STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

OCT 3 2012

REF: OCCL: AJR

CDUA: OA-3636
Acceptance Date: August 13, 2012
180 Day Expiration Date: February 9, 2013
SUSPENSE DATE: 21 Days from stamped date

FILE COPY

OCT - 9 2012

MEMORANDUM

To: Mr. Gary Hooser, Director
Office of Environmental Quality Control

From: Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

Subject: Draft Environmental Assessment (DEA) for Conservation District Use Application (CDUA) **OA-3636** for landscaping, non-commercial animal husbandry and general land and resource management activities located in Kaneohe, Ko'olaupoko, Island of Oahu, Hawaii, *TMK: (1) 4-5-032:001*

The Department of Land and Natural Resources has reviewed the Draft Environmental Assessment (DEA) for the proposed project and anticipates a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability for this project in the **October 23, 2012** issue of the *Environmental Notice*. We have enclosed the applicants OEQC Bulletin publication form, a CD with a copy of the CDUA, DEA and Publication Form and a hardcopy of the DEA.

Should you wish to provide comments regarding this project please respond by the suspense date noted above. If no response is received by the suspense date, we will assume there are no comments. Please contact Alex J. Roy of our Office of Conservation and Coastal Lands staff at (808) 587-0316 should you have any questions.

Enclosures: *One (1) CD with a copy of OEQC publication form, CDUA OA-3636, DEA*
OCCL Acceptance letter (hard copy)
OEQC Bulletin Publication Form (hard copy)
DEA (Hard Copy)

Applicant Action EA
Chapter 343, HRS
Publication Form

Project Name	Draft Environmental Assessment for the Proposed Landscaping, Non-Commercial Animal Husbandry and Land and Resource Management Project
Island:	Oahu
District:	Ko'olaupoko
TMK:	(1) 4-5-032:001
Permits:	State of Hawaii, Conservation District Use Permit
Applicant:	Sharon E. Geary, 326 Lanipo Dr., Kailua, HI, 96734
Approving Agency:	Office of Conservation and Coastal Lands, Department of Land and Natural Resources, Kalanimoku Building, 1151 Punchbowl Street, Room 131, Honolulu, Hawaii 96813, Contact: Samuel J. Lemmo, OCCL Administrator, Telephone: (808) 587-0377
Consultant:	Joe Simmons, c/o Project Solutions, Inc., 365 Auwinala Rd., Kailua, HI, 96734
Status:	Statutory 30-day comment period

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page):

The property owner proposes using portions of the subject parcel for landscaping and animal husbandry for non-commercial purposes. No residence is proposed. The property owner's interest in horticulture and utilization of permaculture techniques (a system of cultivation that creates a self-sustaining ecosystem) is reflected in the specific uses sought in this Conservation District Use Application.

Approximately 12 acres of the parcel's 56.28 acres would be used for landscaping, though ground disturbing activities would be limited to only a fraction of the 12 acres. Plants to be introduced to the property include a variety of native and non-native grasses, fruits, vegetables, flower, shrubs and trees, all known to exist in Hawaii and not considered noxious species. Erosion control and soil improvement is proposed as a means to support landscaping.

Approximately 3 acres would be fenced as pasture for small flocks of domestic animals. Up to six goats and up to six sheep, 24 chickens (no roosters) and up to 12 ducks (female only) are proposed to be housed within the pasture area in appropriate shelters (including a duck pond). Manufactured compost bins designed to contain odors will be located in the animal pasture area.

DRAFT

ENVIRONMENTAL ASSESSMENT

FOR THE

GEARY PROPERTY AT KOKOKAHI PLACE MASTER PLAN

KĀNEʻOHE, ISLAND OF OʻAHU, HAWAIʻI

TMK: (1) 4-5-032:001

October 2012

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

BLNR	Board of Land and Natural Resources
CDUA	Conservation District Use Application
CDUP	Conservation District Use Permit
CZM	Coastal Zone Management
dB	decibel
dBA	A-weighted decibel scale
DES	Department of Environmental Services
DOFAW	Division of Forestry and Wildlife
DLNR	Department of Land and Natural Resources
DNL	day-night average noise level
FEMA	Federal Emergency Management Agency
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
HAR	Hawaiʻi Administrative Rules
HRS	Hawaiʻi Revised Statutes
LUO	Land Use Ordinance
MP	Management Plan
NPDES	National Pollutant Discharge Elimination System
OCCL	Office of Conservation and Coastal Lands
SCP	Sustainable Communities Plan
SMA	Special Management Area
TMK	tax map key
USDA	United Stated Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

Sharon E. Geary, herein referred to as *the property owner,* proposes using portions of her property at 45-234A Kokokahi Place in Kāneʻohe, Hawaiʻi, herein referred to as *the property,* to develop small areas for planting a variety of flora, for gardening purposes, and to house and care for a variety of domestic animals.

The property is located within the State of Hawaiʻi Conservation District. Proposed land-disturbing activities within the Conservation District trigger the preparation of a Conservation District Use Application (CDUA) and an environmental assessment (EA). This EA will evaluate the Proposed Action and identify potential environmental impacts that may result from implementing the entirety, or any fraction of, the Proposed Action at the property.

1.1 Proposed Action

The Proposed Action consists of five separate, but integrated, actions: (1) to landscape small areas of the property with a variety of native and non-native flora, (2) to build terraced planter boxes designed for gardening and cultivation, (3) to repair and upgrade existing utilities serving the property, (4) to develop shelters and supporting facilities necessary to care for a small number of domestic animals (regarded by the owner as pets) on the property, and (5) to maintain existing pathways for access to work sites. Project actions would be limited to an area of approximately 12 acres (out of 56 acres); however, ground disturbing activities would be limited to a fraction of this acreage. A detailed description of the Proposed Action is provided in Section 2.

1.2 Purpose and Need for the Proposed Action

The purpose and need for the Proposed Action is to improve and maintain the natural condition of the property by introducing a variety of native and non-native flora that will reduce erosion, provide a variety of fruits and other edible plants, as well as to develop a portion of the land to keep pets for personal enjoyment. These actions would be strictly for private purposes and are not intended for any commercial use.

1.3 Project Information Overview

PROJECT NAME	Environmental Assessment for the Geary Property at Kokokahi Place Master Plan
THE APPLICANT	Sharon E. Geary
APPLICANT'S REPRESENTATIVE	Pacific Project Solutions, Inc. Joe Simmons, Project Manager 365 Auwinala Road Kailua, HI 96734 Phone: (808) 497-1034, email: joe_simmons@pacprojsol.com
ENVIRONMENTAL ASSESSMENT PREPARER	Wil Chee - Planning, Inc. 1018 Palm Drive Honolulu, Hawaiʻi 96814

PROJECT ADDRESS	45-234A Kokokahi Place Kāneʻohe, Hawaiʻi, 96744
TMK	(1) 4-5-032:001
PARCEL SIZE AND PROJECT AREA	Parcel size: 56.28 acres Proposed Project area: approximately 12.0 acres
ESTIMATED PROJECT COST	$75,000.00
STATE LAND USE CLASSIFICATION	Conservation Land
LUO DESIGNATION	P-1 Preservation/R-10 Residential
ACCEPTING AUTHORITY	State of Hawaiʻi Department of Land and Natural Resources Office of Conservation and Coastal Lands 1151 Punchbowl St., Room 131 Honolulu, Hawaiʻi 96813
PREVIOUS USE	The site was previously used as a residential development and contained one single-family dwelling that burned down approximately 10 years ago and was never rebuilt.

1.4 Project Location

The property is located at 45-234A Kokokahi Place, in an area known as Kokokahi on the Windward side of the island of Oʻahu (Figure 1). The property is south of Kāneʻohe Bay Drive between Kamehameha Highway and the H-3 Freeway. On the makai side, it is surrounded by existing single-family residences and urban uses. On the mauka side, it is bounded by undeveloped Conservation land and state-owned forest reserve lands.

1.5 Existing Conditions

The property is 56.28 acres in size and is predominantly covered with non-native lowland forest growth. Approximately 3.5 acres of land were cleared by a previous owner and are currently open space; a long unpaved driveway leads to the site of what used to be a single family home, which burned down in 2001 and was not rebuilt. Remnants of the previous home's concrete foundation, structural walls and columns remain on the property. Three small, pre-fabricated storage sheds have been erected on the property (with permission of Department of Land and Natural Resources'-DLNR-Office of Conservation and Coastal Lands-OCCL).

1.6 Anticipated Permits

The site is located within the State Land Use Conservation District. Land uses within the Conservation District require approval by the Board of Land and Natural Resources (BLNR). The proposed project will require a Conservation District Use Permit (CDUP). A CDUA and accompanying Management Plan will be completed and submitted to the State of Hawaiʻi's OCCL together with this EA.

A National Pollutant Discharge Elimination System (NPDES) Permit is required for developments that result in land-disturbing activity greater than one acre in size. Although the total land area for the Proposed Action is greater than one acre in size, the total land area for ground disturbing activities is significantly less than one acre; therefore, it is anticipated that a NPDES permit would not be required for this project.

1.7 Scope and Authority

This EA has been prepared pursuant to Chapter 343 of the Hawaii Revised Statutes (HRS), and the associated Title 11, Chapter 200, Hawaii Administrative Rules (HAR), Department of Health, State of Hawaiʻi. The intent of this EA is to ensure that comprehensive and systematic consideration is given to potential impacts of the Proposed Action upon the natural and man-made environments. This EA is intended to serve as an environmental disclosure document that identifies the purpose of and need for the Proposed Action, reasonable implementation alternatives, existing environmental conditions, potential environmental impacts, and mitigation measures to avoid or minimize such impacts. The findings presented in this EA will provide the basis for determining whether an Environmental Impact Statement (EIS) is necessary, or whether a Finding of No Significant Impact (FONSI) is appropriate.

1.8 Summary of Anticipated Impacts

SOILS AND TOPOGRAPHY

The Proposed Action would not contribute to the erosion hazard present on the property, nor would it contribute to the transport of soils or sediments off-site. There would be no changes to the site's topography that would result in an increase of the slope of the property. Elements of the Proposed Action would address erosion, as discussed in this EA.

HYDROLOGY AND RAINFALL

There are no anticipated impacts to groundwater or surface water resources at the property, and implementing the Proposed Action is anticipated to reduce or slow down storm water runoff exiting the property.

NATURAL HAZARDS

There would be no increase in risk or exposure to natural hazards from the Proposed Action. None of the components of the Proposed Action would contribute to flooding, earthquakes, or landslides, nor would they create an environmental condition that would increase the risk to human health, life, or property from these events.

BIOLOGICAL RESOURCES

There would be no adverse impacts to biological resources. No threatened or endangered species are known to occur on the property, and the Proposed Action would not result in loss of any critical habitat. Elements of the Proposed Action would introduce native flora and increase the total biomass on the property.

ACOUSTICAL ENVIRONMENT

Impacts to the acoustic environment from implementing the Proposed Action would be temporary and related to construction activities. The proposed pet shelters and fencing would require only minimal construction.

AESTHETIC RESOURCES

The Proposed Action would neither block significant viewsheds, nor adversely impact the aesthetic character of the area. A component of the Proposed Action would be to implement a landscape master plan, which would add new plants and trees to the property. This change would be consistent with the existing character of the area and, generally, would add to its aesthetic resources.

HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

At one time the Ahukini Heiau was located within the subject property. Archaeological research for a previous EA indicates that the heiau was destroyed by a previous owner around 1974 for the construction of a single-family dwelling. There are no known archaeological resources remaining on the property. The property is not currently used by native Hawaiians for cultural, historical or natural resources. The property is only utilized by the owner.

LAND USE

As previously stated, the property is designated as Conservation land. The property is designated in the *General Subzone* of the State's Conservation District. All four of the major components of the Proposed Action are compatible with HAR §13-5, in particular §13-5-14, which states that land designated as part of the General Subzone should be suitable for farming, flower gardening, operation of nurseries or orchards, grazing; including facilities accessory to these uses when the facilities are compatible with the natural physical environment. There would be no land use impacts under the Proposed Action.

CIRCULATION AND TRAFFIC

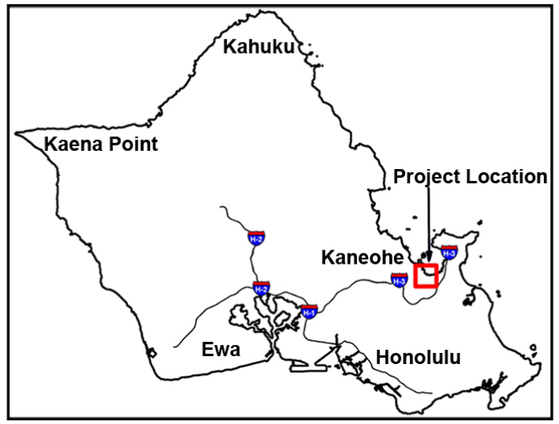
The Proposed Action would have no long-term impacts to traffic or circulation. Short-term impacts may be anticipated during construction; however, these impacts would be temporary and construction equipment and personal vehicles belonging to the construction crew would be parked on property rather than on Kokokahi Place whenever possible. Grading along a paved section of driveway in the State Urban district that rises off Kokokahi Place may be required to support trenching for utility conduit from a newly installed electrical meter to the central part of the property. Appropriate permits and approvals for that project are proposed for Year 3 following award of the CDUP.

INFRASTRUCTURE SYSTEMS

The Proposed Action would repair and/or upgrade electrical, telephone, and cable utilities. Implementing the proposed utility repairs and/or upgrades would not result in an unsustainable demand on those systems.

1.9 Anticipated Findings and Determinations

Based on the information gathered during preparation of this EA, it is expected that no significant impacts would result from implementing the Proposed Action. Consequently, it is anticipated that a FONSI will be issued by the approving agency and that an EIS will not be required.



Project Location Map

Geary Property at Kokokahi Place
Kane'ohe, Hawai'i 96744

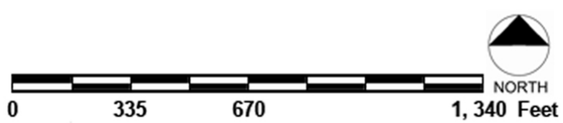


Figure 1. Project Location Map

This Page Intentionally Left Blank

2.0 THE PROPOSED ACTION AND ALTERNATIVES CONSIDERED

2.0.1 Existing Conditions and Description of the Proposed Project Areas

Figure 2 provides an overview of the property and the areas analyzed in this document. It does not represent the project area for any one alternative, but identifies areas discussed in this section that are relevant to this EA. A brief description of each area is presented below and actions proposed in each area are discussed in their relevant sections.

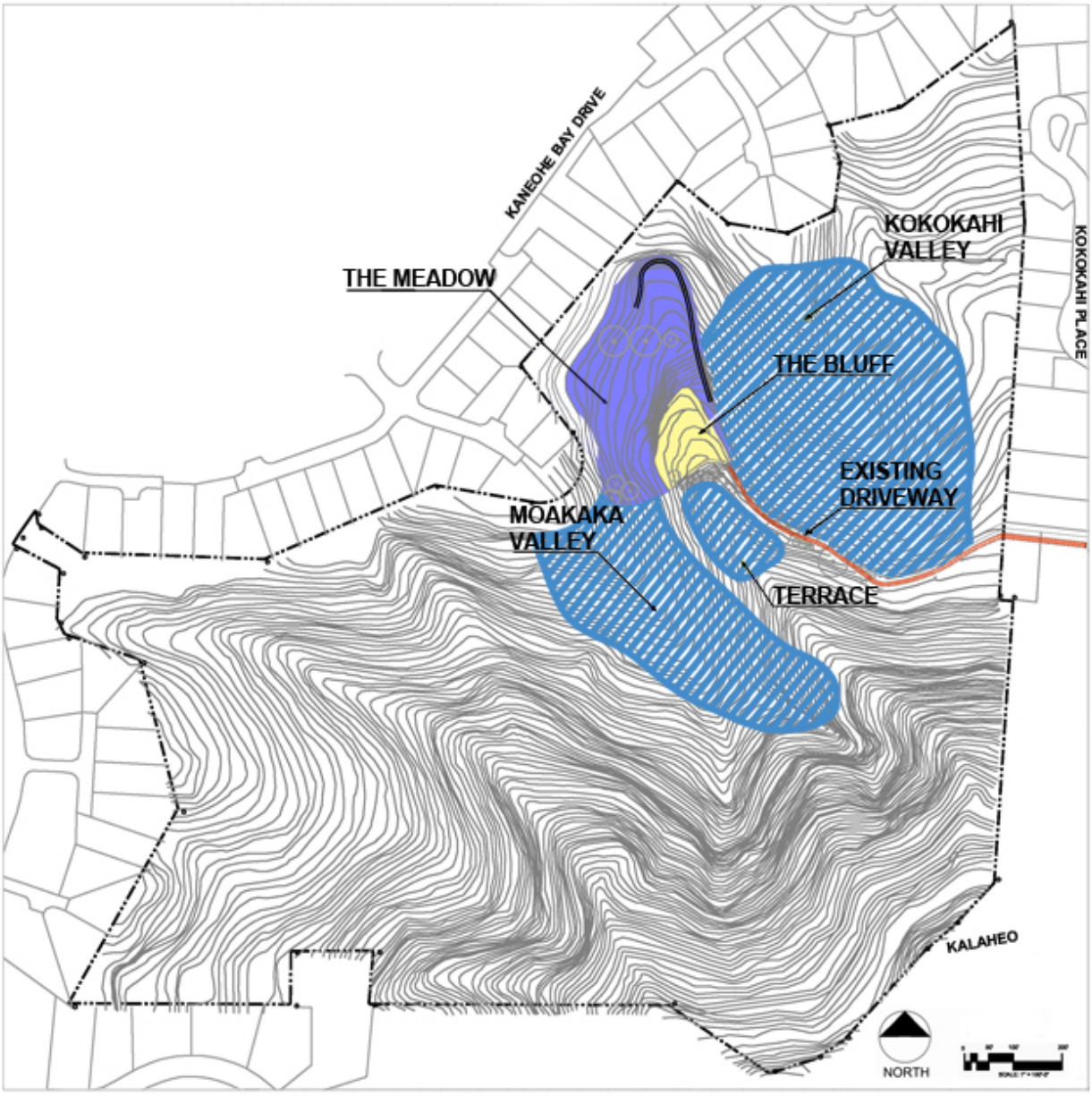


Figure 2. Overview of Proposed Project Locations on the Property

The Bluff

The Bluff is a previously cleared and leveled area encompassing approximately half an acre. It is connected to the public roadway, Kokokahi Place, by an approximately 600-foot-long, 10-foot-wide, unpaved driveway. The Bluff's relatively level terrain drops down steeply at its perimeter to a larger area known as the Meadow. The Bluff affords a panoramic view of Kāneʻohe Bay, the Marine Corps Base, and the Windward coastline. The Bluff was the site of a previous owner's single-family residence, which burned down in 2001. Remnants of the previous home's concrete foundation, structural walls, and columns remain on the property. The current owner has no plans to remove these remnants, nor does she plan to build a new home on the property.

With its central location and direct access to the public street system, the Bluff is now the hub of activity for the owner and the main staging area for her landscaping and grounds-maintenance activities. The Bluff currently supports two pre-fabricated cedar sheds used to store landscaping and maintenance equipment. The smallest shed also houses a composting toilet (the property is not connected to the municipal sewer system). Because the Bluff was formerly the site of a residence, potable water and electric power are still available there.

The Meadow

The Meadow is a cleared area of approximately three acres, which is located downgradient of the Bluff, between the Bluff and the neighboring properties to the northwest. The upper part of the Meadow, just below the Bluff, was leveled by a previous owner. The Meadow is aptly named for its large, open, grassy fields, shade trees, and gently rolling terrain. There is one pre-fabricated shed in the Meadow.

The Terrace

The area known as the Terrace occupies approximately one-quarter of an acre and rises steeply to the south of the Bluff. The Terrace is a part of the natural ridge above the Bluff that has not been leveled. This area is uncleared.

Kokokahi Valley

The valley to the northeast of the Terrace, Bluff, and Meadow is referred to as Kokokahi Valley. This is not the official name of the valley, but for convenience, the valley is labeled in this document with the name of the nearest street, which is Kokokahi Place. Kokokahi Valley encompasses approximately 3.75 acres of the property, is uncleared, heavily vegetated, and contains steep terrain that eventually succumbs to a gentle and somewhat flat valley floor. There are existing foot-trails that meander throughout the valley.

