vegetation and soils were more typical of a forest receiving 60" or more of rain per year. They attributed this apparent anomaly to continuous cloud cover. Lana'i is in the rainshadow of its larger neighbor, Maui, and has been particularly affected by droughts of recent years.

The hydrogeology of Lana'i is unusual, in terms of the predominance of high level water, including the presence of high-level brackish water in at least one location, accompanied by geothermal heating. Numerous dike and fault boundaries have introduced some difficulty in monitoring and understanding the shape of the aquifer and fresh water / salt water interface. The south side of the island has essentially no cap rock, but alluvial deposits or possibly cap rock on the north side may serve to deter discharge of water to the ocean.

The numerical model prepared by the State Commission on Water Resource Management, "*A Numerical Ground Water model for the Island of Lana'i, Hawaii*", (Roy Hardy & Patricia Shade; CWRM-1, 1995) indicates that fog drip has a major role in observed water levels. Loss of fog drip from the forested Lana'ihale, especially if combined with continued pumpage, would adversely affect water availability for the island of Lana'i.

Unfortunately, the hydrogeology of Lana'i is also unusual in that it has less than 10% of the sustainable yield of its neighbor Molokai, and less than 2% that of its neighbor Maui. Virtually all of the fresh water available is contained in the central aquifer, overlain by the watershed.

The relationship of fog drip, which essentially is a form of surface water, to recharge, is discussed above, and is confirmed by *Report CWRM-1, "A Numerical Ground Water model for the Island of Lana'i, Hawaii"*, Roy Hardy & Patricia Shade; 1995. It appears that on the order of 50% of the island's fresh water, located exclusively in the central aquifer region, is dependent upon fog drip. Other evidence of ground and surface water interactions are indicated by taro lo'i still found in the Maunalei Gulch, though there is currently no stream running. Lawrence Gay in his *True Stories of the Island of Lana'i*, 1965, notes that taro production in the Maunalei stream had to be discontinued in the late 1800s because goats had so denuded the cliffs above that it had become dangerous to work below. Gay also reported that the stream traveled only a mile from its source in his day, though older Hawaiians remembered it flowing to the sea. George C. Munro also reported hearing from old Hawaiians that Maunalei stream once ran to the ocean. Stearns (1938, 1940) also noted that Maunalei Stream was still perennial prior to the development of Maunalei tunnel in 1940, although it no longer flowed to the ocean.

The project area of Lana'ihale is being used recreationally and aesthetically for:

- Gathering of lei making materials
- Recreational 4wheel driving by residents and visitors via Munro trail
- Hunting (damage control/access to other hunting areas)
- Hiking (residents/visitors)
- Biking (residents/visitors)
- Picnicking (residents/visitors)
- Sightseeing (residents/visitors)

It is expected that the implementation of the project will not adversely affect any of these functions, with eventually the exception of hunting (following the removal of deer) within the fenced area. The project manager will design and implement educational programs for residents and visitors for the purpose of protection, conservation (wisely used), and preservation (not used) of the project area and its resources.

VI. Recommended Treatments and Practices

- 1. Protective Fencing**
- 2. Animal Management/Deer Removal Inside of Fence**
- 3. Reforestation**
- 4. Weed Management**

1. Protective Fencing

Through discussion and review with resource management agencies and community members, it has been made clear that the most important element of any watershed restoration plan on Lana'i is the construction of a fence in the most critical watershed areas. The purpose of this fence is to prevent vegetative loss from trampling and browsing by deer or other feral animals, and to enable vegetation to recover. Two committees representing multiple community members and agencies have been meeting for years to determine the best course of action for Lana'i's water (Lana'i Water Committee/Working Group), and for Lana'i's biodiversity (Lana'i Biodiversity Partnership). Although these committees met independently, both came to very similar conclusions, and have now presented those conclusions together at larger public forums, inviting public/community input and discussion. In the course of these meetings it has become clear that the residents of Lana'i are very alarmed at the loss of watershed and also at dry conditions in recent years and agree that the highest priority for protection of the watershed is construction of a fence. Several different fence alignments were discussed in both committees as well as with the public. The alignment shown as Option 4 represents the current consensus on approximate alignment, until survey and ground-truthing are completed. Early on in the process of starting the watershed protection chapter for the Water Use & Development Plan, nearly 30 resource managers were polled as to what was the most critical measure for protecting remaining watershed on Lana'i. A strong consensus was that the fence was the keystone measure, without which all other measures were likely to fail.

While this particular grant funding amount is not adequate in itself to construct the entire fence, it provides funding to construct a portion of the Option 4 fence, and it will also help to demonstrate multiple agency interest, so that larger funding requests can be sought.

Through further discussion with the agencies and although more costly it has been decided the entire fenced area (Option 4) should be sectioned into three separate connecting increments. This will involve building of two more fencelines across the width of the Option 4 fence to create three separate sections. Exact increment lines to be determined following survey and consultation with State DOFAW & USF&W. This concept will allow each increment to be built as a complete but separate connecting enclosure.

It will:

- A. Allow the cost of the entire fence to be broken down into three easier to reach amounts
- B. Allow more rapid protection of the forest upon completion of an increment
- C. Aid with the control/removal of deer- re: smaller easier to manage sections
- D. Upon completion of first increment exhibit successful example for future funding
- E. Aid in the overall long-term monitoring/maintenance of fence

To date one smaller enclosure in the project area has been constructed. The Awehi enclosure (approx. 5 acres), which was constructed for the purpose of preserving populations of *Gardenia brighamii* along with other existing natives. In addition, another two small enclosures have been approved. The Puhielelu enclosure is sited to protect a variety of native plants within the Lana'ihale area, and the third, as yet unnamed enclosure will protect critical wet forest habitat for certain snail communities. Experience with these enclosures can also be factored into the (Option 4) fence design.

The fence construction will be similar to the existing fence at the Awehi enclosure utilizing a highly corrosion resistant fence wire mesh with mesh size small enough to prevent even the youngest of deer from entering enclosure (approx. 3"X4" mesh size). Height will be 7.5 feet high with barbed wire strung 6 inches above the top along the entire fence. Treated 11 foot X 6 inch diameter log posts sunk 3 feet in ground with above ground height 8 feet set at 50 foot intervals and galvanized T-posts 11 feet long sunk 3 feet in into ground set 10 feet apart in between log posts will be utilized to stand fence. The log type posts will be utilized on all corners, turns, ridge tops, or wherever extra strength is required and will be braced with 45 degree post braces on each side. This type of fence is presently existing at the Awehi enclosure and has proven effective in keeping deer out. State DOFAW will be consulted on exact specifics prior to fencing.

Currently, a cooperative, multi-agency and community member organization is working on obtaining more fence construction funds, and will utilize information gained during this project to target and justify funding amounts. This committee consists of members of the Lana'i Water Advisory Committee and the Lana'i Biodiversity Committee, with agency participation including the County Department of Water Supply, DLNR-DOFAW, US Dept of Fish & Wildlife, The Nature Conservancy, the State Commission on Water Resource Management and others.

2. Deer Control/Removal

Upon completion of fencing it is obvious that deer removal from within fenced area(s) become the priority, for, this function will allow to some degree, immediate recovery of the existing forest.

Therefore a very aggressive deer removal plan will take place within the fenced area(s) as soon as completed. Remembering that the fence will be built in separate complete sections/increments this deer removal plan will have to be executed each time a section of fencing is completely enclosed.

