STATE OF HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Forestry and Wildlife
Honolulu, Hawai'i 96813

December 14, 2018

Chairperson and Members
Board of Land and Natural Resources
State of Hawai'i
Honolulu, Hawai'i

Land Board Members:

SUBJECT: REQUEST APPROVAL OF THE KAALAEA KOA FARM FOREST STEWARDSHIP MANAGEMENT PLAN AND FOREST STEWARDSHIP AGREEMENT WITH STEPHANIE LOUI AND STEVEN LOUI TMK (1) 4-7-007:009 PORTION, KO'OLAUPOKO, ISLAND OF O'AHU

AND

REQUEST APPROVAL OF DECLARATION OF EXEMPTION TO CHAPTER 343, HAWAI'I REVISED STATUTES FOR THE PROJECT

BACKGROUND:

The State of Hawai'i Forest Stewardship Program (FSP) provides technical and financial assistance to private landowners and land managers committed to the stewardship, conservation, and restoration of important forest resources across the state. These private properties provide a variety of public benefits for the residents of Hawai'i, including but not limited to fresh water capture and production, decreased soil erosion, wildlife habitat, forest products, recreational and educational opportunities, and local jobs. The assistance provided by FSP enables private landowners to develop and implement long-term multi-resource management plans to conserve, restore, and maintain forested areas on their property.

The Forest Stewardship Program was established through Chapter 195F-6, Hawai'i Revised Statutes (HRS) and provides the Department of Land and Natural Resources with the authority to provide financial assistance to approved Forest Stewardship projects for private landowners to manage, protect, and restore important natural resources on forested and formerly forested properties. The Forest Stewardship Program is implemented pursuant to Chapter 195F, HRS, and Section 109, Hawai'i Administrative Rules (HAR). The program provides cost-share reimbursement for the development of long-term forest management plans and for the implementation of approved Forest Stewardship management plans.

ITEM C- 3

To participate in FSP, interested landowners and managers follow a sequence of application steps in the process of developing a long-term Forest Stewardship management plan. All interested landowners submit their project for review by the Forest Stewardship Advisory Committee (FSAC). The FSAC reviews the project based on program eligibility requirements and assures the proposed project is in line with the program's goals of conservation, restoration and/or forest production. Further, the FSAC recommends the development of and reviews all Forest Stewardship management plans. The Forest Stewardship management plan is created by landowners in partnership with natural resource professional/experts and reviewed and approved by both Division and the FSAC, and may be recommended for approval by the Department.

The award of cost-share support for Forest Stewardship management plan implementation follows a similar process to the development of a management plan. Upon approval of a project's Forest Stewardship management plan, the FSAC reviews the implementation schedule and budget summary to ensure that the practice costs are reasonable and follow the program's approved cost-share rates. The FSAC recommends cost-share support for project implementation based on the 10-year implementation schedule that is submitted to the Board of Land and Natural Resources (Board) for consideration. Review and approval of the Forest Stewardship project and management plan, as well as authorization of cost-share support for the project by the Board is required for the Department to enter into the Forest Stewardship Agreement. The Division has previously worked with the Department of the Attorney General to develop a Forest Stewardship Agreement template (Attachment A) for eligible projects.

The Kaalaea Koa Farm Forest Stewardship project proposes to actively manage and reforest approximately 12.5 acres of native forest and a mixed agroforestry system on a portion of Tax Map Key number (1) 4-7-007:009, in the Kāne'ohe area of Honolulu County. The Forest Stewardship project area is designated by the State of Hawai'i as Agriculture District and as Agriculture by the County of Honolulu. The Kaalaea Koa Farm Forest Stewardship project is located on the windward side of O'ahu, south of the Waiāhole Forest Reserve. The proposed FSP project area, once a mixed mesic forest, is now primarily composed of non-native and invasive species after decades of pineapple production and pasture grazing after which the land was left fallow. The landowners seek to protect the natural resources on the property and to improve watershed function by re-establishing the native forest as well as establishing an agroforestry system.

The FSAC approved the Kaalaea Koa Farm Forest Stewardship management plan at their meeting on April 20, 2018 and the State Forester/Division Administrator approved the Forest Stewardship Management Plan on NOV 1 1 2018 (Attachment B).

DISCUSSION:

The Division is requesting approval of a Forest Stewardship Agreement with Kaalaea Koa Farm for the implementation of the Kaalaea Koa Farm Forest Stewardship management plan and project. Over the course of the 10-year management plan, Kaalaea Koa Farm intends to promote the recovery and protection of the native forest in the project area by reforesting 7.0 acres in conjunction with a 5.5-acre agroforestry system. The project area is broken down into seven different management fields numbered 1-7.

The property is dissected by a ridge spine trail. The northern side contains a gulch and the southern side has a small perennial stream. The majority of the property is covered by a dense monoculture of dillenia and other invasive trees, though there are some scattered outcroppings of lowland ʻōhiʻa, hala, and a few remnant koa trees. The understory contains some dryland forest ferns, and other native plants such as akia and ʻuhaloa. Management approaches for this project include invasive species removal, reforestation to increase native plant diversity, establishment of an agroforestry system, and creation of a native plant seedbank.

The first management activity will be the installation of an ungulate proof fence along the unmanaged perimeter of the property. Fencing is a requirement for the Hawaiʻi Conservation Reserve Enhancement Program (CREP) project that will cover certain practices in fields 2, 3, 4, and 5 only. Sites will be prepared for planting primarily through manual and mechanical weed control methods. Invasive plants that cannot be removed through those means will be treated chemically as appropriate. Regionally appropriate keystone species such as ʻōhiā, koa, and hala will be planted along with shrub and groundcover species such as aʻaliʻi, alaheʻe and ʻūlei. Windbreaks and crops will be established using a variety of species in a multi-story agroforestry system which will predominately include a koa overstory. Native species will be seed banked to ensure future seed stock availability. Ongoing maintenance, such as weed control, will be done on a regular basis after the initial planting and throughout the 10 years of the contract.

A total of **$123,002** in state Forest Stewardship funding is requested to provide cost-share support for the Kaalaea Koa Farm Forest Stewardship management plan and the Kaalaea Koa Farm Forest Stewardship Agreement over a ten-year period. Kaalaea Koa Farm will be contributing an equal amount of **$178,930** toward the implementation of their project through the FSP, and will also be receiving an additional $57,004 from Hawaiʻi CREP. This project is adjacent to the Kahula Lio Farm project and will represent a total 17.6 acres with the two projects focused in reforesting with native species and agroforestry. The two projects will be managed by the same project manager. The costs associated with the proposed practices are consistent with the intensity of management required for this type of project. Cost-share funds are provided as reimbursement payments for implementation of approved management practices through the State fiscal year 2029. In addition, Kaalaea Koa Farm has agreed to continue maintenance of the installed Forest Stewardship practices for an additional five years following the completion of the state cost-share contributions, or through State fiscal year 2038.

CHAPTER 343 – ENVIRONMENTAL ASSESSMENT

In accordance with the requirements of Chapter 343, Hawaiʻi Revised Statutes (HRS), and Section 11-200-8, Hawaiʻi Administrative Rules (HAR), and the Exemption List for the Department of Land and Natural Resources as approved by the Environmental Council on June 5, 2015, the subject project is exempt from the preparation of an environmental assessment pursuant to the exemption classes listed in Attachment C.

AGENCIES CONSULTED:

- U.S. Department of Agriculture-Natural Resources Conservation Service

- U.S. Department of Interior-Fish and Wildlife Service
- DLNR-Commission on Water Resource Management
- County of Honolulu-Department of Planning

RECOMMENDATIONS:

That the Board:

1. Approve the Kaalaea Koa Farm Forest Stewardship management plan;

2. Approve cost-share support in the amount of **$123,002** for the implementation of the Kaalaea Koa Farm Forest Stewardship management plan;

3. Authorize the Chairperson to amend, finalize and execute a Forest Stewardship Agreement with Stephanie and Steven Loui to participate in the State Forest Stewardship Program subject to the following:

   A. Availability of State Forest Stewardship funds; and
   B. Review and approval as to form of the Forest Stewardship Agreement by the Department of the Attorney General.

4. Declares, after considering the potential effects of the proposed project as provided by Chapter 343, HRS, and Chapter 11-200, HAR, that this project will likely have minimal or no significant effect on the environment and is therefore exempt from the preparation of an environmental assessment under the exemption classes listed in the Declaration of Exemption (Attachment C).

Respectfully Submitted,

for DAVID G. SMITH, Administrator
Division of Forestry and Wildlife

APPROVED FOR SUBMITTAL:

Suzanne D. Case, Chairperson

Attachment: (Attachment A, B, C)

I. Cover Sheet

Forest Stewardship Management Plan
Kaalaea Koa Farm
July 25, 2018

Applicant Name: Stephanie Loui
Mailing Address:
841 Bishop Street, Suite 1110
Honolulu, Hawaii 96813

Phone: Steven Loui: 808-551-7011
Adam Laeha: 808-445-0265

Email: Steven Loui: sloui@navships.com
Adam Laeha: adam.laeha@gmail.com

Landowner Name: Steven Loui
Lease/License Holder Name: Stephanie Loui (20-year lease 1/1/16 – 1/1/36)
Property Address: 47-924 Kamakoi Road, #2, Kaneohe, Hawaii 96744
Tax Map Key #(s): 4-7-007-009
State and County Land Use District or Zone: A-2
Property Acreage: 15 acres
Farm Service Agency Tract Number: N/A
Proposed Acres of Stewardship Management Area: 12.5
Approximate Elevation: 95 to 310
Soil Composition: Approximately 65% of the property consists of Waikane silty clay 40 to 70% slopes. The two other soil types present are Waikane silty clay 3 to 8% slopes and Hanalei silty clay 2 to 6% slopes.
Rainfall: average 88-112 inches annually

Perennial or Intermittent Stream Courses: A natural artesian well provides water for the property and serves as an irrigation source. The northern side of this ridge contains a gulch that has intermittent flows during weather events. The southern side of the trail has a small perennial stream that cuts deep into a ravine dominated by strips of old growth hala. This unnamed stream joins Waihee Stream at the base of the valley as it flows to Kaneohe Bay.

Consultant's Information:
Name: Adam Laeha, Land Manager
Address: 947 Lunaawa place, Kailua, Hawaii 96734
Email: adam.laeha@gmail.com
Phone: 808-445-0265; 808-261-2419 (fax)

Date the plan was completed (or revised): July 25, 2018

II. Forest Stewardship Plan Signature Page

Professional Resource Consultant Certification: I have prepared (revised) this Forest Stewardship Plan. Resource Professionals have been consulted and/or provided input as appropriate during the preparation of this plan.

Prepared by: Adam Laeha
Professional Resource Consultant's Name

Professional Resource Consultant's Signature: Adam Laeha

Date: 8 - 28 - 18

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: Stephanie Loui

Applicant's Signature: Stephanie Loui

Date: 8/28/18

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 according to state of Hawaii Forest Stewardship Program guidelines and administrative rules.

Approved by:

State Forester's Name

State Forester's Signature:

Date: 11/7/2018

Forest Stewardship Advisory Committee Approval: This plan was reviewed and approved by the Forest Stewardship Advisory Committee on 4/20/2018
Date of approval

III. Introduction

Vision and Goals

Although lowland mesic forests are severely degraded on Oahu, remnants of a naturally occurring forest are found on the property. This forest, once dominated by koa *(Acacia koa),* ohia *(Metrosideros polymorpha)* and hala *(Pandanis tectorious)*, is overrun with invasive species such as dillenia *(Dillenia suffruticosa),* fiddlewood *(Citharexylum caudatum)*, albizia (*albizia julibrissin),* java plum *(Syzygium cumini),* bingabing *(Macaranga peltata)* and autograph *(Clusia rosea)* trees. The long-term vision for this project is to use best management practices to remove invasive species and reforest 7.0 acres of the property, and to establish an agroforestry system on 5.5 acres.

Reforestation of the degraded forests will rebuild native plant diversity, provide soil stabilization to the formerly grazed lands, reduce soil erosion and protect the water quality of nearby gulches and streams. Plants will be planted in accordance with Natural Resource Conservation Services (NRCS) specifications. Removing invasive species and re-establishing a healthy and diverse forest will also increase water retention. *"Invasive plants reduce groundwater recharge; native forests can increase water capture by up to 50%" (Hawaii Conservation Alliance).*

The native overstory will be primarily planted with koa, ohia and hala, supported by a range of companion native trees, shrubs and groundcover species to create a multi-story forest.
Various strains of the wilt resistant koa developed by Hawaii Agriculture Research Center (HARC) will be used, as well as strains of koa collected locally from the surrounding valley. Timber production is not an overall goal for the property and is not included in this management plan.

A mixed agroforestry system will be established on 5.5 acres of the property, including a 1.5-acre dry streambed riparian forest buffer that will be planted with agroforestry trees, traditional food crops as well as native trees, grasses and shrubs (reference Appendix 3 for plant lists). This system will also include high value crops such as ulu (*Artocarpus altilis*), olena (*Curcuma longa),* mamaki *(Piptaurus albidus)* and awa *(Piper methysticum),* which will be planted in the moist understory. These agroforestry resources will be used in the small-scale production of forest products that can be sold to generate revenue to support long-term management practices on the property. Bee hives may also be incorporated to aid in plant pollination, and to create an additional reoccurring revenue source.

Culturally significant plants and those used in Hawaiian plant medicine practice (Laau lapaau), such as uhaloa (*Waltheria indica*), green ti plants *(Cordyline fruticosa),* kukui *(Aleurites moluccanus)* and popolo *(Solanum americanum)* will be grown when viable. These resources will be made available to Native Hawaiian cultural practitioners for use in their traditional and customary practices; Native Hawaiian traditional and customary rights will be protected as provided under the Constitution and laws of the State of Hawaii.

Property Description

Kaalaea Koa Farm is a 15-acre property located in the back of Kaalaea Valley at 47-924, #2, Kamakoi Road. The property is situated on a shared 51-acre condominium lot with three separate lots that share the same TMK: 4-7-007-009 (see Section VIII - TMK map). A ridge spine trail transects the length of the property. The northern side of this ridge contains a gulch which serves as a drainage ditch during weather events. This gulch drains the upper pasturelands and cuts into the middle of the valley forming a dry streambed. The southern side of the trail has a small perennial stream flowing at the bottom of a ravine, which is dominated by remnant of old growth hala. This unnamed stream joins Waihee Stream at the base of the valley as it flows to Kaneohe Bay. A single-family residential structure, lap pool, horse stable and equestrian arena occupy a portion of the property.

This property has been rated as highly erodible by NRCS. The general condition of the land ranges from an intact native palaa and uluhe fern understory with remnant ohia and hala thriving on the ridgeline, to severely degraded land overrun by dillenia, fiddlewood, albizia and various other aggressive invasive species.

Aerial view of property surrounded by a dense invasive forest

Past Reforestation Efforts

2011 – 2014: In collaboration with HARC, Hui Ku Maoli Ola and other conservation organizations involved in koa agroforestry research, test plantings of koa and other native plants were successfully planted on degraded pastureland.

In association with Dr. Leary (HARC), herbicide trials were conducted and treatment protocols developed to remove invasive dillenia, fiddlewood, albizia and java plum on the property. These protocols have been used to successfully clear areas for reforestation. These same practices will be incorporated into this forest stewardship management plan.

2015 – 2016: The Landowner was awarded a soil quality grant through Oahu Research Conservation and Development (ORC&D). This project included the clearing of 1.5-acres of Field 1, installing drip irrigation and jute matting in critically sloped areas and partially funding the planting of 300 HARC koa trees. Some fruit trees, including ulu *(Artocarpus altilis)*, were planted alongside the koa to create nitrogen fixing synergies. A vegetative barrier of vetiver *(Chrysopogon zizanioide)* was installed along with a cover crop of perennial peanut *(Arachis glabrata)*.

Practices that were covered by the ORC&D grant are not included in the scope of this management plan.

2017: The Landowner loaned HARC the use of a 40' commercial grade, climate-controlled nursery pod to support its koa stem cell micro-propagation experiments. The best performing koa trees genetics from these experiments will be cloned and planted on the farm.

Management Objectives Overview

1. Remove dillenia and other invasive species to encourage the re-establishment of a healthy and diverse native Hawaiian forest to mitigate soil erosion, increase ground water recharge and protect the watershed.

2. Re-establish keystone species and increase native plant diversity on the property. Establish a native overstory to reduce invasive weed growth and support the re-establishment of a native understory.

3. Create an agroforestry system to produce food and other sustainable products that will provide a regenerative source of funding to support the long-term management of the property while enhancing forest health and resources.

4. Create a native plant seedbank to ensure seed stock availability for future reforestation efforts on the property and in the Community. When necessary, legal agreements will be established over germplasm prior to seed banking.

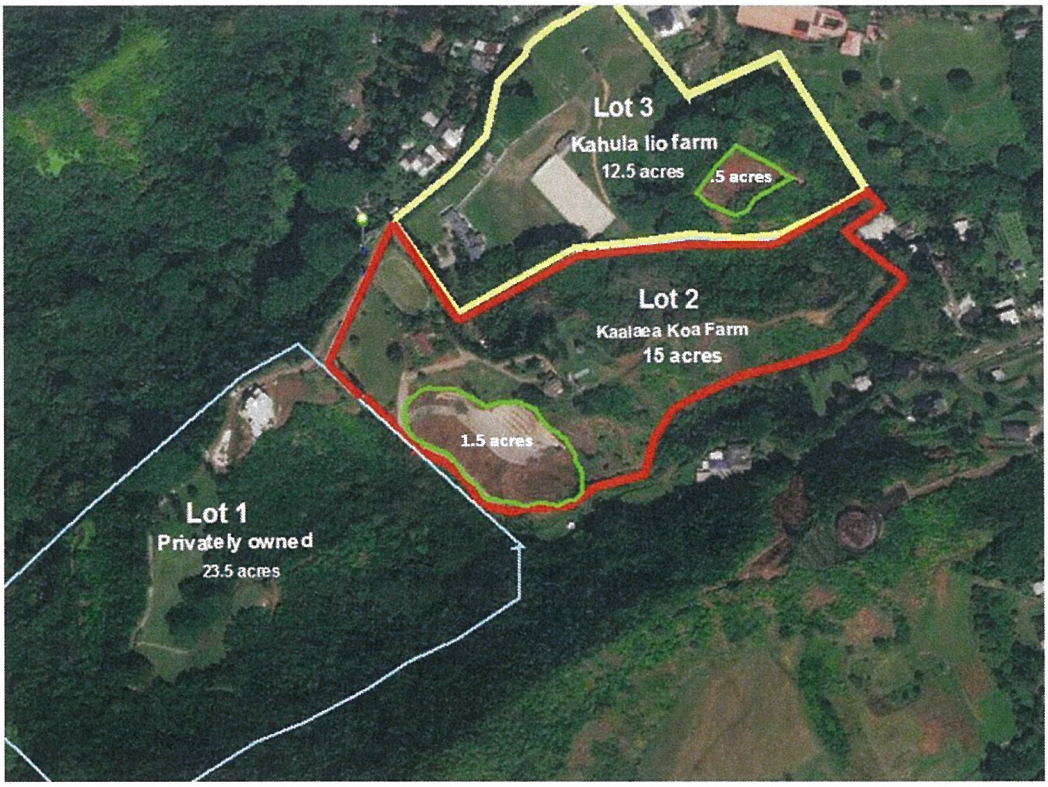
Land Use History and Description of Present Conditions

Ancient Hawaiians considered this area to be a place of healing and fertility. The healing properties of this area are likely attributed to the abundant water and agricultural resources of the area. The valley's varied microclimates are suitable for a broad range of traditional native medicinal plants. Hala, ohia and koa forests once dominated the valley; remnants of these trees still exist on the property.

This land was part of an estimated 2,500 acres in the Koolaupoko district that were converted to pineapple cultivation in the 1920's. Due to the superior pineapple production of the Ewa Plains, this industry was short lived in the valley. Remnants of this pineapple production are still present along the ridgelines where patches of wild pineapple can still be found.

With the demise of the pineapple industry, Kaalaea Country Farm was established and the land was converted to grazing pastures for a neighboring dairy. As the cows grazed, the native ground cover was destroyed, causing soil erosion, topsoil runoff and increased runoff into adjacent streams. With the closure of dairy operations in the mid-1960's, the land lay fallow, which encouraged invasive plant species to seed in the exposed pasture lands.

In the 1990's this 51-acre parcel was converted into a condominium lot with three separate parcels. The landowners of lots #2 and #3 are committed to using best management practices to remove invasive species, re-establish a healthy native forest and protect the resources of their lands.



Areas covered by ORC&D grant funding

IV. Land and Resource Description

Existing Vegetation/Forest Cover Types

Approximately 70% percent of the property is covered in a dense monoculture of the rapidly regenerating fig relative, dillenia and other invasive tree, shrub and vine and grass species; 30% of the property contains scattered outcroppings of a mixed mesic forest with an overstory of old growth hala and lowland ohia. A few remnant koa still exist on the property. Scarification of seed banks around these trees has resulted in natural regeneration of koa. This is an additional indication that this area was once a koa forest. The native understory is dominated by palaa fern (*Sphenomeris chinensis*), a conduit for the germination of ohia seeds. This fern carpets the degraded acidic soils of the ridgeline.

The understory also contains the endemic shrub akia *(Wikistroemia oahensis*), which is often observed growing in close relation to Java Plum and other invasive trees on the property. Common indigenous species such as uhaloa and popolo (*Solanum americanum)* grow along the ridgeline, while native riparian species such as akiohala (*Hibiscus furcellatus*) and an occasional mamaki occur near the stream bank. Epiphytes such as ekaha (*Asplenium nidus)* and moa *(Psilotum nudum),* as well as the Hawaiian club moss *(Lycopodiella cernua*), can occasionally be found growing atop tree logs in the understory. Pohe kula *(Centella asiatica)* spreads out as a groundcover over disturbed soils.

Canoe plants present on the property include awapuhi (*Zingiber zerumbet*), hau *(Hibiscus tiliaceus),* noni *(Morinda citrifolia),* ulu (*Artocarpus altilis)*, kukui *(Aleurites moluccanus*) and mountain apple (*Syzygium malaccense).*

Existing Forest Health Function and Threats

Invasive Species (Appendix 2)

Invasive forest systems negatively impact Native plants by pressuring them out of their natural habitat. An invasive monoculture of dillenia dominates the forest on the property. Because of its tolerance to heavy shade, dillenia can invade closed canopy forests. It's deep root system forms a network beneath the soil, sending out runners to absorb ground water and enabling it to reproduce asexually. Dillenia's fan shaped leaf casts a destructive shade that, along with it's abundant leaf litter, impedes regeneration of the naturally occurring palaa fern and drastically impacts Native plant diversity on the site. Due to its highly undesirable attributes, this aggressive plant has been rated a high risk invasive species by Plant Pono (reference Appendix 1). These undesirable traits include:

- Thrives in tropical climates and disturbed habitats
- Tolerates shade and many soil types
- Forms dense monocultures
- Grows rapidly from seed, reaching maturity in 3-4 years
- Seeds are prolifically dispersed by birds
- Produces adventitious roots from cuttings; can regenerate after coppicing

Fiddlewood, which has been naturalized in the valley, forms a secondary layer of the overstory. Its abundant orange seeds, attractive to birds, are dispersed throughout the valley. Fiddlewood seedlings sprout persistently in the understory, pioneering new territory and forming thick seed banks in exposed soils.

Albizia are also present on the property and are prolifically reseeding in the valley. Albizia seedlings mature rapidly and, if left unmanaged, will likely occupy the entire top story of the forest. Mature albizia are difficult to remove and have rapid growth rates which absorb ground water. Young albizia trees will be hand pulled before they grow to an unmanageable size.

The top overstory is also occupied by java plum and old growth mango *(Mangifera indica),* as well as naturalized pest trees such as octopus trees *(Schefflera actinophylla),* bingabing and autograph trees that flourish in the mid-story along with invasive shrubs such as hilo holly berry *(Ardisia crenata),* koster's curse *(Clidemia hirta)* and maile pilau vines *(Paederia foetida)* that entangle the overstory. Honohono grass (*Commelina diffusa),* California grass *(Brachiaria mutica)*, sleeping grass (*Mimosa pudica),* molasses grass *(Melinis minutiflora)* and wedelia *(wedelia trilobata)* grasses colonize open spaces. Natural regeneration of koa and other native species on the property is severely impeded by competition from these invasive species. Without aggressive management, dillenia and other invasive plants will continue to overtake the property and prolifically spread throughout Kaalaea Valley.

The growth of mosses and ferns on the property is impacted by introduced grass species, such as molasses grass and california grass. Removing these invasive grasses and replacing them with a dense outplanting of native plants and ground covers will encourage the regeneration of the naturally occurring ohia, promote plant biodiversity and reduce diseases typically found in monotypic forest.