Moakaka Valley

Moakaka Valley lies adjacent to and southwest of the ridge containing the Terrace, Bluff, and Meadow. It encompasses approximately 3.75 acres of the property and is covered by uncleared lowland forest. As it does with Kokokahi Valley, this document uses the name of the nearest street for this valley. Moakaka Valley also features steep terrain that descends to a somewhat level area at the valley floor. There are also foot-trails that meander throughout this area.

2.1 The Proposed Action

The Proposed Action would develop areas of the property for planting a variety of native and non-native flora, build terraced planter boxes designed for gardening and cultivation, repair and upgrade the existing utilities that serve the property, and develop the shelters and supporting facilities necessary to care for a small number of domestic animals (regarded by the owner as pets) on the property.

2.1.1 Description and Location of Components of the Proposed Action

A detailed description of each component of the Proposed Action is provided below. Figures 4 through 7 provide an overview of where each component of the Proposed Action would be located.

LANDSCAPING AND PLANTING

A key feature of the Proposed Action is landscaping the property and planting a variety of native and non-native grasses, fruits, vegetables, flowers, shrubs, and trees. A licensed landscape architect, Umemoto Cassandro Design Corporation, has prepared a detailed plant list and a landscape master plan for the property. The landscape master plan is depicted in site plans (Figures 4 through 7), which provide an overview of the landscaping and other plantings planned for the property. It is important to note that Figures 4 through 7 are not blueprints of where and how many trees would be planted on the Property under the Proposed Action. Rather, the landscape site plans are a guide to what types of trees, shrubs, and other flora would be best suited to particular areas and would be used during planting and landscaping of the property.

The property owner is interested in horticulture as a hobby, and would not be raising plants or plant products to sell commercially. She would not be planting an entire area with the same tree. To further her interests, she would plant a small number of a wide variety of species. Rather than planting the entire area shown on the landscape drawings, she is more likely to plant a number of different specimen trees, and most of these will be planted along a footpath for ease of access.

Should the CDUP for this project be granted, the landscaping would be implemented based on ground conditions at the time of planting. The number of plants to be installed and where they would be installed would ultimately be determined based on guidance from the landscape plans and the property owner's ability to install the plants passively, with as little disturbance to the existing vegetation and soil as possible. A goal of the landscaping is to increase the biomass of the property with plants that produce flowers, fruits, and scents without clearing or grubbing sections of the land. Another goal is to reduce erosion. Trees and shrubs would be planted in 2'x2' pits dug for this purpose. The existing weedy groundcover would be kept in place, and other vegetation would be trimmed back only as much as would be required to enable the planting.

It is important to note that new irrigation is not proposed in this project. A few irrigation lines have been previously permitted for the property, and will adequately serve the Proposed Action.

The landscape plans divide the property into three planting and landscaping zones (Figure 4). The first zone contains the Bluff, the Meadow, the Terrace, and the driveway. The second zone contains Kokokahi Valley. The third zone contains Moakaka Valley. The first zone is the most developed, encompassing the already disturbed areas of the property. The remaining two zones—Kokokahi Valley and Moakaka Valley—remain less disturbed and are uncleared.

The first area where landscape improvements would occur is the Bluff, Meadow, Terrace, and Driveway Zone (Figure 5). This zone encompasses an area beginning where the State Urban district changes to Conservation district along the entry drive to the property, and extends to the Bluff and further on to the Meadow. Most of the proposed landscape improvements for the Proposed Action would occur in this zone. Standard passenger vehicles can access this area and utilities (power and water) can reach this zone.

The first zone is flanked by Kokokahi Valley to the east (Figure 6) and Moakaka Valley to the west (Figure 7). Both valleys are currently infested with invasive species, such as Haole koa and Christmas berry. Less intensive orchard-style plantings are planned for these areas. Plantings would consist mainly of fruit and flowering trees, native species, and trees suitable for reforestation. Each valley has individual characteristics that will drive the selection of tree species to be planted. Microclimates in different locations within each valley may offer specific conditions that favor certain species.

Kokokahi Valley is more protected and more consistently shady than other areas of the property. Large Monkeypod trees scattered throughout the valley rise dozens of feet above the valley floor, create conditions suited for trees that prefer to grow in protected locations or under a forest canopy.

Moakaka Valley contains areas that receive significantly more sun exposure than areas in Kokokahi Valley. These areas would favor trees requiring more sunlight and drier conditions. Where necessary, plantings for Moakaka Valley would be selected for drought resistance and preference for increased exposure to the sun.

To implement landscaping passively—with as little disturbance as is practical to existing vegetation—planting locations would be selected based on ease of trimming back existing vegetation and digging planting pits for the new trees. “Planting pit” means digging a hole just large enough to put the new plant in and leaving the surrounding area undisturbed. Clearing and grubbing whole areas to be planted is not proposed, as it could exacerbate erosion and storm water runoff. The planting-pit methodology selected for this project would minimize erosion, preserve existing drainage patterns, and maintain the existing foliage cover so that the existing roots and biomass continue to provide a natural vegetative soil erosion mat.

Where past soil erosion has affected the two valleys, the property owner would cover exposed areas with natural, bio-degradable soil erosion matting, such as jute mesh or coconut fiber matting. Native groundcovers would be interplanted, such as Paʻuohiʻiaka *(Jaquemontia ovalifolia* subsp. *sandwicensis)*, Naio papa *(Myoporum sandwicense)*, ʻUlei *(Osteomeles anthyllidifolia)* and ʻĀkia *(Wikstroemia uva-ursi)*. A system of footpaths and service paths would facilitate and ease landscaping maintenance activities. These pathways currently exist on the property (Figure 4), though one service path requires select removal of non-native vegetation

to allow passage by a low-impact utility vehicle. The path beds are compacted native soil. Permeable materials, such as basaltic pea gravel, would be used to firm the path beds in selected areas, if needed. Bio-degradable matting alongside pathways would be used where erosion control is needed.

Service paths would be used to access both valleys to haul pruned limbs, dead wood, and potentially hazardous fire fuel, including diseased or damaged non-native trees back upslope to prevent an accumulation of potential fire fuels near neighboring properties. Where practicable, this material will be chipped or shredded on the property for use as mulch. Service paths would also be used to transport tree saplings, erosion control materials and soil amendments for planting in the Meadow and Kokokahi Valley.

The Kokokahi Valley service path is currently a foot path that will be widened to six feet to allow Ms. Geary's Kubota service vehicle to access the valley floor. In order to widen the path, a number of invasive plants and trees will be removed. The majority of plants along the path are Christmas berry and Java plum. There are also a number of dead trees that have fallen over the years that will be removed as well.

Once the path has been cleared, Ms. Geary will use the Kubota service vehicle to firm that path bed, and add basaltic pea gravel where needed. The service path is at a slight angle; no digging or grading is planned. Biodegradable matting will be used if erosion becomes an issue along the path. (See Figure 4 for location of the service path.)

The property owner intends to utilize only natural soil amendments, pest control and fertilizers on the property for landscape maintenance. Products used will be natural, bio-degradable, and organic whenever practicable. Pesticides or herbicides would be used only when necessary to control an infestation or disease problem that cannot otherwise be controlled.

All proposed plant species were submitted to DLNR for approval prior to inclusion on the plant material list (see Attachment 1 of Appendix D). In total, the landscaping and planting components of the Proposed Action would be dispersed over 12 acres of the 56.28 acre property; however, only a small fraction—less than one acre—of that would be disturbed.

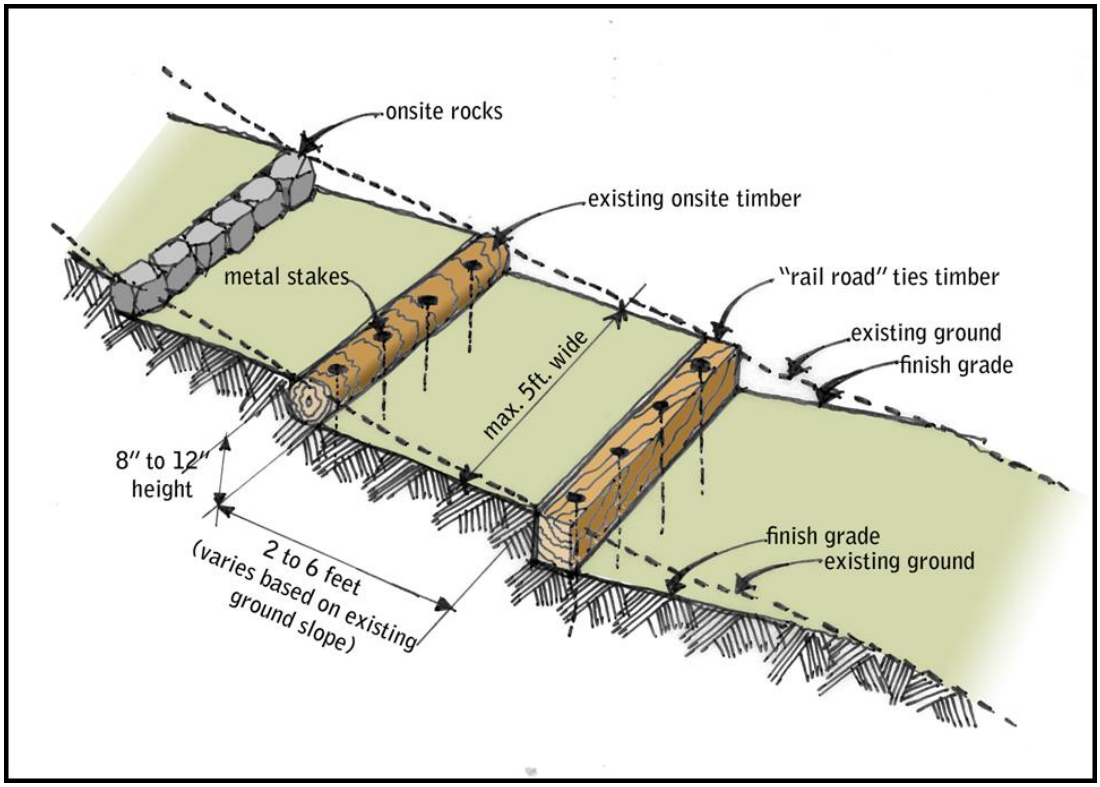
TERRACED PLANTER BOXES

Terraced planter boxes are proposed at two locations on the property: (1) immediately south (upgradient) of the Bluff, on the steep slopes that lead up to the Terrace, and (2) northwest (downgradient) of the Bluff, on the steep slopes that lead to the Meadow (Figure 8). The terraced planter boxes at these locations would have the benefit of reducing runoff and erosion by adding flat, vegetated surfaces along the slopes, which would slow runoff and allow rainwater to collect and percolate into the ground (Figure 3). The size of the planter box to be installed on the Terrace is 1,500 square feet. The size of the planter box to be installed on the Bluff is 1,125 square feet. Combined they add 2,625 square feet of landscaping and terracing along two notably steep slopes within the project area.

In addition to being a tool for decreasing runoff and controlling erosion in these two areas, the planter boxes would be used for gardening. Access to the planter boxes will be by a rustic staircase designed to ease gardening, weeding, and maintenance of the areas (Figure 3).

Figure 3. Planter Boxes and Stairs

Terraced Planter on Sloping Terrain
(Image Source: Backyard Conservation, 1998)



Stair Detail

LEGEND

- **Service path (for small, low impact utility vehicle) and Entry Drive (for passenger vehicles)**
- **Existing Footpath**
- **Proposed Plantings, Trees & Shrubs**
- **Existing Plantings, Trees & Shrubs**

Figure 4
Overview of the Landscaping and Planting Components of the Proposed Action

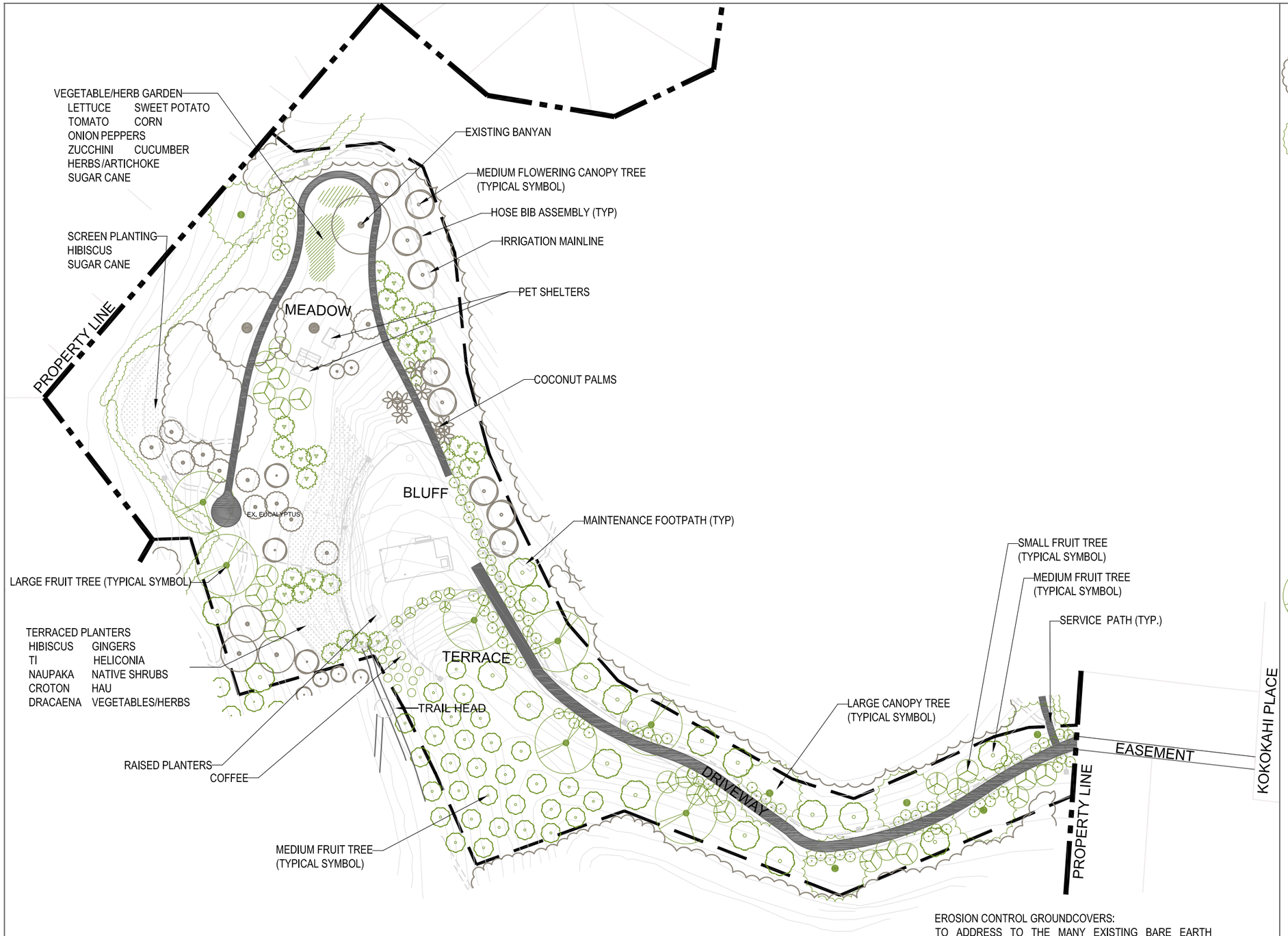
Based on
Umemoto Cassandro Design Corporation
Landscape Master Plan

NORTH

0' 30' 60' 120' 180' 240'

Scale: 1"= 120'-0"

This Page Intentionally Left Blank



EROSION CONTROL GROUNDCOVERS:
TO ADDRESS TO THE MANY EXISTING BARE EARTH SLOPED AREAS AND AREAS WITH EROSIVE CONDITIONS, THE FOLLOWING NATIVE GROUNDCOVERS MAY BE USED WITH OR WITHOUT BIODEGRADABLE EROSION CONTROL MATTING, LIKE COCONUT FIBER MATTING:

- BACOPA
- PAUOHIIAKA
- NEHE
- NAIO PAPA
- KUPUKUPU
- ILIMA PAPA
- POHINAHINA
- AKIA

PLANT MATERIAL LEGEND

Specimen Large Canopy Tree
- Monkeypod

Large Canopy Tree
- Gold Tree
- Jacaranda
- Rainbow Shower Tree
- Royal Poinciana
- Hala

Accent Tree
- Breadfruit Tree (Ulu)
- Wiliwili
- Munroidenron
- Hala

Medium Accent Tree
- Oahai Alii
- Kou
- Calabash Tree
- Lignum Vitae
- Ohia
- Milo

Reforestation Tree
- Koa
- Kou
- Wiliwili
- Alahee
- Teak
- Milo

Medium Accent Tree
- Oahai Alii
- Kou
- Pua Kenikeni
- Ohia
- Munroidendron Racemosa
- Singapore Plumeria
- Lei Plumeria
- Soapberry

Large Fruit Tree
- Mango
- Sapote
- Avocado
- Breadfruit (Ulu)
- Nutmeg
- Clove
- Lychee

Medium Fruit Tree
- Starfruit
- Coffee
- Brown Turkey Fig
- Mangosteen
- Macademia Nut
- Mountain Apple
- Cacao

Small Fruit Tree
- Papaya
- Lemon
- Tangerine
- Orange
- Pomelo
- Surinam Cherry
- Banana
- Pomegranite

Screen Planting
- Kokio Keo Keo
- Kokio Ula
- Mock Orange
- Naio
- Alahee

PLAN SYMBOLS

- Veggie/ Herb Garden
- Existing Vegetation
- Hose Bib (Irr. Control)
- Waterline

LEGEND

- Service path (for small, low impact utility vehicle) and Entry Drive (for passenger vehicles)
- Existing Footpath
- Proposed Plantings, Trees & Shrubs
- Existing Plantings, Trees & Shrubs

Figure 5
Overview of the Proposed Landscaping Along the Driveway

Based on
Umemoto Cassandro Design Corporation
Landscape Master Plan

NORTH

0' 25' 50' 100'

Scale: 1"= 100'-0"

This Page Intentionally Left Blank

LIMIT OF WORK

PROPERTY LINE

COFFEE (TYP.)

SCREEN PLANTING

EX. BAMBOO

COFFEE (TYP.)

EXISTING NATURALIZED SLOPE LANDSCAPE TO REMAIN

KOKOKAHI VALLEY

PROPERTY LINE

KOKOKAHI PLACE

REFORESTATION CANOPY TREE (TYPICAL SYMBOL)

ACCENT TREE (TYPICAL SYMBOL)

MEDIUM FRUIT TREE (TYPICAL SYMBOL)

MEDIUM FLOWERING CANOPY TREE (TYPICAL SYMBOL)

MEDIUM ACCENT CANOPY TREE (TYPICAL SYMBOL)

HOSE BIB ASSEMBLY (TYP.)

IRRIGATION MAINLINE

SERVICE PATH (TYP.)

MANGO GROVE

SCREEN PLANTING

MAINTENANCE FOOTPATH (TYP.)