Note: This hunting plan and time frame is geared toward the completion of one increment only of the proposed three increments that make up the entire Option 4 fence. Each time a section of fence is completely enclosed this program will take place.

Deer Removal Plan:

Step A. Lana'i residents has expressed a desire to have the priority attempt at deer removal through intensive hunting, thus daylight hunting will be allowed to residents for a limited time frame or until residents no longer show interest through lack of participation, indicating a significant decline in the numbers of deer. Residents will be advised to eliminate all deer sighted whether the carcasses are recoverable or not. Lana'i Company's Game Management Department will be the managers of this hunting program, all hunters will be required to follow normal existing damage control hunting procedures such as signing in and out at the Game Management office.

Step B. At this point Lana'i Company's Game Management Department (Rangers.) will execute a night hunting program utilizing spotlights, infrared scope/range finder and high powered rifles. Being that most shots will be long and/or in hard to reach areas attempts to recover carcasses will be upon the discretion of the Rangers.

Deer Removal Plan Time Frame:

- | | |
|--|--|
| Step A. Resident Hunting: | Daily for 2 months (should residents exhibit lack of participation Step B will go into effect immediately) |
| Step B. Company Rangers Night Hunting: | minimum of 16 nights per year |

3. Reforestation

Primary focus in this practice involves augmentation of the existing forest on the windward side of the island within the fenced area, with emphasis on desired native species being planted in the existing open areas within the enclosure. Concentration will be focused on the open grassy areas located on the Southeastern-facing end of the forest where the Manele access road enters the fenced area to the Northeastern-facing end up to Maunalei Valley. This general area being the windward side of the watershed is where the majority of the tradewind clouds approach Lana'i. Augmentation of the forest in this area will certainly increase the ability to intercept clouds, therefore enhancing rainfall and fog drip capabilities. Therefore planting efforts concentrated in these open windward areas (from the fringes of the existing forest till the fenceline) is the most efficient and wise way to augment the forest and utilize the next ten years of this forest stewardship plan.

Being that the typical weather in the target area is very dry and typically not accommodating to just any type of plants the selection of native species for reforestation is based on the dominant surviving species present. This concept will insure the most ability of survival and allow the most impact in augmentation of the forest. Therefore, seeds and cuttings for reforestation propagation will be gathered from the direct and surrounding areas only. This will insure the proper genetics for survival in the target area.

Presently, Koa, Ohia, Pukiawe, and A'alii are the dominant species in the target area and will be the main species utilized for reforestation.

Although the primary focus of reforestation will be on utilization of native species, throughout the years Cook pines have proven their worth in capturing fog drip. The Cook pine's growth pattern and cylindrical shape combined with the ability of natives to grow right up to the trunk and directly under them makes them less of a threat than other non-native species. The concept of planting of Cook pines is to utilize their height for intercepting of clouds and their cylindrical shape for fog drip capturing abilities. Cook pines will not be used in the target forest augmentation area or where they do not already exist on Lana'ihale. These plantings will take place only on the ridge tops to replace any existing old or dying Cook pines.

With the leeward side of Lana'ihale being the most heavy forested area, except for the eroded areas the major forest on this side of the mountain will likely recover on it's own. Monitoring of the forest recovery in this area will take place at the same time of fence maintenance.

Dibble tubes, grow bags, or plastic/blow mold pots will be utilized for propagation of reforestation plant material depending on species and desired height or age requirements. In dealing with the severe weather typical of Lana'i special consideration must be given to the size of propagation containers along with the size and age of plants to insure strong adequate root systems for increased survival rates. Moisture holding products such as Dry-Water (moisture holding gel) will be utilized when planting in dry areas.

Koa: (*Acacia koa*)

Will be propagated by seed with the majority in dibble tubes till 1 to 2 feet tall.

1 gallon grow bags will be utilized for propagation of taller 4 to 6 foot trees to be planted in easy to reach areas.

Koa will be planted in staggered rows 30 feet apart with a total of 56 trees per acre.

One area of Koa plantings (approx. 1 acre) will be planted in staggered rows 10 feet apart to promote straight upright growth for potential future (60 years) canoe building by a non-profit Lana'i Canoe Club.

Ohia: (*Metrosideros polymorpha*)

Will be propagated in extra tall 1-quart size blow mold pots or tubes. Because of the natural slow growth of Ohia, both planting by seed and by cuttings will be utilized. The tall pots will allow the taproot to grow long and straight thus avoiding root bound/curl. Unlike the rapid growth of Koa, Ohia will take 1 to 2 years of nursery time to reach the 2 feet desired height for outplanting. Ohia will be planted in staggered rows 30 feet apart with a total of 56 trees per acre.

Pukiawe: (*Styphelia tameiameia*)

Will be propagated by seed in dibble tubes and 1 quart grow bags. Dibble tube seedlings will be planted in wetter areas while the 1 quart grow bag seedlings will be used in the drier easy to access areas. Pukiawe is a relatively slow grower and will require 6 months to 1 year for the dibble tube seedlings and 1 to 2 years for the grow bag seedlings. These seedlings will be stagger planted between the Koa and Ohia plantings.

A'alii: (*Dodonea viscosa*)

Will be propagated by seed in dibble tubes. These being the most rapid grower and survivor will be utilized the most for plantings in dry areas. A'alii will require 6 months to 1 year nursery time. A'alii will be stagger planted between the Koa and Ohia plantings along with the Pukiawe. A'alii seeds will also be used for seeding in-accessible areas (i.e.: steep and/or eroded areas) by collection of thousands of seeds and hand spreading. The seeds are able to lie on the ground for long periods of time till the conditions are right (i.e.: rain) at which time they will self propagate and grow on their own. Throughout the present drought years A'alii has shown its ability to survive and self propagate making this species probably one of the more important plants to utilize in reforestation, especially of the drier areas.

Cook Pines: (*Araucaria columnaris*)

Will be propagated by young wild seedlings found throughout the upper areas of Lana'i city. This method of propagation has shown us the most rapid growth and survival rates in the past. These will be utilized to replace an old or dying Cook pines. They will be planted before the replaced tree dies to gain a head start on growth therefore preventing the ridge tops of Lana'ihale from being treeless. Cook pines will be propagated in 1 gallon grow bags and require 1 year in nursery but will last up to 2 years before becoming root bound in this size grow bags.

Summary: The objective of this reforestation plan is to augment the present forest by planting and/or seed distribution of all the open grassy or eroded areas on the windward side of Lana'ihale within the proposed fenced areas. The exact fenceline will be known following a complete survey and mapping, which will take place during the first year of the stewardship program. Because this plan is contingent upon the completion of the fence or an increment/section of the fence the exact acreage of planting area is not known at this time. A calculated guess of somewhere up to 600 acres of open grassy or steep/eroded planting area will be established within the fenced area(s) upon completion of survey and building of the fence. The planting budget and timeline is based on a total of 600 acres of reforestation area targeting 300 acres of accessible tree/shrub planting areas and 300 acres of hard to access or in-accessible/eroded areas where seed spreading will take place.

Note: Because of the extremely steep and rough terrain with no vehicular access to actual planting areas plantings will be done by hiking to planting sights utilizing backpacks and/or packboards to haul all plant materials and tools. Unlike conventional farming or landscaping this factor will make planting efforts very labor intensive.

4. Weed Control

Lana'ihale is threatened by many invasive species such as Manuka (*Leptospermum scoparium*), Strawberry Guava (*Psidium cattleianum*), Tibouchina (*Tibouchina herbacea*) and Kahili Ginger. Serious threat is also posed by fire spreading invasive weeds, such as broomsedge, molasses grass and guinea grass.