Pests

Koa are highly susceptible to the Black Twig Borer *(Xylosandrus compactus)* These tiny beetles are capable of defoliating and killing koa trees and seedlings by infecting them with the fungus *F. solani*, a food source for the larvae they lay within tree branches. The tiny size of these borers, and unpredictable influxes of their populations, are notoriously difficult to detect. Borers can be partially managed by removing infected branches. Installing traps and other monitoring strategies has proven to be somewhat effective. Applying Bayer Advanced Twelve-Month Tree and Shrub Protect and Feed II concentrate on vulnerable koa saplings has helped deter the borers. Care will be taken to apply systemic insecticides only on non-flowering trees to reduce unintended damage to bees. Label instructions on systemic insecticide will be followed to ensure safety and efficacy. Increasing the biodiversity of the koa grove will also help deter these pests from finding their target species.

Sweet Potato bugs *(Physomerus grossipes)* are present on the property. These pests suck nutrients from sweet potatoes groundcovers and legumes such as koa and perennial peanut. While it is not lethal to the plant, it interrupts the plant growth cycle and negatively impacts overall plant health.

Japanese Rose beetles (*Adoretus sinicus*) are well established in Kaalaea Valley; they damage the foliage of select native species, especially plants in the Malvaceae family such as akiohala and hau trees.

Giant African snails *(Achatina fulica)*, Cuban slugs *(Veronicella cubensis)* and semi-slugs *(P. martensi)* are also present on the property along with ants, mites, white fly and other common plant pests, but are not considered a significant problem.

Disease

Koa, even those bred from disease resistant stock, are susceptible to fungal diseases such as Koa Wilt, a lethal vascular disease caused by the pathogen *Fusarium oxysporum*. Koa planted at lower elevations are more susceptible to this and other soil borne pathogens. There has been minimal impact of koa wilt on the HARC koa planted on the property in 2016. The growth rate of these trees has also been higher relative to other koa strains grown on the property.

Rapid Ohia Death (ROD) fungus is a severe threat for the lowland ohia populations. Although ROD has not been found on Oahu, the ohia on the property are vulnerable to this and other fungal diseases.

General Slope and Aspect

Elevation of the property ranges from 95 – 310 feet (Section VIII).

Soils and their Condition

Approximately 65% of the property consists of Waikane silty clay 40 to 70% slopes. The two other soil types present are Waikane silty clay 3 to 8% slopes and Hanalei silty clay 2 to 6% slopes (Section VIII.

Water Resources and their Condition

A natural artesian well near Kaalaea Stream provides the irrigation source for the property. A marginal perennial unnamed stream also flows along the southern border of the property, cutting deep into the center of the valley, running along the bottom of a deep gulch to eventually join Waihee Stream. The northern border of the property contains a gully with a dry streambed where the top pastures drain during weather events.

Timber Resources

None.

Wetland Resources

None.

Significant Historic and Cultural Resources

Kaalaea translates to "ocherous earth" in Hawaiian; ocherous earth is used in the production of red dye. The Valley is associated with Pele's sister Hiiaka, the Goddess of Rain. The abundant palaa fern on the property are also associated in lore with Hiiaka. The lands were formerly the property of the Alii, before they were divided during the Great Mahele. Remnant populations of canoe plants point to early Hawaiian habitation. Ulu (*Artocarpus altilis),* mountain apple (*Eugenia malaccensis*), kukui *(Aleurites moluccana)*, awapuhi kuahiwi *(Zingiber zerumbet)*, ti (*Cordyline terminalis)* and noni *(Morinda citrifolia*) are all present in the in the area. Adjacent to Kaalaea Stream are ancient loi terraces and several significant springs.

No cultural sites have been documented on this site to date.

Existing Wildlife

Nearby wetlands draw the Koloa (Hawaiian Duck) to the property. Kolea (Golden Plover) are commonly observed in the pasturelands.

Threatened and Endangered Species

None documented.

Existing Recreational and Aesthetic Values

Horse riding trails are present throughout the property. When properly maintained, these trails greatly enhance the recreational and aesthetic value of the property.

The monoculture of dillenia obstructs the natural beauty of the forest, blocking panoramic views and obstructing wind flow. Dillenia's large fan shaped leaves retain water, creating an ideal habitat for mosquitoes.

Infrastructure and Access Conditions

Approximately 3.0 acres of the property contains a two-story house, a horse stable and equestrian riding arena. Portions of the trail near the koa tree grove have been covered with coral gravel. These areas are not included in the scope of this project.

V. Management Objectives and Practices

The overall goal of the project is to reforest 12.5 acres of marginal land with Kaalaea pioneer species (7.0 acres) and establish a 5.5-acre agroforestry system. Reforestation will be accomplished through the removal of competing invasive plants and the establishment of native Hawaiian plant species. A diverse selection of HARC disease resistant koa species will be used, as well as strains of koa collected locally from the surrounding valley. Koa tree succession will create a shaded overstory which will discourage weed growth, while encouraging native plant establishment within the varied microclimates of the understory. Koa plantings will be supported by the outplanting of other native companion species (reference Appendix 3 for plant list).

The property is primarily comprised of difficult, highly sloped terrain. Coupled with heavy rainfall in the area, sedimentation and runoff are of major concern. This project will address these issues by removing invasive species and re-establishing a healthy and diverse forest to reduce runoff, promote water retention and protect the watershed.

This project may be accomplished in part through the collaboration with student programs at the University of Hawaii system, Hawaii Pacific University (HPU) and Kaimuki High School, along with non-profit volunteer organizations. Volunteers will primarily assist in planting, clearing herbaceous weeds, spreading mulch and amending soils to prepare sites for outplanting. Prior to having volunteers, work sites will be prepped for safety hazards, and steps will be taken to ease accessibility to the work sites. Heavy labor and mechanized tree clearing will be left to skilled laborers to be contracted by the Landowner.

Lesson plans will be developed to teach best management practices in reforestation and agroforestry and promote the value of sustainability and regenerative agriculture. Volunteer field experience hours will be logged so students can earn credit for time worked. This volunteer program will not only provide the project with a viable labor resource, it will help influence the next generation of land stewards.

Native species will be seed banked or direct seeded during wet periods. A native plant seedbank will be maintained to ensure future seed stock availability and enhance reforestation efforts on the property and in the Community.

Management Practices

Fencing (382)

An unmanaged forest borders the property with invasive trees such as wild mango, mountain apple *(Syzygium malaccens)* and guava *(Psidium guajava),* which provide a steady food source for feral pigs. Although there have been few pig sightings on the property, they may become a problem as the soil is disturbed and the agroforestry system is established.

To protect new outplantings, a 3,000-foot long ungulate fence will be installed on the perimeter of the property bordering the Waiahole Forest Reserve. A fencing specialist will be consulted to identify the most impactful size and placement; natural barriers will be identified and left unfenced to avoid redundancy. Establishing fencing along the unmanaged perimeter of the property will also protect the neighboring Kahula Lio Farm (also engaged in reforestation and agroforestry projects) property from potential ungulate activity.

The fence line will be installed on severely sloped land, which will increase the complexity of fence installation. Due to the significant slope, it is advisable that weed matting or skirting be installed along the outside perimeter of the fence as needed. Planting a vegetative barrier along the perimeter of the matting will prevent the borders of the fence from being overtaken by weeds and mitigate against surface erosion tunnels beneath the fence line. Fences will be monitored monthly to ensure they are not breached. Baiting and trapping techniques will be utilized if pigs become a problem. Vulnerable plantings will be caged to protect seedlings from pig activity.

Tree and Shrub Site Preparation (490)

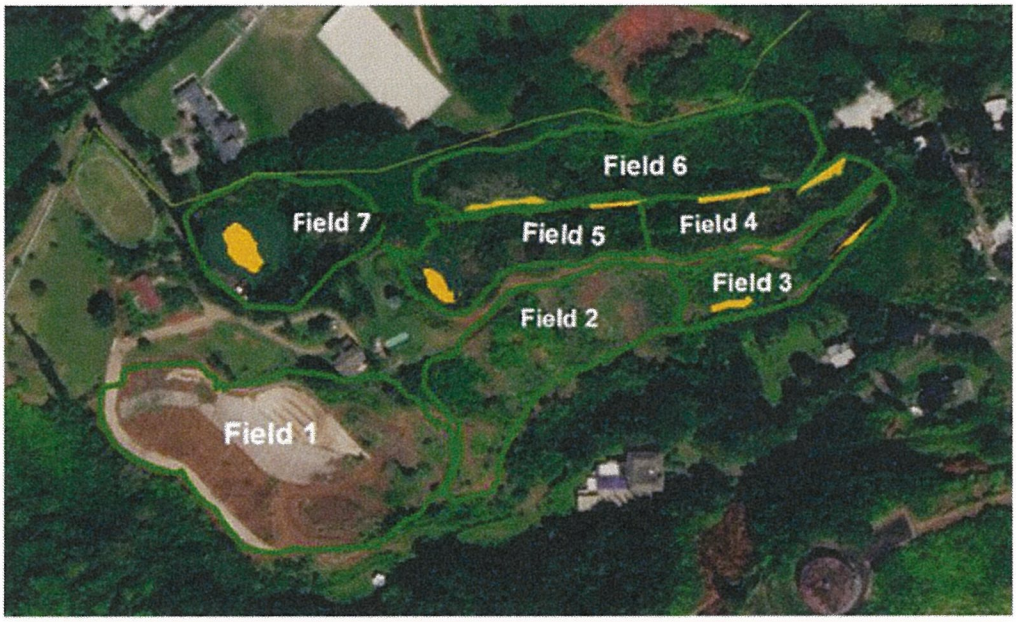
To reduce erosion and minimize weed management labor costs, only areas that are intended to be immediately planted will be cleared. Fields will be cleared systematically starting at the highest point in the field and working downward. Hand tools (chainsaw, machete, weed wrench, etc.) will be used to clear highly sloped areas; mechanized equipment will be minimized in these areas to reduce soil disturbance. Invasive plants growing close to palaa, ohia and other sensitive native plant communities will be hand weeded or treated using appropriate chemical methods.

Herbicides will be applied sparingly and with caution to reduce herbicide drift onto soils and sensitive native outplantings (reference Appendix 4 for Herbicide Chart). Label instructions will be followed to ensure the greatest success. Herbicide will be applied during dry periods to reduce contact with the soil and avoid harmful drift. To increase herbicide absorption, plants will be treated during their active growth cycles which helps deliver the herbicide throughout the plant more efficiently. Initial spraying will commence approximately two months prior to planting; secondary spraying will occur one month after initial treatment as needed to control growth from coppiced plants. Trees will be treated with non-restricted herbicides and observed for levels of defoliation; results will be logged for future reference on herbicide effectiveness. If restricted or pre-emergent herbicides are required, they will be applied by a certified herbicide applicator. Herbicides will target specific plants in order to reduce drift onto non-target plants.

Large invasive woody trees will be targeted for removal via a combination of cut stump, basal bark spray and herbicide incision point injection using protocols developed by Dr. Leary (HARC) through herbicide trials: 0.5 ml dose of undiluted herbicide injected into hatchet incisions spaced every 10" around the circumference of the trunk, at a height within 3' above ground level. For trunks >24" in diameter, injections will be spaced every 5". For trunks >36" in diameter injections will be spaced every 2" (complete girdle). This method has proven effective at defoliating and eradicating mono-typic stands of dillenia while standing. Defoliated trees will be cut down using a chainsaw or machete approximately one month after herbicide application or left to stand if they do not pose a hazard.

When necessary, mechanized equipment will be used to clear woody invasive plants, pull stumps and to stack logs and other organic materials. This equipment is not intended to be used to regrade or scrape the land. Debris piles will be temporarily stacked until they can be chipped for mulching. Piles will be stacked between 15 to 25 feet wide, 10 to 15 feet high, and spaced 150 to 200 feet apart in accordance with NRCS specifications. These piles will also be stacked to provide 30-foot openings at approximate 200-foot intervals to allow for equipment routing and provide natural drainage. Cleared areas will be immediately prepared for mulching and planting to mitigate soil erosion.

Areas where mechanized equipment may be used are highlighted by field in the diagram below.



Areas to be cleared with mechanized equipment (rest of area to be hand cleared)

Koa have been observed naturally regenerating on the property by unintentional scarification. Additional scarification methods will be used when viable on flat terrain to encourage the natural regeneration of koa, while minimizing soil disturbance.

Tree and Shrub Site Preparation - Woody residue treatment (384)

Coppiced branches and organic materials will be chipped, heated and cured before application to prevent the spread of fungal infection onto outplantings. Because the freshly cut branches of dillenia can form adventitious roots, these branches will be reduced in a timely manner to prevent re-establishment.

Mulching (484)

Mulch will be applied to aerate compacted soils, enhance microbial and fungal communities, suppress weeds and aid in plant establishment. Mulch will be produced onsite from invasive woody plants when possible; additional mulch materials will be purchased as needed

Mulch materials will be applied around new plantings with a 2.5' diameter and 2-4" thickness. Care will be taken to avoid sensitive koa roots. Exposed soils will be covered with approximately 2" wood chips. Covering growing stems will be avoided to prevent the spread of fungal infections.

Much of the property is highly sloped. Weed matting will be selectively installed on slopes that are not conducive for conventional mulching. Weed matting will protect vulnerable disturbed soils from erosion, reduce mulch reapplication costs and suppress the re-establishment of woody and herbaceous invasive species. Weed matting will also kill invasive seedbanks stored in the soil.

Nutrient Management (590)

Soils will be tested for deficiencies; amendments will be applied accordingly. Matured horse manure, compost or suitable pelletized fertilizers will be used as needed. Since over-fertilization can leave native plants susceptible to disease, special care will be taken when applying fertilizers around plantings. Fertilizers and other non-organic amendments will be applied, stored and disposed of in accordance with label instructions.

Tree and Shrub Establishment (612)

Plants will generally be purchased in 4" pots or dibble tubes to ensure fewer root bound specimens and lower material costs. Multiple strains of koa, including HARC's koa wilt resistant strains, will be planted. The wilt resistant and rapid growth qualities of the HARC koa should result in enhanced tree health.

Large portions of the property are covered by an invasive canopy. As this canopy is removed, fast growing trees, such as glircidia, will be planted to establish a temporary overstory that will produce filtered light and beneficial leaf litter to enhance soil health. This overstory will act as a nursery for understory plantings, reduce invasive weed dispersal and create an environment to promote fern regeneration. Water captured by these ferns will aid in the establishment of other native plants in proximity of the fern colonies.

Hardy pioneer species tolerant of a broad range of conditions (aalii, hala and uhaloa) will be established first to help compete with weeds. An overstory of koa will be planted with 15' x 15' spacing, interspersed with other native trees (i.e. hala, ohia and loulu) planted to their unique specifications. The understory will be planted with shrubs and other understory plantings with approximate 5' x 5'. Windbreaks will be installed to protect agroforestry areas (reference Appendix 3 for agroforestry plant list). New plantings will be monitored on a weekly basis for one month until establishment and bi-monthly thereafter.

Because of their fragile root system, it difficult to plant beneath established koa trees. To avoid this, an understory of sun tolerant groundcovers (i.e., kupukupu, ukiuki, ulei and nanea) and shrubs (i.e., naio, alahee, kului, ilima and akia) will be planted around koa saplings to encourage tree health. As the overstory matures and provides more meaningful shade, additional outplantings of shade tolerant groundcovers such as carex, ukiuki and palapalai will be incorporated into the understory.

Groundcover Establishment (327)

Palaa and uluhe are keystone groundcover species native to the property. These native ferns form dense mats on the forest floor that compete with invasive plants. Although these ferns are best suited to the site, they are extremely difficult to propagate from spores. They have, however, been successfully transplanted on site under the correct weather conditions. Successful reestablishment of these ferns is dependent on light levels, invasive plant competition and time. Because these ferns are slow-growing, they will be supplemented with hardy native groundcovers such as carex, ulei, kawelu, pili, iliee and nanea to protect exposed soils from weed invasion and erosion. Outplanting will ideally occur during wet periods to improve establishment. Direct seeding techniques will be used when appropriate; seeds will be pretreated as necessary to enhance germination.

Windbreak/Shelterbelt (380)

Windbreaks will be established to protect agroforestry plantings, especially wind sensitive crops such as cacao. Trees will be planted to their unique spacing requirements, in rows perpendicular to harsh winds. Trees must be tolerant of severe winds, multifunctional, fast growing, noninvasive and compatible to the site. These include Koa, and a mix of trees and shrubs of varying heights such as kukui, alahee, jackfruit, ulu and pigeon pea (reference Appendix 3 for windbreak plant list). Planting a diverse polyculture of trees will mitigate the risk of disease and pest issues common in single species windbreaks. Vines and other invasive plants will be removed to ensure the establishment of a healthy windbreak.

Weed Control – Herbaceous Weed Control (315) and Brush Management (314)

Weed control practices will be ongoing to ensure the continued success of tree, shrub and plant growth. Reoccurring herbaceous and woody weeds will be removed by hand. Additional chemical applications will be applied around seedbanks and areas of prolific growth. Herbicides used to manage weeds will be low in toxicity to avoid the risk of drift. Species specific chemicals will be used as needed to enhance the efficacy of the treatment (reference Appendix 4). Weeds removed will be disposed of properly to avoid the risk of reseeding.

Dillenia is a fairly new invasive plant that has been introduced to the Islands and is now prolifically spreading on Oahu. Successful management of this invasive plant has not been well documented to date. To further research in this area, this project will incorporate various strategies to control dillenia (i.e., chemical application methods, weed matting and the planting of temporary overstory trees such as glircidia to mitigate seed dispersal). The results from these management strategies will be shared with the public.

Monitoring (472)

The fence line will be monitored to detect and repair breaches as necessary. Trails will be maintained and kept free of debris and overgrowth to ensure access.

Sites will be monitored on a weekly basis until plantings are established to ensure they are adequately irrigated and free of pests, disease and weed incursion. Weed growth will be removed manually, mulched or sprayed as appropriate.

Koa will be monitored for Twig Borer activity. Diseased planting material will be removed and Bayer Advanced Twelve-Month Tree and Shrub Protect and Feed II concentrate, which have been successfully used by the neighboring Kahula Lio Farm, will be applied on and around the koa planting site as needed.

Maintenance will include the period mowing of trails and removal of branches blocking the path. Access to work sites around the property will require the maintenance and annual clearing along the trails throughout the property.

Diseased and low growing branches will be thinned, as needed, to ensure a healthy canopy. The impact of pigs and other invasive species will be monitored and addressed.

Plantings will be monitored on a weekly basis until fully established and at least bi-monthly thereafter. Hand watering will be used as needed to aid plant establishment.

A monitoring log will be maintained to document where new plants are established, their survival rates, vigor, weed tolerance and the effects of disease and pests. This information will be shared with the neighboring Kahula Lio Farm, which is also involved in reforestation and agroforestry activities.

Best Management Practices

Best Management Practices to prevent the release of polluted storm water runoff will follow the recommendations of the Division of Forestry and Wildlife's manual entitled "Best Management Practices for Maintaining Water Quality in Hawaii" (Division of Forestry and Wildlife 1996). Best Management Practices to be implemented include the following:

a. Soil disturbance during periods of heavy rains will be avoided.

b. Soil disturbed during construction will be seeded, mulched and vegetated as rapidly as possible.

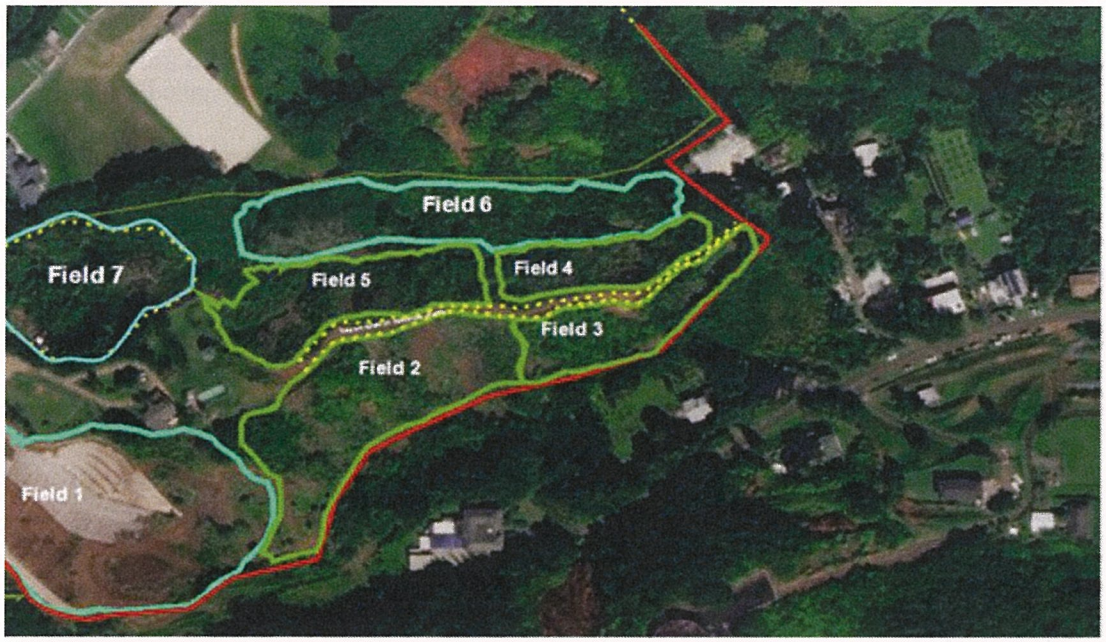
c. Trail maintenance will generally require periodic mowing and the removal of branches blocking the path.

d. Where trails are on steep slopes, and where appropriate along the main access road, vegetative barriers will be established on both sides of the access roads.

e. Herbicides will be transported, stored, mixed and loaded, applied and disposed of following label instructions to minimize the potential for polluted storm water runoff. This project will use only non-restricted herbicide chemicals. If restricted or pre-emergent herbicides are found to be needed, they will be applied by a certified herbicide applicator. Herbicides will be targeted to specific species to reduce drift onto non-targeted plants.

VI. Practice Implementation Schedule

Seven fields totaling 12.5 acres have been identified for management under the FSP and CREP programs:



3,000 ft. ungulate fencing
Fields with FSP practices
Fields with CREP practices
Windbreak

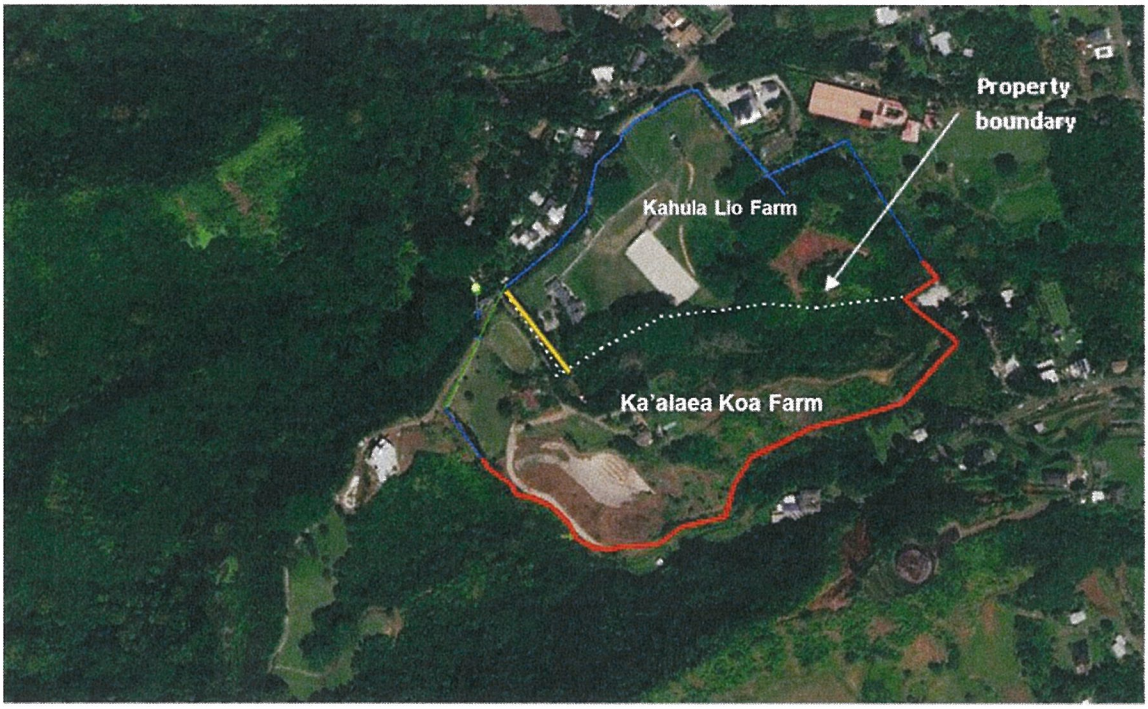
Field	Funding Source	Implementation Year	Description	Acres	Land use
Fence	FSP	1	3,000 ft. ungulate fence		Fencing
1	FSP	1	Koa grove	2.2	Agroforestry
2	CREP	1	South east of spine, next to perennial stream gully	2.0	Reforestation
3	CREP	2	Bottom of spine, partial riparian zone	1.5	Reforestation
4	CREP	2	North facing palaa and ohia fern ridge	1.5	Reforestation
5	CREP	3	North facing palaa and ohia fern ridge	2.0	Reforestation
6	FSP	2	Dry streambed	2.1	Agroforestry
7	FSP	3	Top of dry streambed	1.2	Agroforestry

Funding source summary: CREP 7.0 acres, FSP 5.5 acres
Land use summary: Reforestation 7.0 acres, Agroforestry 5.5 acres

Fence

Clear area for installation of 3,000-foot long, 2.5 foot high woven ungulate fence along the unmanaged perimeter of the property. Weed mat under the fence line to control weeds, install fence skirting as needed and plant grasses and shrubs to stabilize the highly erodible slopes and prevent erosion tunnels from forming under the fence line. The diagram below identifies the existing and proposed fencing to be installed.