EXISTING NATURALIZED SLOPE LANDSCAPE TO REMAIN

Matchline- See Figure 5

EX. MONKEYPOD

MONKEYPOD NEAR GULLY

SMALL FRUIT/ CITRUS TREE (TYPICAL SYMBOL)

EX. MONKEYPOD

MONKEYPOD MEADOW

EX. MONKEYPOD

EXISTING NATURALIZED SLOPE LANDSCAPE TO REMAIN

PROPERTY LINE

EASEMENT

DRIVEWAY

REFER TO DRIVEWAY PLANTING AREA, FIGURE 5. (PREVIOUSLY APPROVED)

EROSION CONTROL GROUNDCOVERS:
TO ADDRESS TO THE MANY EXISTING BARE EARTH SLOPED AREAS AND AREAS WITH EROSIVE CONDITIONS, THE FOLLOWING NATIVE GROUNDCOVERS MAY BE USED WITH OR WITHOUT BIODEGRADABLE EROSION CONTROL MATTING, LIKE COCONUT FIBER MATTING:

- BACOPA
- PAUOHIIAKA
- NEHE
- NAIO PAPA
- KUPUKUPU
- ILIMA PAPA
- POHINAHINA
- AKIA

PLANT MATERIAL LEGEND

Specimen Large Canopy Tree
- Monkeypod

Large Canopy Tree
- Gold Tree
- Jacaranda
- Rainbow Shower Tree
- Royal Poinciana
- Hala

Accent Tree
- Breadfruit Tree (Ulu)
- Wiliwili
- Munroidenron
- Hala

Medium Accent Tree
- Oahai Alii
- Kou
- Calabash Tree
- Lignum Vitae
- Ohia
- Milo

Reforestation Tree
- Koa
- Kou
- Wiliwili
- Alahee
- Teak
- Milo

Medium Accent Tree
- Oahai Alii
- Kou
- Pua Kenikeni
- Ohia
- Munroidendron Racemosa
- Singapore Plumeria
- Lei Plumeria
- Soapberry

Large Fruit Tree
- Mango
- Sapote
- Avocado
- Breadfruit (Ulu)
- Nutmeg
- Clove
- Lychee

Medium Fruit Tree
- Starfruit
- Coffee
- Brown Turkey Fig
- Mangosteen
- Macademia Nut
- Mountain Apple
- Cacao

Small Fruit Tree
- Papaya
- Lemon
- Tangerine
- Orange
- Pomelo
- Surinam Cherry
- Banana
- Pomegranite

Screen Planting
- Kokio Keo Keo
- Kokio Ula
- Mock Orange
- Naio
- Alahee

PLAN SYMBOLS

- Veggie/ Herb Garden
- Existing Vegetation
- Hose Bib (Irr. Control)
- Waterline

LEGEND

- Service path (for small, low impact utility vehicle) and Entry Drive (for passenger vehicles)
- Existing Footpath
- Proposed Plantings, Trees & Shrubs
- Existing Plantings, Trees & Shrubs

Figure 6
Overview of the Proposed Landscaping in Kokokahi Valley

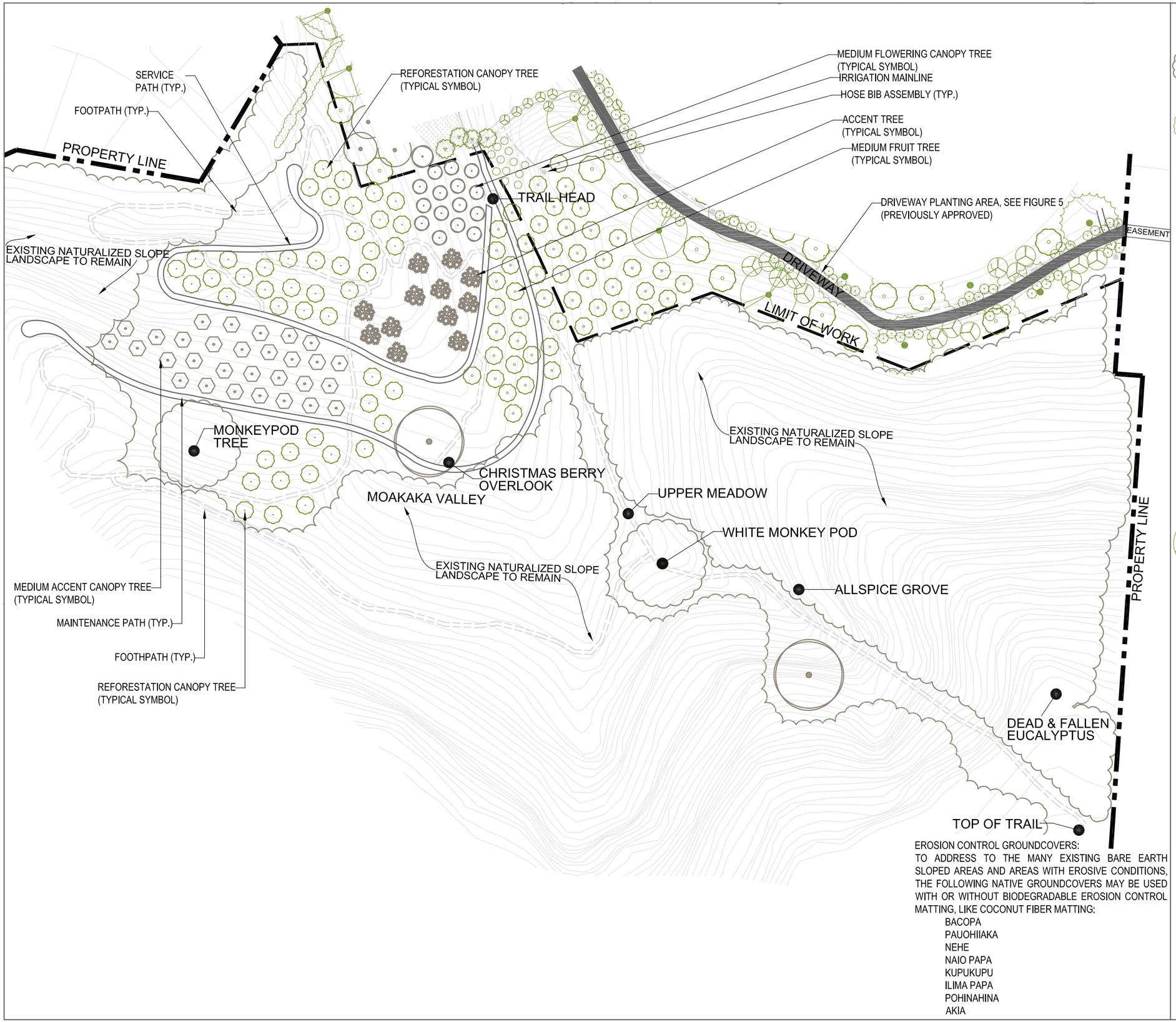
Based on
Umemoto Cassandro Design Corporation
Landscape Master Plan

NORTH

0' 25' 50' 100'

Scale: 1"= 100'-0"

This Page Intentionally Left Blank



EROSION CONTROL GROUNDCOVERS:
TO ADDRESS TO THE MANY EXISTING BARE EARTH SLOPED AREAS AND AREAS WITH EROSIVE CONDITIONS, THE FOLLOWING NATIVE GROUNDCOVERS MAY BE USED WITH OR WITHOUT BIODEGRADABLE EROSION CONTROL MATTING, LIKE COCONUT FIBER MATTING:

- BACOPA
- PAUOHIIAKA
- NEHE
- NAIO PAPA
- KUPUKUPU
- ILIMA PAPA
- POHINAHINA
- AKIA

PLANT MATERIAL LEGEND

Specimen Large Canopy Tree
- Monkeypod

Large Canopy Tree
- Gold Tree
- Jacaranda
- Rainbow Shower Tree
- Royal Poinciana
- Hala

Accent Tree
- Breadfruit Tree (Ulu)
- Wiliwili
- Munroidenron
- Hala

Medium Accent Tree
- Oahai Alii
- Kou
- Calabash Tree
- Lignum Vitae
- Ohia
- Milo

Reforestation Tree
- Koa
- Kou
- Wiliwili
- Alahee
- Teak
- Milo

Medium Accent Tree
- Oahai Alii
- Kou
- Pua Kenikeni
- Ohia
- Munroidendron Racemosa
- Singapore Plumeria
- Lei Plumeria
- Soapberry

Large Fruit Tree
- Mango
- Sapote
- Avocado
- Breadfruit (Ulu)
- Nutmeg
- Clove
- Lychee

Medium Fruit Tree
- Starfruit
- Coffee
- Brown Turkey Fig
- Mangosteen
- Macademia Nut
- Mountain Apple
- Cacao

Small Fruit Tree
- Papaya
- Lemon
- Tangerine
- Orange
- Pomelo
- Surinam Cherry
- Banana
- Pomegranite

Screen Planting
- Kokio Keo Keo
- Kokio Ula
- Mock Orange
- Naio
- Alahee

PLAN SYMBOLS

- Veggie/ Herb Garden
- Existing Vegetation
- Hose Bib (Irr. Control)
- Waterline

LEGEND

- Service path (for small, low impact utility vehicle) and Entry Drive (for passenger vehicles)
- Existing Footpath
- Proposed Plantings, Trees & Shrubs
- Existing Plantings, Trees & Shrubs

Figure 7
Overview of the Proposed Landscaping in Moakaka Valley

Based on
Umemoto Cassandro Design Corporation
Landscape Master Plan

NORTH

0' 25' 50' 100'
Scale: 1"= 100'-0"

This Page Intentionally Left Blank

PET SHELTERS AND FACILITIES

The Proposed Action includes installing fencing to enclose up to 3 acres of the Meadow, building small pet shelters to house and care for up to 6 goats, up to 6 sheep, 24 chickens (no roosters), and 12 ducks (no drakes [male ducks]), as well as additional support facilities to ensure that the animals are healthy and well cared for.

The pasture would be contained by a perimeter fence designed to keep the pets in and other animals out. The pasture fencing would be set back at least 50 feet from the property boundary, providing a buffer between the pet facilities and neighboring properties (Figures 8A and 8B). On the northern edge of the property-owner's side of the 50-foot buffer, the Meadow would be planted with grass and a variety of trees and other plants to form a visual buffer, as well as to add additional sound and odor buffers, between the neighbors and the applicant's pets.

Shelter for the goats and sheep would be designed to provide shade relief and protection from wind and rain. The shelter would measure approximately 20 feet by 20 feet (400 square feet), providing 33.3 square feet of space per animal (Figures 9A, 9B and 9C). The goats and sheep would be permitted to range freely within their shelter and the enclosed pasture. Additional shade relief would be provided by trees and other large vegetation at the property.

Within the enclosed area for the goats and sheep would be a separate area for the chickens and ducks (Figures 9A, 9B and 9D). This area would be enclosed by a separate fence designed to permit them to free range within the ruminant's pasture, but prohibit the ruminants from entering the area intended for the chickens and ducks. Shelters for the chickens and ducks would be provided within this special fenced area, as well as shaded runs, a duck pond, and an outdoor exercise area in which the chickens and ducks would be permitted free range.

Shelter for the chickens would be provided by a coop and shaded run. The coop would accommodate up to 24 adult hens. This space would be separated from the pasture by a fence to prevent the goats and sheep from entering the run and coop area, yet would allow the chickens to have access to the pasture. The chickens would be permitted to range freely within their coop and run, within the space for the ducks, and within the pasture.

Shelter for the ducks would be provided by a duck house and shaded run. The duck house would accommodate up to 12 adult ducks. Additionally, the ducks would be provided with a pond that would have a surface area of approximately 100 square feet and would measure about four feet deep, providing 400 cubic feet of water in which the ducks could exercise and bathe. The duck house, run, and pond would be enclosed by a fence that would separate their space from the pasture. The ducks would be permitted to range freely within their spaces, the spaces for the chickens, and within the pasture. The combined poultry facility would be approximately 36 feet by 36 feet (1,296 square feet).

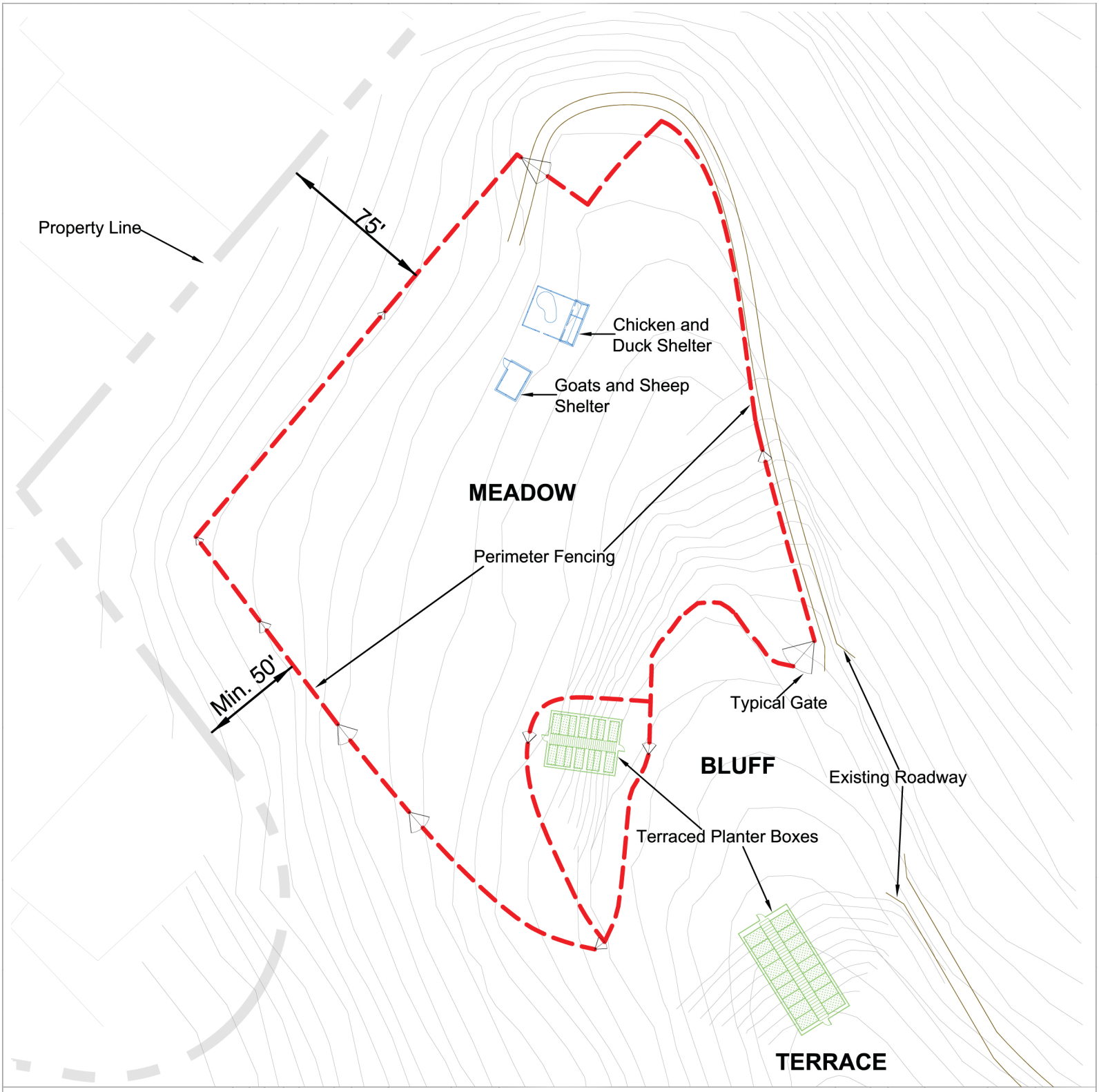
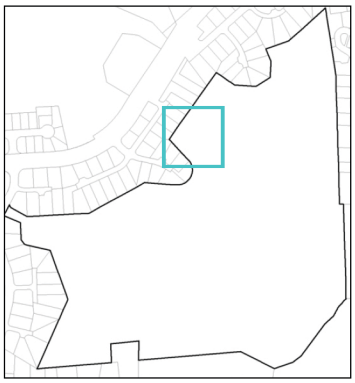


Figure 8A. Proposed Structures



NORTH

0' 20' 50' 100'
10' 30'

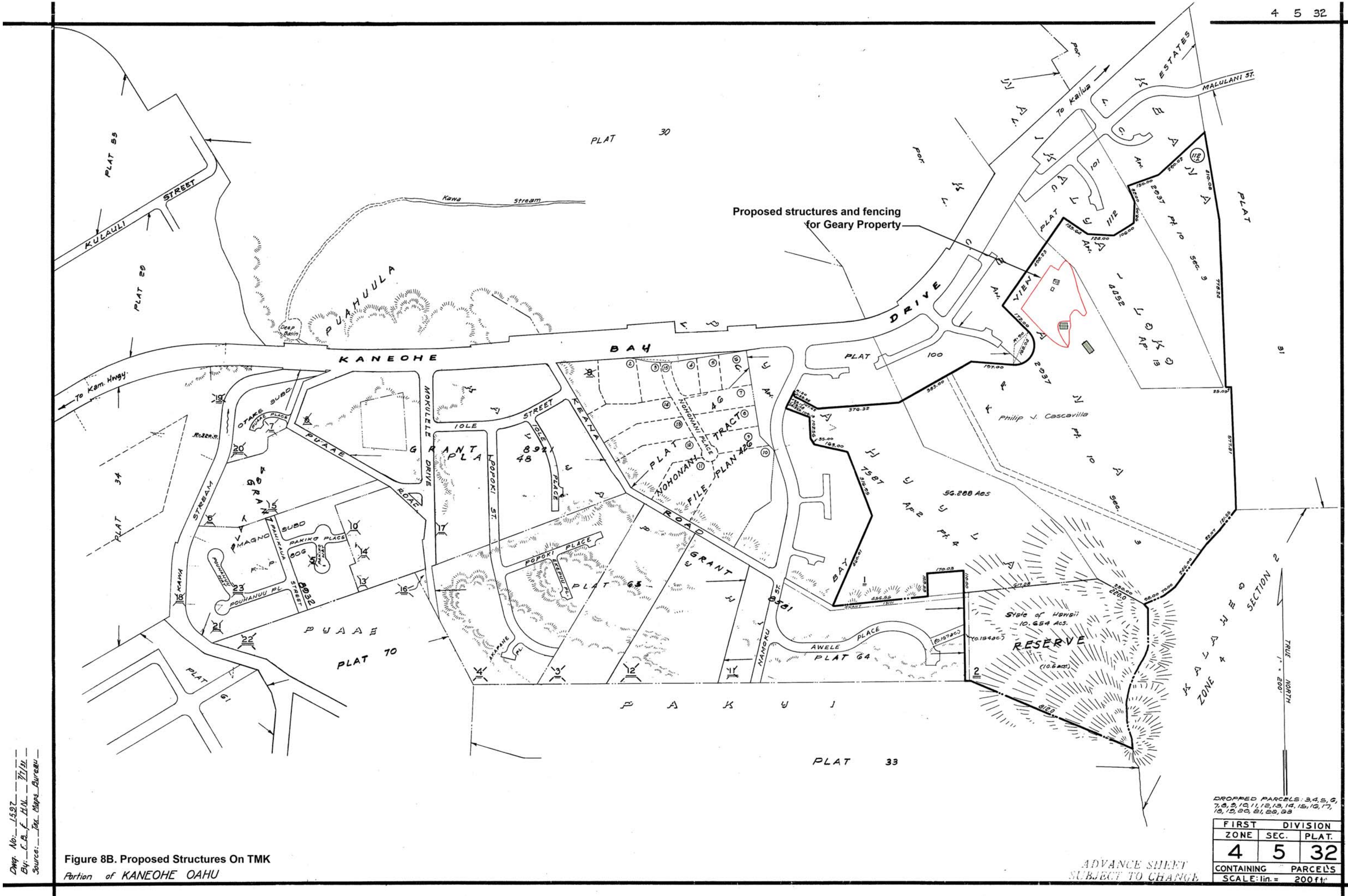
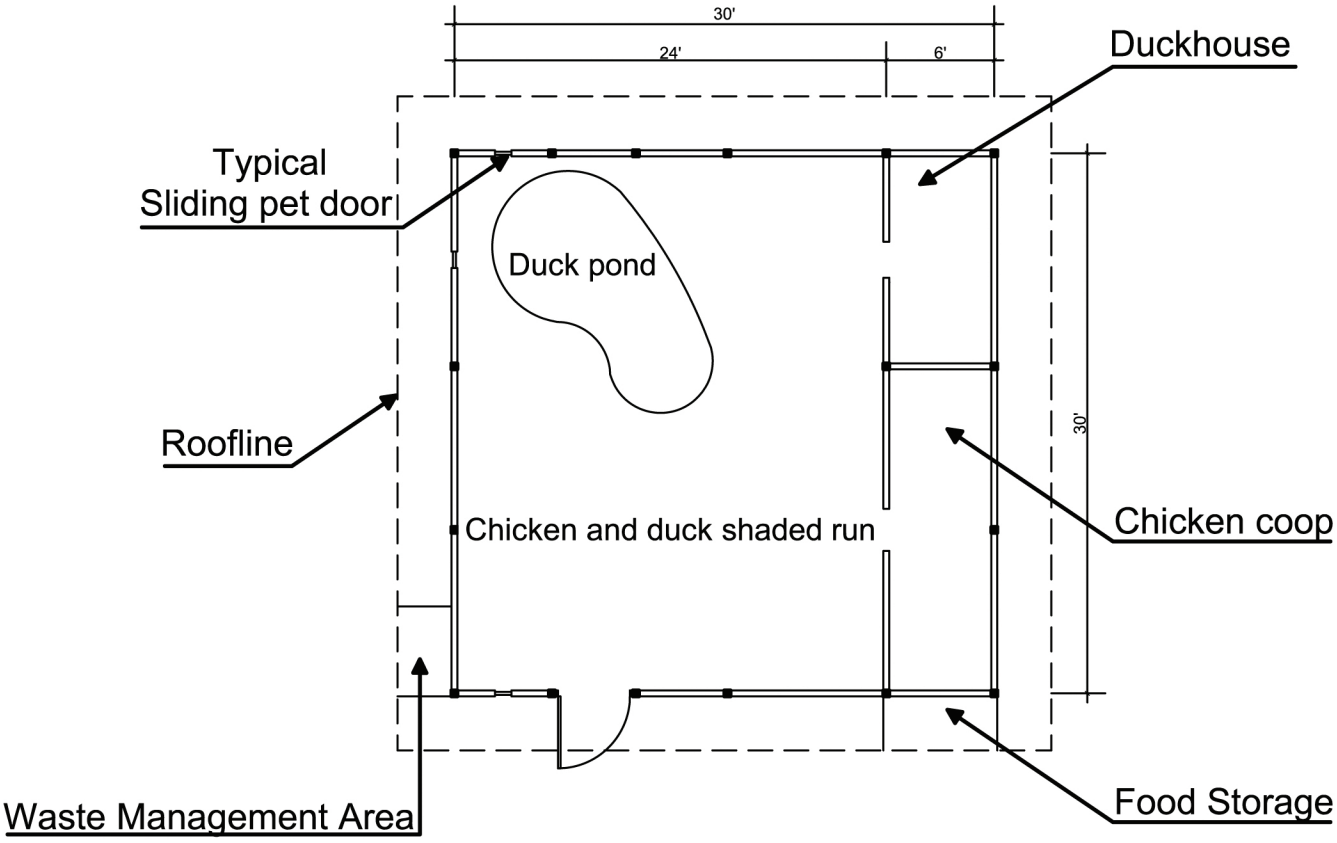
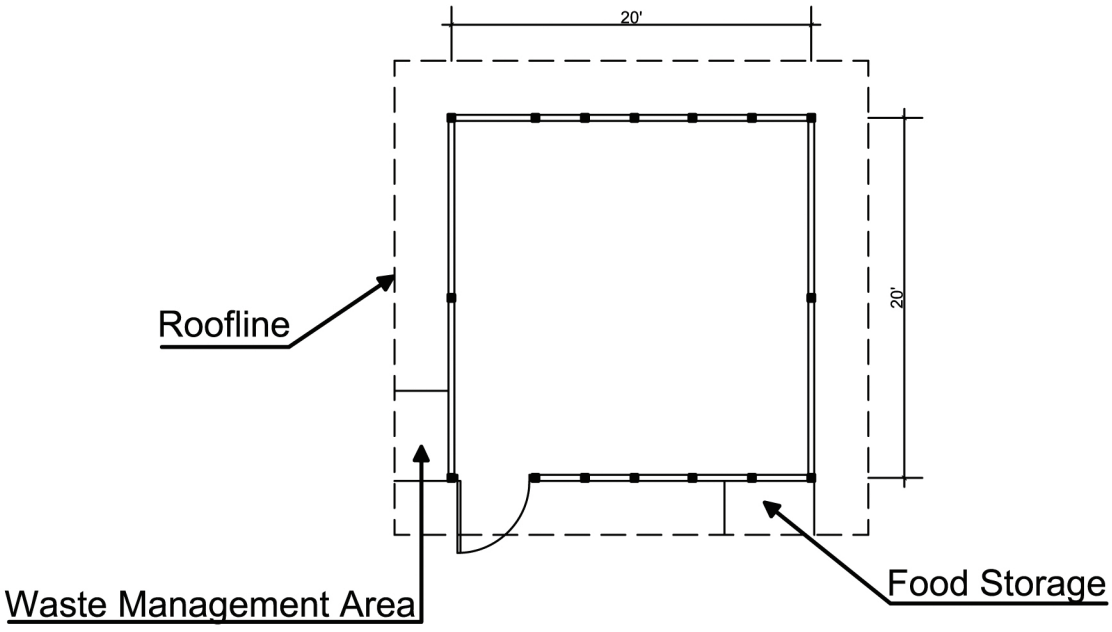