Objective: Weed removal efforts for this project will focus on priorities based on removal of the most aggressive weed from enclosure areas, and from critical forest buffer areas where fire-inducing weeds have become a threat.

Manuka will be targeted within the forested areas with primary focus on the Munro trail road. Observation has shown a significant increase of Manuka in recent years along the Munro trail. Although there is Manuka scattered in heavily forested areas this species seem to thrive and multiply much more rapidly in open areas such as the Munro trail. It is noticed that there is very little or no understory under the Manuka. It would be almost impossible to remove every Manuka due to limited labor and time therefore the intent of this project is to attack the Manuka where the highest impact can be made. Manuka will be removed physically by chainsaw and painting of stumps with Round-Up herbicide and the smaller shrubs removed utilizing manual hand operated shrub pulling equipment.

A firebreak road/trail will be established along the outside of the fence in areas that fire spreading weeds pose a threat to the forest. This will take place at the same time the fence is being constructed. The objective of this project is to create a road size buffer between the weeds and the fence. This buffer will also serve as a trail to inspect and maintain the fence. Although some areas are impossible to work at due to the extremely steep terrain effort will be made to accomplish this task wherever possible. Methods utilized for this task will be granular herbicide, weed whacker, and/or chainsaw. Presently there are roads that the fence will run along on the majority of the Leeward side of Lana'ihale therefore most of this work will be done along the Windward side of Lana'ihale. There are no roads for the fence to follow on the Windward side so most of this work will be done on foot.

5. Education

Education efforts will include participation as well as information. Educational measures are listed below:

- A. Service trips/volunteer opportunities with lessons at beginning or end
 - 1. Service trips to help collect seeds/seedlings
 - 2. Service trips to help remove un-desired species weeds/Manuka
 - 3. Service trips to help with planting
 - 4. School projects to propagate A'alii or other appropriate plants

- B. Lectures and workshops
 - 1. Workshops at schools tied to service trips
 - 2. Short lecture for guests at hotels
 - 3. Presentations to other community groups

Year 1 – 2001					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8 Fence unit 1 Site Preparation for Forest Protection: supplies/chemicals Chainsaws, pruners small tools.	Unit 1 surrounds approx. 1200 acres. Clear 5ft wide trail for fencing: approx 6mi.				
			\$5,800	\$2,900	\$2,900
			\$2,000	\$1,000	\$1,000
		\$300		\$150	\$150
Seedling Acquisition	2800 seedlings	\$1.50	\$4,200	\$2,100	\$2,100
Labor	208 days per year	\$695/day	\$144,560	\$86,110	\$58,450
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Totals 2001			\$177,660	\$102,660	\$75,000

Year 2 – 2002					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8 Unit 2 fence area. Site Preparation for Forest Protection: supplies/chemicals small tools	Unit 2 surrounds approx. 1200 acres. Clear 5ft wide trail for fencing: approx 6mi.				
			\$5,800	\$2,900	\$2,900
			\$300	\$150	\$150
Seedling Acquisition	2800 seedlings	\$1.50	\$4,200	\$2,100	\$2,100
Resident Deer removal program for fenced unit 1	sign hunters in/out monitor progress 60 consecutive days	\$250/day	\$15,000	\$7,500	\$7,500
Company Rangers night hunting	16 nights	\$1000/night	\$16,000	\$12,000	\$4,000
Night hunting Supplies	Infrared scope/ammo distance finder/rifle		\$5,000	\$2,500	\$2,500
Planting	25 acres	\$80/acre	\$2,000	\$1,000	\$1,000
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$715/day	\$148,720	\$108,720	\$40,450
Totals 2002			\$225,820	\$150,820	\$75,000

Year 3 - 2003					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8 Unit 3 fence area. Site Preparation for Forest Protection: supplies/chemicals small tools	Unit 3 surrounds approx. 1200 acres. Clear 5ft wide trail for fencing approx. 5mi.		\$5,800 \$300	\$2,900 \$150	\$2,900 \$150
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Resident Deer removal program for fenced unit 2	sign hunters in/out monitor progress 60 consecutive days	\$250/day	\$15,000	\$7,500	\$7,500
Company Rangers night hunting	16 nights	\$1030/night	\$16,480	\$12,480	\$4,000
Night hunting Supplies	ammunition		\$1,000	\$500	\$500
Planting	25 acres	\$80/acre	\$2,000	\$1,000	\$1,000
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$737/day	\$153,296	\$112,446	\$40,350
Totals 2003			\$231,076	\$156,076	\$75,000

Year 4 - 2004					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Resident Deer removal program for fenced unit 3	sign hunters in/out monitor progress 60 consecutive days	\$250/day	\$15,000	\$7,500	\$7,500
Company Rangers night hunting	16 nights	\$1065/night	\$17,040	\$13,040	\$4,000
Night hunting Supplies	ammunition		\$1,000	\$500	\$500
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$760/day	\$158,080	\$122,130	\$35,150
Totals 2004			\$256,820	\$181,820	\$75,000

Year 5 – 2005					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Company Rangers night hunting	16 nights	\$1100/night	\$17,600	\$13,600	\$4,000
Night hunting Supplies	ammunition		\$1,000	\$500	\$500
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$785/day	\$163,280	\$120,630	\$42,650
Totals 2005			\$247,580	\$172,580	\$75,000

Year 6 – 2006					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Company Rangers night hunting	16 nights	\$1150/night	\$18,400	\$14,400	\$4,000
Night hunting Supplies	ammunition		\$1,000	\$500	\$500
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$810/day	\$168,480	\$125,830	\$42,650
Totals 2006			\$253,580	\$178,580	\$75,000

Year 7 - 2007					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Company Rangers night hunting	16 nights	\$1185/night	\$18,960	\$14,960	\$4,000
Night hunting supplies	ammunition		\$1,000	\$500	\$500
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$835/day	\$173,680	\$131,030	\$42,650
Totals 2007			\$259,340	\$134,340	\$75,000

Year 8 - 2008					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Company Rangers night hunting	16 nights	\$1225/night	\$19,600	\$15,600	\$4,000
Night hunting supplies	ammunition		\$1,000	\$500	\$500
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$860/day	\$178,880	\$136,230	\$42,650
Totals 2008			\$265,180	\$190,180	\$75,000

Year 9 - 2009					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Company Rangers night hunting	16 nights	\$1265/night	\$20,240	\$16,240	\$4,000
Night hunting supplies	ammunition		\$1,000	\$500	\$500
Seedling Acquisition	5600 seedlings	\$1.50	\$8,400	\$4,200	\$4,200
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$886/day	\$184,288	\$141,638	\$42,650
Totals 2009			\$271,228	\$196,228	\$75,000