This fencing will also control ungulate access onto the neighboring Kahula Lio Farm, which is also engaged in reforestation and agroforestry activities.

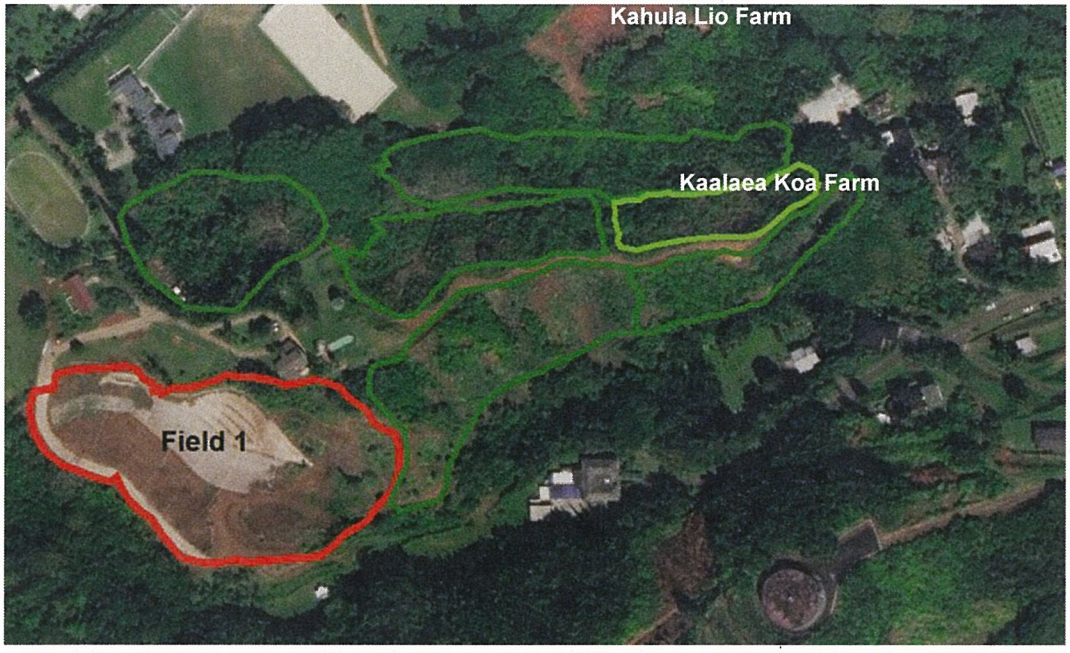


LEGEND

- Proposed ungulate fence for Ka'alaea Koa Farm
- Existing fencing (chain link/other)
- Natural barrier (steep slope)
- Rock wall barrier

Field 1

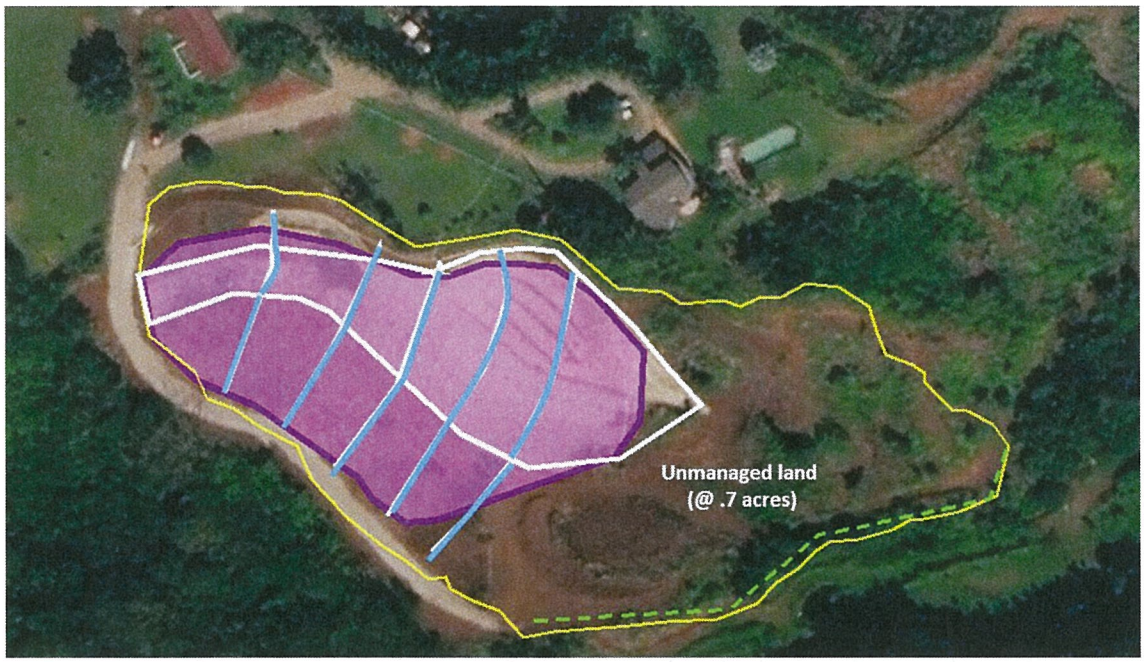
Size: 2.2 acres
Acres managed through ORC&D grant: 1.5 acres (.7 acre is unmanaged)
Land use: Agroforestry
Funding source: FSP



In 2015, the Landowner was awarded a soil quality grant through ORC&D. With funding from this grant, drip irrigation and jute matting were installed on 1.5 acres of cleared land (the landowner funded the clearing of this area, it was not funded by the ORC&D grant) and a stand of 300 HARC koa trees was planted. Perennial peanut, carex, kupukupu and ulei were planted in the grove along with a vegetative barrier of vetiver that was established at the bottom of the slope for erosion control. The ORC&D grant did not fund the planting of native shrubs, chipped mulching of non-sloped areas, nutrient management or on-going weed control. This project is requesting funding for these practices through the Forest Stewardship Program.

The remaining .7 acres of this field is an unmanaged area covered in dillenia and fiddlewood, with some exposed land. The goal is to clear these invasive plants and reforest the area with koa, hala and ohia, complemented with an understory of native plantings.

The diagram below shows practices funded by ORC&D on 1.5 acres of Field 1 (.7 acre is currently unmanaged):



LEGEND

- Irrigation installed in koa grove
- Jute matting installed in koa grove (no wood chipping)
- Koa grove of 300 trees planted
- Vetiver planting for erosion barrier

Jute matting and irrigation installed on slope

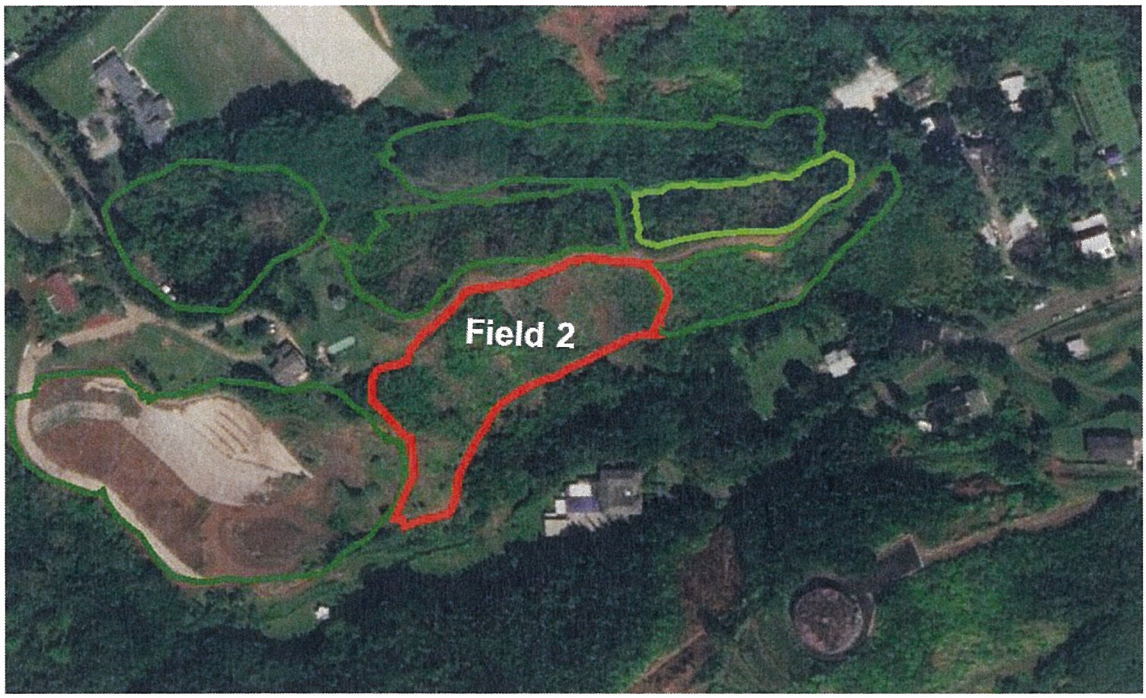
Successful establishment of Koa on slope

Additional management practices are needed to address soil erosion issues and improve overall plant and soil health in this area. The table below is a comparison of practices funded through the ORC&D grant and the additional practices proposed through this management plan. Practices that were covered by the ORC&D grant are not included in the scope of this management plan. The table below provides a comparison of practices funded under ORC&D versus those proposed in this management plan:

Practices Covered by ORC&D Funding		Practices Proposed for FSP Funding	
Practices	**Description**	**Practices**	**Description**
Vegetative barrier	Strips of vetiver were densely planted and established along the concentrated flow area to control erosion.	Tree and shrub establishment	The planting of native shrub species was not funded under the ORC&D grant. Additional planting is needed to increase the plant biodiversity of this area. Plant species to be used include, but are not limited to, aalii, naio, kului, ilima, uhaloa and alahee.
Drip irrigation	A drip irrigation system was installed to irrigate the koa grove during dry seasons. Because of the property has had high levels of rainfall, irrigation needs have been minimal. Because of this, irrigation has not been requested for this management plan.	Weed control	The ORC&D grant did not provide for on-going weed control. On-going weed herbaceous and woody weed control is needed to ensure the success of of tree, shrub and plant growth.
Mulching (matting)	Jute matting was installed on the sloped hillsides.	Mulching (chipped mulch)	The ORC&D grant did not fund chipped mulching for this field. Mulch is needed to cover exposed soils where ORC&D mulching did not occur.
Critical area planting	A stand of 300 koa was established on the hillside.	Nutrient management	Nutrient management was not included in the ORC&D grant funding. Exposed soils will need to be amended to support additional planting.
Tree Windbreak	Multiple rows of koa were installed in linear configuration.		
Conservation cover	Perennial peanut, carex, kupukupu and ulei were planted on approximately one acre of the 1.5 acre managed area.		

Field 2

Size: 2.0 acres
Land use: Reforestation
Funding source: CREP



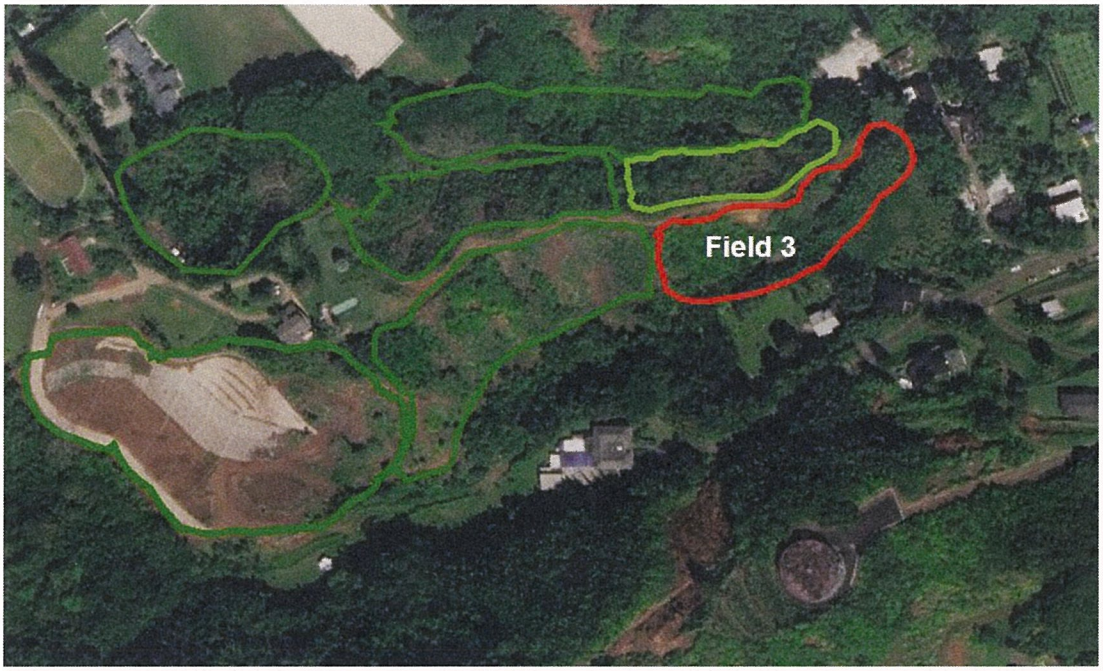
Field 2 contains a partial understory of palaa and a few remnant ohia and akia that struggle to survive beneath a monoculture of dillenia. This area is adjacent to a deeply cut stream gully with a remnant hala forest. The invasive overstory trees on the ridgeline have been cleared using cut and drop methods. There is substantial regrowth from the coppiced stumps. This field is moderately to severely sloped; approximately 80% of it is accessible by foot.

This field will be reforested with durable native plantings to cover exposed soils and compete with weed regeneration. Because this field lacks a closed canopy, glircidia and hala will be planted to create a temporary overstory that will create beneficial shade for plantings, while protecting exposed soils from seed dispersal. A permanent overstory of ohia, hala and koa will be planted and hardy native species such as uhaloa, ulei, carex, kawelu, pili grass and other plants will be established to regenerate degraded areas.

To protect the fragile palaa understory, most of the clearing in this field will be accomplished by hand or through the careful application of milestone herbicide via incision injection.

Field 3

Size: 1.5 acres
Land use: Reforestation
Funding source: CREP

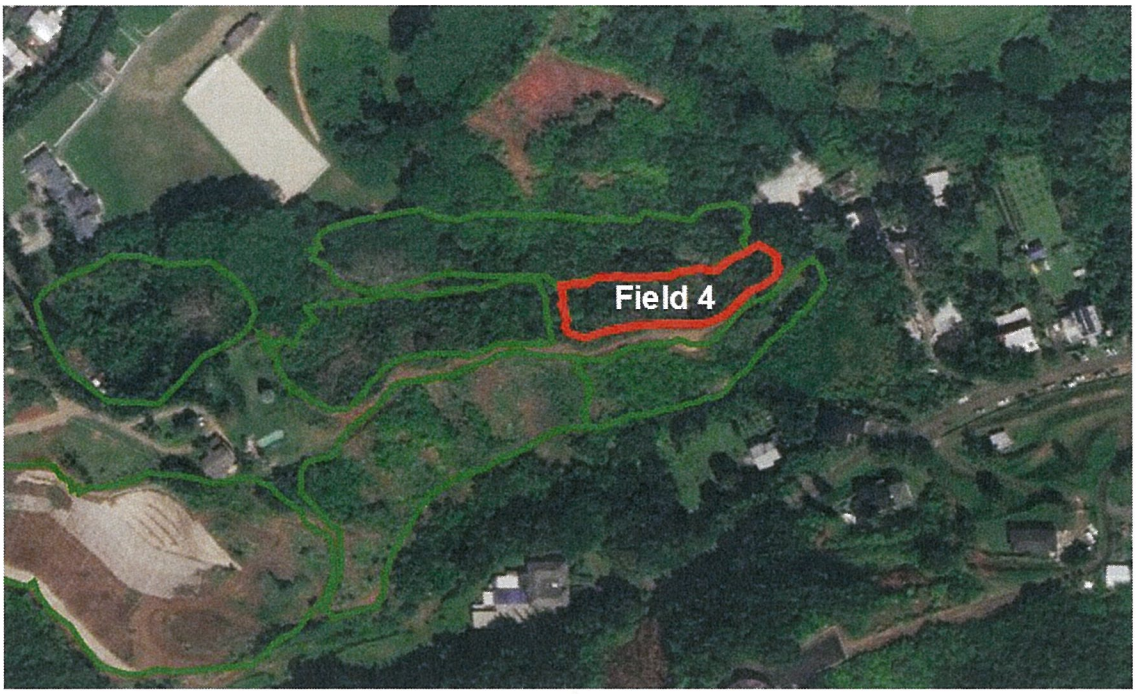


Field 3 is located at the bottom of the ridgeline and is partially occupied by a riparian buffer zone. The invasive canopy in this area has been reduced. The understory is colonized by bingabing, dillenia, albizia, trumpet trees, schefflera and fiddlewood, which thrive in the moist conditions and choke out the understory. Invasive seedlings crowd the understory along with herbaceous weeds such as wedelia, honohono and maile pilau. A native overstory of hala once occupied the riparian buffer zone of this field, as evidenced by the relatively intact hala overstory in the upstream gully. Akiohala seeds itself along the field and is represented by several specimens in the field. Uhaloa is also present, growing among the weeds on sections of the ridge.

This field will be reforested by removing competing invasive vegetation and installing a dense planting of hala to form an overstory. Perennial grasses and riparian plant species such as akiohala, uki, aeae, hala and mamaki will be planted along the stream and surrounding areas. Mulch will be placed on exposed soils around new plantings to reduce weed competition. Remnant palaa fern patches will be weeded to encourage regeneration and hardy native species such uhaloa and popolo will be re-established to reclaim degraded areas. Weed matting will be installed in heavily infested areas on difficult to maintain sections of the field. The steep slopes of this area will largely be maintained by hand; trees too difficult to remove manually will be treated with basal bark incision. Clumps of undesirable plants will be removed via excavator; sensitive areas will be avoided to minimize erosion damage.

Field 4

Size: 1.5 acres
Land use: Reforestation
Funding source: CREP

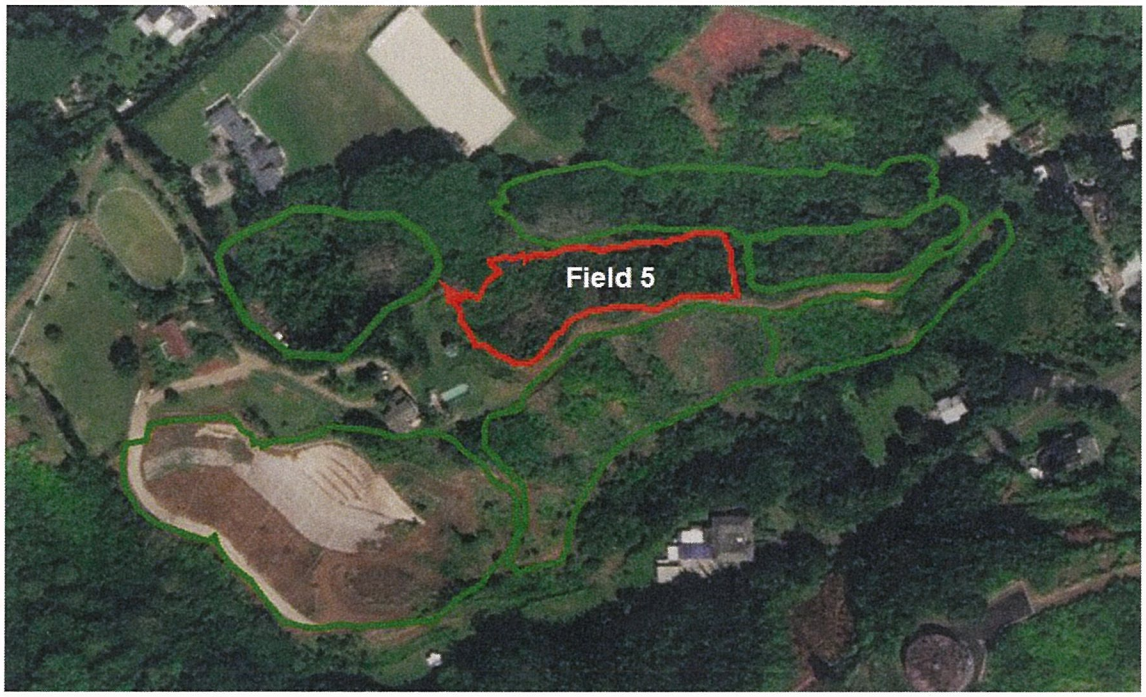


Field 4 is located next to a dry streambed. Its canopy of java plum, fiddlewood and octopus trees has been partially removed, leaving a vulnerable understory that has ample sunlight and moisture levels. Bingabing and fiddlewood seedlings are prolific in this area, along with young albizia and gunpowder trees. Remnant ohia and akia are found on the upper ridgeline of the field. A concentration of palaa remains on the north facing ridgeline with weedy shrubs such as koster's curse, hilo holly and shoe button ardisia germinating within its patches.

This field will be reforested by removing invasive plant species and planting koa, ohia and hala. Dead wood and logs will be selectively retained to encourage palaa reestablishment. Conservation cover species and native groundcovers will be planted in exposed areas. The overstory of fiddlewood and rubber trees will be felled and chipped. Because of its slow growth rate and relatively low level of seed dispersal, select java plum trees will be retained as a temporary canopy and removed when they are no longer needed. Conventional mulch will be used around ferns to reduce invasive plant regrowth and improve soil quality. Weed matting will be used on difficult to maintain areas. Special care will be taken to avoid damaging sensitive ohia seedlings and the many slow growing ferns in the area.

Field 5

Size: 2.0 acres
Land use: Reforestation
Funding source: CREP

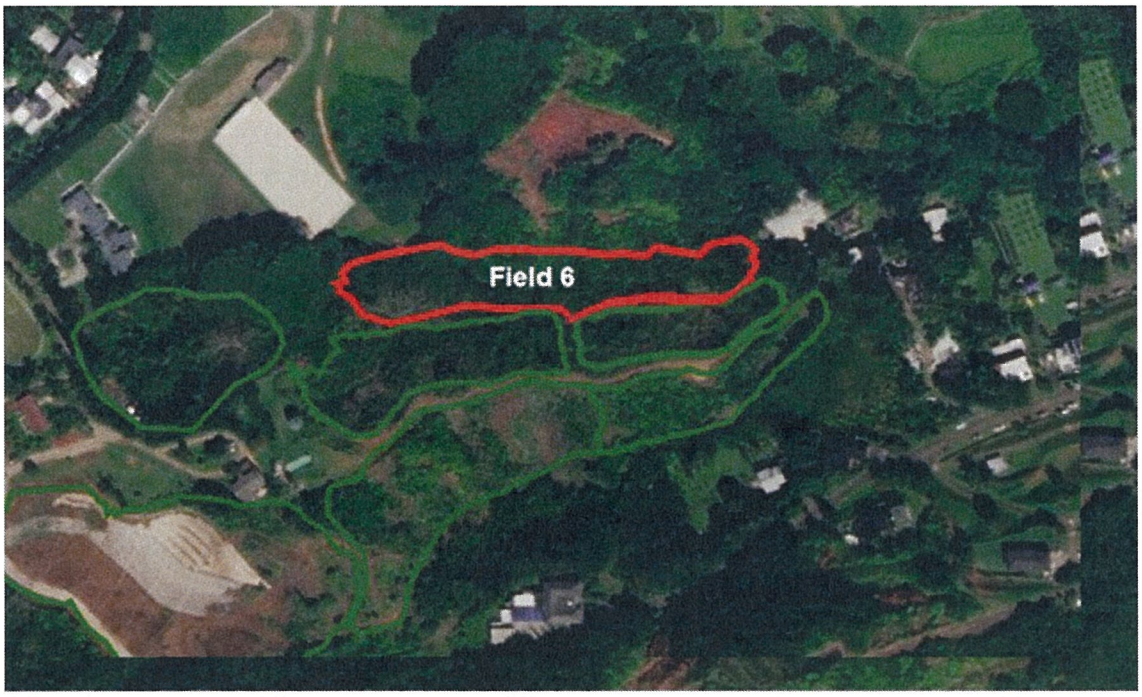


Field 5 is a heavily sloped area located next to a dry stream. This field was once dominated by palaa and ohia, but is now overtaken by a monoculture of dillenia. Some dillenia has been cut and dropped, but their stumps are re-sprouting rapidly. Mango, rubber, java plum and autograph trees fill the overstory. Mature albizia have established along the ridge, along with prolifically growing bingabing and fiddlewood seedlings, which compete with palaa and the few remnant ohia for resources.