Figure 8B. Proposed Structures On TMK

This Page Intentionally Left Blank



SHELTER FOR CHICKENS AND DUCKS

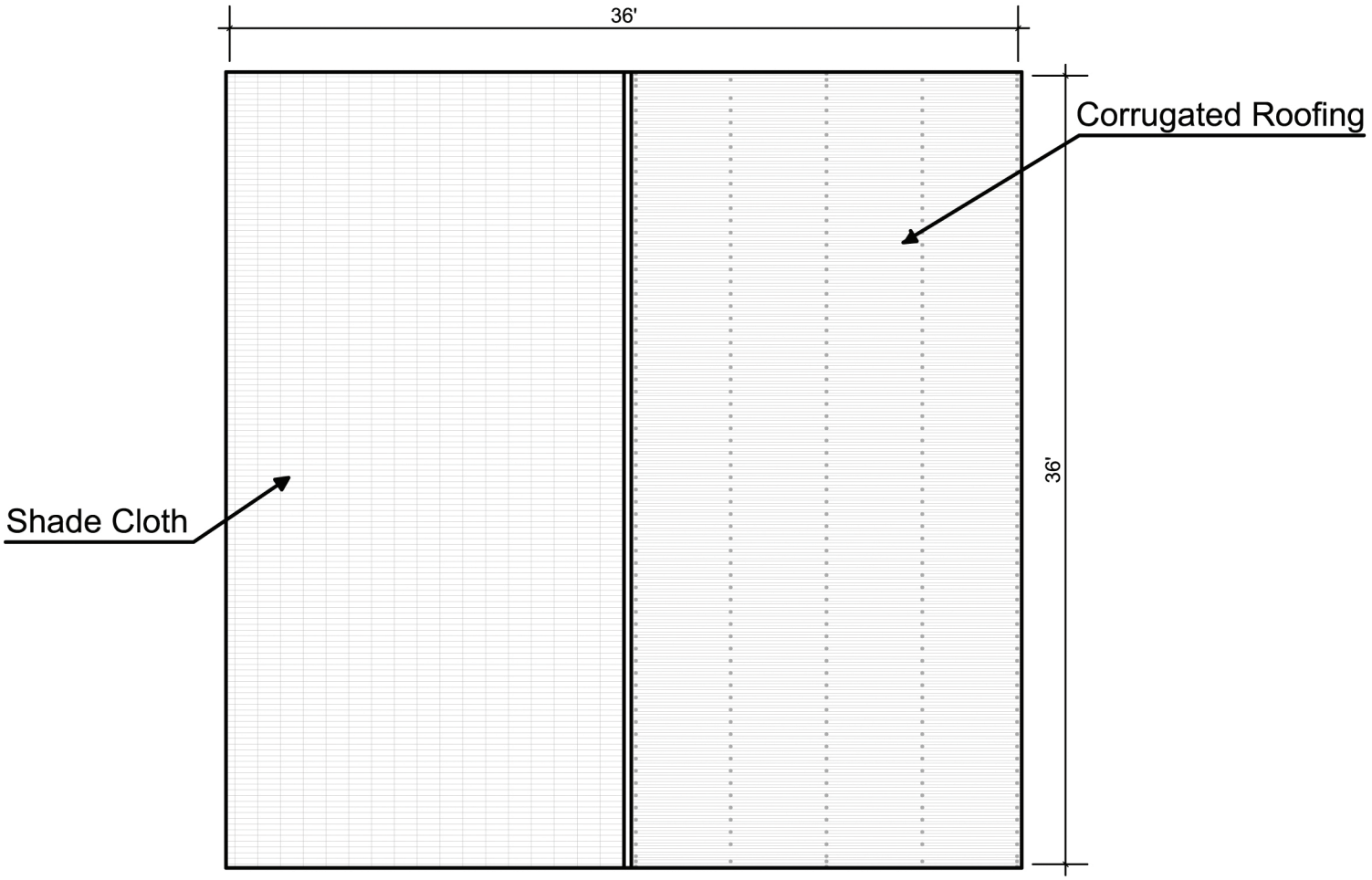


SHELTER FOR GOATS AND SHEEP

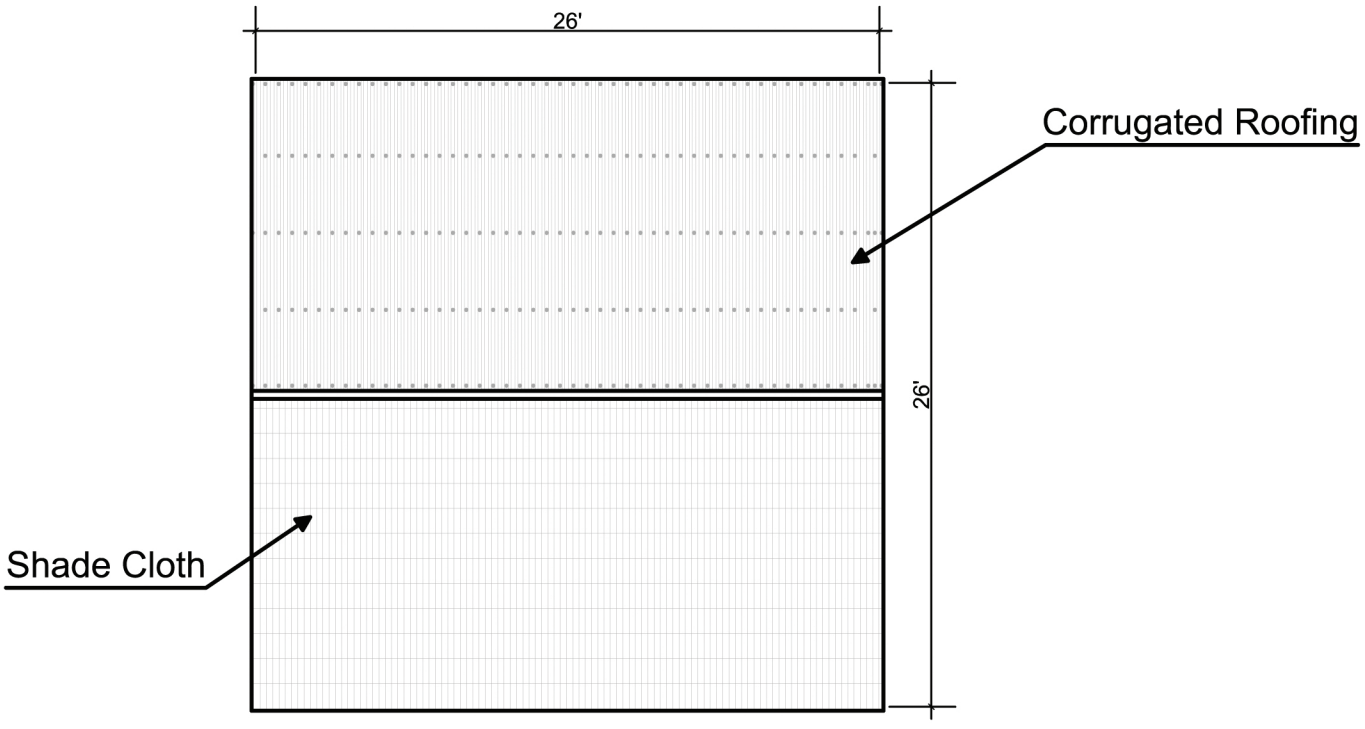
Figure 9A. Animal Shelter Plans

NORTH

SCALE: 0 1' 2' 5' 10'



SHELTER FOR CHICKENS AND DUCKS ROOF PLAN

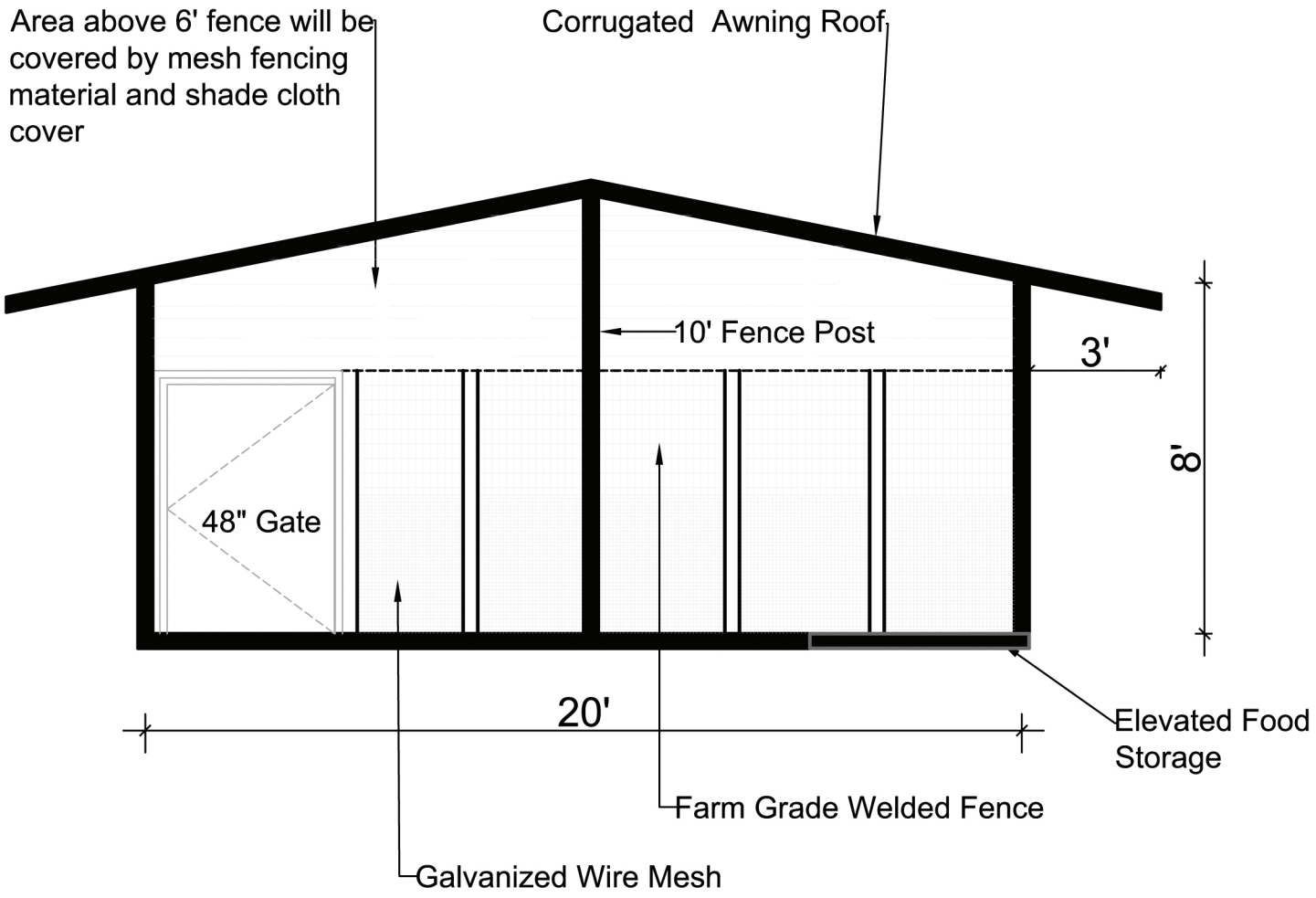


SHELTER FOR GOATS AND SHEEP ROOF PLAN

Figure 9B. Animal Shelter Roof Plans

NORTH

SCALE: 0 1' 2' 5' 10'

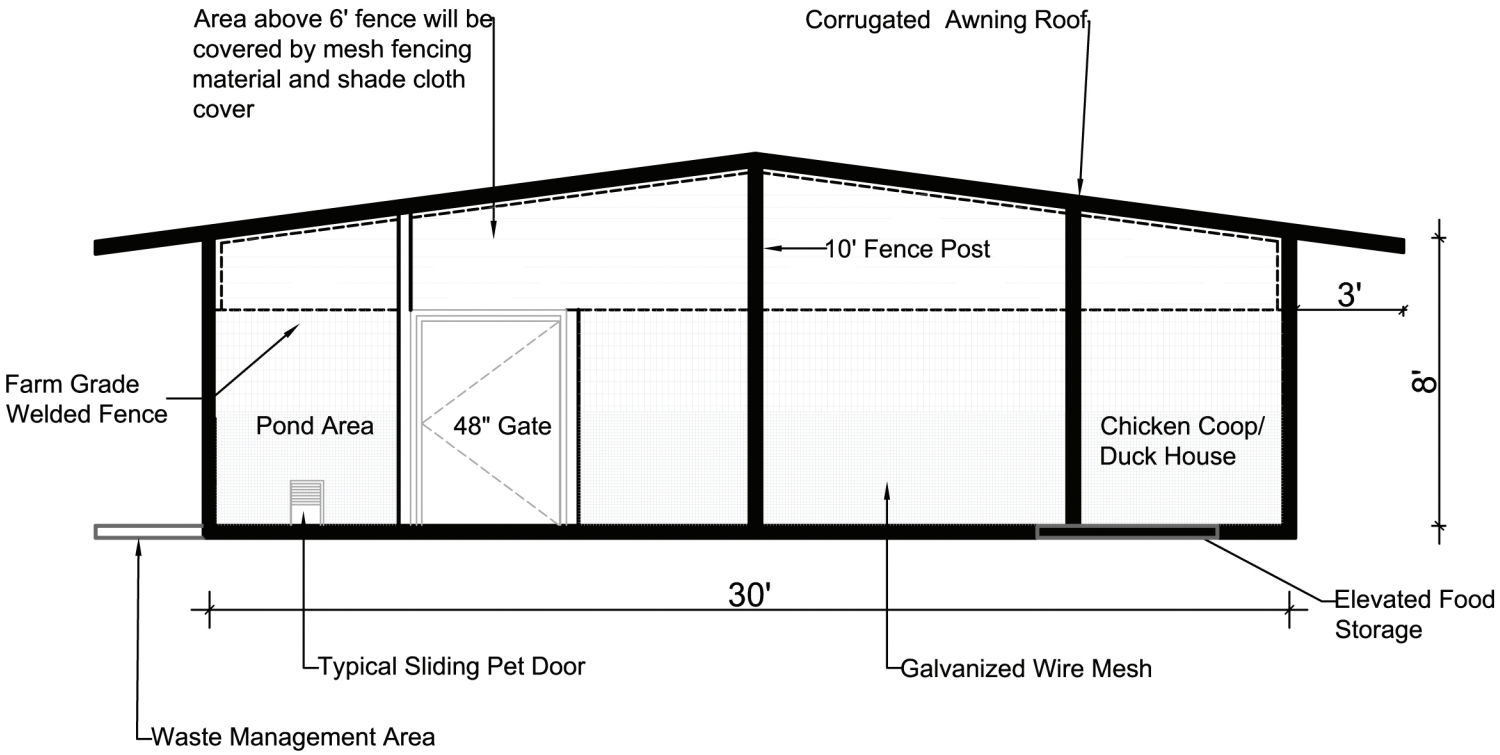


GOATS AND SHEEP SHELTER

Figure 9C. Goats and Sheep Shelter Section

NORTH

SCALE: 0 1' 2' 5' 10'



CHICKENS AND DUCKS SHELTER

Figure 9D. Chicken And Duck Shelter Section

NORTH

SCALE: 0 1' 2' 5' 10'

Waste randomly deposited by the goats and sheep in the pasture would remain and be allowed to decompose as fertilizer for the field. In areas where waste accumulates, such as the shelters, feeding areas, and shaded areas, it would be collected and composted before being reapplied as fertilizer for the field. Waste created by the chickens and ducks would be collected from the coop and duck house, as much as is practicable, and added to self-contained manufactured composting units designed to contain odors and control moisture and heat exchange.

The composting and storage area would be located in the Meadow near the pet shelters, and would function to compost animal manure and soiled bedding, and plant material from the property. The compost units would be maintained to prevent odor and infestation by pests. Proper maintenance, ventilation, turning, and application of "green" and "brown" plant materials to the compost units would prevent odors from developing and prevent the proliferation of insects and other pests.