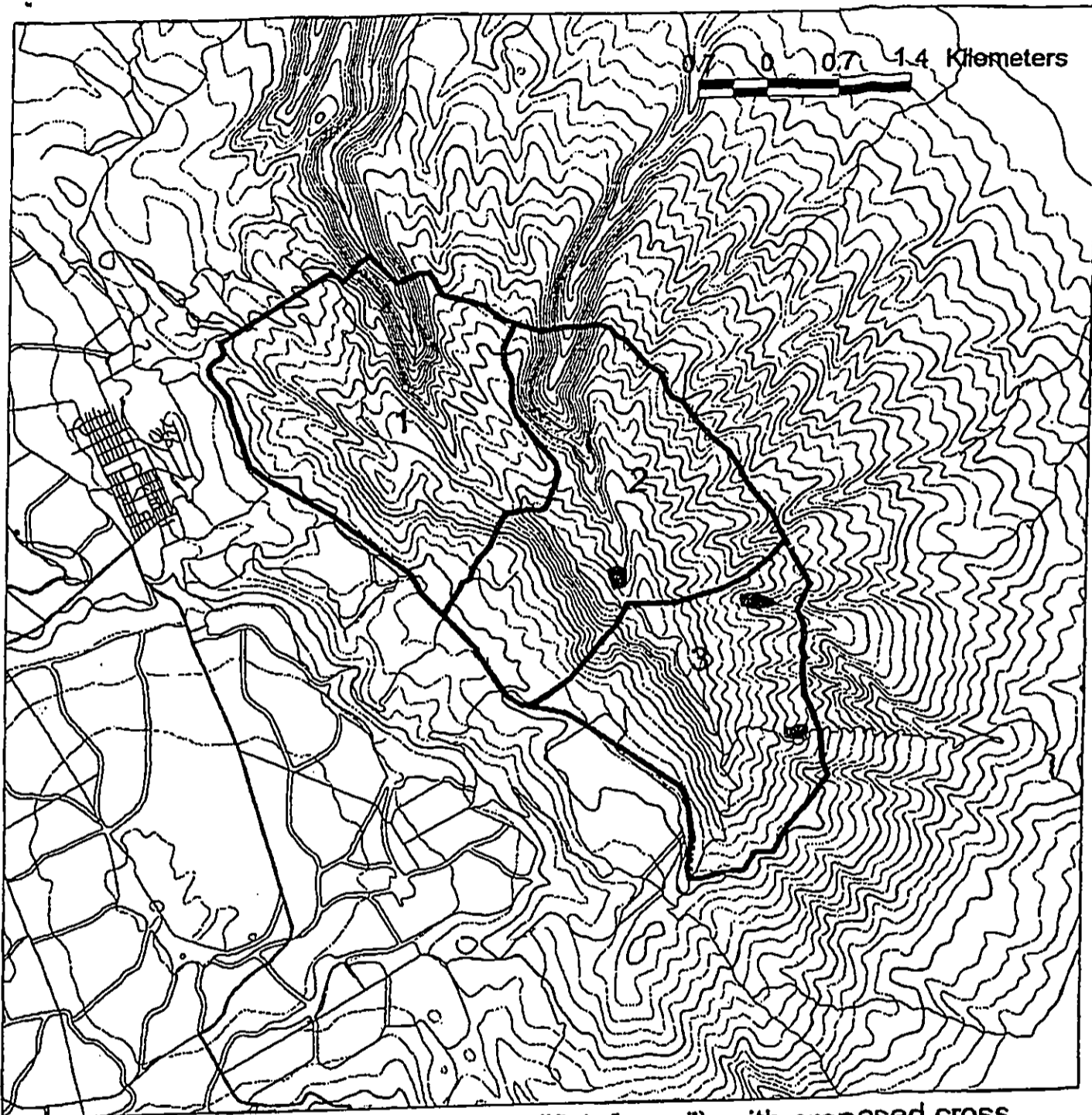
Year 10 - 2010					
Practice component and SIP number	units to be accomplished	actual cost/unit	total cost	Owner share	State share
SIP 2-4-6-8					
Company Rangers night hunting	16 nights	\$1305/night	\$20,880	\$16,880	\$4,000
Night hunting supplies	ammunition		\$1,000	\$500	\$500
Planting	50 acres	\$80/acre	\$4,000	\$2,000	\$2,000
Fertilizer and Amendments	50 acres	\$250/acre	\$12,500	\$6,250	\$6,250
Seed collection and distribution			\$8,000	\$4,000	\$4,000
Supplies	50 acres	\$40/acre	\$2,000	\$1,000	\$1,000
Fence Maintenance			\$10,000	\$10,000	
Transportation	208 days per year	\$100/day	\$20,800	\$10,400	\$10,400
Labor	208 days per year	\$915/day	\$190,320	\$143,470	\$46,850
Totals 2010			\$269,500	\$194,500	\$75,000

Draft Environmental Assessment: Lanai'hale Forest Stewardship Plan

ATTACHMENT B







PROJECT MAPS

DOCUMENT CAPTURED AS RECEIVED



Proposed Lana'i summit fence (a.k.a., "fish fence"), with proposed cross fences to divide area into management units and approximate completed or proposed biodiversity exclosures.

Legend:

-  Primary Roads
-  Elevation (500 ft contours)
-  Secondary Roads & Trails
-  Elevation (100 ft. contours)
-  Revised Option 4 "Fish Fence" in increments
-  Completed or proposed biodiversity exclosures



PROPOSED PROJECT AREA. - CORRESPONDS TO OPTION #4

Option 4

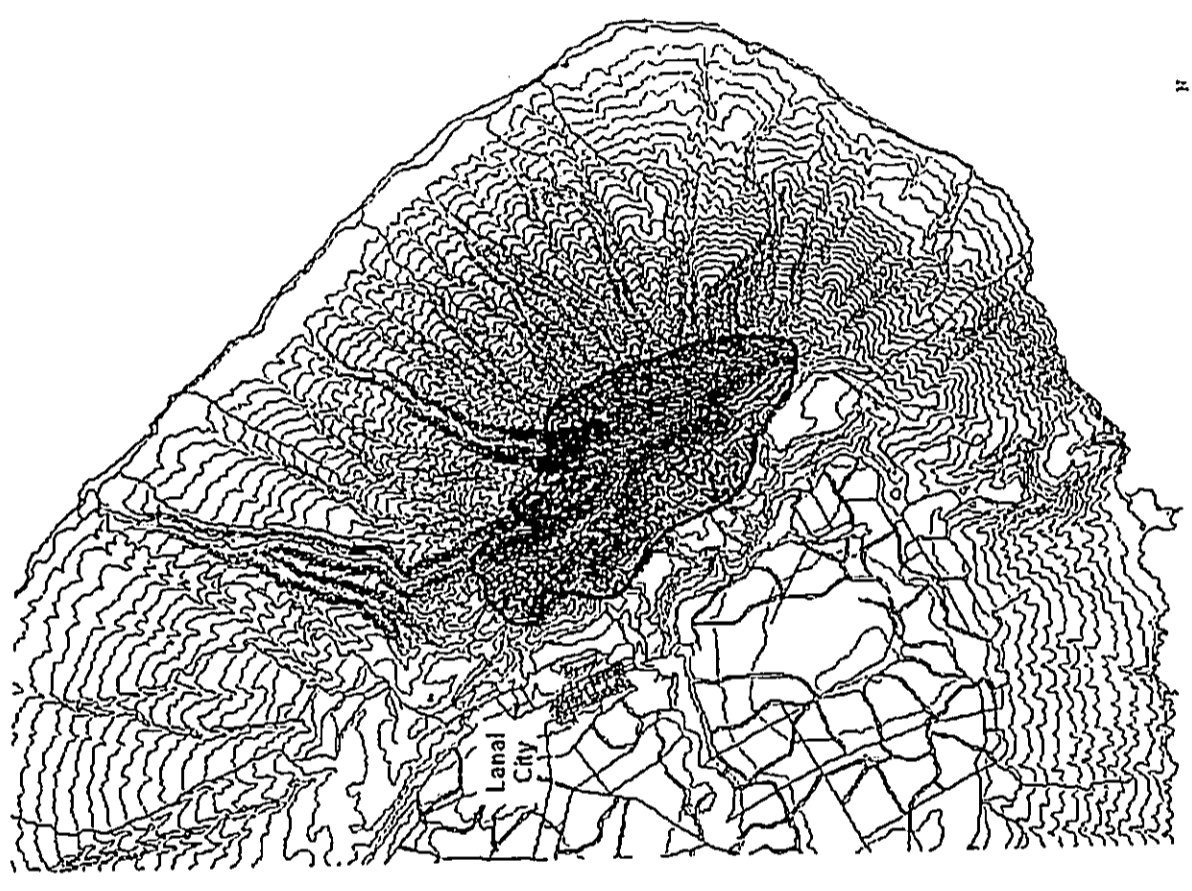
12.1 Miles

\$680,000

Enclosed Area:

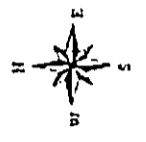
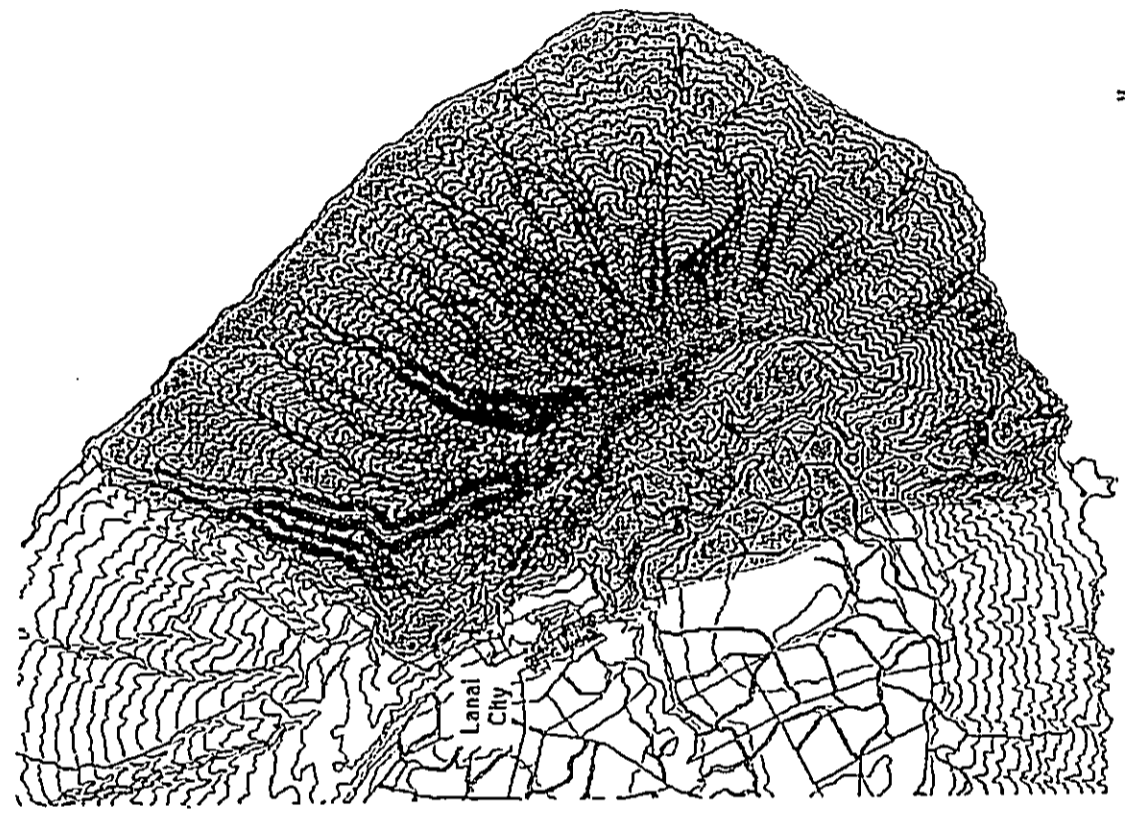
3,588.127 Acres

Materials	\$170,400
Helicopter	\$30,000
Tractor	\$10,000
Trucking	\$10,000
Labor	\$250,000
Food & Lodging	\$75,000
Airfare	\$75,000
Benefits/Workman's Comp	\$60,000
Total	\$680,000



Option 1
13.9 Miles
\$330,000/410 K
Enclosed Area:
32,055 Acres
HI Volcanoes Nat'l Prk
Assumes:

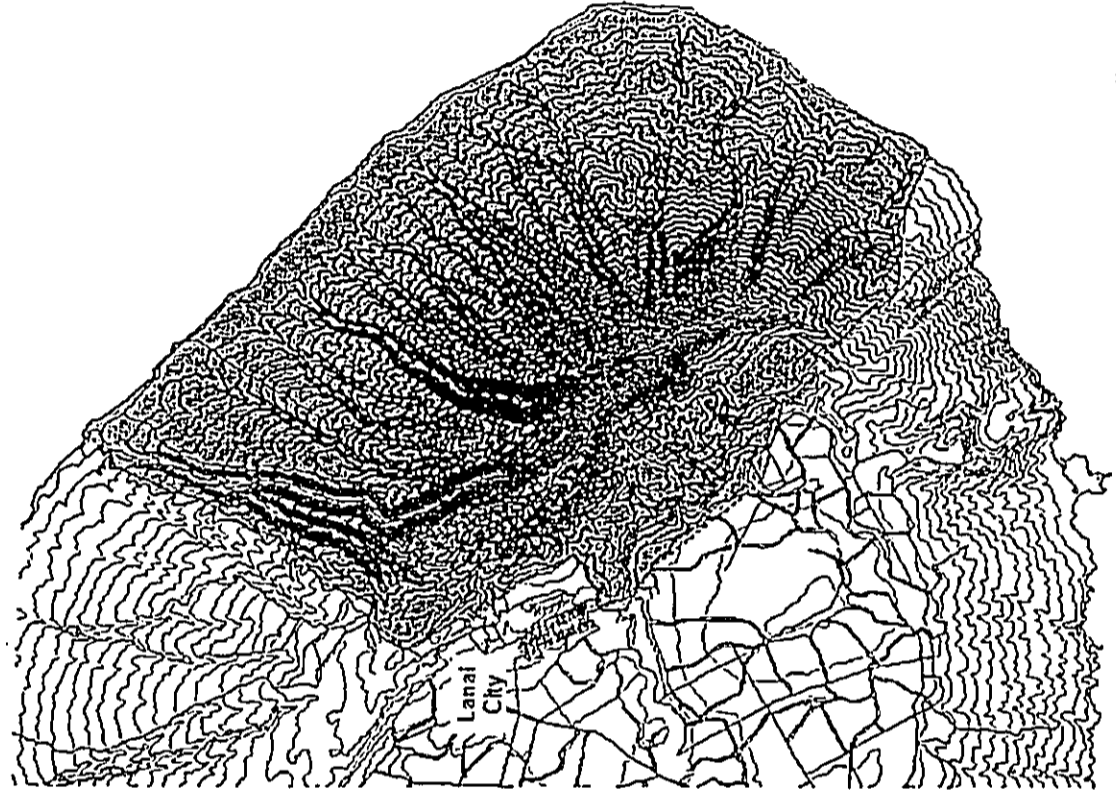
- \$25,000/mile for materials & construction
- 7' woven wire fence
- fence follows roads