This field will be reforested by removing dillenia and the other invasive vegetation and replacing it with hardy keystone species (koa, ohia, hala and others) to establish a native overstory and shade exposed soils from wind borne seeds. This difficult to manage terrain requires intensive herbicide treatment and clearing. Large woody trees will be removed via herbicide incision injection and frill cuts as needed. Due to the steep terrain, weed matting will be used to manage weed growth and reduce the labor required to manage these difficult to reach areas. To reduce invasive seed dispersal, invasive mother plants on the ridge will be targeted and treated while standing.

Field 6

Size: 2.1 acres
Land use: Agroforestry
Funding source: FSP



Field 6 has a dry streambed that fills with water during large weather events. As with the rest of the property, this area is overrun by a dillenia dominated invasive forest. The overstory contains water loving rubber trees and fiddlewood, along with a few mango trees. A grove of cacao has been successfully planted along the streambed.

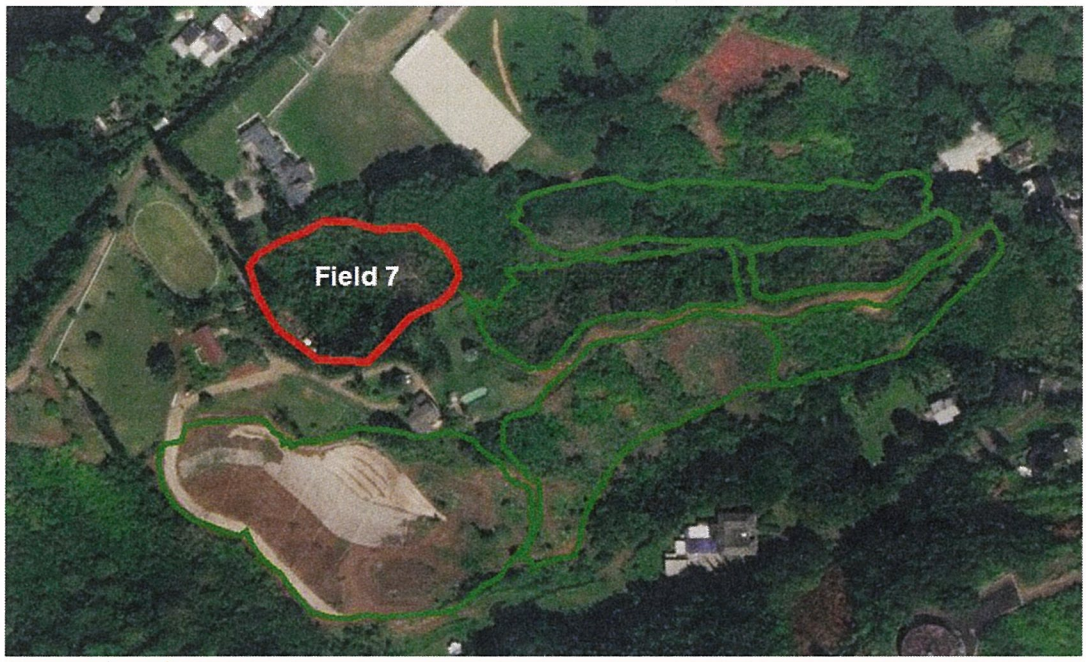
The goal for this field is to create a windbreak and regenerative multi-story agroforestry system to protect the resources of the dry streambed and provide for the small-scale production of saleable crops. These crops will include traditional Hawaiian plants such as mamaki, awa and ulu. Perennial native grasses, ferns and groundcovers will be established to mitigate topsoil losses and aid in nutrient retention.

The invasive overstory in this field is currently too dense to support understory crops. It will be selectively cleared to retain some shade; these trees will be removed once the native overstory takes hold. A windbreak of trees will be established on both sides of the streambed. These trees will be selected to tolerate heavy winds, varying light conditions and significant water flow during seasonal weather events.

Because the terrain along the streambed is highly sensitive, manual methods will be used to remove invasive plants. Mechanized equipment will be used only as needed to stack logs and selectively pull invasive trees in range of the trail. Woody residue created from trees will be spread to cover exposed soils and mitigate the re-establishment of invasive seedlings. Undesirable trees will be carefully treated with herbicide incision injection.

Field 7

Size: 1.2 acres
Land use: Agroforestry
Funding source: FSP



Field 7 is a severely overgrown, unmanaged bowl located at the top of the property. It is a relatively flat area with an impressive tangle of invasive plants. The top canopy is made up of two large old growth mango trees, albizia, fiddlewood and some java plum. A large clump of bamboo covered in maile pilau and passiflora sp. covers the center of the bowl. Bingabing trees seed prolifically from mother plants high upon the ridgeline; gunpowder and african tulip, trumpet and octopus trees are also present in a variety of sizes.

The goal is to remove the invasive plant cluster at the heart of the 1.2-acre bowl and create a multi-story agroforestry system. The invasive plant levels in this area will require mechanized equipment to clear the overgrowth. Approximately .3 acres along the wall of the bowl will be covered with weed matting to address erosion issues; a windbreak will be established within the matting, along with groundcovers and other plants.

Indigenous tree crops such as ulu and kukui will be planted along with koa and other agroforestry trees to form an overstory canopy. Shade tolerant food and spice crops such as cacao and turmeric will be planted in the understory along with perennial grasses, native ferns and cover crops to retain nutrients and mitigate surface erosion. Agroforestry plantings will be selected with consideration to their specific growth requirements. Once the overstory is established, shade tolerant traditional crops such as mamaki and awa will be planted in the understory, along with various shrubs and other non-invasive food crops.

VII. Budget Detail and Summary

Year 1: Field 1 (2.2 acres) FSP - AGROFORESTRY (1.5 acres were managed through ORC&D grant; other practices will be implemented through this plan)

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application		Estimated costs					
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Fence	472 Access Control	$5.00-$14.00	3,000	feet	10.50	31,500	15,750	15,750		Fencing to be installed on highly sloped site, on difficult terrain. Skirting and weed matting will be installed in some areas to prevent tunneling.
Tree shrub site prep	490 Tree/Shrub Site Prep	$400-$1000	0.7	acre	1,000	700	350	350		Prep the .7 acre unmanaged area (rest of field has been prepped). Will require some excavation; highly sloped areas will be hand cleared.
Tree shrub site prep	384 Woody Residue Treatment	$400-$1000	0.7	acre	1,000	700	350	350		Prep the .7 acre unmanaged area (rest of field has been prepped). Will require some excavation; highly sloped areas will be hand cleared.
Nutrient management	590 Nutrient Management	$100-$700	2.2	acre	500	1,100	550	550		
Tree shrub establishment	612 Tree/Shrub Establishment	$1.00-$12.00	2,400	seedling	6.45	15,480	7,740	7,740		Trees and shrubs to be planted on .7 acres of unmanaged land (price based on CREP rates)
Mulching	484 Mulching	$0.14-$0.28	21,780	square foot	0.21	4,574	2,287	2,287		Install weed matting along highly sloped areas pf .7 unmanaged field; spread wood chippings in remaining areas.
Groundcover establishment	327 Conservation Cover	$800-$2,800	1.0	acre	2,600	2,600	1,300	1,300		.7 acre unmanaged area.
Weed control	314 Brush Management	$200-$600	0.7	acre	600	420	210	210		Only required for .7 acre unmanaged area.
Weed control	315 Herbaceous Weed control	$200-$600	1.0	acre	600	600	300	300		
TOTALS	-	-	-	-	-	**57,674**	**28,837**	**28,837**		-

Year 1: Field 2 (2.0 acres) CREP - REFORESTATION

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application		Estimated costs					
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Tree shrub site prep	490 Tree/Shrub Site Prep	$400-$1,000	2.0	acre	2,383	4,766	2,383		2,383	Field 2 is a highly sloped area which will make prep work more difficult. Most work will be done by hand since it is too steep to be accessed by an excavator. **Rate per CREP budget estimate provided.**
Tree shrub establishment	612 Tree/Shrub Establishment	$1.00-$12.00	4,000	seedling	6.45	25,800	12,900		12,900	Seeding and rate assumptions based on CREP budget estimate provided.
Mulching	484 Mulching	$0.14-$0.28	60,984	square foot	0.21	12,807	6,403	6,403		Install weed matting along highly sloped areas (.5 acre); spread wood chippings in remaining areas. Install through FSP since CREP does not cover weed matting.
Groundcover establishment	327 Conservation Cover	$800-$2,800	2.0	acre	538	1,076	538		538	Rate per CREP budget estimate provided.
Weed control	314 Brush Management	$200-$600	2.0	acre	201	401	201		201	Rate per CREP budget estimate provided.
Weed control	315 Herbaceous Weed control	$200-$600	2.0	acre	112	223	112		112	Rate per CREP budget estimate provided.
TOTALS	-	-	-	-	-	**45,073**	**22,537**	**6,403**	**16,133**	-

Year 2: Total 3.0 acres Field 3 (1.5 acres) and Field 4 (1.5 acres) CREP - REFORESTATION

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application		Estimated costs					
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Tree shrub site prep	490 Tree/Shrub Site Prep	$400-$1,000	3.0	acre	2,383	7,149	3,575		3,575	Some canopy has already been removed. Retain and plant in palaa fern on .5 acres; .2 acres has a longan grove. **Rate per CREP budget estimate provided.**
Mulching	484 Mulching	$0.14-$0.28	65,340	square foot	0.21	13,721	6,861	6,861		These fields are severely sloped. Weed matting will need to be installed extensively in these areas. Installation will be difficult. Funding is requested through FSP since CREP does not cover weed matting.
Tree shrub establishment	612 Tree/Shrub Establishment	$1.00-$12.00	6,000	seedling	6.45	38,700	19,350		19,350	Assumptions based on CREP budget estimate provided.
Groundcover establishment	327 Conservation Cover	$800-$2,800	3.0	acre	538	1,614	807		807	Rate per CREP budget estimate provided.
Weed control	314 Brush Management	$200-$600	3.0	acre	201	602	301		301	Rate per CREP budget estimate provided.
Weed control	315 Herbaceous Weed control	$200-$600	3.0	acre	112	335	168		168	Rate per CREP budget estimate provided.
TOTALS	-	-	-	-	-	**62,121**	**31,061**	**6,861**	**24,200**	-

Year 2: **Field 6 (2.1) FSP - AGROFORESTRY**

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application		Estimated costs					
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Tree shrub site prep	490 Tree/Shrub Site Prep	$400-$1,000	2.0	acre	1,000	2,000	1,000	1,000		2.0 acre is plantable. Will need handclearing; area too steep for excavator
Tree shrub site prep	384 Woody Residue Treatment	$400-$1,000	2.0	acre	982	1,964	982	982		
Mulching	484 Mulching	$0.14-$0.28	60,984	square foot	0.21	12,807	6,403	6,403	-	Requires weed matting.
Nutrient management	590 Nutrient Management	$100-$700	2.0	acre	500	1,000	500	500	-	
Tree shrub establishment	612 Tree/Shrub Establishment	$1.00-$12.00	4,000	seedling	6.45	24,548	12,274	12,274		Rate based on CREP budget estimate provided.
Groundcover establishment	327 Conservation Cover	$800-$2,800	2.0	acre	2,600	4,979	2,490	2,490	-	
Windbreak	380 Windbreak	$800-$2,800	60	seedling	8.50	510	255	255	-	Higher cost due to greater proportion of native trees vs. shrubs in windbreak.
Weed control	314 Brush Management	$200-$600	2.1	acre	600	1,260	630	630	-	
Weed control	315 Herbaceous Weed control	$200-$600	2.1	acre	600	1,260	630	630	-	
TOTALS	-	-	-	-	-	**50,328**	**25,164**	**25,164**	-	-

Year 3: Field 5 (2.0 acres) CREP - REFORESTATION

Practice Components	NRCS Code	Allowable Cost Share Rate			Practice Application		Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Tree shrub site prep	490 Tree/Shrub Site Prep	$400-$1,000	2.0	acre	$2,383	4,766	2,383		2,383	The canopy has been partially managed; .3 is not plantable. Trees will be carefully planted into the existing palaa fern area.
Tree shrub establishment	612 Tree/Shrub Establishment	$1.00-$12.00	4,000	seedling	$6.45	25,800	12,900		12,900	Assumptions based on CREP budget estimate provided.
Mulching	484 Mulching	$0.14-$0.28	42,870	square foot	0.21	9,003	4,501	4,501	-	1.0 acre of mulch needed including weed matting. Install through FSP since CREP does not cover weed matting.
Groundcover establishment	327 Conservation Cover	$800-$2,800	2.0	acre	538	1,076	-		1,076	Rate per CREP budget estimate provided.
Weed control	314 Brush Management	$200-$600	2.0	acre	201	401	201		201	Rate per CREP budget estimate provided.
Weed control	315 Herbaceous Weed control	$200-$600	2.0	acre	112	223	112		112	Rate per CREP budget estimate provided.
TOTALS	-	-	-	-	-	**41,269**	**20,097**	**4,501**	**16,671**	

Year 3: **Field 7 (1.2 acres) FSP - AGROFORESTRY**

Practice Components	NRCS Code	Allowable Cost Share Rate			Practice Application		Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Tree shrub site prep	490 Tree/Shrub Site Prep	$400-$1,000	1.2	acre	$1,000	1,200	600	600		Field 7 is a highly sloped dry streambed severely impacted by invasives; site prep will be difficult in this area.
Tree shrub site prep	384 Woody Residue Treatment	$400-$1,000	1.2	acre	$1,000	1,200	600	600		Chip cleared material to prevent dillenia from adventitious rooting.
Nutrient management	590 Nutrient Management	$100-$700	1.2	acre	500	600	300	300	-	
Tree shrub establishment	612 Tree/Shrub Establishment	$1.00-$12.00	2,400	seedling	$6.45	15,480	7,740	7,740	-	
Mulching	484 Mulching	$0.14-$0.28	33,728	square foot	0.21	7,083	3,541	3,541	-	1.0 acre of mulch needed including weed matting.
Windbreak	380 Windbreak	$0.14-$0.28	60	seedling	8.50	510	255	255	-	Higher proportion of native trees vs. shrubs in windbreak.
Groundcover establishment	327 Conservation Cover	$800-$2,800	1.0	acre	2,600	2,600	1,300	1,300	-	
Weed control	315 Herbaceous Weed control	$200-$600	1.2	acre	600	720	360	360	-	
Weed control	314 Brush Management	$200-$600	1.2	acre	600	720	360	360	-	
TOTALS	-	-	-	-	-	**30,113**	**15,056**	**15,056**	-	-

Year 4: Install shade tolerant shrubs and groundcover on Fields 1 & 2; Weed Control on all Fields

Practice Components	NRCS Code	Allowable Cost Share Rate			Practice Application		Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Groundcover establishment	327 Conservation Cover	$800-$2,800	2.7	acre	1,200	3,209	1,605	1,605	-	Install shade tolerant ground covers in Fields 1 and 2 (2.7 acres), which should now have sufficient canopy cover.
Weed control	315 Herbaceous Weed control	$200-$600	11.0	acre	500	5,500	2,750	2,750		
Mulching	484 Mulching	$0.14-$0.28	20,480	acre	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	150	1,650	825	825	-	
TOTALS	-	-	-	-	-	**13,431**	**6,716**	**6,716**	-	-

Year 5: Install shade tolerant groundcover on Fields 3, 4 and 6; Reapply mulch and Weed Control on all Fields

Practice Components	NRCS Code	Allowable Cost Share Rate			Practice Application		Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Groundcover establishment	327 Conservation Cover (CREP)	$800-$2,800	2.3	acre	1,200	2,760	1,380	1,380	-	Install shade tolerant ground covers in Fields 3 and 4 (2.3 acres), which should now have sufficient canopy cover.
Groundcover establishment	327 Conservation Cover (FSP)	$800-$2,800	1.7	acre	1,200	2,040	1,020	1,020		Install shade tolerant ground covers in Field 6 (FSP) (1.7 acres), which should have sufficient canopy cover.
Weed control	315 Herbaceous Weed control	$200-$600	11.0	acre	500	5,500	2,750	2,750	-	All fields, excludes 1.5 acre for Field 1 funded by ORC&D.
Mulching	484 Mulching	$0.14-$0.28	20,480	acre	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	150	1,650	825	825	-	
TOTALS	-	-	-	-	-	**15,022**	**7,511**	**7,511**	-	-

Year 6: Install shade tolerant groundcover on Fields 5 and 7; weed Control on all Fields

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application				Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Groundcover establishment	327 Conservation Cover (CREP)	$800-$2,800	1.5	acre	1,200	1,800	900	900	-	Install shade tolerant ground covers in Fields 5 and 7, which should now have sufficient canopy cover from the previous plantings.
Groundcover establishment	327 Conservation Cover (FSP)	$800-$2,800	1.2	acre	1,200	1,440	720	720		Install shade tolerant ground covers in Fields 5 and 7, which should now have sufficient canopy cover from the previous plantings.
Weed control	315 Herbaceous Weed control	$200-$600	11.0	acre	400	4,400	2,200	2,200	-	All fields, excludes 1.5 acre for Field 1 funded by ORC&D
Mulching	484 Mulching	$0.14-$0.28	20,480	SqFt	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	150	1,650	825	825	-	
TOTALS	-	-	-	-	-	**12,362**	**6,181**	**6,181**	-	-

Year 7: Weed control and monitoring

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application				Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Weed control	315 Herbaceous Weed control	$200-$600	10.8	acre	400	4,320	2,160	2,160	-	All fields, excludes 1.5 acre for Field 1 funded by ORC&D
Mulching	484 Mulching	$0.14-$0.28	20,480	SqFt	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	100	1,100	550	550	-	
TOTALS	-	-	-	-	-	**8,492**	**4,246**	**4,246**	-	-

Year 8: Weed control and monitoring (all fields, excludes 1.5 ORCD managed area)

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application				Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Weed control	315 Herbaceous Weed control	$200-$600	9.7	acre	400	3,888	1,944	1,944	-	All fields, excludes 1.5 acre for Field 1 funded by ORC&D
Mulching	484 Mulching	$0.14-$0.28	20,480	SqFt	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	100	1,100	550	550	-	
TOTALS	-	-	-	-	-	**8,060**	**4,030**	**4,030**	-	-

Year 9: Weed control and monitoring (all fields, excludes 1.5 ORCD managed area)

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application				Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Weed control	315 Herbaceous Weed control	$200-$600	8.7	acre	400	3,499	1,750	1,750	-	All fields, excludes 1.5 acre for Field 1 funded by ORC&D
Mulching	484 Mulching	$0.14-$0.28	20,480	SqFt	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	100	1,100	550	550	-	
TOTALS	-	-	-	-	-	**7,671**	**3,836**	**3,836**	-	-

Year 10: Weed control and monitoring (all fields, excludes 1.5 ORCD managed area)

Practice Components	NRCS Code	Allowable Cost Share Rate	Practice Application				Estimated costs			
			# of Units	Unit	Cost/Unit	Total Cost	Applicant Share	FSP Share	CREP Share	Comments/Justification (optional)
Weed control	315 Herbaceous Weed control	$200-$600	7.9	acre	400	3,149	1,575	1,575	-	All fields, excludes 1.5 acre for Field 1 funded by ORC&D
Mulching	484 Mulching	$0.14-$0.28	20,480	SqFt	0.15	3,072	1,536	1,536		
Monitoring	472 Access Control	$20-$150	11.0	acre	100	1,100	550	550		
TOTALS	-	-	-	-	-	**7,321**	**3,661**	**3,661**	-	-

TOTALS: $ 358,937 $ 178,930 $ 123,002 $ 57,004

Budget Summary

Year	Total Budget	Applicant Share	FSP Share	CREP Share	Description of Work
1	$ 100,537	$ 50,268	$ 34,135	$ 16,133	Fencing + Fields 1 (FSP 2.2 acres) & 2 (CREP 2.0 acres); total 4.2 acres
2	112,449	56,224	32,025	24,200	Fields 3 (CREP 1.5 acres), Field 4 (CREP 1.5 acres) & Field 6 (FSP 2.1 acres); total 5.1 acres
3	73,592	36,258	20,663	16,671	Fields 5 (CREP 2.0 acres) and 7 (FSP 1.2 acres); total 3.2 acres
4	13,431	6,716	6,716	-	Install shade tolerant understory plants in the canopy of fields 1 & 2 (4.2 acres); maintain 11.0 acres
5	15,022	7,511	7,511	-	Install shade tolerant understory plants in the canopy of fields 3, 4 & 6 (5.1 acres); maintain 11.0 acres
6	12,362	6,181	6,181	-	Install shade tolerant understory plants in the canopy of fields 5 & 7 (4.2 acres); maintain 11.0 acres
7	8,492	4,246	4,246	-	Maintain 11.0 acres (excl 1.5 acres funded through ORC&D)
8	8,060	4,030	4,030	-	Maintain 11.0 acres (excl 1.5 acres funded through ORC&D)
9	7,671	3,836	3,836	-	Maintain 11.0 acres (excl 1.5 acres funded through ORC&D)
10	7,321	3,661	3,661	-	Maintain 11.0 acres (excl 1.5 acres funded through ORC&D)
Total	**$ 358,937**	**$ 178,930**	**$ 123,002**	**$ 57,004**	-

VIII. Required Maps

1. Project and location on Oahu
2. TMK Map
3. Elevation
4. Average annual precipitation
5. Soil composition

Figure 1. Map of project and location on Oahu

Kaalaea Koa Farm is in Kaalaea Valley which is part of the Koolaupoko district located on the southeastern district of Oahu.