Green materials would consist of fresh vegetation, animal manure, and garden and yard trimmings. Brown materials would consist of bedding, dry leaves, dead plant material, wood chips and sawdust, and other carbonaceous material. A good ratio of brown to green materials prevents insect infestation and odors. Adequate moisture and aeration enhances the composting process and speeds the development the compost.

Background research related to the proposed facilities and management of domestic animals on the property is documented in the Animal and Waste Research report attached to this EA as Appendix B. The research was conducted as the technical basis for the Management Plan required for the CDUA, and to address community concerns regarding domestic animal-generated manure. Figures 9A-C provides conceptual drawings of the shelters for the goats, sheep, chickens, and ducks. Pet shelters would be built at least 150 feet from the nearest neighbor. A Management Plan documenting specific activities and Best Management Practices to maintain the activities under the Preferred Alternative is attached to this EA as Appendix D.

REPAIR AND UPGRADE OF EXISTING UTILITIES

The existing utilities serving the property—electrical, telephone, and cable—would be repaired and upgraded. Although the property owner does not propose building any residential or other large structures on the property, the utilities would be necessary for power, safety, and security.

2.1.2 The Property Owner's Vision: Impetus for the Proposed Action

The property owner envisions this project as an opportunity to improve a natural area of windward Oʻahu, while maintaining the rural character of the property. Each component of the Proposed Action was selected to meet the following goals:

- Improve the natural systems of the property;
- Take a proactive step in addressing erosion and storm water runoff concerns;
- Develop gardening and landscaping spaces to grow a variety of native and non-native flora, particularly those that produce fruit, flowers, and scent; and,
- Provide a space to shelter and care for a small number of pets for personal enjoyment, which are compatible with the rural character of the property.

2.1.3 Planning and Designing the Proposed Action

Prior to the preparation of this EA, the property owner hired an urban and environmental planning firm, Wil Chee - Planning, Inc., to design and carry out a number of small planning exercises to explore the feasibility of various site improvements that the property owner wished to pursue at Kokokahi Place. The results of these planning exercises were used as the basis for the Proposed Action described in this EA. The most feasible property improvements supporting the goals examined during the planning exercises are included in this EA as Alternative Actions; additional proposed actions were ruled out due to potential impacts on the environment or neighboring properties, high cost, or other factors that led to their dismissal.

The descriptions of the proposed actions in this document are schematic and are intended to provide the reviewer with an overview of what the applicant is trying to achieve, as well as provide adequate detail to assess potential environmental impacts. Once the EA has been accepted by the DLNR, and the CDUA and attendant Management Plan have been accepted and approved by the BLNR, the property owner would seek the services of a licensed professional engineer, who would prepare final drawings and obtain any additional necessary approvals.

2.1.4 Implementation and Phasing for the Proposed Action

The property owner plans to implement the Proposed Action over a five-year period, which would start after the CDUP is approved and all conditions have been met. The following schedule is a best estimate of the time it would take the property owner to actualize her vision for the property.

Year 1

Perimeter fencing would be installed in the Meadow to enclose the grazing and exercise area for the pets. Buffer landscaping would be planted along the fence bordering the neighbors. The shelter for the chickens would be built and a small flock of up to 24 chickens would be introduced. Landscaping would be installed along the edges of the driveway, the Bluff and the Meadow; the service path into Kokokahi Valley would be cleared of non-native vegetation to allow access by the low-impact utility vehicle. Terraced planters would be built between the Bluff and the Terrace, and a rustic stairway would be built adjacent to the planters to provide access to the planter boxes. Final planning and design efforts for the duck pond would also be initiated.

Year 2

The shelter for the ruminants would be built and a small herd of up to 6 goats would be introduced. Planting would continue in the Meadow, Bluff, driveway, and in Kokokahi Valley. Construction of the terraced planters between the Meadow and the Bluff would begin, and a rustic stairway would be built adjacent to the planters to provide access to the planter boxes. Utility upgrades and repairs would be planned, and the duck pond would be constructed.

Year 3

A small flock of up to 12 ducks would be introduced on the property. Miscellaneous planting would be completed on the Meadow, Bluff, and driveway. Planting would be 50 percent complete on the Meadow, Bluff, and driveway. The footpath into Moakaka Valley would be

cleared as needed to allow access for planting to begin in this area. Construction of terraced planters between the Meadow and the Bluff would be completed. Permits for utility repairs and upgrades would be secured.

Year 4

Up to 6 sheep would be introduced on the property. Planting in Kokokahi Valley would be 50 percent complete, and utilities would be repaired and upgraded.

Year 5

Planting in Moakaka Valley would be completed. All of the property owner's pets would have been introduced to the property.

Year 6 – ongoing

Plantings and removal of dead wood would continue in core areas (Bluff, Meadow, along driveway, Moakaka and Kokokahi valleys). Management of pets and maintenance of the property will continue as documented in the Management Plan (Appendix D).

2.2 Alternative Actions

The locations for the landscaping and planting components of the project, the terraced planter boxes, and the utility repair and upgrades would not change under Alternative Action 1 or Alternative Action 2; however, the locations for the pet facilities and land use areas would change under each proposed alternative. The plans for the landscaping and the terraced planter boxes would not change because, as currently planned, there are no other suitable locations for such activities. Additionally, the locations of the utilities to be upgraded or repaired are fixed and cannot be altered.

Each alternative action presented below proposes to implement the landscaping and planting plans, the installation of the terraced planter boxes, and the utility repair and upgrading plans as they are proposed in the Proposed Action; however, each alternative action proposes a change in location for the pet shelters and facilities. The overall design guidelines for the pet shelters and facilities would remain the same as they are in the Proposed Action.

2.2.1 Alternative Action 1: Development on the Bluff

Under Alternative Action 1, the shelters and facilities to care for the pets proposed for this project would be developed on the Bluff (Figure 10). The overall design of the facilities would remain the same as they are in the Proposed Action. Only the location of these facilities and the location of the fencing would change. The facilities to be placed on the Bluff would include the shelters for the goats, sheep, chickens, and ducks; the duck and chicken runs; and, the duck pond. Under this alternative, the Bluff and the Meadow would be enclosed by fencing to ensure that the ruminants have adequate grazing and exercise space. As with the Proposed Action, the facilities and space for the chickens and ducks would be enclosed by a separate fence within the ruminant enclosure.

The benefit of this alternative is that it would increase the distance between the pet shelters and the neighboring properties. The drawback is that the Bluff is now being used as the main parking, storage, and activity hub on the property. The addition of pet shelters, watering/

feeding facilities, and inclusion of this area as part of the outdoor feeding/grazing and exercise areas may cause overcrowding and conflict with the planned terrace box to be located on the slopes of the Bluff. Additional fencing to prevent the pets from entering the terraced area would be necessary. At approximately half-an-acre in total land area and the hub of activities planned for the property, inclusion of the Bluff in the grazing and exercise area for the pets presents more disadvantages than advantages.

2.2.2 Alternative Action 2: Development in Kokokahi Valley

Under Alternative Action 2, the pet shelters and facilities would be located in Kokokahi Valley (Figure 10). As with the Proposed Action and Alternative Action 1, the facilities for the chickens and ducks would be encompassed by a separate fence within the enclosed space for the goats and sheep. Since the valley is currently entirely covered by lowland forest growth, a small area would need to be cleared to accommodate the pet shelters. To protect the pets from flooding and over-moist conditions, the shelters would be located in a relatively level area of Kokokahi Valley, at a distance of at least eight feet from the valley's lowest point so that water would not accumulate within the shelters.

Currently, access to the area is by foot-trail only. To meet the needs of the animals and be able to properly maintain the area, an existing maintenance path would need to be widened by removing non-native vegetation to a six-foot width to accommodate an low-impact utility vehicle. This trail would follow the existing contours leading into the center of Kokokahi Valley from the bottom of the existing foot trail that connects the Bluff and the Meadow.

The benefit of this alternative is that it would provide the largest buffer between the pet facilities and its requisite land uses and neighboring properties. It is the only other relatively flat area of the property that would be suitable for such a purpose. The drawbacks are that the area is uncleared and implementing this alternative would reduce the total biomass of the property, which is contrary to the vision the property owner has for the land.

2.2.3 Alternative Action 3: No Action

Under Alternative Action 3, No Action, the subject property would continue to be vacant and unoccupied. The property owner would not apply for a CDUP. The previously cleared areas within the property would continue to be maintained; however, this alternative would severely restrict the property owner's ability to enjoy her property.

This alternative would adversely impact the natural systems of the property by disallowing the property owner to take preventative measures to control erosion, such as installation of the terraced planter boxes and increasing the biomass of the property—both of which would reduce erosion and slow storm water runoff. Additionally, a drawback of this alternative is that it severely restricts the property owner's use of the land.

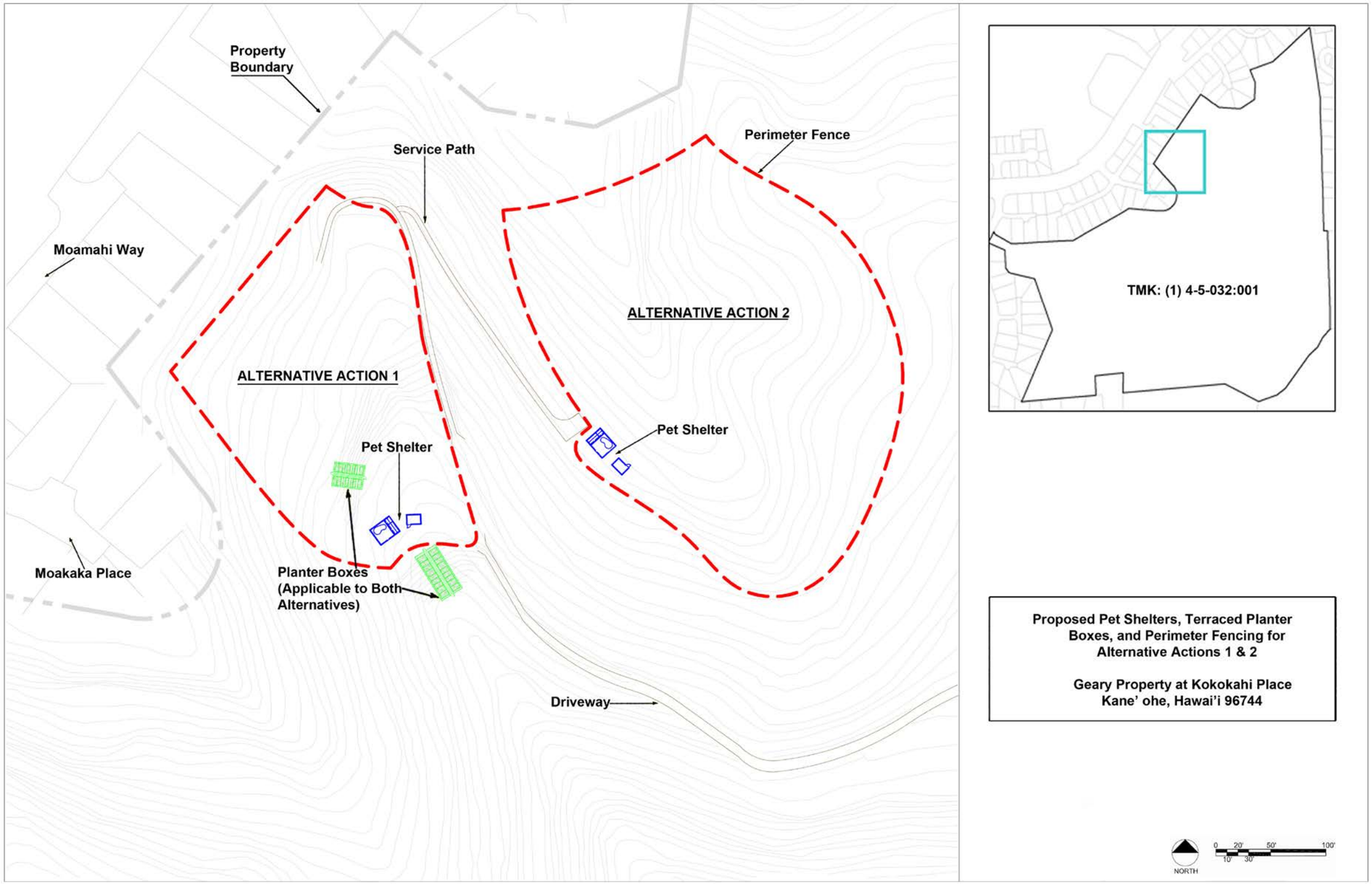


Figure 10. Alternative Actions 1 and 2

This Page Intentionally Left Blank

3.0 ENVIRONMENTAL RESOURCES, POTENTIAL IMPACTS, AND MITIGATION MEASURES

3.1 Soils and Topography

There are four soil classifications within the property. Table 1 provides an overview of each known soil classification and some basic information about those soils. Figure 11 shows the location of each known soil classification.

Table 1. Soil Classifications Contained within the Property

Soil Type	Series and Slopes	Drainage Characteristics
ALF	Alaeloa[1] silty clay, 40 to 70 percent slopes	Runoff is rapid to very rapid, erosion hazard is severe.
AeE	Alaeloa silty clay, 15 to 35 percent slopes	Permeability is moderately rapid. Runoff is medium, and the erosion hazard is moderate.
HLMG	Helemano[2] silty clay, 30 to 90 percent slopes	Permeability is moderately rapid. Runoff is medium to very rapid, and the erosion hazard is severe to very severe.
KgC	Kaneohe[3] silty clay, 8 to 15 percent slopes	Runoff is medium and the erosion rate is moderate.

Source: USDA, 1972

Notes:

1. Alaeloa series soils consist of well-drained soils in upland areas. They are gently sloping to very steep and range in elevation from 100 to 1500 feet above mean sea level. Typically, these soils are used for pastureland, wildlife habitat, orchards, water supply, and homesites.

2. Helemano series soils consist of well-drained soils on alluvial fans and collegial slopes on the sides of gulches. They are steep to extremely steep and range in elevation from 500 to 1200 feet above mean sea level. These soils are used for pastureland, woodland, and wildlife habitat.

3. Kaneohe series soils consist of well-drained soils on terraces and alluvial fans. Elevations range from 100 to 1000 feet above mean sea level. These soils are used for pastureland, homesites, and urban development.

It is important to note that although the soil in the area of the Proposed Action is classified according to the United States Department of Agriculture (USDA) soil survey as ALF, a previous owner graded and leveled sections within the project area. Slopes at the site of the Proposed Action are less than 40 percent and nearly flat in most areas. Each soil classifications' erosion rate is a function of composition and slope; because the slope for the sections of the project area is substantially less than what USDA soil survey recorded, it is reasonable to assume the erosion rate for the project site is reduced. Figure 1, the project location map, provides an

aerial overview of the project site, where the portion of the property that was cleared and graded is evident.

3.1.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions are determined to have a significant adverse impact on soils if there is an increase in erosion and transport of soils and sediment off-site, particularly if the resulting transport of sediment would cause adverse impacts to water quality or aquatic habitats. Project actions are determined to have a significant adverse impact on topography if significant changes are made to the topography resulting in excessively steep slopes or unstable ground conditions.

PROPOSED ACTION

The Proposed Action would not contribute to the erosion hazard present on the property, nor would it contribute to the transport of soils or sediments off-site. There would be no changes to the site's topography that would result in an increase of the slope of the property.

A component of the Proposed Action is the installation of two terraced planter boxes for gardening purposes. Although the effect would be small relative to the size of the property, the terraced planter boxes would stabilize the steep slopes in the areas where they are proposed by slowing down runoff, allowing water to collect for a longer period of time to percolate into the groundwater system, and increasing the overall proportion of permeable ground cover in their respective areas. Although the impact that the planter boxes would produce would be small, it would incrementally contribute to the reduction of erosion and runoff rates for the property and stabilize two areas of the property where slopes are in excess of 40 percent. The intent of the Proposed Action is to mitigate erosion hazard.

Additionally, the overall increase of biomass on the property would help reduce erosion and reduce the potential for soil transport off-site.

ALTERNATIVE ACTION 1

Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2

Potential impacts from Alternative Action 2 would be the same as for the Proposed Action.

NO ACTION

Under the No Action Alternative, conditions would remain in their present state. There would be no impacts associated with this alternative.

3.1.2 Mitigation Measures

No mitigation measures are warranted or proposed.

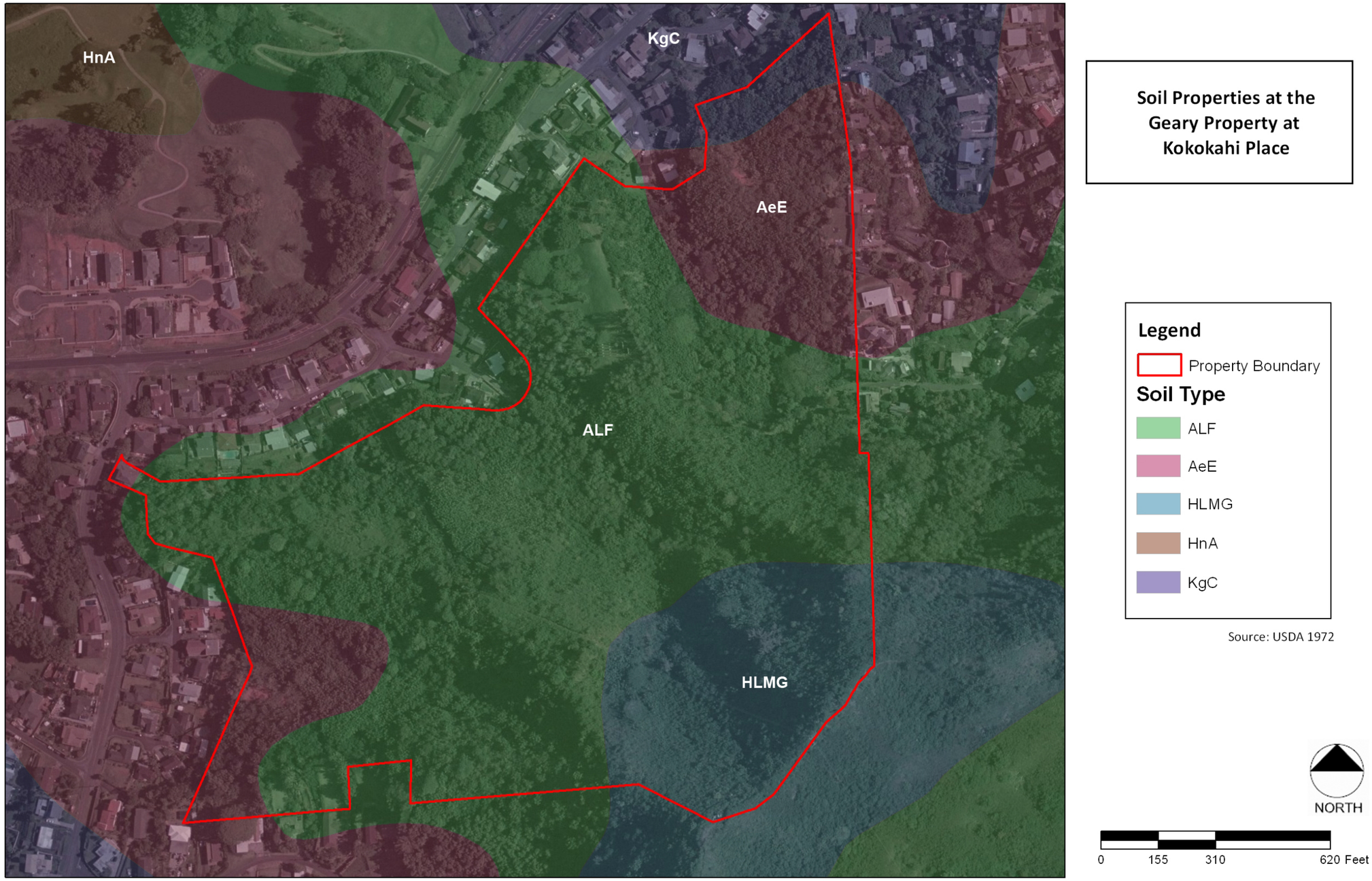


Figure 11. Soil Classifications and Properties

This Page Intentionally Left Blank

3.2 Hydrology and Rainfall

The property receives approximately 60 inches of rainfall per year (Armstrong et al, 1983). Rainwater on the property either percolates into the ground, or exits the property as runoff via sheet flow or one of two intermittent storm water drainage beds that have formed in the V-gulches of the property's two main valleys.