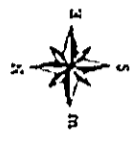
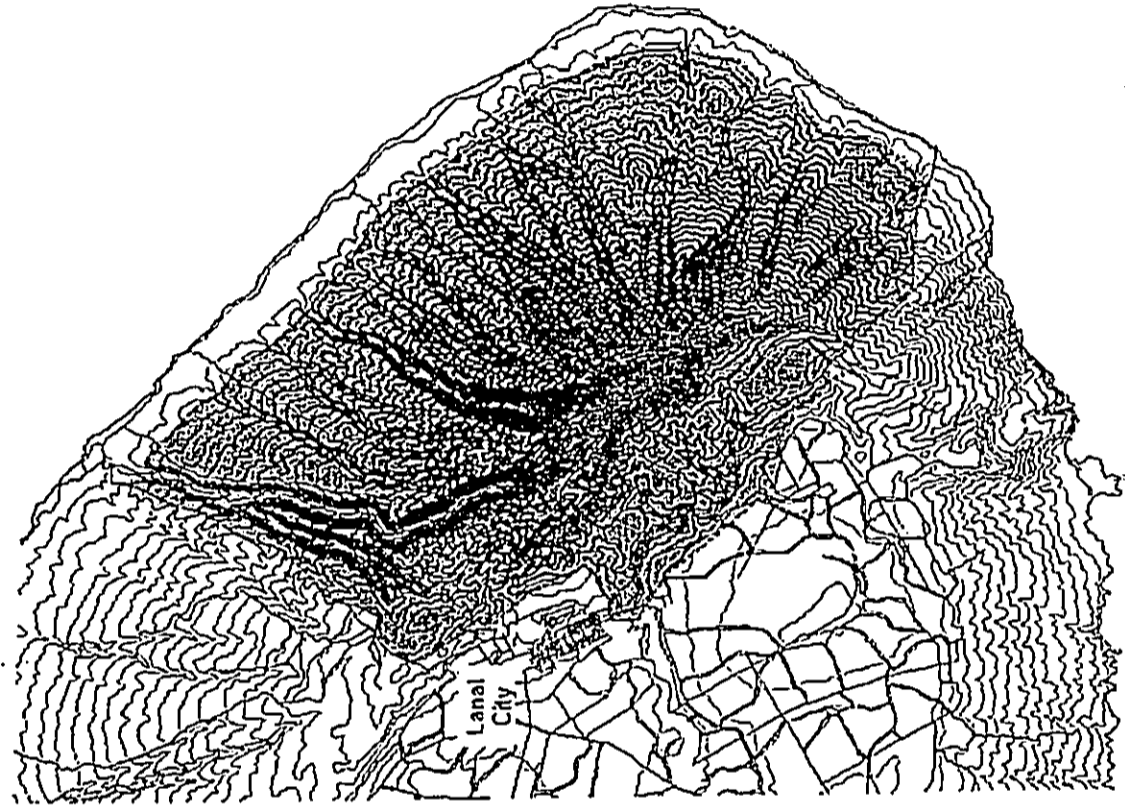
Option 2
14.7 Miles
\$370,000/450 K
Enclosed Area:
26,555 Acres
HI Volcanoes Nat'l Prk

Assumes:

- \$25,000/mile for materials & construction
- 7" woven fence
- 1 mile off roads

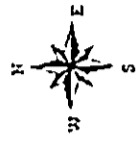


Option 3
“Old Pipeline”
23 Miles
>\$1.1 Million
Enclosed Area:
22,806.508 Acres



Option 4
12.1 Miles
\$680,000
Enclosed Area:
3,588.127 Acres

Materials	\$170,400
Helicopter	\$30,000
Tractor	\$10,000
Trucking	\$10,000
Labor	\$250,000
Food & Lodging	\$75,000
Airfare	\$75,000
Benefits/Workman's Comp	\$60,000
Total	\$680,000

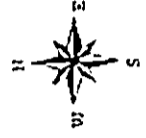
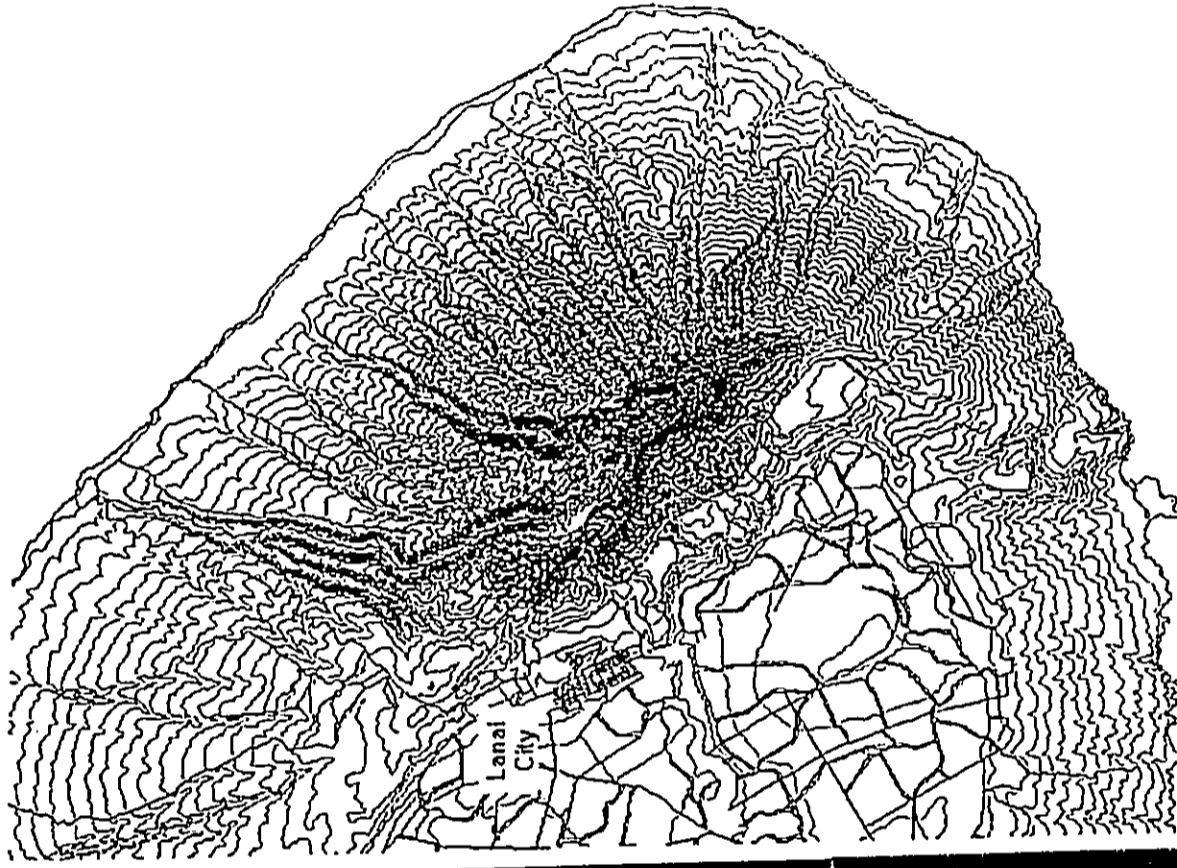


Option 5

11.5 Miles

Enclosed Area: 1,834.69 Acres

Materials	\$765,000
Excavator	\$ 8,000
Tractor	\$ 15,000
Truck (20)	\$ 17,000
Loader	\$220,000
Fuel & Lodging	\$ 25,000
MP (20)	\$ 30,000
Barrels/Warrior's Camp	\$ 25,000
TOTAL COST	\$1,000,000



Elevation - 50 Ft.
Coastline



Option 6
Eradication
&
Option 7
No Action

ATTACHMENT B
CORRESPONDENCE AND COMMENTS

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY AND WILDLIFE

1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

October 13, 2000

TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

AQUACULTURE DEVELOPMENT
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BOATING AND OCEAN RECREATION
CONSERVATION AND
ENVIRONMENTAL AFFAIRS
CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCES MANAGEMENT

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, Hawaii 96813

Dear Ms Salmonson:

Subject:

Revised Draft Environmental Assessment for Lanaihale Watershed Protection and Forest Restoration Forest Stewardship Project, TMK 1-4-9-02-001, Lanai, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the draft environmental assessment for the subject project, which has been revised as per your letter of September 19, and we anticipate a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in the November 8, 2000 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the draft EA. You should already have a copy of the project summary on disk, which we submitted with the original draft EA. Please call Karl Dalla Rosa, at 587-4174 if you have any questions, or if you require an additional copy of the project summary.