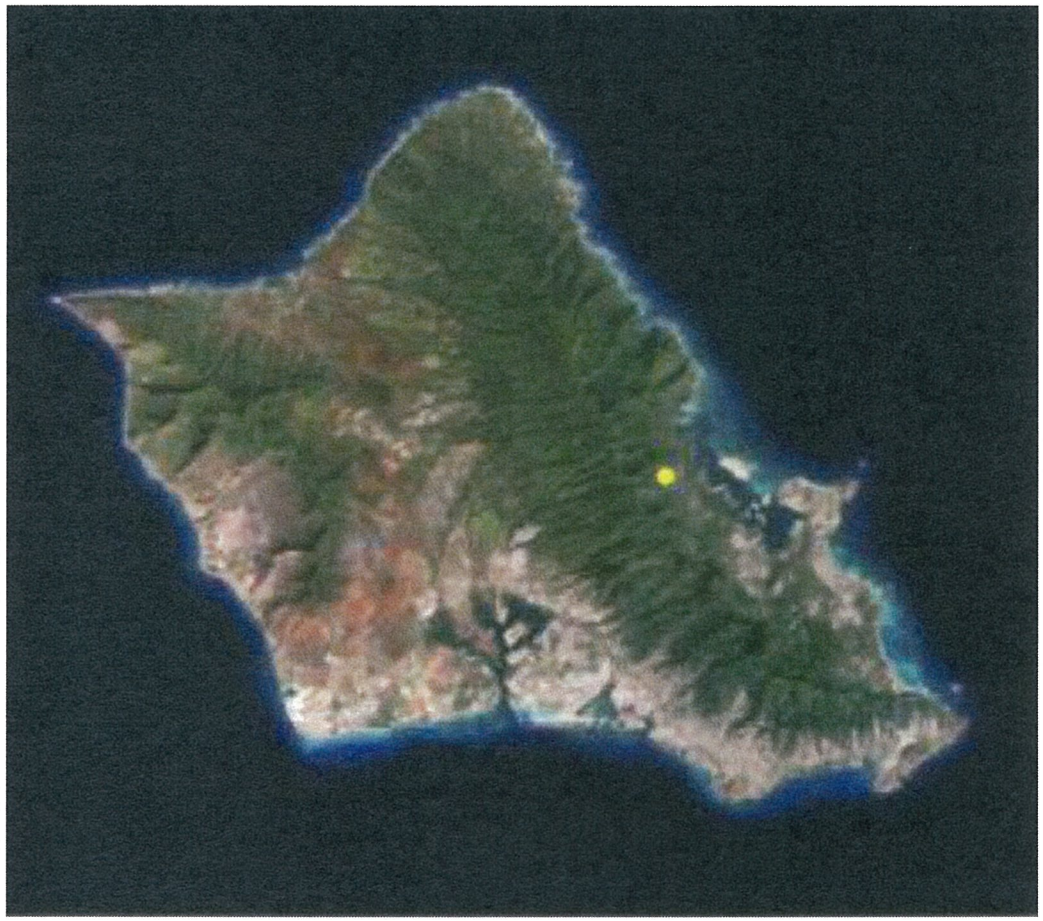


Figure 2. TMK Map **Shared Condominium Lot TMK 4-7-007-009**

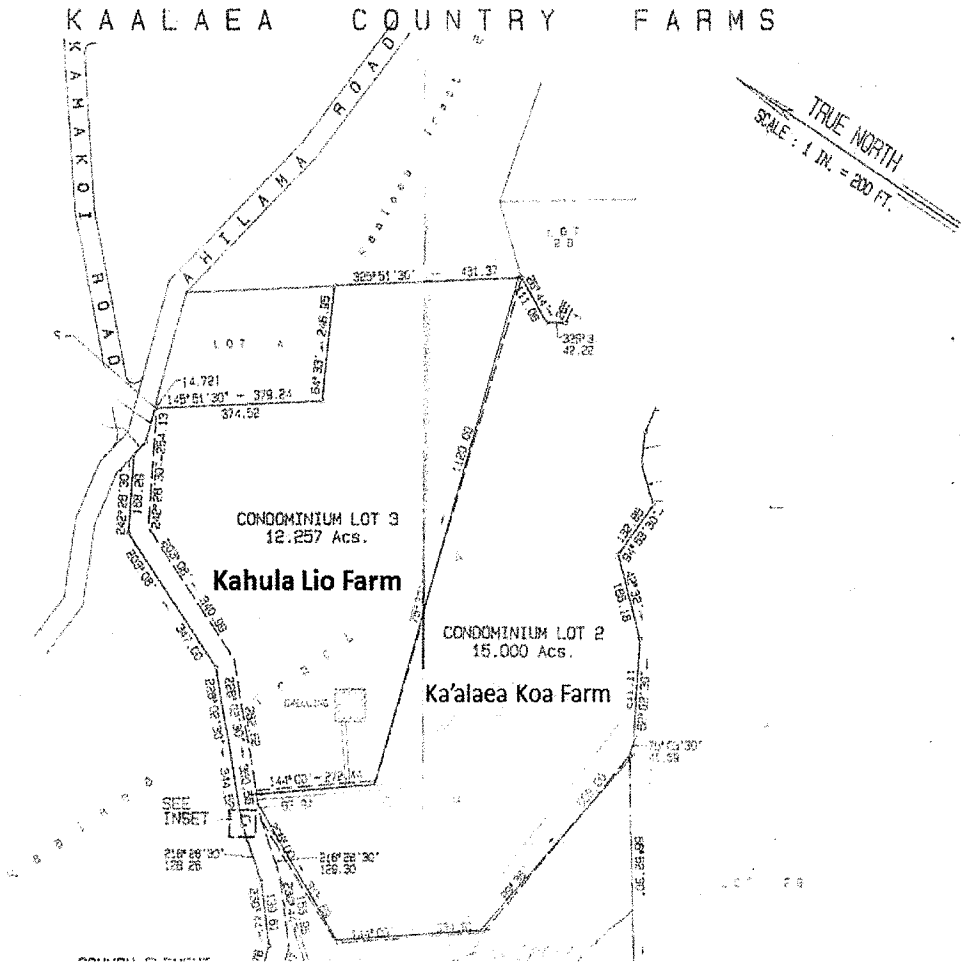
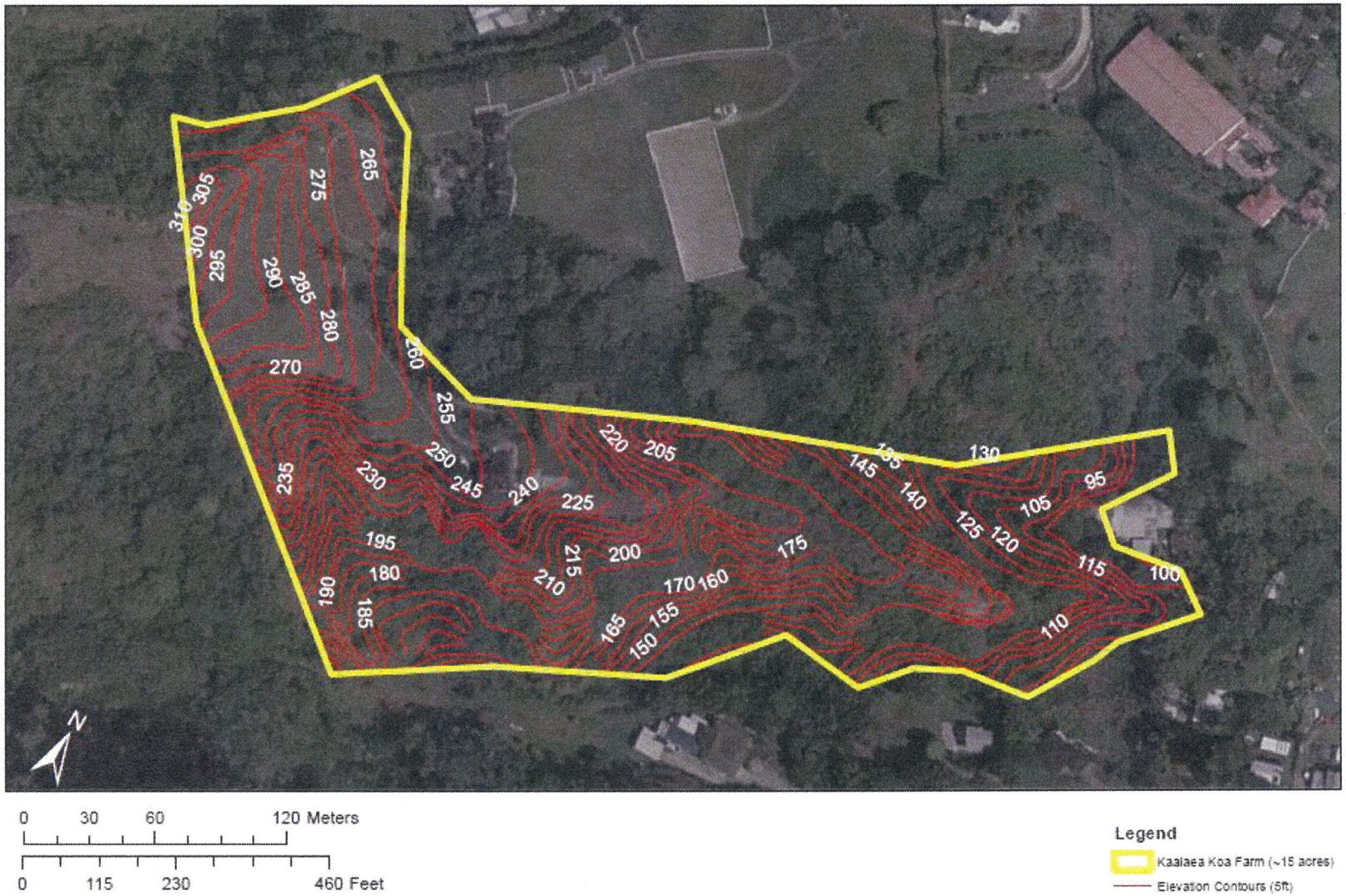


Figure 3. Elevation Map (5 ft. contours) 95 to 310 feet



0 30 60 120 Meters

0 115 230 460 Feet

Legend

Kaalaea Koa Farm (~15 acres)

Elevation Contours (5ft)

Figure 4. Average Annual Precipitation (inches)

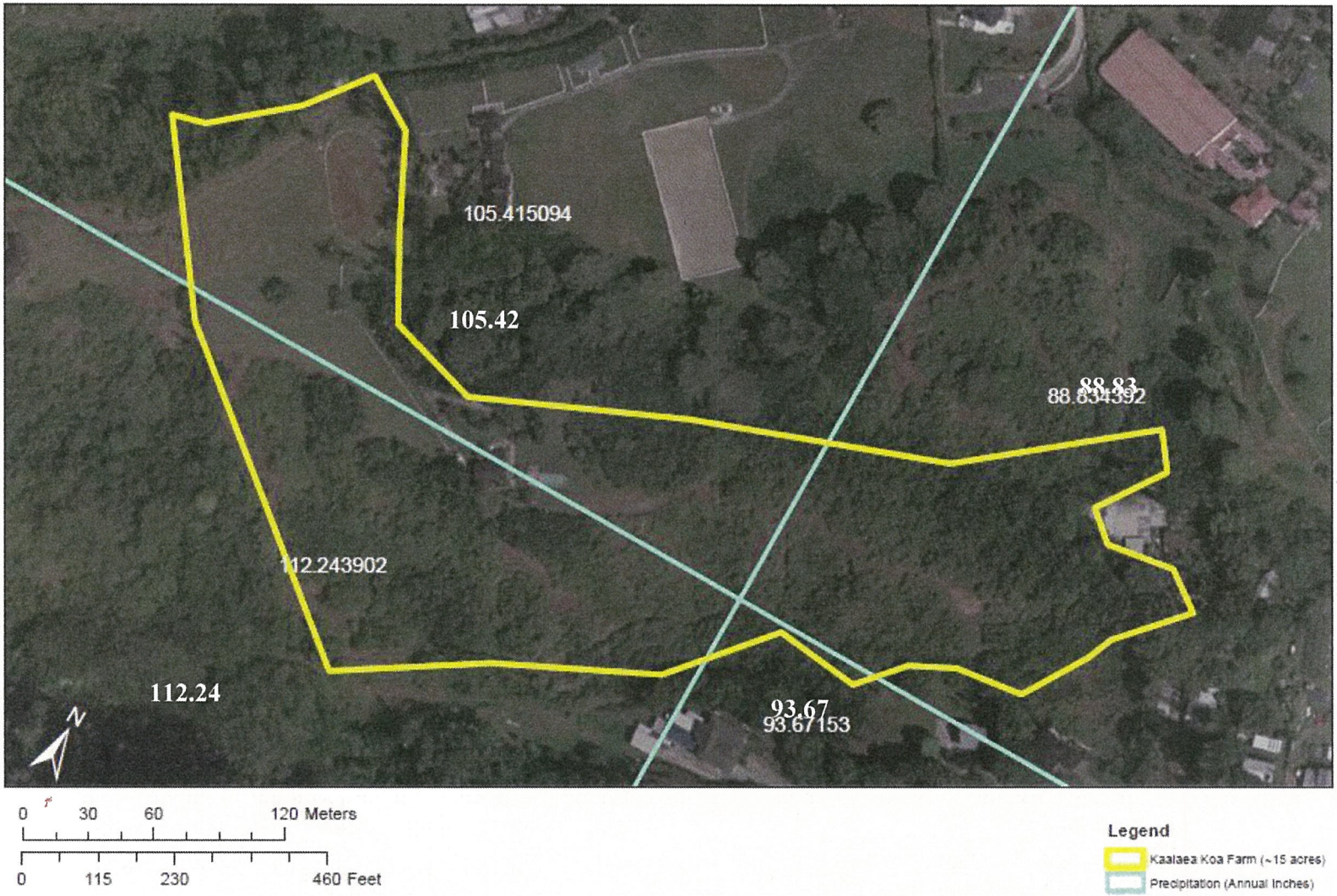
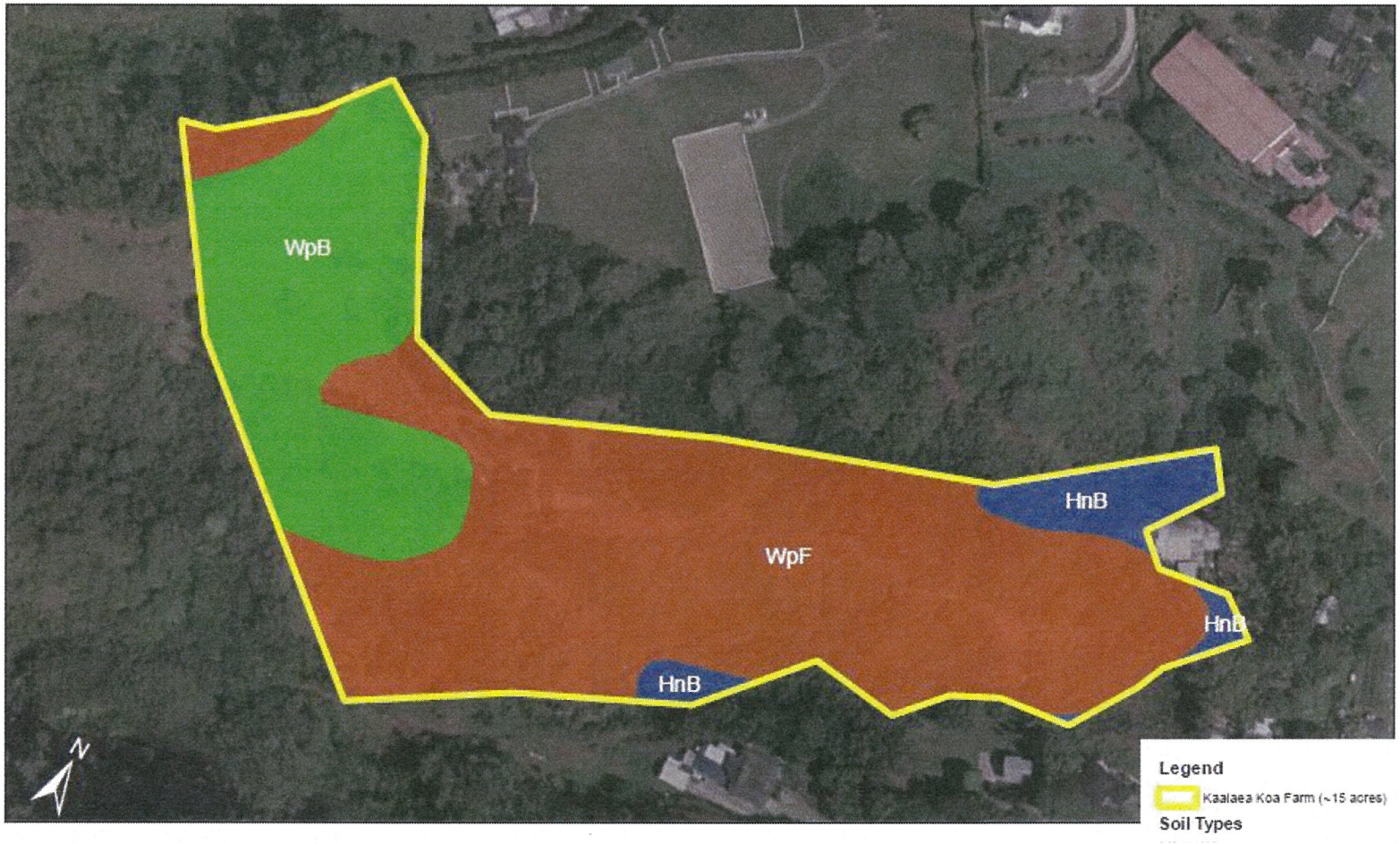


Figure 5. Soil Map and Description



Approximately 65% of the property consists of Waikane silty clay 40 to 70% slopes. The two other soil types present are Waikane silty clay 3 to 8% slopes and Hanalei silty clay 2 to 6% slopes.

IX. Appendices

Appendix 1 – Dillenia suffruticosa Risk Rating

(Plantpono.org/files/dillenia%20suffruticosa.pdf)

Creation Date: 22 Jun | *(dillenia suffruticosa)* | Page **1** of **16**

TAXON: *dillenia* | **SCORE:** | **RATING:** ***High***

Assessor: Chuck Chimera | **Status:** Assessor Approved | **End Date:** 22 Jun 2015

WRA Score: **11.0** | **Designation:** | **Rating:** High Risk

Keywords: Tropical Shrub, Environmental Weed, Thicket-forming, Bird-dispersed, Coppices

Qsn #	Question	Answer Option	Answer
101	Is the species highly domesticated?	y=-3, n=0	n
102	Has the species become naturalized where grown?		
103	Does the species have weedy races?		
201	Species suited to tropical or subtropical climate(s) - If island is primarily wet habitat, then substitute "wet tropical" for "tropical or subtropical"	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
202	Quality of climate match data	(0-low; 1-intermediate; 2-high) (See Appendix 2)	High
203	Broad climate suitability (environmental versatility)	y=1, n=0	n
204	Native or naturalized in regions with tropical or subtropical climates	y=1, n=0	y
205	Does the species have a history of repeated introductions outside its natural range?	y=-2, ?=-1, n=0	y
301	Naturalized beyond native range	y = 1*multiplier (see Appendix 2), n= question 205	y
302	Garden/amenity/disturbance weed		
303	Agricultural/forestry/horticultural weed		
304	Environmental weed	n=0, y = 2*multiplier (see Appendix 2)	y
305	Congeneric weed		
401	Produces spines, thorns or burrs	y=1, n=0	n
402	Allelopathic		
403	Parasitic	y=1, n=0	n
404	Unpalatable to grazing animals	y=1, n=-1	n
405	Toxic to animals	y=1, n=0	n
406	Host for recognized pests and pathogens	y=1, n=0	y
407	Causes allergies or is otherwise toxic to humans	y=1, n=0	n
408	Creates a fire hazard in natural ecosystems		

Appendix 2 – Invasive Plant List

Trees	
african tulip	*Spathodea campanulata*
albizia	*Falcataria moluccana*
autograph tree	*Clusia rosea*
bingabing	*Macaranga mappa*
fiddlewood	*Citharexylum spinosum*
gunpowder tree	*Trema orientalis*
java plum	*Syzygium cumini*
mango	*Mangifera indica*
octopus tree	*Schefflera actinophylla*
trumpet tree	*Cecropia obtusifolia*
Herbaceous Weeds	
asiatic pennywort	*Centella asiatica*
bamboo orchid	*Arundina graminifolia*
black catnip	*Phyllanthus amarus*
garden spurge	*Euphorbia hirta*
maile hohono	*Ageratum conyzoides*
sleeping grass	*Mimosa pudica*
wedelia	*Sphagneticola trilobata*
Grasses	
guinea grass	*Panicum maximum*
molasses grass	*Melinis minutiflora*
Shrubs	
clidemia, koster's curse	*Clidemia hirta*
dillenia	*Dillenia suffruticosa*
haole koa	*Leucaena leucocephala*
hilo holly	*Ardisia crenata*
shoe button ardisia	*Ardisia elliptica*
Vines	
dissotis	*Dissotis rotundifolia*
maile pilau	*Paederia foetida*
red barleria	*Barleria repens*

Appendix 3 – Project Plant Lists
General Plant List

Common name	Scientific Name	Classification
aalii	*Dodonaea viscosa*	Indigenous
aeae	*Bacopa monnieri*	Indigenous
ahuawa	*Cyperus javanicus*	Indigenous
akia	*Wikstroemia sp.*	Endemic
akiohala	*Hibiscus furcellatus*	Indigenous
alahee	*Psydrax odorata*	Indigenous
green ti	*Cordyline fruticosa*	Polynesian Introduced
hala	*Pandanus tectorius*	Indigenous
iliee	*Plumbago zeylanica*	Indigenous
ilima	*Sida fallax*	Indigenous
kawelu	*Eragrostis variabilis*	Endemic
koa	*Acacia koa*	Endemic
kului	*Nototrichium sandwicense*	Endemic
loulu	*Pritchardia martii*	Endemic
mamaki	*Pipturus albidus*	Indigenous
milo	*Thespesia populnea*	Indigenous
naio	*Myoporum sandwicense*	Indigenous
nanea	*Bacopa monnieri*	Indigenous, covercrop
oahu sedge	*Carex wahuensis*	Endemic
ohia	*Metrosideros polymorpha*	Endemic
palaa	*Sphenomeris chinensis*	Indigenous
palapalai	*Microlepia strigosa*	Indigenous
perennial peanut	*Arachis sp.*	covercrop
pidgeon pea	*Cajanus cajan*	Covercrop
pili grass	*Heteropogon contortus*	Indigenous
popolo	*Solanum americanum*	Indigenous
uhaloa	*Waltheria indica*	Indigenous
ulei	*Osteomeles anthyllidifolia*	Indigenous

Agroforestry Plant List

Common Name	Scientific name	Crop trees	Native	Spacing	Mature height	Windbreak	Nitrogen Fixing
Koa	*Acacia koa*	N	Y	10x10	Tall	Y	Y
Jackfruit	*Artocarpus heterophyllum*	Y	N	25 x 25	Tall	Y	N
Cacao	Theobroma cacao	Y	N	10x10	Short	N	N
'ōhi'alehua	*Metrosideros polymorpha*	N	Y	20x20	Medium	Y	N
Ulu	*Artocarpus altilis*	Y	N	20x20	Tall	N	N
Milo	*Thespesia populnea*	N	Y	10x10	Tall	Y	N
Mango	*Magnifera indica*	Y	N	25x25	Tall	Y	N
'A'ali'i	*Dodonaea viscosa*	N	Y	10x10	Short	Y	N
Samoan coconut	*Cocos nucifera*	Y	N	20x20	Medium	Y	N
Kukui	*Aleurites moluccanus*	N	Y	15x15	Medium	Y	N
Glyrcidia	*Gliricidia sepium*	N	N	12x12	Tall	Y	Y
Sour sop	*Annona muricata*	Y	N	15x15	Medium	N	N
Neem	*Azadirachta indica*	N	N	20x20	Tall	Y	N
Mamaki	*pipturus albidus*	N	Y	10x10	Medium	N	N
Kou	*Cordia subcordata*	N	Y	12x12	Tall	Y	N
Alahe'e	*Psydrax odorata*	N	Y	10x10	Medium	Y	N
Pili nut	*Arachis pintoi*	Y	N	20x20	Tall	Y	N
Star apple	*Chrysophyllum cainito*	Y	N	20x20	Tall	Y	N

Windbreak Plant List

Common Name	Scientific Name	Status	Nitrogen Fixing	Spacing (ft)	Forest Product
Aaalii	*Dodonaea viscosa*	Native	N	12-20	seed, pollinator
Alahee	*Psydrax odorata*	Native	N	20	pollinator
Cut nut	*Barringtonia procera*	Agroforestry	N	20	nut
Dwarf coconut	*Cocos nucifera*	Agroforestry	N	20	nut
Glircidia	*Gliricidia sepium*	Agroforestry	Y	20	none
Hala	*Pandanus tectorius*	Native	N	15x15	none
Jackfruit	*Artocarpus heterophyllus*	Agroforestry	N	20-25	fruit, nut
Koa*	*Acacia koa*	Native	Y	10-15	seed
Kukui	*Aleurites moluccana*	Poly introduction	N	20-25	nut
Pidgeon pea	*Cajanus cajan*	Agroforestry	Y	5ft	pea
Pili nut	*Canarium ovatum*	Agroforestry	N	20	nut
Soursop	*Annona muricata*	Agroforestry	N	20	fruit
Star apple	*Chrysophyllum cainito*	Agroforestry	N	25	fruit
Ulu	*Artocarpus altilis*	Poly introduction	N	20	fruit

* Primary tree to be used in windbreak.

Appendix 4 – Herbicide Chart

This project will use only non-restricted herbicide chemical treatments. If restricted use herbicides are deemed necessary, they will be applied by a certified herbicide applicator.

Herbicide Chart					
Active ingredient	**Commercial Formulation**	**Target Species**	**Application method**	**Restricted use pesticide (Y/N)**	**Adjuvant /Gallon**
Glyphosate (GLY)	Roundup Honcho pro	Grasses Seedlings Clidemia Bingabinga Octopus tree	Foliar Spot spraying Foliar Incision injection Cut Stump, Incision injection	N	0.5oz/gal
Triclopyr (TCP)	Garlon 4	Woody shrubs Fiddlewood Java plum Trumpet tree	Cut Stump, Incision injection/ cut stump Incision injection, Stump drizzle incision injection,	N	Mix w/oil only(no H2O)
Aminopyralid (AMP)	Milestone	Dillenia Albizia, African tulip, gunpowder tree	Incision Injection, Frill cut, Cut stump.	N	None
Glyphosate/ Triclopyr Mix	See above	African tulip, Albizia, Fiddlewood		N	.5 oz/gal

Appendix 5 – Bibliography

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Exhibit A

STATE OF HAWAII
FOREST STEWARDSHIP AGREEMENT

This AGREEMENT, made this _____ day of _____ _____, 20___, by and between the BOARD OF LAND AND NATURAL RESOURCES, STATE OF HAWAII ("STATE"), by its Chairperson, whose address is 1151 Punchbowl Street, Honolulu, Hawaii 96813, and _____, ("LANDOWNER") whose address and federal and state taxpayer identification numbers are as follows:_____

_____

_____

Business address *Federal and state taxpayer identification numbers*

RECITALS

WHEREAS, Chapter 195F, Hawaii Revised Statutes (HRS), provides for the establishment of a forest stewardship program to encourage and assist private landowners in managing, protecting, and restoring important watersheds, native vegetation, fish and wildlife habitats, isolated populations of rare and endangered plants, and other forest lands that are not recognized as potential natural area reserves; and

WHEREAS, in accordance with HRS Chapter 195F and Title 13, Subtitle 5, Part 1, Chapter 109 of the Hawaii Administrative Rules (HAR), the LANDOWNER has applied, and qualifies, for participation in the forest stewardship program; and

WHEREAS, the LANDOWNER has submitted a forest stewardship management plan, as set forth in Exhibit A hereto, that the STATE agrees is consistent with the policies, goals, and objectives of the forest stewardship program; and

WHEREAS, the STATE desires to assist the LANDOWNER in implementing the forest stewardship management plan with financial and other assistance; and

WHEREAS, money is available to fund this agreement pursuant to: Act 195, SLH 1993, Hawaii Revised Statutes, Section 247-7.