Runoff from the property generally contributes to the Kawa Stream water basin, which carries fresh water to Kāneʻohe Bay. Kawa Stream is located about 1,530 feet northwest of the property, across Kāneʻohe Bay Drive. Rainfall that percolates into the ground contributes to the Koʻolaupoko groundwater aquifer system (DLNR, 1995) and sits above a brackish basal groundwater area (Armstrong et at, 1983).

3.2.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions could be considered to have an adverse impact if groundwater systems, surface water systems, or the functioning or development of these resources would be substantially reduced. Additionally, project actions would be considered to have an adverse impact on these resources if they would result in release of toxic or harmful chemicals into groundwater or surface water systems, rendering them unsuitable for human use or harmful within ecological systems.

PROPOSED ACTION

The Proposed Action would not increase impermeable surface area, nor would it increase storm water runoff from the property. Rather, runoff is anticipated to be reduced slightly by the installation of two terraced planter boxes and the increase of biomass on the property under the guidelines of the landscape master plan. Each of these components of the Proposed Action are designed to stabilize slopes, reduce runoff, control erosion, and create an environment conducive to rainwater percolating into the groundwater system, rather than exiting the property as sheet flow.

It is the property owner's intention to implement the landscape master plan in a low-impact way, utilizing natural, biodegradable and, where practicable, organic products. Chemical pesticides or herbicides would only be applied when a situation has become so invasive the benefit of aggressive treatment outweighs the benefit of natural control.

ALTERNATIVE ACTION 1

Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2

Potential impacts from Alternative Action 2 would be the same as for the Proposed Action.

NO ACTION

There would be no impact on either groundwater or fresh water resources under the No Action Alternative.

3.2.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.3 Natural Hazards

Natural Hazards are naturally occurring environmental phenomena that can result in injuries or death to humans, property damage, or cause other economic losses (Juvik and Juvik, 1998). Flooding, earthquakes, and landslides are natural hazards that have been identified as relevant to the subject property.

FLOODING

Floods are one of the most common hazards in the United States. Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states (FEMA, 2011). The property is located in Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map Zone D and Zone X (FEMA, 2005). Zone D entails areas where floods are undetermined, but possible; whereas, Zone X refers to an area that is determined to be outside the 100- and 500-year floodplains (FEMA, 2011).

EARTHQUAKES

Earthquake is a term used to describe a sudden movement of the earth and the resulting ground shaking and radiated seismic energy released by the movement. Earthquakes can be caused by tectonic plates slipping along a fault, by volcanic or magmatic activity, or other sudden stress changes in the earth [United States Geological Survey (USGS), 2011]. Earthquake hazards differ across the United States, but in Hawai'i they are primarily associated with the movement of magma near Earth's crust.

LANDSLIDES

The term *landslide* includes a wide range of ground movements, such as rock falls, deep failure of slopes, and shallow debris flows. Like many areas of Oʻahu, the area is prone to landslides due to the steepness of slopes which are weakened through saturation by heavy rains.

The property contains areas with steep topography, which makes landslides originating on the property a natural hazard risk. Although the property does contain several steep slopes, it is also heavily vegetated—a factor that reduces the overall risk because the plant roots often act as a stabilizing force for steep slopes.

3.3.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions are determined to have a significant adverse impact if they increase the risk to human health or the environment posed from natural hazards. An increase in risk would be creating an environmental condition that would make human or other natural populations more likely to suffer from a natural hazard.

PROPOSED ACTION

There would be no increase in risk or exposure to natural hazards from the Proposed Action. None of the components of the Proposed Action would contribute to flooding, earthquakes, or

landslides, nor would they create an environmental condition that would increase the risk to human health, life, or property from these events.

A small component of the Proposed Action, as previously discussed, would build terraced planter boxes along two areas of the property where the slope is relatively steep. This would stabilize the slopes on which they are built; however, it would not reduce the risk of a landslide occurring on a large scale. The overall size of the property and the number of steep slopes located within its boundaries are very large compared to the small scope of the Proposed Action.

The Proposed Action is anticipated to slightly reduce the risk of flooding on the property and downgradient of the property by increasing the parcel's biomass. This impact, however, would not be significant for large flood events, such as 50-year, 100-year, or 500-year floods, and it can be expected that neighboring parcels downgradient of the property that currently experience flooding during heavy rains would continue to do so.

ALTERNATIVE ACTION 1
Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2
Potential impacts from Alternative Action 2 would be the same as for the Proposed Action.

NO ACTION
There would be no change in the risk associated with natural hazards under the No Action alternative.

3.3.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.4 Biological Resources

An assessment of botanical resources was conducted for a previous environmental assessment prepared for the property by Helber Hastert & Fee in 2006 (Leon). The information provided by the 2006 Botanical Survey was reviewed in 2011 by AECOS, Inc., for accuracy. It was determined that the 2006 study is still accurate. A copy of AECOS's findings is attached to this document as Appendix C.

The plant species on the property are predominantly introduced (non-native) species. Flora identified during the 2006 botanical survey in areas not adjacent to the property's driveway, or the previously cleared areas (i.e., the Meadow and the Bluff), included: Guava (*Psidium guajava*), Java plum (*Syzygium cumini*), Koa haole (*Leucaena leucocephala*), Octopus tree (*Schefflera actinophylla*), Brazilian pepper tree (*Schinus terebinthifolius*), Fern tree (*Filicum decipiens*), Lemon-scented gum (*Eucalyptus citriodora*), Mango (*Mangifera indica*), Avocado (*Persea americana*), African tulip (*Spathodea campanulata*), monkeypod (*Samanea saman*), Wedelia (*Sphagneticola trilobata*), Ironwood (*Casuarina equisetifola*), Ti leaf (*Cordyline fruticosa*), and Fragrant dracaena (*Draceana fragrans*) (Helber Hastert & Fee, 2006).

Previously cleared portions of the property (the Meadow and the Bluff) are predominantly covered with California grass (*Brachiaria mutica*). A row of money trees (*Dracaena marginata*) was planted on the northeastern property boundary toward Malulani Street by a previous owner. Interspersed at low-densities in the meadow are a single Silky Oak (*Grevillea robusta*), three monkeypods, a banyan (*Ficus microcarpa*), and a small grove of Swamp mahogany (*Eucalyptus robusta*) (Helber Hastert & Fee, 2006).

Faunal species that may be present on the property include feral mammals common throughout Oʻahu, including domesticated dogs (*Canis familiaris familiaris*), domesticated cats (*Felis catus*), mongoose (*Herpestes auropunctatus*), rats (*Rattus rattus*), and mice (*Mus musclulus*) (Helber Hastert & Fee, 2006). Also observed on the property are wild boar populations that migrate throughout the area.

The Division of Forestry of Wildlife (DOFAW) classifies the property as having a low concentration of threatened and endangered species (DOFAW, 1992). No rare, threatened or endangered species were observed during the 2006 botanical survey or are known to exist on the property.

The United States Fish and Wildlife Service (USFWS) identified the possible presence of the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*). Though bats are uncommon on O`ahu and there are no reports of habitat use in the Kokokahi area, bats are highly mobile and their endangered status mandates protection. Because of the potential presence of the Hawaiian hoary bat on the subject property, USFWS recommends that the owner should avoid removing or pruning any trees taller than 15 feet during the Hawaiian hoary bat pupping season which runs from June 1 through September 15. (Letter from USFWS to WCP, February 03, 2012; Appendix A, Early Consultation.)

USFWS also commented that Hawaiian waterbirds (endangered Hawaiian coot (*Fulica alai*), Hawaiian duck (*Anas wyvilliana*), Hawaiian moorhen (*Gallinula chloropus sandvicensis*), and Hawaiian stilt (*Himantopus mexicanus knudseni*) could be attracted to the proposed duck pond if it were not enclosed. As described in Section 2.1.1 and shown in Figure 9, the pond will be enclosed by a fence within the fenced pasture area.

3.4.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions are determined to have a significant adverse impact on the flora environment if there is any disturbance to or removal of endangered or threatened species, or removal of trees of significance.

In determining the extent of impacts to fauna species, criteria such as the extent of habitat loss or gain, and the presence or absence of threatened, endangered or protected species are used. The loss of sensitive habitat is indicative of significant impacts, whereas relocation and/or modification of habitats are indicative of adverse but not significant impacts.

PROPOSED ACTION

Impacts to biological resources under the Proposed Action would be minimal and well below a level of significance. There are no known occurrences of threatened or endangered species on the property, and no clearing or grubbing is proposed.

The landscape master plan proposes to implement the landscaping and gardening plans for the property passively—with as little disturbance as is practical to existing vegetation. Planting locations would be selected based on ease of trimming back existing vegetation and digging planting pits for the new trees. The planting-pit methodology selected for this project would reduce the issue of erosion, preserve existing drainage patterns, and maintain the existing foliage cover so that the existing roots and biomass continue to provide a natural, vegetative, soil erosion mat.

The proposed pasture contains a variety of grasses (predominantly California grass), weeds, and shrubs—an ideal diet for multispecies grazing by small ruminants. The pasture would be managed through a multispecies grazing system. Goats and sheep can share pasture efficiently because they tend to eat different plants or parts of plants. In multispecies pasture situations, goats tend to graze a wide range of grasses, legumes, and a variety of browse-plants, including brush, shrubs, trees, and woody vines. Sheep tend to graze grasses, clover, and forbs. Neither species is anticipated to have adverse environmental impacts to biological resources. Grazing would be restricted to selected location by enclosing the grazing area with a suitable fence.

ALTERNATIVE ACTION 1

Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2

Implementing Alternative Action 2 would require some clearing of vegetation from Kokokahi Valley to accommodate the pet shelters, permit sufficient sunlight to permeate the grazing areas and the duck pond, and to create a maintenance vehicle access road. Though there are no known occurrences of threatened or endangered species in this area, implementing Alternative Action 2 would result in a decrease to the total biomass in this area of the property, which is contrary to the property owner's vision for this project.

Additionally, implementing this alternative would impact the landscaping plan for Kokokahi Valley, requiring substantial measures be implemented to ensure that the pets do not interfere with the plants as they are developing. Undertaking measures necessary to mitigate this impact would be cost -prohibitive.

NO ACTION

The No Action Alternative would not result in adverse environmental impacts. The site conditions would remain as they currently are.

3.4.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.5 Acoustic Environment

The impacts of sound on the environment are determined by several factors including loudness, duration of exposure, frequency, and variations or fluctuations in noise levels during exposure. The decibel (dB) is used to measure sound level. The A-weighted decibel scale (dBA) approximates the frequency response of the human ear and is the most commonly used noise descriptor. Average noise exposure over a 24-hour period is often presented as a day-night average noise level (DNL). DNL values are calculated from 24-hour averages in which nighttime values are decreased by 10 dBA to account for the greater disturbance potential from nighttime noise. HAR Title 11, Chapter 46 defines the maximum permissible sound levels for the State of Hawai'i and provides prevention, control, and abatement rules for noise pollution. The property is located in noise Zoning District A, which establishes maximum daytime (7:00 am to 10:00 pm) permissible sound levels at 55 dBA and maximum nighttime (10:00 pm to 7:00 am) permissible sound levels at 45 dBA.

Construction noise typically generates noise levels of 80 to 90 dBA at a distance of 50 feet. With concurrent operation of several pieces of equipment, construction noise can be significant; however, beyond 1,000 feet from the construction site noise levels generally are not substantial. Acceptable noise exposure identified by the Occupational Safety and Health Administration for an 8-hour work day is 90 dBA.

Ambient noise levels at the property are particularly low, with no stationary sources of loud or frequent noise. The main source of noise at the property is the sound of traffic in the distance, or from helicopters or small aircraft that occasionally pass by, and there is little noise emitting from the property, particularly since it is currently unoccupied.

3.5.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions are determined to have a significant adverse impact on the acoustic environment if they result in a new substantial, stationary noise source, or if they expose people to high levels of noise beyond those recommended or permitted by applicable guidelines and regulations.

PROPOSED ACTION

Impacts to the acoustic environment from implementing the Proposed Action would be temporary and related to construction activities. The proposed pet shelters and fencing would require only minimal construction, and this short-term and temporary impact would be minimal. The contractor would be required to implement measures to ensure that the construction noise remains low to moderate, including limiting construction time to between the hours of 7:00 am and 6:00 pm Monday - Friday and 9:00 am to 6:00 pm on Saturdays, in accordance with HAR §11-46-7.

ALTERNATIVE ACTION 1

Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2

Impacts to the acoustical environment under Alternative Action 2 would be slightly greater than under the Proposed Action due to the requirement to clear and grub areas to accommodate

the pet shelters and maintenance access path. These impacts would also be temporary and related to construction. As with the Proposed Action, the contractor would be required to implement precautionary measures to ensure that the construction noise has a minimal impact, including limiting construction time to hours in accordance with HAR §11-46-7.

NO ACTION

There would be no change to the acoustical environment under the No Action alternative.

3.5.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.6 Aesthetic Resources

Preservation of visual and aesthetic resources are key elements of the Koʻolaupoko Sustainable Communities Plan (SCP), a document intended to guide the development of Koʻolaupoko District (City and County of Honolulu 2000). The Koʻolaupoko SCP identifies significant viewsheds that should be protected and maintained for Windward Oʻahu, noting that the steep cliffs abutting the Kāneʻohe area provides several, intermittent, panoramic views, that are valuable aesthetic resources to the area.

From the street, the property appears as part of a vast, forested, steep hillside. The public vista to the property is from nearby neighborhood roads or the more traveled Kāne`ohe Bay Drive. The property slopes are typical of the Kokokahi Ridge area in Oneawa Hills; covered with scrub haole koa and scattered with trees both majestic (monkey pod) and scraggly (introduced guava and Christmas berry). From the property, unobstructed views of Kāne`ohe Bay are broken only by occasional trees.

3.6.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions are determined to have a significant adverse impact on visual and aesthetic resources if they block significant viewsheds or adversely conflict with the aesthetic character of the area.

PROPOSED ACTION

The Proposed Action would neither block significant viewsheds, nor adversely conflict with the aesthetic character of the area. Part of the Proposed Action would be implementing the landscape master plan, which would add new plants and trees to the property. This change would be in character with the area and add to its aesthetic resources.

ALTERNATIVE ACTION 1

Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2

Under Alternative Action 2, there would be a slight decrease in the biomass on the property, but it is anticipated that this would be minimal and likely would not be noticeable from the street, particularly with the addition of the many trees and other plants proposed in the landscape master plan.

NO ACTION

There would be no impact to aesthetic resources under the No Action Alternative. Site conditions would remain the same as they currently are.

3.6.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.7 Historic, Archaeological, and Cultural Resources

In 2006, in support of a previous environmental assessment, an archaeological field check and literature review was conducted by Cultural Surveys Hawaiʻi, Inc., to investigate the presence and condition of Ahukini Heiau, which was determined to have been located on or near the property (Helber Hastert & Fee, 2006). Ahukini Heiau was placed on the Hawaiʻi Register of Historic Places in 1971 and is identified by the State Inventory of Historic Places as site number 80-10-352.

During the historical, archaeological, and cultural resources research conducted during the archaeological literature review in 2006, multiple references to the heiau were discovered, including this description of the structure written in 1933 by McAllister:

> A small structure, 70 by 127 feet, built on top of an elevation of 1,200 feet from the sea. The ground slopes away from the heiau in all directions. The only features remaining are the low walls, unusual because they are built of stones a few inches in size. Here and there at the bottom larger stones have been used, and at a few places the wall stands one foot in height, but most of the remains are scattered, for it is very easy for the cattle to disturb small stones. Nor could the walls have been very high, for it would be very difficult to keep these small stones, which are typical of the surrounding area, in place. The heiau faces north, in which side there is a gap of two feet in about the middle of the wall. At the southwest corner a larger stone was used, 2.5 feet in size, which stands out in contrast to the much smaller stones of the walls. There appears to have been only this one platform, which was dirt-paved, though on the end toward the mountains there are many scattered stones, also small, which may, at one time, have been used for paving a small area. (Helber Hastert & Fee, 2006; excerpted from McAllister, 1933).

Additionally, a 1978 reference to the heiau indicated that it had been relocated in 1952 to the back of the ridge west of Kokokahi Road and was in a similarly dilapidated condition (Helber Hastert & Fee, 2006; referring to Sterling and Sumners, 1978). Based on information contained in an approved 1979 CDUA to permit the development of a single family dwelling on the property, the heiau had been previously altered. The home being referred to in this CDUA was located on the portion of the property referred to in this document as the Bluff.

The findings of the 2006 archaeological field study determined that the Ahukini Heiau was demolished around 1974 for construction of a single family dwelling (Helber Hastert & Fee, 2006).

3.7.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions would be considered to have significant impacts if they adversely affect any known or discovered archaeologically or culturally sensitive resources encountered at the site.

PROPOSED ACTION

The Proposed Action would have no impact on historic, archaeological, or cultural resources. There are no known archaeological resources remaining on the property and cultural practices are not known to be practiced here as the land is privately owned and is not open to the public. If during construction, any sites suspected to contain historical, archaeological, or cultural resources are discovered, construction would cease and the proper authorities would be contacted.

ALTERNATIVE ACTION 1

Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2

Potential impacts from Alternative Action 2 would be the same as for the Proposed Action.

NO ACTION

There would be no impact to historic, archaeological, or cultural resources under the No Action Alterative.

3.7.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.8 Land Use

Currently, the property is unoccupied; however, it previously was the site of a permitted single-family residence that burned down in 2001 and was not rebuilt. The driveway, the Bluff, and the Meadow were cleared and leveled by the previous owner. All other areas of the 56.28-acre property remain uncleared and primarily covered by lowland forest vegetation. The property is surrounded on all sides by residential development and land zoned for residential and urban uses, except where it abuts undeveloped Conservation Land directly to the southeast (mauka), and partially to the south and east, where the cliffs are too steep for development.

Most of the property lies within the *P-1 Preservation* zone under the City and County of Honolulu Land Use Ordinance and as *Conservation Land* under the State of Hawai`i Land Use District classification system (Figure 12). The exception is a small portion (approximately 6,000 square feet) facing Namoku Street. This small portion is zoned *R-10 Residential* by the City and County of Honolulu.

PAST RESIDENTIAL USE

On February 22, 1980, the BLNR approved a CDUA for residential use on the subject property. This was a conditional use of the General Subzone (CDUA OA-12/3/79-1188). The CDUP allowed a previous owner to build a two-story, wooden A-frame structure covering approximately 1,600

square feet. The CDUP also allowed for a gravel driveway linking the dwelling with Kokokahi Place (Helber, Hastert & Fee, 2006).

In May 1980, a previous owner submitted an application for construction of a single-family dwelling on the property, as well as for subdivision (CDUA OA-3/24/80-1246). In the subdivision application the previous owner proposed creating 12 separate parcels. The proposal included subdividing 3.4 acres of the property into eleven individual parcels, while the remaining 52.88 acres would constitute the original or 12th parcel. The BLNR denied the application because the subdivision would reduce open space and encourage urban development which would not be in conformance to the objectives of the General subzone (Helber, Hastert & Fee, 2006).

In 2007, a previous owner submitted a CDUA for the construction of a single-family residence and 3-horse barn. However, after the environmental review document for that proposal was completed, the owner withdrew the 3-horse barn from the permit application. The BLNR approved the CDUA for the single-family home, but it was never built.

OTHER USES

On April 22, 1988, the BLNR permitted with conditions a television booster transmission station and shared-use radio/cellular facilities (CDUA OA-11/18/87-1861A). These antennae facilities are located near the southeastern boundary of the subject property at the top of the mountain ridge.

Figure 12. State Land Use Designation and Honolulu Zoning Classification

This Page Intentionally Left Blank

3.8.1 Potential Impacts

SIGNIFICANCE CRITERIA

Project actions are determined to have a significant adverse impact if they conflict with surrounding land uses or are counter to the intended uses permitted within each land use classification or designation.