Sincerely

Michael G. Buck
Administrator

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

November 3, 2000

TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

AQUACULTURE DEVELOPMENT
PROGRAM
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STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCES MANAGEMENT

Librarian
Lanai Public & School Library
P.O. Box 550
Lanai City, HI 96763

Dear Librarian:

Subject: REVISED Draft Environmental Assessment for Lanai Watershed Protection and Forest Restoration Forest Stewardship Project, TMK 1-4-9-02-001, Lanai, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed *revised* environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the November 8, 2000 OEQC Environmental Notice.

Please make available to the public in your holdings, the enclosed draft EA for the subject project for the required 30-day public comment period: November 8 to December 8, 2000. Thank you for your assistance.

Sincerely

Karl R. Dalla Rosa
Cooperative Resource Management Forester

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

September 23, 2000

FILE
TIMOTHY E. JOHNS
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

AQUACULTURE DEVELOPMENT
PROGRAM
AQUATIC RESOURCES
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CONSERVATION AND
RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCES MANAGEMENT

Maui Dept. of Planning
200 South High Street
Wailuku, HI 96793

To Whom it May Concern:

Subject: Draft Environmental Assessment for Lanaihale Watershed Protection and Forest Restoration Forest Stewardship Project, TMK 3-3-5-01-73, Hamakua District, Hawaii, HI

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the enclosed environmental assessment for the subject project, and anticipates a Finding of No Significant Impact (FONSI) determination. Notice of availability for this project will be published in the September 23, 2000 OEQC Environmental Notice.

Please review and comment as necessary sometime during the required 30-day public comment period: September 23 to October 23, 2000. Feel free to call me if you have any questions. My office number is (808)587-4174. Thank you very much for your assistance.

Sincerely

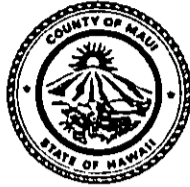
A handwritten signature in black ink that reads "Karl R. Dalla Rosa".

Karl R. Dalla Rosa
Cooperative Resource Management Forester

JAMES "KIMŪ" APANA
Mayor

JOHN E. MIN
Director

CLAYTON I. YOSHIDA
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

October 17, 2000

Mr. Karl R. Dalla Rosa
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Dalla Rosa:

**RE: COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT FOR
LANAIHALE WATERSHED PROTECTION AND FOREST
RESTORATION PROJECT**

Thank you for the opportunity to provide you with comments. While the Maui Planning Department (Department) is mostly concerned with Urban, Rural and Agricultural lands, the Department recognizes the important role of the conservation lands, especially the watersheds, in the islands' economy and the health, safety and welfare of its citizens.

- The watershed is the long-term source of potable water. Their importance will grow as our population increases.
- These lands are becoming more important as eco-tourism becomes a larger segment of the visitor industry.
- These kinds of managed lands hold some of the rarest biological resources in the world.

For these reasons and others, we support this program.

If you have any questions, please contact Mr. William Spence, Staff Planner, of this office at 270-7735.

Very truly yours,

A handwritten signature in black ink, appearing to read "John E. Min", is written over a large, stylized flourish.

JOHN E. MIN
Planning Director

Mr. Karl R. Dalla Rosa
October 17, 2000
Page 2

JEM:WRS:cmp

cc: Clayton Yoshida, AICP, Deputy Planning Director
William R. Spence, Staff Planner
Mark White, Maui TNC
Project File
General File S:\ALL\WILLIAACORESPI2000\Dir5.wpd

34541

BENJAMIN J. CAYETANO
GOVERNOR

179

*Mike Bunde -
Please draft reply*



RECEIVED

00 DEC 8 P 2: 51

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

December 6, 2000

Mr. Tim Johns, Chair
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Johns:

Subject: Draft Environmental Assessment for the Lana'ihale Watershed Protection and Forest Restoration Project, Lana'i

Thank you for the opportunity to review the subject document. We have the following questions and comments.

1. The Office of Environmental Quality Control supports your proposal to protect and restore the Lana'ihale watershed and its ecological and cultural resources through the construction of a perimeter fence and aggressive hunting program.
2. Please include a list of all permits and approvals that would be required before this project can be implemented.
3. Please provide your findings and reasons for supporting the finding of no significant impact. Please see the enclosed example.

Should you have any questions, please call Jeyan Thirugnanam at 586-4185.

Sincerely,

Genevieve Salmonson
Director

c: Lana'i Company

BENJAMIN J. CAYetano
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

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HISTORIC PRESERVATION
DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

February 22, 1996

MEMORANDUM

LOG NO: 16040 ✓
DOC NO: 9512SC03

TO: Karl R. Dalla Rosa, Coordinator
Forest Stewardship Program
Division of Forestry and Wildlife

FROM: Don Hibbard, Administrator
State Historic Preservation Division *DH*

SUBJECT: Historic Preservation Comments on the Forest Stewardship
Plan for the Lanaihale Stewardship Area
Multiple Ahupua'a, Lanai
TMK:4-9-02:1

Our comments are late, and we apologize; we hope that they are of use to you in finalizing your plans. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the subject parcel.

According to our records, several known historic sites may be within the boundaries of the proposed project area for the Lanaihale Stewardship Area. The attached map shows the general locations of these sites, as recorded in our files. These historic sites include the following properties, given with their State Inventory of Historic Places (SIHP) numbers:

50-40-98-29: Hi'i Heiau. Situated at the foot of Pu'u Ali'i, Hi'i Heiau is located at about the 2000-foot elevation. The heiau is one of only 11 that are known to exist on Lana'i.

50-40-98-33: The Ho'okio Fortified Ridge Complex. One of the few fortified ridge sites recorded in the islands, the Ho'okio Complex consists of three artificially cut notches in the Ho'okio Ridge at the head of Mauanlei Gulch, at about the 2500-foot elevation. There are legendary accounts of battles which took place at the Ho'okio fortifications.

Karl R. Dalla Rosa
Page 2

50-40-98-144: The Maunalo'i Taro Complex. The Maunalo'i Taro lo'i complex is located on the stream flats of Maunalo'i Stream, from approximately 70 to 650 meters *mauka* of the pump house. Although the site's location falls within the Lanaihale Project area boundaries, the complex is below the 900-foot elevation.

50-40-98-207: The Kealiaaupuni Complex. Most of the sites within this complex, including the Luahiwa Petroglyphs and the Piliamoe Workshop lie outside of the Lanaihale Project Area boundaries; an arbitrarily drawn rectangle encloses the sites in the complex. However, at least several sites thought to be associated with the Kealiaaupuni Complex (including a heiau, other petroglyphs, an adze quarry, and terraces) may lie in the upper portion of the Site -207 rectangle, which appears to overlap with the proposed Lanaihale Project Area.