NOW, THEREFORE, in consideration of the promises contained in this AGREEMENT, the STATE and the LANDOWNER agree as follows:

A. SCOPE OF SERVICES

The LANDOWNER hereby agrees to implement the forest stewardship management plan set forth in Exhibit A and the project described in the "Scope of Services" set forth in Attachment S1 in proper and satisfactory manner as determined by the STATE, both of which are hereby made a part of this AGREEMENT. The STATE hereby agrees to assist the LANDOWNER in implementing the forest stewardship management plan, all in accordance with the terms and conditions set forth in Attachments S1, S2, S3, S4, S5, and S6, attached hereto.

B. COMPENSATION

The LANDOWNER shall be compensated for performance of the project under this AGREEMENT according to the "Compensation and Payment Schedule," set forth in Attachment S2, which is hereby made a part of this Agreement.

C. TIME OF PERFORMANCE

The performance required of the LANDOWNER under this AGREEMENT shall be completed in accordance with the "Time of Performance" set forth in Attachment S3, which is hereby made a part of this AGREEMENT.

D. CERTIFICATE OF EXEMPTION FROM CIVIL SERVICE

The "State of Hawaii Certificate of Exemption from Civil Service," set forth in Attachment S4, is hereby made a part of the AGREEMENT.

E. OTHER TERMS AND CONDITIONS

The "State of Hawaii Special and General Conditions for Forest Stewardship Program Agreements," set forth in Attachment S5, and the General Conditions attached hereto, are hereby made a part of this AGREEMENT. For the purposes of this AGREEMENT the term "CONTRACTOR" in the "General Conditions" shall mean the LANDOWNER.

F. STANDARDS OF CONDUCT DECLARATION

The "Standards of Conduct Declaration" by LANDOWNER, set forth in Attachment S6, is hereby made a part of this AGREEMENT. For the purposes of this AGREEMENT the term "CONTRACTOR" in the "Standards of Conduct Declaration" shall mean the LANDOWNER.

Exhibit A

IN WITNESS WHEREOF, the parties execute this AGREEMENT by their signatures to be effective as of the date first above written.

STATE

By _____
Chairperson of the Board of Land and Natural Resources

_____
Print Name

Date_____

LANDOWNER

By_____

_____
Print Name

Date_____

Approved by the Board of
Land and Natural Resources on

_____.

APPROVED AS TO FORM:

_____
Deputy Attorney General

Exhibit A

LANDOWNER'S ACKNOWLEDGMENT

STATE OF HAWAII)
) SS.
COUNTY OF _____)

On this _____ day of _____, 20____, before me personally appeared_____, to me personally known, who being by me duly sworn, did say the he/she is the_____ _____, the LANDOWNER named in the foregoing instrument, and the he/she is authorized to sign said instrument on behalf of the LANDOWNER, and acknowledges that he/she executed said instrument as the free act and deed of the LANDOWNER.

_____
Notary Public, State of Hawaii

_____

My Commission Expires:_____

Date of the Notarized Document: _____
Number of Pages: _____
Identification or Description of the Document being Notarized: _____
_____
_____
Printed Name of Notary: _____ _____ Circuit
_____
Notary's Signature and Notary's Official Stamp or Seal Date

STATE OF HAWAII

CONTRACTOR'S STANDARDS OF CONDUCT DECLARATION

For the purposes of this declaration:

"Agency" means and includes the State, the legislature and its committees, all executive departments, boards, commissions, committees, bureaus, offices; and all independent commissions and other establishments of the state government but excluding the courts.

"Controlling interest" means an interest in a business or other undertaking which is sufficient in fact to control, whether the interest is greater or less than fifty per cent (50%).

"Employee" means any nominated, appointed, or elected officer or employee of the State, including members of boards, commissions, and committees, and employees under contract to the State or of the constitutional convention, but excluding legislators, delegates to the constitutional convention, justices, and judges. (Section 84-3, HRS).

On behalf of _____, CONTRACTOR, the undersigned does declare as follows:

1. CONTRACTOR ☐ is* ☐ is not a legislator or an employee or a business in which a legislator or an employee has a controlling interest. (Section 84-15(a), HRS).
2. CONTRACTOR has not been represented or assisted personally in the matter by an individual who has been an employee of the agency awarding this Contract within the preceding two years and who participated while so employed in the matter with which the Contract is directly concerned. (Section 84-15(b), HRS).
3. CONTRACTOR has not been assisted or represented by a legislator or employee for a fee or other compensation to obtain this Contract and will not be assisted or represented by a legislator or employee for a fee or other compensation in the performance of this Contract, if the legislator or employee had been involved in the development or award of the Contract. (Section 84-14 (d), HRS).
4. CONTRACTOR has not been represented on matters related to this Contract, for a fee or other consideration by an individual who, within the past twelve (12) months, has been an agency employee, or in the case of the Legislature, a legislator, and participated while an employee or legislator on matters related to this Contract. (Sections 84-18(b) and (c), HRS).

CONTRACTOR understands that the Contract to which this document is attached is voidable on behalf of the STATE if this Contract was entered into in violation of any provision of chapter 84, Hawaii Revised Statutes, commonly referred to as the Code of Ethics, including the provisions which are the source of the declarations above. Additionally, any fee, compensation, gift, or profit received by any person as a result of a violation of the Code of Ethics may be recovered by the STATE.

* Reminder to Agency: If the "is" block is checked and if the Contract involves goods or services of a value in excess of $10,000, the Contract must be awarded by competitive sealed bidding under section 103D-302, HRS, or a competitive sealed proposal under section 103D-303, HRS. Otherwise, the Agency may not award the Contract unless it posts a notice of its intent to award it and files a copy of the notice with the State Ethics Commission. (Section 84-15(a), HRS).

CONTRACTOR

By _____
(Signature)

Print Name _____

Print Title _____

Name of Contractor _____

_____

Date _____

STATE OF HAWAII

SCOPE OF SERVICES

SECTION 1 - SCOPE OF WORK

1.1 MANAGEMENT AREA - The project area to be managed is the _____ Forest Stewardship project area; TMK NUMBER(S) _____as designated on maps found in _____to this AGREEMENT.

1.2 THE PRIMARY OBJECTIVES - The STATE and LANDOWNER shall direct their efforts under this AGREEMENT to do the following: fund the management of and manage the natural resources of the _____ Forest Stewardship project area ("Forest Stewardship project area") in accordance with the MANAGEMENT PLAN, attached as _____ to this AGREEMENT, and all approved amendments thereto, with the intention of _____ in the ….. community.

1.3 SCOPE OF WORK - The LANDOWNER shall perform the following technical and professional services:

(a) Management plan. The LANDOWNER shall carry out the management activities outlined in the approved MANAGEMENT PLAN, attached as _____ to this AGREEMENT.

(b) Consultation. The LANDOWNER shall be available for consultation regarding progress, upon request by the STATE.

1.4 AUTHORITY TO CARRY OUT MANAGEMENT PLAN - The LANDOWNER hereby represents that it has authority to carry out the MANAGEMENT PLAN and that it is the landowner of "Forest Stewardship project area" as defined in Section 195F-2, Hawaii Revised Statutes, as amended.

1.5 NO INCONSISTENT ACTIVITIES - The LANDOWNER shall not take any action on the "Forest Stewardship project area", which will undermine or conflict with the approved MANAGEMENT PLAN.

II. SECTION 2 - CONTROL AND PROGRESS OF THE WORK

STATE OF HAWAII

SCOPE OF SERVICES

2.1 REPORTS - The LANDOWNER shall submit to the STATE, reports showing work accomplished at the following times:

(a) Progress Reports. A progress report shall be due on December 31 of each year under this AGREEMENT for which funding has been approved. This report shall include a description of the approved MANAGEMENT PLAN accomplishments and activities, areas needing technical advice, an accounting of expenditures with documentation, and proposed modifications to the current year's management activities. This report shall be submitted to the STATE within 30 days following the due date. If the LANDOWNER would like more than 2 reimbursements per year, a progress report shall accompany each reimbursement request and the "Forest Stewardship project area" shall be made available for a site visit by Department of Land and Natural Resources personnel.

(b) Annual Report. An annual report shall be due on or before June 30 of each year under this AGREEMENT for which funding has been approved. In the event the contract is executed less than 6 months prior to June 30, then no annual report is due on June 30 of that year. This report shall include a description of MANAGEMENT PLAN accomplishments and activities, areas needing technical advice, and proposed modifications to the next year's approved management objectives, projects and budget. This report shall also include a detailed accounting of expenditures for the preceding 12-month period to provide the basis for the annual reconciliation of the STATE's and the LANDOWNER's respective shares of funding as determined pursuant to Attachment S2, Section 1.1. This report shall be submitted to the STATE within 60 days of due date. This report may also request, subject to approval by the STATE, changes to the management plan, for either or both the practice implementation schedule and/or the budget/payment schedule in order to best consolidate and rectify the past year's outcomes or lack thereof.

STATE OF HAWAII

SCOPE OF SERVICES

2.2 DELEGATION OF AUTHORITY - As used herein and throughout this AGREEMENT, unless the context clearly indicates otherwise, the STATE shall include the State of Hawaii Department of Land and Natural Resources and its authorized employees, agents and representatives.

STATE OF HAWAII

COMPENSATION AND PAYMENT SCHEDULE

SECTION 1 – PAYMENT

1.1 SCOPE OF PAYMENT -

(a) STATE's Payment. In full satisfaction of the STATE's funding share of the approved MANAGEMENT PLAN, which is contingent upon satisfactory completion by the LANDOWNER of the management activities described in the approved MANAGEMENT PLAN, attached as Exhibit A to this AGREEMENT, the STATE agrees to pay the LANDOWNER a total sum not to exceed ___ . _____ 00/100 Dollars ($_____) according to the schedule outlined below that includes fiscal year 20XX through 20XX for completion of the management activities described in the approved MANAGEMENT PLAN. Payments shall be made by the STATE to the LANDOWNER as partial annual reimbursements for actual expenditures made by the LANDOWNER in completing the management activities described in the approved MANAGEMENT PLAN only after the corresponding progress or annual report has been reviewed by the STATE and all reported management activity accomplishments have been verified following an inspection of the "Forest Stewardship project area" by the STATE. Actual expenditures may include but are not limited to in-kind services such as heavy equipment operation and sources of labor. All funds to be paid by the STATE to the LANDOWNER shall be encumbered on an annual basis for the forthcoming fiscal year provided that the STATE has approved the continuation of management activities outlined in ……..._____ of this AGREEMENT for the forthcoming fiscal year.

If in any fiscal year the allocated annual funds are not exhausted due to the LANDOWNER not completing all management activities described in the MANAGEMENT PLAN for that year, the LANDOWNER may request that these funds be incorporated in the following year's encumbrances to complete the management activities which were not completed. If there are sufficient funds available to accommodate LANDOWNER's request and the STATE approves the

request, this change will be incorporated by written amendment to the AGREEMENT.

If in any fiscal year the STATE does not appropriate, and/or the STATE does not approve the expenditure of, funds sufficient to meet the STATE's funding share of the approved MANAGEMENT PLAN, this AGREEMENT shall automatically terminate without penalty at the end of the last fiscal year for which any funds have been appropriated and approved, subject to Attachment S5, Section 4.1, regarding partial State funding.

(b) LANDOWNER's Share. In full satisfaction of the LANDOWNER's funding share of the approved MANAGEMENT PLAN, the LANDOWNER agrees to fully complete the management activities described in the approved MANAGEMENT PLAN, and to initially assume all corresponding actual annual expenditures in expectation of the STATE's partial reimbursement for satisfactory completion of these management activities. Expenditures for implementation of the approved MANAGEMENT PLAN which are less than the amounts allocated in the approved budget may be made by the LANDOWNER in its discretion so long as the quality of materials and work as called for in the approved MANAGEMENT PLAN are not adversely affected.

STATE OF HAWAII

COMPENSATION AND PAYMENT SCHEDULE

PATRICK & SHEILA CONANT FOREST STEWARDSHIP

PROJECT BUDGET/PAYMENT SCHEDULE:

YEAR	Total Budget	Land Owner share	State Share
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Total			

1.2 PAYMENT SCHEDULE –

(a) Progress Payment. Within 30 days following receipt of the progress report as provided in Attachment S1, Section 2.1(a) for each year for which the STATE has agreed to pay the LANDOWNER as outlined in the schedule above and for which funding has been appropriated, the STATE shall pay to the LANDOWNER a portion of the STATE's funding share of the approved MANAGEMENT PLAN as a partial reimbursement of actual expenditures made to complete approved management activities. This payment shall be subject to the LANDOWNER's satisfactory completion of the corresponding approved management activities described in the approved MANAGEMENT PLAN, attached as Exhibit A to this AGREEMENT, and calculated on the basis of actual expenditures made by the LANDOWNER. This payment shall also be subject to the STATE's approval of such progress report.

(b) Annual/Final Payment. Within 30 days of receipt of the annual report as provided in Attachment S1, Section 2.1(b), the STATE shall pay to the LANDOWNER the balance of the STATE's approved annual funding share. This payment shall be subject to the LANDOWNER's satisfactory completion of the corresponding

annual management activities described in the approved MANAGEMENT PLAN, attached as Exhibit A to this AGREEMENT, and calculated on the basis of actual expenditures made by the LANDOWNER.

(1) Annual or Final Acceptance and Payment - Annual or final acceptance means a written notice from the STATE to the LANDOWNER advising the LANDOWNER of the satisfactory fulfillment of the AGREEMENT's annual or final requirements.

1.3 UNAUTHORIZED WORK - The LANDOWNER shall not receive matching STATE funds for management activities not designated in the approved MANAGEMENT PLAN. All work completed by the LANDOWNER prior to receipt of a fully-executed copy of this AGREEMENT, and prior to STATE approval of funding for any subsequent years and prior to STATE approval of any subsequent amendments to the approved MANAGEMENT PLAN, shall be at the LANDOWNER's own volition and risk, including work performed during the period of any deliberations by the STATE in anticipation of approval; provided, however, that if funding and/or amendments applicable to such work are subsequently approved, the LANDOWNER may be paid for such work even if performed prior to such approval.

SECTION 2 - FISCAL RECORDS MAINTENANCE, RETENTION, AND ACCESS

2.1 The LANDOWNER shall maintain, in accordance with generally acceptable accounting practices, fiscal records and supporting documents and related files, papers and reports that adequately reflect all direct and indirect expenditures and management and fiscal practices materially related to the LANDOWNER's performance of services paid for by State funds under this AGREEMENT.

(a) The STATE, the Comptroller of the State of Hawaii, and any of their authorized representatives, the committees (and their staff) of the Legislature of the State of Hawaii, and the Legislative Auditor of the State of Hawaii shall have the right of access to any book, document, paper, file, or other records of the LANDOWNER

that is materially related to the performance by the LANDOWNER of services funded by the STATE under this AGREEMENT, in accordance with generally accepted audit procedures, for the purposes of monitoring and evaluating the LANDOWNER's performance of services and the LANDOWNER's management program and fiscal practices to assure the proper and effective expenditure of funds under this AGREEMENT; provided, however, that no party conducting any such audit or examination shall copy, distribute, or retain any of such information or records, with the understanding that it is not the intention that the LANDOWNER's financial and other records and information be made public.

(b) The right of access shall not be limited to the required retention period but shall last as long as the records are retained. The LANDOWNER shall retain all records related to the LANDOWNER's performance of services funded under this AGREEMENT for at least 3 years after the date of submission of the LANDOWNER's annual reports for any designated period and payment for such expenditures by the STATE in accordance with its matching share, except that if any litigation, claim, negotiation, investigation, audit, or other action involving the records has been started before the expiration of the 3-year period, the LANDOWNER shall retain the records until completion of the action and resolution of all issues that arise from it or until the end of the regular 3-year retention period, whichever occurs later.

STATE OF HAWAII

TIME OF PERFORMANCE

SECTION 1 - EXECUTION OF AGREEMENT

1.1 EXECUTION OF AGREEMENT - This AGREEMENT shall be promptly executed by the STATE and the LANDOWNER upon approval by each party.

1.2 CERTIFICATION AND APPROVAL OF AGREEMENT - This AGREEMENT shall not be considered binding upon the STATE, unless the availability of the funds therefore has been duly certified as prescribed by Section 103-39, Hawaii Revised Statutes, as amended. Further, this AGREEMENT shall not be considered to be fully executed unless the Office of the Attorney General of the State of Hawaii has approved this AGREEMENT as to form.

SECTION 2 - TERM

2.1 INITIAL TERM - The initial term will be for a minimum of _____(__) years following the completion of any and all management practices for which the LANDOWNER has received cost-share assistance. Accordingly, this AGREEMENT shall commence on the date of full execution hereof and shall be in effect until _____; subject, however to earlier termination as provided in this AGREEMENT.

2.2 STATE FUNDING CONDITION - This AGREEMENT is subject to continued funding of the STATE's share of the approved management budget as outlined in Attachment S2, Section 1.1. Annual funding is provided by the Conveyance Tax pursuant to Act 195, SLH 1993, Section 247-7, Hawaii Revised Statutes, whereby twenty-five percent of the amount collected from this tax shall be paid into the natural area reserve fund from which funds are dispersed to the natural area partnership and forest stewardship programs, and by way of Act 269, SLH 2000 to projects undertaken in accordance with watershed management plans. Payments are then made through the forest stewardship program to reimburse landowners for implementing approved stewardship management practices. Any balance remaining in this fund at the end of any fiscal year shall be carried forward

STATE OF HAWAII

TIME OF PERFORMANCE

into the fund for the next fiscal year. If in any fiscal year the STATE does not appropriate, and/or the STATE does not approve the expenditure of, funds sufficient to meet its share of the approved management budget, this AGREEMENT shall automatically terminate without penalty at the end of the last fiscal year for which any funds have been appropriated and approved, subject to Attachment S5, Section 4.1, regarding partial State funding.

STATE OF HAWAII

CERTIFICATE OF EXEMPTION FROM CIVIL SERVICE

1. By Heads of Departments Delegated by the Director of the Department of Human Resources Development ("DHRD").*

Pursuant to a delegation of the authority by the Director of DHRD, I certify that the services to be provided under this Contract, and the person(s) providing the services under this Contract are exempt from the civil service, pursuant to § 76-16, Hawaii Revised Statutes (HRS).

_____ (Signature) _____ (Date)

_____ (Print Name)

_____ (Print Title)

* This part of the form may be used by all department heads and the heads of attached agencies to whom the Director of DHRD expressly has delegated authority to certify § 76-16, HRS, civil service exemptions. The specific paragraph(s) of § 76-16, HRS, upon which an exemption is based should be noted in the contract file. If an exemption is based on § 76-16(b)(15), the contract must meet the following conditions:

(1) It involves the delivery of completed work or product by or during a specific time;
(2) There is no employee-employer relationship; and
(3) The authorized funding for the service is from other than the "A" or personal services cost element.

NOTE: Not all attached agencies have received a delegation under § 76-16(b)(15). If in doubt, attached agencies should check with the Director of DHRD prior to certifying an exemption under § 76-16(b)(15). Authority to certify exemptions under §§76-16(b)(2), and 76-16(b)(12), HRS, has not been delegated; only the Director of DHRD may certify §§ 76-16(b)(2), and 76-16(b)(12) exemptions.

2. By the Director of DHRD, State of Hawaii.

I certify that the services to be provided under this Contract, and the person(s) providing the services under this Contract are exempt from the civil service, pursuant to §76-16, HRS.

_____ (Signature) _____ (Date)

_____ (Print Name)

_____ (Print Title, if designee of the Director of DHRD)

STATE OF HAWAII

SPECIAL CONDITIONS

SECTION 1 – INSPECTIONS

1.1 The STATE shall have the right to make inspections of the "Forest Stewardship project area" after prior notice to the LANDOWNER. In addition, the STATE shall be obligated to inspect the work on the "Forest Stewardship project area" not less frequently than once per year under this AGREEMENT, and more frequently in the case of a LANDOWNER default as provided in Section 4.1(d) below or when the LANDOWNER makes more than 2 reimbursement requests per year as provided in Attachment S1, Section 2.1. The STATE shall notify the LANDOWNER within a reasonable time thereafter of any perceived defaults in the LANDOWNER's implementation of the approved MANAGEMENT PLAN. The LANDOWNER hereby represents that it has authority to allow access to the "Forest Stewardship project area" by the STATE in connection with this AGREEMENT, conditional upon receipt of a liability waiver, acceptable to the LANDOWNER for all state personnel visiting the "Forest Stewardship project area".

SECTION 2 - AMENDMENTS

2.1 The LANDOWNER may propose for approval by the STATE, and the STATE may approve, minor alterations to the approved MANAGEMENT PLAN, which will not have a material adverse impact on the achievement of the overall management objectives of the approved MANAGEMENT PLAN. This includes minor changes to the practice implementation schedule and/or changes in the budget/payments schedule so long as the total management activities do not subtract from or exceed the total scope of the approved MANAGEMENT PLAN and the budget/payments schedule does not exceed the total annual budget allocations up to and including the budget request for that year, and so long as the STATE has sufficient funding available to accommodate such a request.

2.1 The LANDOWNER may propose for approval by the STATE, and the STATE may approve, significant changes to the approved MANAGEMENT PLAN or budget to adapt to current conditions. Significant amendments to the approved MANAGEMENT PLAN shall include an amended budget, which will increase the overall STATE's funding share

above the total amount set forth in the approved budget/payment schedule. The STATE shall make the proposed amendments available for public review prior to final approval.

2.3 The proposed amendments may include, without limitation, re-establishment of management priorities, increase or reduction of the specified work, increases to the budget/payments schedule, or time for performance of specified tasks, all as determined considering the natural conditions of the "Forest Stewardship project area," existing management priorities, threats, potential for decline of the natural resource during any period under consideration, availability of specialized labor or technical expertise, permitting requirements and time needed to obtain permits, and other material factors.

2.4 Any proposed expenditures which will increase the overall STATE's funding share above the amount set forth in the approved budget of the approved MANAGEMENT PLAN, which are proposed either as a result of additional costs required to implement the approved MANAGEMENT PLAN or as a result of amendments to the approved MANAGEMENT PLAN, must be mutually agreed upon in advance by and between the STATE and the LANDOWNER. If so agreed upon the approval of these expenditures shall be incorporated in written amendment to this AGREEMENT.

2.5 Economic Hardship. Notwithstanding other provisions of this AGREEMENT, in the event that the LANDOWNER determines in good faith that it is financially unable without undue economic hardship to fulfill its funding share as provided in Attachment S2, Section 1.1(b), or to carry out fully the management activities described in the approved MANAGEMENT PLAN, attached as Exhibit A to this AGREEMENT, within the budget and time period established thereby, the LANDOWNER may apply to the STATE to renegotiate the terms thereof.

(a) Negotiation of Amendment. In such event, the STATE and the LANDOWNER shall meet and negotiate in good faith an acceptable amendment to the approved MANAGEMENT PLAN that seeks to accomplish the significant objectives of the approved MANAGEMENT PLAN reasonably within the LANDOWNER's

financial means. The amendment may include, without limitation, re-establishment of management priorities and reduction and/or deferral of the specified work, involving significant costs, and/or extension of time for performance of specified tasks, all as determined considering the natural conditions of the "Forest Stewardship project area," existing management priorities, threats, potential for decline of the natural resource during any period under consideration, other potential sources of funding, and other material factors.

(b) Disputes. If the STATE and the LANDOWNER are unable to agree reasonably and in good faith on a suitable amendment to the approved MANAGEMENT PLAN, the parties shall refer any such disputes to arbitration as provided in the General Conditions, Section 11.

(c) No Termination for Economic Hardship. This provision shall not be construed to allow the LANDOWNER or the STATE to terminate this AGREEMENT for economic hardship; it is rather intended to provide a mechanism for reasonable revisions to the approved MANAGEMENT PLAN for economic hardship.