PROPOSED ACTION

The subject property has been designated *Conservation Land, General Subzone* under State Land Use Classification. According to HAR §13-5-14, the objective of the General Subzone is to designate open space where specific conservation uses may not be defined, but where urban use would be premature. It further states that the General Subzone shall encompass lands suitable for farming, flower gardening, operation of nurseries or orchards, grazing; including facilities accessory to these uses when the facilities are compatible with the natural physical environment. All four of the major components of the Proposed Action are compatible with this definition. These include (1) planting, (2) terraced planter boxes, (3) repair and upgrade of existing utilities, (4) construction of pet shelters and supporting facilities, and (5) to improve an existing path to accommodate a low-impact work vehicle.

Since the Meadow borders a few small residential properties to the north, compatibility between the pets and the neighbors must be considered. To minimize noise, odor and other potential nuisance factors from the pets, the following design guidelines have been built into the Proposed Action:

- Sturdy, pet-proof fencing would be constructed on the southern end of the meadow at a distance of 50 feet from the property line, to provide a buffer between the pets and adjacent properties
- Various flora (see Figures 4 and 5) would be planted along both sides of the fencing to provide noise and odor control, as well as a visual barrier between the pets and the neighboring properties.
- The pet shelters and facilities would be sited within the meadow, at least 150 feet from the nearest neighbors. The pet shelters and facilities would be regularly cleaned and well maintained (see the Management Plan attached as Appendix E).

ALTERNATIVE ACTION 1

Under Alternative Action 1, all of the pet shelters and facilities would be located on the Bluff. This would be at least 300 feet from the nearest neighbors and at a higher elevation. No conflict with surrounding land uses is anticipated under this alternative, as it would also be considered a permitted land use in the General Subzone.

ALTERNATIVE ACTION 2

Under Alternative Action 2, the pet shelters and facilities would be located in Kokokahi Valley, approximately 400 to 500 feet from neighboring property boundaries. There would be no anticipated conflict with surrounding land uses under this alternative, as it would also be considered a permitted land use in the General Subzone.

NO ACTION
There would be no conflict with adjacent or nearby land uses under the No Action alternative.

3.8.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.9 Circulation and Traffic

Access to the property is through a 12-foot wide easement over TMK (1) 4-5-31:077, and consists of a steep driveway that rises off Kokokahi Place. The driveway is initially concrete, changing to asphalt and then unpaved once it crosses from the Urban district to the property within the Conservation district boundary.

Kokokahi Place is a small and narrow roadway, owned by the City and County of Honolulu, and is on the mauka side of Kāne'ohe Bay Drive. Kokokahi Place services the few dozen residences in the neighborhood, is about 14 feet in width, and does not have sidewalks, curbs, gutters or subsurface drainage structures. Vehicles in the area typically park in their respective driveways, with some spill over located along portions of the street.

Utility improvements to the property are planned for the initial segment of the driveway. New conduit for electrical distribution from the newly-installed electrical meter along the access easement is needed. This improvement will require removal of the existing concrete to allow trenching for the conduit; re-grading of the steep driveway section from its initial ascent from Kokokahi Place may be warranted. Appropriate re-surfacing of this portion of the driveway would complete the improvement. This work is proposed to begin in year 4 after CDUA approval, and will require separate plans, building and grading permits. This improvement would occur in the State Urban district.

3.9.1 Potential Impacts

SIGNIFICANCE CRITERIA
Project actions would be considered to have a significant adverse impact to traffic if they result in a permanent increase in traffic volume such that existing levels of service are degraded to an extent that necessitates substantial road improvements to increase the capacity of the affected street systems, or if they would cause long-term disruption or alteration of circulation patterns.

PROPOSED ACTION
The Proposed Action would have no long-term impact on traffic or circulation. Traffic entering or exiting the property at Kokokahi Place is permitted by the easement over TMK (1) 4-5-31:077 and the Proposed Action would not increase the volume or frequency of traffic to or from the property.

Short-term impacts may be anticipated during grading or construction, but these impacts would be temporary and construction vehicles would be parked on property whenever possible, not on Kokokahi Place.

ALTERNATIVE ACTION 1

As under the Proposed Action, there would be no long-term disruption to circulation or traffic under Alternative Action 1. Short-term impacts related to construction activities would be temporary. The construction duration would be short, as planned facilities are limited to fencing, terrace boxes, and simple pet shelters.

ALTERNATIVE ACTION 2

As under the Proposed Action and Alternative Action 1, there would be no long-term disruption to circulation or traffic under Alternative Action 2. Short-term impacts would be related to construction activities and would be temporary. Construction would only be for fences and pre-fabricated sheds, not a house.

NO ACTION

There would be no change to traffic or circulation under the No Action alternative.

3.9.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.10 Infrastructure and Utilities

The property is connected to water, electrical, and telephone systems that were established by a previous owner.

WATER

The property is currently served by the Board of Water Supply, a service that was started by a previous owner for his home. Because the current owner uses water for landscaping only, an agricultural rate applies. The current owner was permitted by DLNR (SPA: OA 11-42) and Board of Water to undertake repairs to the water transmission system and to install new water lines. These actions have been completed.

WASTEWATER

The property is not connected to the City's wastewater collection system and the previous owner disposed of wastewater in a cesspool system. The property owner does not intend to use the property as a residence, and in place of a cesspool system has installed a composting toilet which has been permitted by the DLNR. The Department of Environmental Services (DES) of the City and County of Honolulu has commented that their department has proposed construction of a deep gravity sewer tunnel that will run below the subject property. A sewer easement in favor of the City will be proposed for the new sewer after the alignment has been determined. Because the sewer tunnel will be very deep, there would be no manholes or planned maintenance activities from the property's surface.

ELECTRICAL

The property currently receives service from Hawaiian Electric Co., Inc. The service was initiated by a previous owner. In the western portion of the property, a 25-foot wide electrical easement (easement #12) is maintained by Hawaiian Electric Co., Inc.

TELEPHONE AND CABLE

The property is connected to telephone and cable infrastructure.

REFUSE SERVICE
The property is within the refuse service area of the City and County of Honolulu.

OTHER UTILITIES
At the top of the mountain ridge near the southeastern boundary of the property, a previous owner obtained a permit for a television booster transmission station and shared-use radio/cellular facilities. The antenna facility is still functioning.

3.10.1 Potential Impacts

SIGNIFICANCE CRITERIA
Project actions would be considered to have a significant adverse impact on infrastructure if they create unsustainable demand on utility systems.

PROPOSED ACTION
The repairs and upgrades to the electrical, telephone, cable systems that are part of the Proposed Action would extend from street connections at the base of the driveway, up to the front gate of the property, and into a secure utility closet. From there, the lines would run down the driveway and into underground junction boxes located on the Bluff. Since this is an upgrade of existing utility lines, no alternative pathway is proposed. There would be no anticipated increase in demand on utility systems that would result in an unsustainable demand on those systems.

ALTERNATIVE ACTION 1
Potential impacts from Alternative Action 1 would be the same as for the Proposed Action.

ALTERNATIVE ACTION 2
Potential impacts from Alternative Action 2 would be the same as for the Proposed Action.

NO ACTION
Under the No Action Alternative, existing utilities would not be repaired and upgraded. There would be no change to demand on utility systems under this alternative.

3.10.2 Mitigation Measures

No mitigation measures are warranted or proposed.

3.11 Cumulative Impacts Analysis

Cumulative impacts are two or more individual effects, which, when considered together, compound or increase the overall impact on a resource or ecosystem. Cumulative impacts can arise from the individual effects of a single action or from the combined effects of past, present or future actions. Therefore, cumulative impacts can result from individually minor actions which collectively produce significant impacts over time.

3.11.1 The Proposed Action

In the context of the Proposed Action, few potential impacts to resources or ecosystems are anticipated when the Proposed Action is examined individually or cumulatively with past, present, or future actions in the area. Examination and analysis of potential cumulative impacts

for the Proposed Action was limited to existing and proposed projects within the vicinity of the property. Although all environmental resources were considered when examining the project for cumulative impacts, natural resources were given particular attention because the property has been designated *Conservation Land, General Subzone*.

At this time, the only known pending or proposed project within the vicinity of the property is the construction of a deep gravity sewer tunnel proposed by the DES that would run below a portion of the property. A sewer easement in favor of the City will be proposed for the new sewer after the exact alignment is determined. Based on early consultation with DES, there are no conflicts or adverse impacts anticipated between the two projects. A copy of the early consultation letter and response from DES is attached to this EA as Appendix A.

The Koʻolaupoko Sustainable Communities Plan makes several recommendations that would preserve or improve the visual and aesthetic resources in the district and explicitly states that "significant scenic views of ridges, upper valley slopes, shoreline areas from major public parks, highways, coastal waters and hiking trails must be protected" (City and County of Honolulu 2000). Components of the Proposed Action would contribute positively to the cumulative visual and aesthetic character of the region through implementation of the landscape master plan and general beautification of the land through introduction of various flora that would add to the biomass of the property.

The Proposed Action is not expected to have any long-term adverse impacts, and thus, it would not contribute to any long-term or significant cumulative impacts on any of the resources or environments examined for this EA.

3.11.2 Alternative Action 1

Cumulative impacts under Alternative Action 1 would be the same as under the Proposed Action.

3.11.3 Alternative Action 2

Cumulative impacts under Alternative Action 2 would be the same as under the Proposed Action.

3.11.4 Mitigation Measures

No mitigation measures are warranted or proposed.

This Page Intentionally Left Blank

4.0 COMPLIANCE WITH LAND USE REGULATIONS AND PLANS

Land use controls and planning documents that include the proposed project area exist at both the state and county levels. The official government identification (tax map key or TMK) of the 56.28-acre parcel is First Tax Division (Island of Oʻahu), Zone 4, Section 5, Plat 032, Parcel 001. Implementation of the Proposed Action would be consistent with existing state land use policy, as well as with City and County of Honolulu land use controls (see following sections).

4.1 State of Hawaiʻi

4.1.1 Hawaiʻi State Plan

Chapter 226, HRS (1995), the Hawaiʻi State Plan, identifies goals, objectives, policies and priorities to guide the future growth of the State of Hawaiʻi. The Plan offers a basis for prioritizing and allocating the state's limited resources. These include public funds, services, human resources, land, energy, and water. It establishes a system for the formulation and coordination of state and county plans, policies, programs, projects, and regulatory activities and facilitates the integration of all major state and county activities. The relevant sections of the Plan are as follows:

Section 226-11(b)(3) Take into account the physical attributes of areas when planning and designing activities and facilities.
Previous owners of the subject property leveled and cleared small sections of the land (the driveway, Bluff and Meadow), which altered the physical attributes of the hillside. The property owner does not intend to do any further leveling of the land and her landscape and erosion control plans would maintain the physical attributes of this steeply sloped site.

Section 226-12(b)(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.
The Proposed Action would not alter views or vistas obtainable both from the site and from the publically traveled streets looking towards the site. New landscaping would be consistent with the existing vegetation and would not alter the general profile or topography of the land. Pet shelters and facilities would be less than the 25-foot height limit mandated by HAR §13-5-41, and would be shielded from view by vegetation.

Section 226-12(b)(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.
Archaeological field investigations conducted for previous property owners determined that the project site does not contain cultural resources and resources in the vicinity of the property would not be affected by the Proposed Action.

Section 226-13(b)(7) Encourage urban developments in close proximity to existing services and facilities.
The Proposed Action would not be considered urban development; nevertheless, connections with municipal utility services (water, electricity, cable) were established by previous land owners from existing utilities in the surrounding residential neighborhood. These services would continue to be used by the current owner for property maintenance, landscaping and security purposes.

Section 226-104(b)(12) Utilize Hawaii's limited land resources wisely, providing adequate land to accommodate projected population and economic growth needs while ensuring the protection of the environment and the availability of the shoreline, conservation lands, and other limited resources for future generations.

The Proposed Action would not be used as a residence and, therefore, would not contribute to population and economic growth. It would, however, ensure the protection of the environment and the availability of conservation lands for future generations.

4.1.2 Chapter 205, Hawai'i Revised Statutes (State Land Use Law)

The State Land Use Commission, pursuant to HRS Chapter 205, has classified all lands within the State into one of four land use districts: Urban, Rural, Agricultural, and Conservation. The subject property is classified as Conservation Land, General Subzone. Figure 12 shows the project area in relation to the state land use district boundaries.

Use of Conservation District lands is under the jurisdiction of the BLNR. Rules governing use of Conservation District lands are specified in HAR Title 5, Chapter 5 (adopted September 1994). The history of BLNR approvals of CDUAs for the subject property is as follows:

- 1980 (OA-12/3/79-1188, Ref. No. CPO-1385), single-family residential use
- 1988 (OA-11/18/87-1861A, Document No. 3249 E), telecommunications facility use at the top of the mountain ridge within the subject property
- 2007 (OA-3366), single-family residential use
- 2008, 2009, 2010 (OA 09-15; OA 10-147; OA 11-5; OA 11-42), entry gate and fence construction; perimeter tree maintenance; avoid hazardous fuel conditions; water transmission lines

The latter four permits listed were among those awarded the current landowner for work conducted to date. This EA and associated submittals to DLNR were recommended to gain approval for interconnected land uses under a Conservation District Use Permit.

The criteria for evaluating the merits of proposed land uses within the Conservation District are set forth in the State Conservation District Rules HAR §13-5-30(c). Each criterion is listed below in italics, followed by an evaluation of how the Proposed Action meets each criterion.

1) The proposed land use is consistent with the purpose of the conservation district.

The purpose of the Conservation District is to conserve and protect the State's special and unique cultural and natural resources (Chapter 205, HRS, Section 205-2[e]). Special and unique cultural and natural resources would not be impacted by the Proposed Action. The natural resources on the site would, instead, be preserved and enhanced by general land maintenance and landscape improvements. The Proposed Action would reduce erosion by introducing native ground cover and bio-degradable textile mats as part of the landscape plan and by construction of terraced planter boxes in two locations where slopes are very steep.

2) The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur.

State Conservation District rules designate all Conservation lands as one of the following five subzones: Protective, Limited, Resource, General and Special. Except for the Special designation, all subzones are ranked in accordance with a "hierarchy of environmental

sensitivity" (http://hawaii.gov/dlnr/occl/conservation). The most environmentally sensitive subzone is Protective, while the General Subzone is the least sensitive. The subject property is in the General subzone.

The General Subzone is intended to "designate open space where specific conservation uses may not be defined, but where urban use would be premature" (Section 153-5-14, HAR). The Proposed Action is consistent with the objective of the General Subzone. No open space will be removed or destroyed, and the existing natural landscape will be preserved and enhanced. The Proposed Action cannot be defined as urban use.

3) *The proposed land use complies with the provisions and guidelines contained in Chapter 205A, HRS, entitled "Coastal Zone Management," where applicable*.

At its closest point the subject property is a distance of approximately 1,100 feet from the shoreline at Kāneʻohe Bay, with intervening urban use in the surrounding residential neighborhood. The Proposed Action would have no impact on valuable coastal resources. See Section 4.1.4 below.

4) *The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.*

The proposed use of the property for gardening and landscaping, and accessory use for keeping domestic animals (pet goats, sheep, chickens and ducks), would have no adverse impact to natural resources in the surrounding community or region. The pets would be confined and well managed.

5) *The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas and appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

The Proposed Action is compatible with the neighboring residential properties. Pets would be cared for and maintained daily (refer to the Management Plan attached as Appendix E). Odor, noise, and other nuisance factors would be minimized with effective landscape screening, buffers, and proper management of wastes. The Proposed Action is appropriate to the conditions and capabilities of the parcel, in that the parcel would remain in rural use, which would preserve the character of the site. The topography and drainage are appropriate for the Proposed Action.

6) *The existing physical and environmental aspects of the land, such as the natural beauty and open space requirements, will be preserved and improved upon, whichever is applicable.*

The natural beauty and open space character of the existing site would be preserved and enhanced by the Proposed Action. New native plantings would co-exist with existing vegetation and areas currently overrun by invasive species would be improved.

7) *Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district.*

The Proposed Action would not subdivide the property to increase the density of the land. The property owner has no intention of subdividing the property while it remains in her ownership.

8) *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

Public health, safety, and welfare would not be compromised by the Proposed Action. Utility

connections and services would comply with state and county requirements. Standard best management practices for construction and landscaping, such as use of erosion-control measures while natural ground cover matures, would be implemented to mitigate short-term impacts. No commercial activities would take place on the subject parcel.

4.1.3 State Environmental Policy

State environmental policy codified in HRS Chapter 343 establishes a system of environmental review to ensure that decision making takes into account environmental concerns, including economic and technical considerations. Any project or proposed action that includes one or more of eight specified land uses or administrative acts must comply with HRS Chapter 343. This includes any action on any property within the State Land Use Conservation District. The Proposed Action is subject to environmental review under HRS Chapter 343 because it is located in the State Land Use Conservation District. As the approving agency, with jurisdiction over conservation lands, DLNR must grant its approval of the Proposed Action. This draft EA document complies with the requirements set forth in HRS Chapter 343 and HAR Section 11-200.

4.1.4 Coastal Zone Management

HRS Chapter 205A-2, Part I, sets forth the policies and objectives of the Hawaiʻi Coastal Zone Management Program. The CZM program is intended to promote the protection and maintenance of fragile coastal resources. Although the subject parcel lies within the CZM area, it is not located near the shoreline and the Proposed Action is not expected to have any adverse impact to the coastal zone. The property is not within the Special Management Area (SMA), as discussed in Section 4.2.4 below.

4.2 City and County of Honolulu

4.2.1 General Plan, City and County of Honolulu

The General Plan for the City and County of Honolulu was adopted in 1977 and has been amended, most recently in 2002. The overall goal of the document is to maintain the general welfare and prosperity of the people of Oʻahu. It is a comprehensive statement describing the objectives of long-range social, economic, and environmental activities. The General Plan's growth policies include full development of the Primary Urban Center (all land between Pearl City and Kahala); encourage development in the secondary urban center of Kapolei, and the Ewa, and Central Oʻahu urban-fringe areas; and the preservation of existing low-densities through managed growth of the remaining urban-fringe and rural areas on Oʻahu, including the Windward Region. The Plan objectives and policies relevant to the Proposed Action are discussed in the following:

<u>III. Natural Environment</u>

Objective A: To protect and preserve the natural environment

Policy 4: *Require development projects to give due consideration to natural features such as slope, flood and erosion hazards, water recharge areas, distinctive land forms, and existing vegetation.*

Policy 9: *Protect mature trees on public and private lands and encourage their integration into new developments.*

The Proposed Action would protect and preserve the natural environment. Natural features such as slope, flood and erosion hazards, water recharge areas, and distinctive land forms would not be negatively impacted. Existing vegetation would be altered, but this alteration would take place through new planting designed to improve the natural viability of the site. Fire hazards and invasive species would be removed, and a variety of native species would be planted in place of the invasive ones. In areas where erosion hazards exist, the Proposed Action would mitigate erosion by treating these areas with natural, bio-degradable soil erosion matting, such as jute mesh or coconut fiber matting. These areas would be re-planted with native groundcover species.

Mature trees would not be removed, except for those that die and become a fire hazards. Tree species suited to the site would be planted in their place.

Objective B: To preserve and enhance the natural monuments and scenic views of Oʻahu for the benefit of both residents and visitors.

Policy 1: Protect the island's well-known resources: its mountains and craters; forests and watershed areas, marshes, rivers and streams; shoreline, fishponds and bays and reefs and offshore islands.

Policy 2: Protect Oʻahu's Scenic views, especially those seen from highly developed and traveled areas.

Use of the subject property for private gardening and horticulture would preserve and enhance the natural rural beauty of the area. Judicious planting and cultivation would preserve scenic views for both the property owner and the neighbors. The island's well-known mountain resources would be protected by the Proposed Action.

VII. Physical Development and Urban Design

Objective A: To coordinate changes in the physical environment of Oʻahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

Policy 2: Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation and public safety facilities.

The Proposed Action is timely. The property has been vacant for several years and routine maintenance was not conducted, resulting in the accumulation of dead plant material that became fire hazards to both the property owner and some of the neighbors. The owner procured the services of a licensed landscape architect, professional land use planners, and civil engineers to ensure that her development of the property is well-designed. Although the Proposed Action does not include a family residence, water supply, electrical power and cable services would be necessary to maintain the planting and landscaping efforts, and for security. The owner has verified that all utilities are available through proximity to an established residential community and past use of the site as a single-family residence. Repair and upgrade of these existing utilities on the property will not be a burden to the municipal utility services.