All of these historic sites and site complexes are eligible for inclusion, under multiple criteria, on the Hawai'i and National Registers of Historic Places. In addition, it is likely that there are other, as-yet-unidentified historic sites within the boundaries of the proposed Lanaihale Project Area. Since, as noted above, some of the sites listed above (i.e., Sites -144 and parts of Site -207) lie below the 2000-foot contour which will demarcate the lower limits of the reforestation activities, the proposed undertakings will have "no effect" on the sites below this elevation point.

In the case of the other previously identified historic sites (Sites - 29, -33, and portions of -207), it appears that they lie at or above the 2000-foot elevation. In order for the activities planned for the Lanaihale Stewardship Program to have "no effect" on significant historic sites, we recommend the following actions:

- (1) All clearing of vegetation, including the removal of trees such as ironwood or guava, shall be done by hand.
- (2) Should historic sites such as walls, platforms, pavements, or mounds, or remains such as artifacts, burials, concentrations of shell or charcoal be encountered during construction activities, work shall cease immediately in the immediate vicinity of the find, and the find shall be protected from further damage. The project crew shall immediately contact the State Historic Preservation Division (587-0013), which will assess the significance of the find and recommend an appropriate mitigation measure, if necessary.

Should you have any questions, please feel free to call Sara Collins at 587-0013.

SC:jen

BENJAMIN J. AYETANO
GOVERNOR OF HAWAII



GILBERT S. COLOMA-AGARAN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

JANET E. KAWELO
DEPUTY

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY AND WILDLIFE
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

'01 FEB -9 A8:11

February 7, 2001

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

AQUACULTURE DEVELOPMENT
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HISTORIC PRESERVATION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT
WATER RESOURCES MANAGEMENT

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Ste. 702
Honolulu, Hawaii 96813

Dear Ms Salmonson:

Subject:

**Negative Declaration Determination and Final Environmental Assessment for
Lana'ihale Watershed Protection and Forest Restoration Forest Stewardship
Project, TMK 1-4-9-02-001, Lana'i, HI**

The Department of Land and Natural Resources, Division of Forestry and Wildlife has reviewed the comments received during the 30-day public comment period that ended on December 8, 2000 concerning the Draft Environmental Assessment for the subject project. We have determined that, according to the significance criteria established according to the Department of Health Rules, the project will not produce a significant environmental impact.

(1) **The project involves no irrevocable commitment to loss or destruction of any natural or cultural resources:** The primary objective of this project is to restore and protect native forest resources, both natural and cultural, associated with the Lana'ihale watershed. Although the project requires that deer be excluded from the project area with a perimeter fence, public access will be afforded for all traditional land uses, with the exception of deer hunting, through gates and deer guards to be maintained by Lana'i Company. Lana'i residents have agreed that areas outside of the proposed fence will provide for ample deer hunting opportunities. All proposed fence construction and tree-planting activities will be carried out so as not to disturb any existing native vegetation - or any culturally significant resources - only after detailed maps and surveys determining the optimal fence line and reforestation locations are finalized.

(2) **The project will in no way curtail the beneficial uses of the environment:** The only land use that will be curtailed is deer hunting, which is

considered to be an unsustainable, and therefore detrimental land use for Lana'ihale, by Lana'i residents and the many agency experts consulted in planning for this project. If the Lana'i's deer population is not excluded from the Lana'ihale as proposed by this project, its watershed and forest values will likely be irrevocably lost.

(3) The project is clearly consistent with the State's long-term environmental policies, goals and guidelines as expressed in Chapter 344, HRS - and any revisions thereof and amendments thereto, court decisions or executive orders.

(4) The project will not substantially affect the economic or social welfare of the community or state: As stated previously, Lana'i residents have agreed that areas outside the fence will provide ample continued deer hunting opportunities. Public access for all other currently permissible land uses will continue to be afforded through gates and passable deer guards. Much more important to Lana'i's economic and social welfare, is the protection and conservation Lana'ihale's value as the only significant forested watershed on Lana'i. Lana'i residents and state and county agencies agree that the only way to protect and conserve Lana'ihale's natural, cultural and hydrologic watershed values is to immediately exclude deer from the area.

(5) The project will not substantially affect public health: Again, it is clear that the project's only impacts on public health will be positive. Restoration and protection of the watershed will serve to ensure the long-term provision of clean water to Lana'i's residents.

(6) The project does not involve any substantial secondary impacts, such as population changes or effects on public facilities.

(7) The project does not involve any degradation of environmental quality. This project can in fact only serve to enhance the environmental quality of Lana'i.

(8) The project does not involve a commitment for larger actions or a considerable cumulative affect on the environment: Once the fence has been constructed and the planned areas have been reforested - the project will move into a maintenance and observational phase. Input requirements will taper off as the environmental benefits achieved as a result of the perimeter fence and planting/weed control efforts will begin to accrue.

(9) The project will not substantially affect a rare, threatened or endangered species or its habitat: As stated previously, all fence construction and planting activities will be carried out so as not to disturb native plant or wildlife resources - or any culturally significant sites on Lana'ihale. This project will be implemented in complete collaboration with the Lana'i Biodiversity Working Group and under the auspices of the Lana'i Forest and Watershed Partnership (final draft agreement pending official signatures) whose participants include the Lana'i Company, the DLNR Division of Forestry and Wildlife, the Maui Board of Water Supply, Hui

Malama Pono o Lana'i, the Nature Conservancy and the U.S. Fish and Wildlife Service. Certain threatened or endangered species are currently being protected and fostered within the proposed project area, in intensively managed, smaller exclosures.

(10) **Project activities will not affect air or water quality or ambient noise levels.** As stated previously, the project is likely to eventually improve the water quality on Lana'i, through restoration and protection of the watershed's hydrologic function.

(11) **The project is not likely to affect or suffer damage by being located in an environmentally sensitive area** such as a flood plain, tsunami zone, beach, geographically hazardous land, estuary, and freshwater or coastal waters. Some of the upper slopes within the project area are currently erosion prone due to years of deer traffic that has destroyed protective vegetation and created trails that can channel overland flow. The intent of the project is to mitigate this impact, and thus the potential for substantial future erosion.

(12) **The project will not affect scenic vistas and view planes identified in county or state plans or studies.** At 7.5 feet tall, and considerably down slope from the Lana'ihale summit, it is unlikely that the proposed fence will interfere with any view planes - or even be visible to most public using the area. Reforestation plantings will be designed so as to mimic natural, native vegetation spatial arrangements and thus they will enhance view planes and the natural aesthetics of the area.

(13) **The project will not require substantial energy consumption.**

As we have deemed no environmental impacts to be significant, we declare a Finding of No Significant Impact for this project and we ask that you publish this determination in the February 23 edition of your Environmental Notice. We have enclosed a completed OEQC Publication Form and four copies of the final EA. You should already have a copy of the project summary on disk, which we submitted with the original draft EA. Please call Karl Dalla Rosa, at 587-4174 if you have any questions, or if you require an additional copy of the project summary.

In addition to this Environmental Assessment, we are awaiting approval of a Conservation District Use Application for this project and we will also be preparing a Forest Stewardship Contract Agreement for review and approval of the Board of Land and Natural Resources.

Sincerely,



Michael G. Buck
Administrator