SECTION 3 - PAYBACK OF STATE FUNDS

3.1 In the event that the LANDOWNER sells, conveys, or otherwise transfers LANDOWNER's right, title, or interest in the "Forest Stewardship project area," or any portion thereof, during the initial term of this AGREEMENT as defined in Attachment S3, Section 2.1, the LANDOWNER shall within 90 days of the sale, conveyance or transfer of title or interest in the "Forest Stewardship project area," pay back to the STATE a portion of the amount paid by the STATE to the LANDOWNER pursuant to this AGREEMENT. The amount to be paid back to the STATE shall be that fraction of the total matching funds received by the LANDOWNER under this AGREEMENT that is equal to the fraction of the "Forest Stewardship project area" that is sold, conveyed or otherwise transferred by the LANDOWNER.

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3.2 In the event that the LANDOWNER sells, conveys, or otherwise transfers LANDOWNER's right, title, or interest in the "Forest Stewardship project area," or any portion thereof, during the initial term of this AGREEMENT as defined in Attachment S3, Section 2.1, the LANDOWNER will not be required to reimburse the STATE as set forth in Attachment S5, Section 3.1 for the cost-share assistance received if the person(s) who acquire the property contractually agree to assume full responsibility for this AGREEMENT for the initial term of the AGREEMENT, including but not limited to management and financial responsibilities and penalties contained herein. See Agenda Item _____, as amend, approved at the Board of Land and Natural Resources ……..._____ meeting. Nothing in this provision shall relieve the LANDOWNER of its obligations under this AGREEMENT.

SECTION 4 - TERMINATION; DEFAULT; PENALTY PAYBACK

4.1 TERMINATION OF THE AGREEMENT - It is mutually agreed that this AGREEMENT may be terminated for any one of the following reasons on the following terms:

(a) No State Funding. This AGREEMENT shall be terminated if the STATE does not approve funding for the forthcoming fiscal year of the approved MANAGEMENT PLAN. In such event, this AGREEMENT shall automatically terminate without penalty at the end of the funding period then in effect.

(b) Partial State Funding. This AGREEMENT may be terminated by the LANDOWNER if the STATE approves only a portion of its share of funding for the forthcoming fiscal year as outlined in the budget provided in the approved MANAGEMENT PLAN.

(1) In such event, the LANDOWNER shall elect, by written notice to the STATE, either:

(A) to terminate this AGREEMENT without penalty at the end of the funding period then in effect; or

(B) to revise the approved MANAGEMENT PLAN and budget in the LANDOWNER's reasonable discretion to accomplish significant management goals which can reasonably be funded with the amount of STATE funding actually approved.

(c) Transfer to Government Agency. This AGREEMENT may be terminated without penalty if the "Forest Stewardship project area" is transferred or sold to a government agency committed to forest stewardship and that possesses the technical and professional skills to manage the "Forest Stewardship project area" natural resources.

(d) LANDOWNER Default. This AGREEMENT may be terminated by the STATE upon substantial evidence that progress being made by the LANDOWNER in carrying out the approved MANAGEMENT PLAN is inadequate, incorrect, or insufficient to substantially complete on a timely basis the work called for in the approved MANAGEMENT PLAN subject to the lack of performance notification provisions set forth below.

(1) Penalties Apply. In the event of termination for default in accordance with these provisions, the penalty payback provisions set forth below shall apply.

(2) Lack of Performance Notification. In such event, the STATE may terminate for default, provided the STATE adheres to the following procedures for notice and opportunity to cure prior to termination:

(A) The STATE shall first notify the LANDOWNER in writing of any perceived inadequacy, incorrectness or insufficient progress. The STATE and the LANDOWNER shall meet within two weeks

thereafter, and every three months thereafter until one year following the date of the notice, and discuss in good faith the perceived failure and the reasons therefore and any subsequent progress or lack thereof. If the reason for the failure is a good faith inability of the LANDOWNER to carry out the terms of the MANAGEMENT PLAN for reasons beyond the LANDOWNER's reasonable control, including without limitation economic hardship as described in Attachment S5, Section 2.5 above, the STATE and the LANDOWNER shall specifically consider the need to amend the approved MANAGEMENT PLAN, including extending the time to carry out the work called for in the approved MANAGEMENT PLAN and/or revising the budget established in the approved MANAGEMENT PLAN, subject to the provisions of Attachment S1, Section 1.5 and Attachment S5, Section 2 of this AGREEMENT regarding amendments to this AGREEMENT and the approved MANAGEMENT PLAN. Following the date of the notice, the STATE shall be obligated to inspect the "Forest Stewardship project area" once each quarter after notifying the LANDOWNER, to determine the updated status of the perceived default.

(B) Following the expiration of the one year period following notice of default given by the STATE to the LANDOWNER and failure of the LANDOWNER to remedy the default, or to make significant progress to remedy the default if by its nature the default cannot reasonably be remedied within one year, the STATE may elect to notify the LANDOWNER of its intention to terminate this AGREEMENT for default. Such notice shall be in writing, shall state that the STATE will terminate the AGREEMENT for default on a date not less than 3 months thereafter if the LANDOWNER

does not remedy the default, or to make significant progress to remedy the default if by its nature the default cannot reasonably be remedied within 3 months, and shall specify that penalties as provided under this AGREEMENT shall apply.

(C) If the LANDOWNER fails to remedy the default within 3 months thereafter, or to make significant progress to remedy the default if by its nature the default cannot reasonably be remedied within 3 months, the STATE may terminate this AGREEMENT effective immediately for default by written notice thereof to the LANDOWNER.

(D) The STATE shall be deemed to have complied with these provisions if it attempts in good faith to meet with the LANDOWNER and to inspect the "Forest Stewardship project area" as provided above, whether or not the LANDOWNER cooperates in such procedures.

(3) All disputes regarding default and termination under this AGREEMENT, which cannot be resolved by the parties, shall be referred to arbitration as provided in the General Conditions, Section 11.

(4) If the LANDOWNER has not fully performed its work under this AGREEMENT on expiration or termination of this AGREEMENT, the STATE may withhold the final payment to the LANDOWNER pending full completion of the LANDOWNER's work. This withheld payment shall be paid by the STATE to the LANDOWNER on final acceptance and tax clearance as provided in Attachment S2, Section 1.2 (b) and the General Conditions, Section 17.

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4.2 PENALTY PAYBACK -

(a) Payback and Penalties. In the event that the LANDOWNER defaults on this AGREEMENT as provided in Attachment S5, Section 4.1(d) above and the STATE has followed the Lack of Performance Notification procedures as outlined in Attachment S5, Section 4.1(d)(2) above, the LANDOWNER shall promptly pay to the STATE the following payback and penalty monies:

(1) Refund of State Funds - 3 Years. All funds paid from the initial date of this AGREEMENT by the STATE to the LANDOWNER in the previous 3 years (or such portion thereof as STATE shall have funded if this AGREEMENT shall have been in effect for less than 3 years) shall be returned to the STATE. In the event that this AGREEMENT shall have been in effect for more than 3 years, the LANDOWNER shall be liable to pay back State funds for the immediately preceding 3 years. In addition, the LANDOWNER shall pay to the STATE a penalty of two percent of the total of funds that are returned to the STATE.

(b) No Other Party Liable. Only the LANDOWNER receiving State funding under the FOREST STEWARDSHIP PROGRAM shall be liable to the STATE under this AGREEMENT for the payback and penalty.

(c) Disputes. The LANDOWNER shall have the right to submit any disputes to the arbitration procedure as outlined in the General Conditions, Section 11 if it feels that the imposition of payback, and/or additional penalties is unwarranted.

4.3 VIOLATIONS OF AGREEMENT - It is expressly understood and agreed that violations which are not caused by the LANDOWNER shall not constitute or give rise to a default by the LANDOWNER under this AGREEMENT and no penalty provisions shall apply to the LANDOWNER.

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4.4 EFFECT OF EMINENT DOMAIN -

(a) Full Condemnation. If any action in eminent domain for the condemnation of the fee title of the entire "Forest Stewardship project area" described herein is filed, or if the "Forest Stewardship project area" is acquired in lieu of eminent domain for a public improvement by a public agency or person or whenever there is any such action or acquisition by the federal government or the state government or any person, instrumentality or agency acting under authority or power of the federal government or the state government, this AGREEMENT shall be deemed null and void without penalty as to the land actually being condemned or so acquired as of the date the action is filed, and upon the termination of such a proceeding, this AGREEMENT shall be null and void without penalty for all land actually taken or acquired.

(b) Partial Condemnation. When such an action to condemn or acquire less than all the entire "Forest Stewardship project area" is filed, this AGREEMENT shall be deemed null and void without penalty as to the portion so condemned or acquired.

(c) Adjustment of approved MANAGEMENT PLAN. The land actually taken by the means set forth above in this Section shall be removed from this AGREEMENT and the approved MANAGEMENT PLAN and budget adjusted accordingly on a reasonable basis by the STATE and the LANDOWNER.

SECTION 5 - INCORPORATION OF CHAPTER 195F, HAWAII REVISED STATUTES

5.1 Incorporation. The provisions of chapter 195F, Hawaii Revised Statutes, as amended, are incorporated by reference into this AGREEMENT. In the event that there is any conflict between the provisions of this AGREEMENT and the provisions of chapter 195F, Hawaii Revised Statutes, the latter shall be controlling.

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5.2 Renumbering. In the event that chapter 195F, or any of the sections under chapter 195F, Hawaii Revised Statutes, are renumbered, any references to the chapter or sections in this AGREEMENT shall be deemed renumbered accordingly.

EXHIBIT A

_____ Forest Stewardship Management Plan.

GENERAL CONDITIONS

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GENERAL CONDITIONS

1. Coordination of Services by the STATE. The head of the purchasing agency ("HOPA") (which term includes the designee of the HOPA) shall coordinate the services to be provided by the CONTRACTOR in order to complete the performance required in the Contract. The CONTRACTOR shall maintain communications with HOPA at all stages of the CONTRACTOR'S work, and submit to HOPA for resolution any questions which may arise as to the performance of this Contract. "Purchasing agency" as used in these General Conditions means and includes any governmental body which is authorized under chapter 103D, HRS, or its implementing rules and procedures, or by way of delegation, to enter into contracts for the procurement of goods or services or both.

2. Relationship of Parties: Independent Contractor Status and Responsibilities, Including Tax Responsibilities.

   a. In the performance of services required under this Contract, the CONTRACTOR is an "independent contractor," with the authority and responsibility to control and direct the performance and details of the work and services required under this Contract; however, the STATE shall have a general right to inspect work in progress to determine whether, in the STATE'S opinion, the services are being performed by the CONTRACTOR in compliance with this Contract. Unless otherwise provided by special condition, it is understood that the STATE does not agree to use the CONTRACTOR exclusively, and that the CONTRACTOR is free to contract to provide services to other individuals or entities while under contract with the STATE.

   b. The CONTRACTOR and the CONTRACTOR'S employees and agents are not by reason of this Contract, agents or employees of the State for any purpose, and the CONTRACTOR and the CONTRACTOR'S employees and agents shall not be entitled to claim or receive from the State any vacation, sick leave, retirement, workers' compensation, unemployment insurance, or other benefits provided to state employees.

   c. The CONTRACTOR shall be responsible for the accuracy, completeness, and adequacy of the CONTRACTOR'S performance under this Contract. Furthermore, the CONTRACTOR intentionally, voluntarily, and knowingly assumes the sole and entire liability to the CONTRACTOR'S employees and agents, and to any individual not a party to this Contract, for all loss, damage, or injury caused by the CONTRACTOR, or the CONTRACTOR'S employees or agents in the course of their employment.

   d. The CONTRACTOR shall be responsible for payment of all applicable federal, state, and county taxes and fees which may become due and owing by the CONTRACTOR by reason of this Contract, including but not limited to (i) income taxes, (ii) employment related fees, assessments, and taxes, and (iii) general excise taxes. The CONTRACTOR also is responsible for obtaining all licenses, permits, and certificates that may be required in order to perform this Contract.

   e. The CONTRACTOR shall obtain a general excise tax license from the Department of Taxation, State of Hawaii, in accordance with section 237-9, HRS, and shall comply with all requirements thereof. The CONTRACTOR shall obtain a tax clearance certificate from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of the Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR have been paid and submit the same to the STATE prior to commencing any performance under this Contract. The CONTRACTOR shall also be solely responsible for meeting all requirements necessary to obtain the tax clearance certificate required for final payment under sections 103-53 and 103D-328, HRS, and paragraph 17 of these General Conditions.

   f. The CONTRACTOR is responsible for securing all employee-related insurance coverage for the CONTRACTOR and the CONTRACTOR'S employees and agents that is or may be required by law, and for payment of all premiums, costs, and other liabilities associated with securing the insurance coverage.

g. The CONTRACTOR shall obtain a certificate of compliance issued by the Department of Labor and Industrial Relations, State of Hawaii, in accordance with section103D-310, HRS, and section 3-122-112, HAR, that is current within six months of the date of issuance.

h. The CONTRACTOR shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs, State of Hawaii, in accordance with section 103D-310, HRS, and section 3-122-112, HAR, that is current within six months of the date of issuance.

i. In lieu of the above certificates from the Department of Taxation, Labor and Industrial Relations, and Commerce and Consumer Affairs, the CONTRACTOR may submit proof of compliance through the State Procurement Office's designated certification process.

3. Personnel Requirements.

a. The CONTRACTOR shall secure, at the CONTRACTOR'S own expense, all personnel required to perform this Contract.

b. The CONTRACTOR shall ensure that the CONTRACTOR'S employees or agents are experienced and fully qualified to engage in the activities and perform the services required under this Contract, and that all applicable licensing and operating requirements imposed or required under federal, state, or county law, and all applicable accreditation and other standards of quality generally accepted in the field of the activities of such employees and agents are complied with and satisfied.

4. Nondiscrimination. No person performing work under this Contract, including any subcontractor, employee, or agent of the CONTRACTOR, shall engage in any discrimination that is prohibited by any applicable federal, state, or county law.

5. Conflicts of Interest. The CONTRACTOR represents that neither the CONTRACTOR, nor any employee or agent of the CONTRACTOR, presently has any interest, and promises that no such interest, direct or indirect, shall be acquired, that would or might conflict in any manner or degree with the CONTRACTOR'S performance under this Contract.

6. Subcontracts and Assignments. The CONTRACTOR shall not assign or subcontract any of the CONTRACTOR'S duties, obligations, or interests under this Contract and no such assignment or subcontract shall be effective unless (i) the CONTRACTOR obtains the prior written consent of the STATE, and (ii) the CONTRACTOR'S assignee or subcontractor submits to the STATE a tax clearance certificate from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR'S assignee or subcontractor have been paid. Additionally, no assignment by the CONTRACTOR of the CONTRACTOR'S right to compensation under this Contract shall be effective unless and until the assignment is approved by the Comptroller of the State of Hawaii, as provided in section 40-58, HRS.

a. Recognition of a successor in interest. When in the best interest of the State, a successor in interest may be recognized in an assignment contract in which the STATE, the CONTRACTOR and the assignee or transferee (hereinafter referred to as the "Assignee") agree that:

(1) The Assignee assumes all of the CONTRACTOR'S obligations;

(2) The CONTRACTOR remains liable for all obligations under this Contract but waives all rights under this Contract as against the STATE; and

(3) The CONTRACTOR shall continue to furnish, and the Assignee shall also furnish, all required bonds.

b. Change of name. When the CONTRACTOR asks to change the name in which it holds this Contract with the STATE, the procurement officer of the purchasing agency (hereinafter referred to as the "Agency procurement officer") shall, upon receipt of a document acceptable or satisfactory to the

Agency procurement officer indicating such change of name (for example, an amendment to the CONTRACTOR'S articles of incorporation), enter into an amendment to this Contract with the CONTRACTOR to effect such a change of name. The amendment to this Contract changing the CONTRACTOR'S name shall specifically indicate that no other terms and conditions of this Contract are thereby changed.

c. Reports. All assignment contracts and amendments to this Contract effecting changes of the CONTRACTOR'S name or novations hereunder shall be reported to the chief procurement officer (CPO) as defined in section 103D-203(a), HRS, within thirty days of the date that the assignment contract or amendment becomes effective.

d. Actions affecting more than one purchasing agency. Notwithstanding the provisions of subparagraphs 6a through 6c herein, when the CONTRACTOR holds contracts with more than one purchasing agency of the State, the assignment contracts and the novation and change of name amendments herein authorized shall be processed only through the CPO's office.

7. Indemnification and Defense. The CONTRACTOR shall defend, indemnify, and hold harmless the State of Hawaii, the contracting agency, and their officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorneys' fees, and all claims, suits, and demands therefore, arising out of or resulting from the acts or omissions of the CONTRACTOR or the CONTRACTOR'S employees, officers, agents, or subcontractors under this Contract. The provisions of this paragraph shall remain in full force and effect notwithstanding the expiration or early termination of this Contract.

8. Cost of Litigation. In case the STATE shall, without any fault on its part, be made a party to any litigation commenced by or against the CONTRACTOR in connection with this Contract, the CONTRACTOR shall pay all costs and expenses incurred by or imposed on the STATE, including attorneys' fees.

9. Liquidated Damages. When the CONTRACTOR is given notice of delay or nonperformance as specified in paragraph 13 (Termination for Default) and fails to cure in the time specified, it is agreed the CONTRACTOR shall pay to the STATE the amount, if any, set forth in this Contract per calendar day from the date set for cure until either (i) the STATE reasonably obtains similar goods or services, or both, if the CONTRACTOR is terminated for default, or (ii) until the CONTRACTOR provides the goods or services, or both, if the CONTRACTOR is not terminated for default. To the extent that the CONTRACTOR'S delay or nonperformance is excused under paragraph 13d (Excuse for Nonperformance or Delay Performance), liquidated damages shall not be assessable against the CONTRACTOR. The CONTRACTOR remains liable for damages caused other than by delay.

10. STATE'S Right of Offset. The STATE may offset against any monies or other obligations the STATE owes to the CONTRACTOR under this Contract, any amounts owed to the State of Hawaii by the CONTRACTOR under this Contract or any other contracts, or pursuant to any law or other obligation owed to the State of Hawaii by the CONTRACTOR, including, without limitation, the payment of any taxes or levies of any kind or nature. The STATE will notify the CONTRACTOR in writing of any offset and the nature of such offset. For purposes of this paragraph, amounts owed to the State of Hawaii shall not include debts or obligations which have been liquidated, agreed to by the CONTRACTOR, and are covered by an installment payment or other settlement plan approved by the State of Hawaii, provided, however, that the CONTRACTOR shall be entitled to such exclusion only to the extent that the CONTRACTOR is current with, and not delinquent on, any payments or obligations owed to the State of Hawaii under such payment or other settlement plan.

11. Disputes. Disputes shall be resolved in accordance with section 103D-703, HRS, and chapter 3-126, Hawaii Administrative Rules ("HAR"), as the same may be amended from time to time.

12. Suspension of Contract. The STATE reserves the right at any time and for any reason to suspend this Contract for any reasonable period, upon written notice to the CONTRACTOR in accordance with the provisions herein.

a. Order to stop performance. The Agency procurement officer may, by written order to the CONTRACTOR, at any time, and without notice to any surety, require the CONTRACTOR to stop all or any part of the performance called for by this Contract. This order shall be for a specified

period not exceeding sixty (60) days after the order is delivered to the CONTRACTOR, unless the parties agree to any further period. Any such order shall be identified specifically as a stop performance order issued pursuant to this section. Stop performance orders shall include, as appropriate: (1) A clear description of the work to be suspended; (2) Instructions as to the issuance of further orders by the CONTRACTOR for material or services; (3) Guidance as to action to be taken on subcontracts; and (4) Other instructions and suggestions to the CONTRACTOR for minimizing costs. Upon receipt of such an order, the CONTRACTOR shall forthwith comply with its terms and suspend all performance under this Contract at the time stated, provided, however, the CONTRACTOR shall take all reasonable steps to minimize the occurrence of costs allocable to the performance covered by the order during the period of performance stoppage. Before the stop performance order expires, or within any further period to which the parties shall have agreed, the Agency procurement officer shall either:

(1) Cancel the stop performance order; or

(2) Terminate the performance covered by such order as provided in the termination for default provision or the termination for convenience provision of this Contract.

b. Cancellation or expiration of the order. If a stop performance order issued under this section is cancelled at any time during the period specified in the order, or if the period of the order or any extension thereof expires, the CONTRACTOR shall have the right to resume performance. An appropriate adjustment shall be made in the delivery schedule or contract price, or both, and the Contract shall be modified in writing accordingly, if:

(1) The stop performance order results in an increase in the time required for, or in the CONTRACTOR'S cost properly allocable to, the performance of any part of this Contract; and

(2) The CONTRACTOR asserts a claim for such an adjustment within thirty (30) days after the end of the period of performance stoppage; provided that, if the Agency procurement officer decides that the facts justify such action, any such claim asserted may be received and acted upon at any time prior to final payment under this Contract.

c. Termination of stopped performance. If a stop performance order is not cancelled and the performance covered by such order is terminated for default or convenience, the reasonable costs resulting from the stop performance order shall be allowable by adjustment or otherwise.

d. Adjustment of price. Any adjustment in contract price made pursuant to this paragraph shall be determined in accordance with the price adjustment provision of this Contract.

13. Termination for Default.

a. Default. If the CONTRACTOR refuses or fails to perform any of the provisions of this Contract with such diligence as will ensure its completion within the time specified in this Contract, or any extension thereof, otherwise fails to timely satisfy the Contract provisions, or commits any other substantial breach of this Contract, the Agency procurement officer may notify the CONTRACTOR in writing of the delay or non-performance and if not cured in ten (10) days or any longer time specified in writing by the Agency procurement officer, such officer may terminate the CONTRACTOR'S right to proceed with the Contract or such part of the Contract as to which there has been delay or a failure to properly perform. In the event of termination in whole or in part, the Agency procurement officer may procure similar goods or services in a manner and upon the terms deemed appropriate by the Agency procurement officer. The CONTRACTOR shall continue performance of the Contract to the extent it is not terminated and shall be liable for excess costs incurred in procuring similar goods or services.

b. CONTRACTOR'S duties. Notwithstanding termination of the Contract and subject to any directions from the Agency procurement officer, the CONTRACTOR shall take timely, reasonable, and

necessary action to protect and preserve property in the possession of the CONTRACTOR in which the STATE has an interest.

c. Compensation. Payment for completed goods and services delivered and accepted by the STATE shall be at the price set forth in the Contract. Payment for the protection and preservation of property shall be in an amount agreed upon by the CONTRACTOR and the Agency procurement officer. If the parties fail to agree, the Agency procurement officer shall set an amount subject to the CONTRACTOR'S rights under chapter 3-126, HAR. The STATE may withhold from amounts due the CONTRACTOR such sums as the Agency procurement officer deems to be necessary to protect the STATE against loss because of outstanding liens or claims and to reimburse the STATE for the excess costs expected to be incurred by the STATE in procuring similar goods and services.

d. Excuse for nonperformance or delayed performance. The CONTRACTOR shall not be in default by reason of any failure in performance of this Contract in accordance with its terms, including any failure by the CONTRACTOR to make progress in the prosecution of the performance hereunder which endangers such performance, if the CONTRACTOR has notified the Agency procurement officer within fifteen (15) days after the cause of the delay and the failure arises out of causes such as: acts of God; acts of a public enemy; acts of the State and any other governmental body in its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes or other labor disputes; freight embargoes; or unusually severe weather. If the failure to perform is caused by the failure of a subcontractor to perform or to make progress, and if such failure arises out of causes similar to those set forth above, the CONTRACTOR shall not be deemed to be in default, unless the goods and services to be furnished by the subcontractor were reasonably obtainable from other sources in sufficient time to permit the CONTRACTOR to meet the requirements of the Contract. Upon request of the CONTRACTOR, the Agency procurement officer shall ascertain the facts and extent of such failure, and, if such officer determines that any failure to perform was occasioned by any one or more of the excusable causes, and that, but for the excusable cause, the CONTRACTOR'S progress and performance would have met the terms of the Contract, the delivery schedule shall be revised accordingly, subject to the rights of the STATE under this Contract. As used in this paragraph, the term "subcontractor" means subcontractor at any tier.

e. Erroneous termination for default. If, after notice of termination of the CONTRACTOR'S right to proceed under this paragraph, it is determined for any reason that the CONTRACTOR was not in default under this paragraph, or that the delay was excusable under the provisions of subparagraph 13d, "Excuse for nonperformance or delayed performance," the rights and obligations of the parties shall be the same as if the notice of termination had been issued pursuant to paragraph 14.

f. Additional rights and remedies. The rights and remedies provided in this paragraph are in addition to any other rights and remedies provided by law or under this Contract.

14. Termination for Convenience.

a. Termination. The Agency procurement officer may, when the interests of the STATE so require, terminate this Contract in whole or in part, for the convenience of the STATE. The Agency procurement officer shall give written notice of the termination to the CONTRACTOR specifying the part of the Contract terminated and when termination becomes effective.

b. CONTRACTOR'S obligations. The CONTRACTOR shall incur no further obligations in connection with the terminated performance and on the date(s) set in the notice of termination the CONTRACTOR will stop performance to the extent specified. The CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated performance. The CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated performance subject to the STATE'S approval. The Agency procurement officer may direct the CONTRACTOR to assign the CONTRACTOR'S right, title, and interest under terminated orders or subcontracts to the STATE. The CONTRACTOR must still complete the performance not terminated by the notice of termination and may incur obligations as necessary to do so.

c. Right to goods and work product. The Agency procurement officer may require the CONTRACTOR to transfer title and deliver to the STATE in the manner and to the extent directed by the Agency procurement officer:

(1) Any completed goods or work product; and

(2) The partially completed goods and materials, parts, tools, dies, jigs, fixtures, plans, drawings, information, and contract rights (hereinafter called "manufacturing material") as the CONTRACTOR has specifically produced or specially acquired for the performance of the terminated part of this Contract.

The CONTRACTOR shall, upon direction of the Agency procurement officer, protect and preserve property in the possession of the CONTRACTOR in which the STATE has an interest. If the Agency procurement officer does not exercise this right, the CONTRACTOR shall use best efforts to sell such goods and manufacturing materials. Use of this paragraph in no way implies that the STATE has breached the Contract by exercise of the termination for convenience provision.

d. Compensation.

(1) The CONTRACTOR shall submit a termination claim specifying the amounts due because of the termination for convenience together with the cost or pricing data, submitted to the extent required by chapter 3-122, HAR, bearing on such claim. If the CONTRACTOR fails to file a termination claim within one year from the effective date of termination, the Agency procurement officer may pay the CONTRACTOR, if at all, an amount set in accordance with subparagraph 14d(3) below.

(2) The Agency procurement officer and the CONTRACTOR may agree to a settlement provided the CONTRACTOR has filed a termination claim supported by cost or pricing data submitted as required and that the settlement does not exceed the total Contract price plus settlement costs reduced by payments previously made by the STATE, the proceeds of any sales of goods and manufacturing materials under subparagraph 14c, and the Contract price of the performance not terminated.

(3) Absent complete agreement under subparagraph 14d(2) the Agency procurement officer shall pay the CONTRACTOR the following amounts, provided payments agreed to under subparagraph 14d(2) shall not duplicate payments under this subparagraph for the following:

(A) Contract prices for goods or services accepted under the Contract;

(B) Costs incurred in preparing to perform and performing the terminated portion of the performance plus a fair and reasonable profit on such portion of the performance, such profit shall not include anticipatory profit or consequential damages, less amounts paid or to be paid for accepted goods or services; provided, however, that if it appears that the CONTRACTOR would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss;

(C) Costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to subparagraph 14b. These costs must not include costs paid in accordance with subparagraph 14d(3)(B);

(D) The reasonable settlement costs of the CONTRACTOR, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the Contract and for the termination of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of property allocable to the terminated portion of this Contract. The total sum to be paid the CONTRACTOR under this subparagraph shall not exceed the

total Contract price plus the reasonable settlement costs of the CONTRACTOR reduced by the amount of payments otherwise made, the proceeds of any sales of supplies and manufacturing materials under subparagraph 14d(2), and the contract price of performance not terminated.

(4) Costs claimed, agreed to, or established under subparagraphs 14d(2) and 14d(3) shall be in accordance with Chapter 3-123 (Cost Principles) of the Procurement Rules.

15. Claims Based on the Agency Procurement Officer's Actions or Omissions.

a. Changes in scope. If any action or omission on the part of the Agency procurement officer (which term includes the designee of such officer for purposes of this paragraph 15) requiring performance changes within the scope of the Contract constitutes the basis for a claim by the CONTRACTOR for additional compensation, damages, or an extension of time for completion, the CONTRACTOR shall continue with performance of the Contract in compliance with the directions or orders of such officials, but by so doing, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, damages, or an extension of time for completion; provided:

(1) Written notice required. The CONTRACTOR shall give written notice to the Agency procurement officer:

(A) Prior to the commencement of the performance involved, if at that time the CONTRACTOR knows of the occurrence of such action or omission;

(B) Within thirty (30) days after the CONTRACTOR knows of the occurrence of such action or omission, if the CONTRACTOR did not have such knowledge prior to the commencement of the performance; or

(C) Within such further time as may be allowed by the Agency procurement officer in writing.

(2) Notice content. This notice shall state that the CONTRACTOR regards the act or omission as a reason which may entitle the CONTRACTOR to additional compensation, damages, or an extension of time. The Agency procurement officer, upon receipt of such notice, may rescind such action, remedy such omission, or take such other steps as may be deemed advisable in the discretion of the Agency procurement officer;

(3) Basis must be explained. The notice required by subparagraph 15a(1) describes as clearly as practicable at the time the reasons why the CONTRACTOR believes that additional compensation, damages, or an extension of time may be remedies to which the CONTRACTOR is entitled; and

(4) Claim must be justified. The CONTRACTOR must maintain and, upon request, make available to the Agency procurement officer within a reasonable time, detailed records to the extent practicable, and other documentation and evidence satisfactory to the STATE, justifying the claimed additional costs or an extension of time in connection with such changes.

b. CONTRACTOR not excused. Nothing herein contained, however, shall excuse the CONTRACTOR from compliance with any rules or laws precluding any state officers and CONTRACTOR from acting in collusion or bad faith in issuing or performing change orders which are clearly not within the scope of the Contract.

c. Price adjustment. Any adjustment in the price made pursuant to this paragraph shall be determined in accordance with the price adjustment provision of this Contract.

16. Costs and Expenses. Any reimbursement due the CONTRACTOR for per diem and transportation expenses under this Contract shall be subject to chapter 3-123 (Cost Principles), HAR, and the following guidelines:

a. Reimbursement for air transportation shall be for actual cost or coach class air fare, whichever is less.

b. Reimbursement for ground transportation costs shall not exceed the actual cost of renting an intermediate-sized vehicle.

c. Unless prior written approval of the HOPA is obtained, reimbursement for subsistence allowance (i.e., hotel and meals, etc.) shall not exceed the applicable daily authorized rates for inter-island or out-of-state travel that are set forth in the current Governor's Executive Order authorizing adjustments in salaries and benefits for state officers and employees in the executive branch who are excluded from collective bargaining coverage.

17. Payment Procedures; Final Payment; Tax Clearance.

a. Original invoices required. All payments under this Contract shall be made only upon submission by the CONTRACTOR of original invoices specifying the amount due and certifying that services requested under the Contract have been performed by the CONTRACTOR according to the Contract.

b. Subject to available funds. Such payments are subject to availability of funds and allotment by the Director of Finance in accordance with chapter 37, HRS. Further, all payments shall be made in accordance with and subject to chapter 40, HRS.

c. Prompt payment.

(1) Any money, other than retainage, paid to the CONTRACTOR shall be disbursed to subcontractors within ten (10) days after receipt of the money in accordance with the terms of the subcontract; provided that the subcontractor has met all the terms and conditions of the subcontract and there are no bona fide disputes; and

(2) Upon final payment to the CONTRACTOR, full payment to the subcontractor, including retainage, shall be made within ten (10) days after receipt of the money; provided that there are no bona fide disputes over the subcontractor's performance under the subcontract.

d. Final payment. Final payment under this Contract shall be subject to sections 103-53 and 103D-328, HRS, which require a tax clearance from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR have been paid. Further, in accordance with section 3-122-112, HAR, CONTRACTOR shall provide a certificate affirming that the CONTRACTOR has remained in compliance with all applicable laws as required by this section.

18. Federal Funds. If this Contract is payable in whole or in part from federal funds, CONTRACTOR agrees that, as to the portion of the compensation under this Contract to be payable from federal funds, the CONTRACTOR shall be paid only from such funds received from the federal government, and shall not be paid from any other funds. Failure of the STATE to receive anticipated federal funds shall not be considered a breach by the STATE or an excuse for nonperformance by the CONTRACTOR.

19. Modifications of Contract.

a. In writing. Any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract permitted by this Contract shall be made by written amendment to this Contract, signed by the CONTRACTOR and the STATE, provided that change orders shall be made in accordance with paragraph 20 herein.

b. No oral modification. No oral modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract shall be permitted.

c. Agency procurement officer. By written order, at any time, and without notice to any surety, the Agency procurement officer may unilaterally order of the CONTRACTOR:

(A) Changes in the work within the scope of the Contract; and

(B) Changes in the time of performance of the Contract that do not alter the scope of the Contract work.

d. Adjustments of price or time for performance. If any modification increases or decreases the CONTRACTOR'S cost of, or the time required for, performance of any part of the work under this Contract, an adjustment shall be made and this Contract modified in writing accordingly. Any adjustment in contract price made pursuant to this clause shall be determined, where applicable, in accordance with the price adjustment clause of this Contract or as negotiated.

e. Claim barred after final payment. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if written modification of the Contract is not made prior to final payment under this Contract.

f. Claims not barred. In the absence of a written contract modification, nothing in this clause shall be deemed to restrict the CONTRACTOR'S right to pursue a claim under this Contract or for a breach of contract.

g. CPO approval. If this is a professional services contract awarded pursuant to section 103D-303 or 103D-304, HRS, any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract which increases the amount payable to the CONTRACTOR by at least $25,000.00 or ten per cent (10%) of the initial contract price, whichever increase is higher, must receive the prior approval of the CPO.

h. Tax clearance. The STATE may, at its discretion, require the CONTRACTOR to submit to the STATE, prior to the STATE'S approval of any modification, alteration, amendment, change, or extension of any term, provision, or condition of this Contract, a tax clearance from the Director of Taxation, State of Hawaii, and the Internal Revenue Service, U.S. Department of Treasury, showing that all delinquent taxes, if any, levied or accrued under state law and the Internal Revenue Code of 1986, as amended, against the CONTRACTOR have been paid.

i. Sole source contracts. Amendments to sole source contracts that would change the original scope of the Contract may only be made with the approval of the CPO. Annual renewal of a sole source contract for services should not be submitted as an amendment.

20. Change Order. The Agency procurement officer may, by a written order signed only by the STATE, at any time, and without notice to any surety, and subject to all appropriate adjustments, make changes within the general scope of this Contract in any one or more of the following:

(1) Drawings, designs, or specifications, if the goods or services to be furnished are to be specially provided to the STATE in accordance therewith;

(2) Method of delivery; or

(3) Place of delivery.

a. Adjustments of price or time for performance. If any change order increases or decreases the CONTRACTOR'S cost of, or the time required for, performance of any part of the work under this Contract, whether or not changed by the order, an adjustment shall be made and the Contract modified in writing accordingly. Any adjustment in the Contract price made pursuant to this provision shall be determined in accordance with the price adjustment provision of this Contract. Failure of the parties to agree to an adjustment shall not excuse the CONTRACTOR from proceeding with the Contract as changed, provided that the Agency procurement officer promptly and duly makes the provisional adjustments in payment or time for performance as may be reasonable. By

proceeding with the work, the CONTRACTOR shall not be deemed to have prejudiced any claim for additional compensation, or any extension of time for completion.

b. Time period for claim. Within ten (10) days after receipt of a written change order under subparagraph 20a, unless the period is extended by the Agency procurement officer in writing, the CONTRACTOR shall respond with a claim for an adjustment. The requirement for a timely written response by CONTRACTOR cannot be waived and shall be a condition precedent to the assertion of a claim.

c. Claim barred after final payment. No claim by the CONTRACTOR for an adjustment hereunder shall be allowed if a written response is not given prior to final payment under this Contract.

d. Other claims not barred. In the absence of a change order, nothing in this paragraph 20 shall be deemed to restrict the CONTRACTOR'S right to pursue a claim under the Contract or for breach of contract.

21. Price Adjustment.

a. Price adjustment. Any adjustment in the contract price pursuant to a provision in this Contract shall be made in one or more of the following ways:

(1) By agreement on a fixed price adjustment before commencement of the pertinent performance or as soon thereafter as practicable;

(2) By unit prices specified in the Contract or subsequently agreed upon;

(3) By the costs attributable to the event or situation covered by the provision, plus appropriate profit or fee, all as specified in the Contract or subsequently agreed upon;

(4) In such other manner as the parties may mutually agree; or

(5) In the absence of agreement between the parties, by a unilateral determination by the Agency procurement officer of the costs attributable to the event or situation covered by the provision, plus appropriate profit or fee, all as computed by the Agency procurement officer in accordance with generally accepted accounting principles and applicable sections of chapters 3-123 and 3-126, HAR.

b. Submission of cost or pricing data. The CONTRACTOR shall provide cost or pricing data for any price adjustments subject to the provisions of chapter 3-122, HAR.

22. Variation in Quantity for Definite Quantity Contracts. Upon the agreement of the STATE and the CONTRACTOR, the quantity of goods or services, or both, if a definite quantity is specified in this Contract, may be increased by a maximum of ten per cent (10%); provided the unit prices will remain the same except for any price adjustments otherwise applicable; and the Agency procurement officer makes a written determination that such an increase will either be more economical than awarding another contract or that it would not be practical to award another contract.

23. Changes in Cost-Reimbursement Contract. If this Contract is a cost-reimbursement contract, the following provisions shall apply:

a. The Agency procurement officer may at any time by written order, and without notice to the sureties, if any, make changes within the general scope of the Contract in any one or more of the following:

(1) Description of performance (Attachment 1);

(2) Time of performance (i.e., hours of the day, days of the week, etc.);

(3) Place of performance of services;

(4) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for the STATE in accordance with the drawings, designs, or specifications;

(5) Method of shipment or packing of supplies; or

(6) Place of delivery.

b. If any change causes an increase or decrease in the estimated cost of, or the time required for performance of, any part of the performance under this Contract, whether or not changed by the order, or otherwise affects any other terms and conditions of this Contract, the Agency procurement officer shall make an equitable adjustment in the (1) estimated cost, delivery or completion schedule, or both; (2) amount of any fixed fee; and (3) other affected terms and shall modify the Contract accordingly.

c. The CONTRACTOR must assert the CONTRACTOR'S rights to an adjustment under this provision within thirty (30) days from the day of receipt of the written order. However, if the Agency procurement officer decides that the facts justify it, the Agency procurement officer may receive and act upon a proposal submitted before final payment under the Contract.

d. Failure to agree to any adjustment shall be a dispute under paragraph 11 of this Contract. However, nothing in this provision shall excuse the CONTRACTOR from proceeding with the Contract as changed.

e. Notwithstanding the terms and conditions of subparagraphs 23a and 23b, the estimated cost of this Contract and, if this Contract is incrementally funded, the funds allotted for the performance of this Contract, shall not be increased or considered to be increased except by specific written modification of the Contract indicating the new contract estimated cost and, if this contract is incrementally funded, the new amount allotted to the contract.

24. Confidentiality of Material.

a. All material given to or made available to the CONTRACTOR by virtue of this Contract, which is identified as proprietary or confidential information, will be safeguarded by the CONTRACTOR and shall not be disclosed to any individual or organization without the prior written approval of the STATE.

b. All information, data, or other material provided by the CONTRACTOR to the STATE shall be subject to the Uniform Information Practices Act, chapter 92F, HRS.

25. Publicity. The CONTRACTOR shall not refer to the STATE, or any office, agency, or officer thereof, or any state employee, including the HOPA, the CPO, the Agency procurement officer, or to the services or goods, or both, provided under this Contract, in any of the CONTRACTOR'S brochures, advertisements, or other publicity of the CONTRACTOR. All media contacts with the CONTRACTOR about the subject matter of this Contract shall be referred to the Agency procurement officer.

26. Ownership Rights and Copyright. The STATE shall have complete ownership of all material, both finished and unfinished, which is developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract, and all such material shall be considered "works made for hire." All such material shall be delivered to the STATE upon expiration or termination of this Contract. The STATE, in its sole discretion, shall have the exclusive right to copyright any product, concept, or material developed, prepared, assembled, or conceived by the CONTRACTOR pursuant to this Contract.

27. Liens and Warranties. Goods provided under this Contract shall be provided free of all liens and provided together with all applicable warranties, or with the warranties described in the Contract documents, whichever are greater.

28. Audit of Books and Records of the CONTRACTOR. The STATE may, at reasonable times and places, audit the books and records of the CONTRACTOR, prospective contractor, subcontractor, or prospective subcontractor which are related to:

a. The cost or pricing data, and

b. A state contract, including subcontracts, other than a firm fixed-price contract.

29. Cost or Pricing Data. Cost or pricing data must be submitted to the Agency procurement officer and timely certified as accurate for contracts over $100,000 unless the contract is for a multiple-term or as otherwise specified by the Agency procurement officer. Unless otherwise required by the Agency procurement officer, cost or pricing data submission is not required for contracts awarded pursuant to competitive sealed bid procedures.

If certified cost or pricing data are subsequently found to have been inaccurate, incomplete, or noncurrent as of the date stated in the certificate, the STATE is entitled to an adjustment of the contract price, including profit or fee, to exclude any significant sum by which the price, including profit or fee, was increased because of the defective data. It is presumed that overstated cost or pricing data increased the contract price in the amount of the defect plus related overhead and profit or fee. Therefore, unless there is a clear indication that the defective data was not used or relied upon, the price will be reduced in such amount.

30. Audit of Cost or Pricing Data. When cost or pricing principles are applicable, the STATE may require an audit of cost or pricing data.

31. Records Retention.

(1) Upon any termination of this Contract or as otherwise required by applicable law, CONTRACTOR shall, pursuant to chapter 487R, HRS, destroy all copies (paper or electronic form) of personal information received from the STATE.

(2) The CONTRACTOR and any subcontractors shall maintain the files, books, and records that relate to the Contract, including any personal information created or received by the CONTRACTOR on behalf of the STATE, and any cost or pricing data, for at least three (3) years after the date of final payment under the Contract. The personal information shall continue to be confidential and shall only be disclosed as permitted or required by law. After the three (3) year, or longer retention period as required by law has ended, the files, books, and records that contain personal information shall be destroyed pursuant to chapter 487R, HRS or returned to the STATE at the request of the STATE.

32. Antitrust Claims. The STATE and the CONTRACTOR recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by the purchaser. Therefore, the CONTRACTOR hereby assigns to STATE any and all claims for overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from violations commencing after the price is established under this Contract and which are not passed on to the STATE under an escalation clause.

33. Patented Articles. The CONTRACTOR shall defend, indemnify, and hold harmless the STATE, and its officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorneys fees, and all claims, suits, and demands arising out of or resulting from any claims, demands, or actions by the patent holder for infringement or other improper or unauthorized use of any patented article, patented process, or patented appliance in connection with this Contract. The CONTRACTOR shall be solely responsible for correcting or curing to the satisfaction of the STATE any such infringement or improper or unauthorized use, including, without limitation: (a) furnishing at no cost to the STATE a substitute article, process, or appliance acceptable to the STATE, (b) paying royalties or other required payments to the patent holder, (c) obtaining proper authorizations or releases from the patent holder, and (d) furnishing such security to or making such arrangements with the patent holder as may be necessary to correct or cure any such infringement or improper or unauthorized use.

34. Governing Law. The validity of this Contract and any of its terms or provisions, as well as the rights and duties of the parties to this Contract, shall be governed by the laws of the State of Hawaii. Any action at law or in equity to enforce or interpret the provisions of this Contract shall be brought in a state court of competent jurisdiction in Honolulu, Hawaii.

35. Compliance with Laws. The CONTRACTOR shall comply with all federal, state, and county laws, ordinances, codes, rules, and regulations, as the same may be amended from time to time, that in any way affect the CONTRACTOR'S performance of this Contract.

36. Conflict Between General Conditions and Procurement Rules. In the event of a conflict between the General Conditions and the procurement rules, the procurement rules in effect on the date this Contract became effective shall control and are hereby incorporated by reference.

37. Entire Contract. This Contract sets forth all of the agreements, conditions, understandings, promises, warranties, and representations between the STATE and the CONTRACTOR relative to this Contract. This Contract supersedes all prior agreements, conditions, understandings, promises, warranties, and representations, which shall have no further force or effect. There are no agreements, conditions, understandings, promises, warranties, or representations, oral or written, express or implied, between the STATE and the CONTRACTOR other than as set forth or as referred to herein.

38. Severability. In the event that any provision of this Contract is declared invalid or unenforceable by a court, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms of this Contract.

39. Waiver. The failure of the STATE to insist upon the strict compliance with any term, provision, or condition of this Contract shall not constitute or be deemed to constitute a waiver or relinquishment of the STATE'S right to enforce the same in accordance with this Contract. The fact that the STATE specifically refers to one provision of the procurement rules or one section of the Hawaii Revised Statutes, and does not include other provisions or statutory sections in this Contract shall not constitute a waiver or relinquishment of the STATE'S rights or the CONTRACTOR'S obligations under the procurement rules or statutes.

40. Pollution Control. If during the performance of this Contract, the CONTRACTOR encounters a "release" or a "threatened release" of a reportable quantity of a "hazardous substance," "pollutant," or "contaminant" as those terms are defined in section 128D-1, HRS, the CONTRACTOR shall immediately notify the STATE and all other appropriate state, county, or federal agencies as required by law. The Contractor shall take all necessary actions, including stopping work, to avoid causing, contributing to, or making worse a release of a hazardous substance, pollutant, or contaminant, and shall promptly obey any orders the Environmental Protection Agency or the state Department of Health issues in response to the release. In the event there is an ensuing cease-work period, and the STATE determines that this Contract requires an adjustment of the time for performance, the Contract shall be modified in writing accordingly.

41. Campaign Contributions. The CONTRACTOR is hereby notified of the applicability of 11-355, HRS, which states that campaign contributions are prohibited from specified state or county government contractors during the terms of their contracts if the contractors are paid with funds appropriated by a legislative body.

42. Confidentiality of Personal Information.

a. Definitions.

"Personal information" means an individual's first name or first initial and last name in combination with any one or more of the following data elements, when either name or data elements are not encrypted:

(1) Social security number;

(2) Driver's license number or Hawaii identification card number; or

(3) Account number, credit or debit card number, access code, or password that would permit access to an individual's financial information.

Personal information does not include publicly available information that is lawfully made available to the general public from federal, state, or local government records.

"Technological safeguards" means the technology and the policy and procedures for use of the technology to protect and control access to personal information.

b. Confidentiality of Material.

(1) All material given to or made available to the CONTRACTOR by the STATE by virtue of this Contract which is identified as personal information, shall be safeguarded by the CONTRACTOR and shall not be disclosed without the prior written approval of the STATE.

(2) CONTRACTOR agrees not to retain, use, or disclose personal information for any purpose other than as permitted or required by this Contract.

(3) CONTRACTOR agrees to implement appropriate "technological safeguards" that are acceptable to the STATE to reduce the risk of unauthorized access to personal information.

(4) CONTRACTOR shall report to the STATE in a prompt and complete manner any security breaches involving personal information.

(5) CONTRACTOR agrees to mitigate, to the extent practicable, any harmful effect that is known to CONTRACTOR because of a use or disclosure of personal information by CONTRACTOR in violation of the requirements of this paragraph.

(6) CONTRACTOR shall complete and retain a log of all disclosures made of personal information received from the STATE, or personal information created or received by CONTRACTOR on behalf of the STATE.

c. Security Awareness Training and Confidentiality Agreements.

(1) CONTRACTOR certifies that all of its employees who will have access to the personal information have completed training on security awareness topics relating to protecting personal information.

(2) CONTRACTOR certifies that confidentiality agreements have been signed by all of its employees who will have access to the personal information acknowledging that:

(A) The personal information collected, used, or maintained by the CONTRACTOR will be treated as confidential;

(B) Access to the personal information will be allowed only as necessary to perform the Contract; and

(C) Use of the personal information will be restricted to uses consistent with the services subject to this Contract.

d. Termination for Cause. In addition to any other remedies provided for by this Contract, if the STATE learns of a material breach by CONTRACTOR of this paragraph by CONTRACTOR, the STATE may at its sole discretion:

(1) Provide an opportunity for the CONTRACTOR to cure the breach or end the violation; or

(2) Immediately terminate this Contract.

In either instance, the CONTRACTOR and the STATE shall follow chapter 487N, HRS, with respect to notification of a security breach of personal information.

e. Records Retention.

(1) Upon any termination of this Contract or as otherwise required by applicable law, CONTRACTOR shall, pursuant to chapter 487R, HRS, destroy all copies (paper or electronic form) of personal information received from the STATE.

(2) The CONTRACTOR and any subcontractors shall maintain the files, books, and records that relate to the Contract, including any personal information created or received by the CONTRACTOR on behalf of the STATE, and any cost or pricing data, for at least three (3) years after the date of final payment under the Contract. The personal information shall continue to be confidential and shall only be disclosed as permitted or required by law. After the three (3) year, or longer retention period as required by law has ended, the files, books, and records that contain personal information shall be destroyed pursuant to chapter 487R, HRS or returned to the STATE at the request of the STATE.