4.2.2 Koʻolaupoko Sustainable Communities Plan (SCP)

A detailed framework to implement the General Plan's policies and objectives for Oʻahu is provided by the City and County of Honolulu's Development Plan (DP) program. Eight

geographical DP areas, including the Koʻolaupoko SCP are established by the DP program. Kāneʻohe, where the subject property is located, is part of the Koʻolaupoko SCP.

The windward area covered by the Koʻolaupoko SCP runs from Makapuʻu Point to the northern end of Kāneʻohe Bay, at Kaʻōʻio Point. As promulgated in The General Plan, the SCP defines the region's rural areas and urban fringe as areas where managed growth will prevent undesirable development from spreading. In 2000, the Koʻolaupoko SCP was adopted as Ordinance No. 00-47. The ordinance includes land use policies and visions for long-range land use within the region, such as investment in infrastructure and public facilities. Maps to illustrate policies in the plan are included in the SCP.

There are two overriding concepts presented in the Koʻolaupoko SCP—the protection of the region's natural, scenic, cultural, historical and agricultural resources; and the need to improve and replace aging infrastructure. The Plan calls for the preservation and enhancement of the region's scenic, cultural and recreational resources which help to define a Koʻolaupoko sense of place. The land use map in the Plan designates the subject property as "Open Space/Preservation Area" and as outside the Urban Community Boundary. Undeveloped lands such as these are not valued for agriculture, but are an important part of the region's pattern of open space. Most of the State's Conservation District has this designation. The Proposed Action—landscaping and gardening activities and the tending of a limited number of pets—will preserve and promote open space.

4.2.3 Land Use Ordinance

Allowable land uses on Oʻahu are defined by *The City and County of Honolulu Land Use Ordinance (LUO)* and accompanying maps. Applicable development standards and uses permitted within each zoning district designated by the LUO are specified in the Ordinance.

In the LUO, the subject parcel is zoned P-1 Restricted Preservation and R-10 Residential. The R-10 zoning applies only to a small 6,000-square-foot portion of the parcel fronting Namoku Street. The rest of the property is zoned P-1 Restricted Preservation and is regulated by the State of Hawaiʻi. Conservation District Rules, Chapter 13-5, HAR specify that in P-1 Restricted Preservation lands, all uses, structures, and development standards are controlled by the state.

4.2.4 Special Management Area

All counties in the State of Hawaiʻi, including Oʻahu, have adopted boundaries that identify the Special Management Area. County rules and regulations governing the SMA are compliant with Chapter 205A, HRS, which controls development within the SMA. The special requirements governing the SMA are intended to protect the state's shoreline which is particularly sensitive to the impacts of development. No SMA permit is required for the Proposed Action since the property is outside the SMA.

5.0 FINDINGS AND DETERMINATIONS

This Draft EA demonstrates that the Proposed Action is not anticipated to result in adverse environmental impacts at the project site or any other area; therefore, an EIS is not warranted. A FONSI is anticipated for this project.

5.1 Reasons for Supporting this Preliminary Determination

This determination is based upon criteria outlined in Chapter 343, HRS, as amended, and Title 11, Chapter 200, HAR.

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

The relatively small scope of the Proposed Action—landscaping, gardening, utilities improvements, and keeping domestic animals (pets) on the property—would not result in a significant loss of any natural or cultural resources. The purpose of the Proposed Action is to improve the natural condition of the property, albeit in a small way compared to the size of the parcel. Proposed land uses would not impact sensitive or critical habitat or degrade natural resources in the area, and there are no known cultural resources at the project site.

(2) Curtail the range of beneficial uses of the environment

There would be no change in beneficial uses of the environment from implementing the Proposed Action. The land use activities that are proposed in this project comply with the purpose and intent of the State Conservation District, and are anticipated to have no adverse environmental impacts.

(3) Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 343, HRS and any revisions thereof and amendments thereto, court decisions, or executive orders

The Proposed Action does not present any conflicts with the State's long-term environmental policies or goals and guidelines as expressed in any legislative statutes, rules, regulations, court decisions, or executive orders. The Proposed Action complies with all local, state, and federal laws, as well as with local, regional, and state planning documents.

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

The Proposed Action would have no impact on economic or social welfare in the surrounding community or the state. The project is to develop a privately-owned parcel for limited landscaping and gardening activities, as well as to house and care for a variety of pets (up to 6 goats and up to 6 sheep; 24 chickens, and up to 12 ducks). The purpose of the Proposed Action is purely for personal enjoyment and proposes no commercial uses.

(5) Substantially affects public health

The Proposed Action would have no impact on public health. Small flocks of domestic animals (considered pets) proposed for the property provide manure that will be composted to provide nutrient-rich natural fertilizer to enhance soil condition.

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

There would be no secondary impacts resulting from the Proposed Action. The limited scope of the project would have no effect on population or public facilities. Utility improvements proposed for the site are to maintain safety and security, as well as to ensure proper caretaking of the pets to be kept on the property. These improvements are minimal and would have no impact on public utilities or services.

(7) Involves a substantial degradation of environmental quality

There would be no degradation of environmental quality resulting from the Proposed Action. The property would remain in its natural state with the addition of new plants for gardening and landscaping, approved in advance by the DLNR. The Proposed Action would not result in any loss of habitat or other substantial natural areas within the Conservation District.

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

Section 3.11 evaluates the Proposed Action for potential cumulative impacts. The only known pending or scheduled project in the vicinity of the Proposed Action is a deep gravity sewer line proposed by DES. According to their pre-consultation comment letter, dated January 11, 2012, DES anticipates no conflict between the Proposed Action and their project. It is anticipated that no adverse cumulative impacts would result from the Proposed Action.

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

The Proposed Action would not affect any rare, threatened or endangered species or habitat as they do not exist at the Proposed Action site. As a precaution, pruning and removal of large trees will be avoided during the Hawaiian Hoary Bat pupping season. The parcel would remain in its natural state and the Proposed Action would not contribute to habitat loss of any kind.

(10) Detrimentally affects air or water quality or ambient noise levels

The Proposed Action would have no impact on air quality, water quality, or ambient noise levels. The scope of the project is small, particularly relative to the size of the property. Temporary impacts on air quality, water quality, or ambient noise levels would be short-term, temporary, and construction related. The contractor would be required to implement standard construction best management practices to reduce these impacts during the construction phase for the pet shelters, fencing, and planter boxes.

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

The Proposed Action is not located in a flood plain, a tsunami zone, or near a beach; however, erosion is a concern for the property due to the many steep slopes within its boundaries. The Proposed Action would not contribute to erosion and includes small features that may help reduce erosion in two small areas of the property. Two terraced planter boxes designed to provide gardening space are expected to slightly reduce the risk of erosion along the faces of the two steep slopes where these planter boxes would be located. However, this beneficial impact is small in scope and is not expected to greatly reduce the risk of erosion present on the property.

(12) Substantially affects scenic vistas and viewplanes identified in county or state plans or studies

The Proposed Action would have no impact on scenic vistas or viewplanes. The proposed landscaping, gardening, and pet shelters and land uses would be on private property and outside of the public view.

(13) Requires substantial energy consumption

The Proposed Action does not propose an increase or change in energy consumption at the property, nor does it critically contribute to energy consumption in the area or on Oʻahu.

This Page Intentionally Left Blank

6.0 JUSTIFICATION FOR A CONSERVATION DISTRICT USE PERMIT

The Proposed Action is located in the State Land Use Conservation District. Before being eligible for a CDUP, the applicant must demonstrate that the proposed land use is consistent with the following criteria, as outlined in HAR §13-5-30 (c):

(1) The proposed land use is consistent with the purpose of the conservation district

The purpose of the Conservation District is to regulate land use for the purpose of conserving, protecting, and preserving the important natural resources of the state through appropriate management and use, to promote their long-term sustainability and the public health, safety, and welfare (HAR Title 13, Chapter 5). The purpose of the Proposed Action is to improve the natural systems of a 12-acre portion of the property through landscaping: to include removal of noxious plants and introduce plant materials similar in character and appearance to existing vegetation in the surrounding area; to remove dead or diseased non-native trees; to implement erosion control; and to maintain a small number of domestic animals, which the owner regards as pets, and create and utilize nutrient-rich compost to improve soils in planting areas. The landscaping and animal husbandry components of the Proposed Action are consistent with the purpose of the Conservation District.

(2) The proposed land use is consistent with the objectives of the subzone of the land on which the use will occur

The subject property has been designated *Conservation Land, General Subzone* under State Land Use Classification. According to HAR §13-5-14, the objective of the General Subzone is to designate open space where specific conservation uses may not be defined, but where urban use would be premature. It further states that the General Subzone shall encompass lands suitable for farming, flower gardening, operation of nurseries or orchards, grazing; including facilities accessory to these uses when the facilities are compatible with the natural physical environment. All four of the major components of the proposed action are compatible with this definition. These include (1) planting, (2) terraced planter boxes, (3) repair and upgrade of existing utilities, and (4) domestic animal shelters and supporting facilities. Use of the property will be solely for the landowner; no commercial use will occur.

(3) The proposed land use complies with the provision and guidelines contained in Chapter 205A HRS, entitled "Coastal Zone Management," where applicable

The CZM program is built to meet 10 policies and objectives. Below is a discussion of how the Proposed Action complies with the provisions and guidelines contained within the CZM program.

> *(1) Recreational Resources - To provide coastal recreational opportunities accessible to the public and protect coastal resources uniquely suited for recreational activities that cannot be provided elsewhere.*
>
> The Proposed Action is located more than ¼ mile from the nearest shoreline are (Kāne`ohe Bay) and therefore does not influence accessibility to coastal recreational opportunities.

(2) Historic Resources - To protect, preserve, and where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
There are no known historic or prehistoric resources currently located at the site of the Proposed Action, or within the boundaries of the property. The findings of a 2006 archaeological field study determined that a previously identified heiau was demolished around 1974 for construction of a single family dwelling. Although it is unlikely that any historic resources would be uncovered during the construction phase of the Proposed Action, should any artifacts or human remains be uncovered, construction would immediately cease, and the State Historic Preservation Division would be contacted to evaluate the inadvertent find.

(3) Scenic and Open Space Resources - To protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.
The property does not fall within the public's view toward coast. The property can be seen from the nearby neighborhood roads and the more traveled Kāne`ohe Bay Drive. The mauka view may reveal newly planted trees as they grow to visible heights from the lower elevation; other proposed improvements (low-statured animal shelters and a fenceline) will not be visible.

(4) Coastal Ecosystems - To protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.
The Proposed Action will occur in a terrestrial ecosystem dominated by non-native vegetation typical of a formerly disturbed inland area. Erosion control and new plantings should ultimately reduce run off and benefit nearby coastal ecosystems in the long-term.

(5) Economic Uses - To provide public or private facilities and improvements important to the state's economy in suitable locations; and ensure that coastal dependent development such as harbors and ports, energy facilities, and visitor facilities, are located, designed, and constructed to minimize adverse impacts in the coastal zone area.
The Proposed Action would be located on privately-owned land. No component of the Proposed Action would impact on the State's economy, as all proposed uses are for personal enjoyment. The Proposed Action is not located in the coastal zone and would result in no adverse impacts to resources within the coastal zone. Further, the Proposed Action would not result in adverse environmental impacts in the Conservation District or elsewhere.

(6) Coastal Hazards - To reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.
The Proposed Action is not located within the tsunami evacuation zone or near enough to the coast to be at risk of hazard from exposure to storm waves. The property lies within an area designated as Flood Zone D and X as designated by the Flood Insurance Rate Map (FIRM) program. FIRM does not regulate developments within Flood Zone D and X.

(7) Managing Development - To improve the development review process, communication, and public participation in the management of coastal resources and hazards.

The Proposed Action requires environmental review as prescribed under HRS Chapter 343, which involves a public comment period following the publication of the draft environmental assessment. This process provides the public with an opportunity to participate in the development management process.

(8) Public Participation - To stimulate public awareness, education, and participation in coastal management; and maintain a public advisory body to identify coastal management problems and provide advice and assistance to the CZM program.

The Proposed Action is not located adjacent to or near to coastal resources. However, as previously stated, the Proposed Action provides opportunity for public participation and public comment during the two public review periods that follow publication of the draft and final versions of the EA, as prescribed under HRS Chapter 343.

(9) Beach Protection - To protect beaches for public use and recreation; locate new structure inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion.

The Proposed Action is not located adjacent to or near a beach. At its closest point the property is approximately 1,100 feet from the shoreline at Kāne`ohe Bay with intervening residential and urban land uses in the surrounding neighborhood. Further, the Proposed Action does not promote inland erosion that might influence the landscape downgradient, near the shoreline or beaches.

(10) Marine Resources - To implement the state's ocean resources management plan.

Ocean resources management planning is not relevant to the Proposed Action.

(4) The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community, or region

The proposed land uses will help stabilize currently un-vegetated steep slopes by installing small terraced planting areas, which will reduce run-off as well as increase planting area for soil stabilization. Additionally, removal of deadfall trees and plant material, along with periodic maintenance pruning, will help to reduce dry, potential fuel for wildfires thus lessening wildfire-related hazards to surrounding property owners. The parcel abuts more than 70 single-family residences, many of which lie down-slope at the property's makai edge.

(5) The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels

The Proposed Action is to conduct landscaping and gardening activities, and to keep domestic animals at the property—each of which is appropriate to the physical conditions of the property and compatible with its rural character and the surrounding areas. No home will be built as part of this Proposed Action.

(6) The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable

As previously stated, the Proposed Action will be conducted on just 12 acres of the 56-acre parcel, and generally in areas already modified by previous landowners. The proposed uses will enhance the open space character of the existing site while providing vegetation and soil management on the property. New native and non-native plantings would co-exist with existing vegetation and some areas currently overrun by invasive species would be converted to native species. Jute and similar erosion-control material will be used in select areas for planting of appropriately selected ground cover to minimize erosion. Proposed fences and shelters for animals and maintenance sheds will be screened or located away from public view

(7) Subdivision of land will not be utilized to increase the intensity of land uses in the conservation district

The Proposed Action does not propose any subdivision of land or increase in intensity of land use within the Conservation District.

(8) The proposed land use will not be materially detrimental to the public health, safety and welfare

There would be no change in risk to public health, safety, or welfare from the Proposed Action.

7.0 EARLY CONSULTATION

Multiple public agencies and other organizations were contacted during the planning and research phase of this environmental assessment of potential impacts from the Proposed Action. Additionally, 65 households neighboring the property were contacted and given an opportunity to comment on the project prior to development of this document.

AGENCIES AND ORGANIZATIONS CONTACTED FOR EARLY CONSULTATION:

FEDERAL AGENCIES

U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office

STATE AGENCIES

Department of Land and Natural Resources, Department Head

Department of Land and Natural Resources, Office of Conservation and Coastal Lands

Department of Land and Natural Resources, State Historic Preservation Division

Department of Health, Office of Environmental Quality Control

Department of Agriculture

Department of Transportation

CITY AND COUNTY OF HONOLULU AGENCIES

Board of Water Supply

Department of Design and Construction

Department of Planning and Permitting

Department of Environmental Services

Fire Department

Police Department

OTHER ORGANIZATIONS

The Kāneʻohe Neighborhood Board, No. 30[1]

The University of Hawaiʻi at Mānoa, College of Tropical Agriculture and Human Resources

Office of Hawaiian Affairs

Hawaiian Telecom

Hawaiian Electric Co., Inc.

Oceanic Time Warner Cable

[1] The Kāne'ohe Neighborhood Board was contacted by email for early consultation.

A copy of early consultation letters sent and any responses received are attached as Appendix A to this document. Additionally, a copy of the early consultation packets distributed to the 65 neighboring households contacted for early consultation, and any comments received, are also attached in Appendix A; however, the names and addresses of those consulted is not included in the appendix unless a response was received and the recipient filled out their name and address on the returned comment form.

8.0 LIST OF PREPARERS

PREPARER	AFFILIATION	ROLE/RESPONSIBILITY
Wilbert C.F. Chee	Wil Chee - Planning, Inc.	Principal Planner
Richard McGerrow	Wil Chee - Planning, Inc.	Senior Planner, Project Manager
Barrie Fox Morgan	Wil Chee - Planning, Inc.	Senior Planner
Angelyn Davis	Wil Chee - Planning, Inc.	Planner
Robert Mills	Wil Chee - Planning, Inc.	Planner
Hiep Nguyen	Wil Chee – Planning, Inc.	CAD Specialist, Illustrator
Sery Berhanu	Wil Chee – Planning, Inc.	CAD Specialist

9.0 REFERENCES

Armstrong, Warwick R. et al. 1983. *Atlas of Hawaiʻi: Second Edition.* University of Hawaiʻi at Mānoa. Department of Geography. University of Hawaiʻi Press. Honolulu.

Burton, I., Robert W. Kates, and Gilbert F. White. 1978. *The Environment as Hazard*. New York: Oxford University Press.

City and County of Honolulu. July 2000. *Koʻolaupoko Sustainable Communities Plan.* Department of Planning and Permitting.

Cultural Surveys Hawaiʻi, Inc. 2006. *Archaeological Field Check and Literature Review of TMK 4-5-032:001, Kāneʻohe, Koʻolaupoko, Oʻahu.* December.

Department of Land and Natural Resources (DLNR). 1995. *Aquifers*. DLNR island-wide Geographic Information System spatial data. Geographic Information System Data Published by Office of Planning, State of Hawaiʻi.

Division of Forestry and Wildlife (DOFAW). 1992. *Threatened and Endangered Plants.* Geographic Information System Data compiled by DOFAW from the Nature Conservancy. Published by Office of Planning, State of Hawaiʻi.

Federal Emergency Management Agency (FEMA). 2005. *Flood Insurance Rate Map, City and County of Honolulu, Hawaiʻi, Panel 270 of 395.* Map Number 15003C0270G.

Federal Emergency Management Agency (FEMA). 2011. *Floods*. http://www.fema.gov/hazard/flood/index.shtm. Data accessed on 22 December 2011.

Helber Hastert & Fee, Planners. 2006. *Final Environmental Assessment Cooper Residence at Kokokahi Place, Kāneʻohe, Koʻolaupoko District, City and County of Honolulu, Hawaiʻi*. December.

Juvik and Juvik. 1998. *Atlas of Hawaiʻi, Third Edition.* University of Hawaiʻi at Hilo. Department of Geography. University of Hawaiʻi Press. Honolulu.

Leon, Mark. 2006. *Botanical Resources Assessment Study*. March.

McAllister, J. Gilbert. 1933. *Archaeology of Oʻahu.* B.P. Bishop Museum Bulletin 104. Honolulu, Hawaiʻi.

Sterling, Elspeth P. and Catherine C. Summers. 1978. *Sites of Oʻahu.* B.P. Bishop Museum. Honolulu, Hawaiʻi.

United States Department of Agriculture (USDA). 1972. *Soil Survey of Islands of Kauai, Oʻahu, Maui, Molokaʻi, and Lanaʻi, State of Hawaiʻi. Soil Survey Geographic (SSURGO) Data Base.* Miscellaneous Publication Number 1527. Natural Resource Conservation. National Soil Survey Center. Geographic Information System Data Published by Office of Planning, State of Hawaiʻi.

United States Geological Survey (USGS). 2011. *Hazards in Hawaiʻi*. http://hvo.wr.usgs.gov/earthquakes/hazards. Data accessed on 22 December 2011.

APPENDIX A

EARLY CONSULTATION

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

January 30, 2012

Mr. Richard McGerrow, Senior Planner
Wil Chee – Planning & Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

Subject: Your Letter Dated January 2, 2012 on the Environmental Assessment Pre-Assessment Consultation for the Geary Property at Kokokahi Place Master Plan, TMK: 4-5-32:1

Thank you for the opportunity to comment on the proposed development.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data and, therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of your building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

The proposed project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the building permit application.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

SUSAN UYESUGI
Program Administrator
Customer Care Division

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Susan Uyesugi, Program Administrator
Customer Care Division
BOARD OF WATER SUPPLY
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Ms. Uyesugi:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of January 30, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that the existing water system is adequate to accommodate the proposed development, however, the final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

It should be noted that the current owner receives water through a service that was started by a previous owner who had a residence on the property. The water service has been continued by the current owner for gardening and agricultural usage, but she does not intend to use the property as a residence.

On-site fire protection requirements will be coordinated with the Honolulu Fire Department. We understand that the project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the building permit application.

A copy of the DEA will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (806) 768-4567
Web site: www.honolulu.gov

PETER B. CARLISLE
MAYOR

LORI M.K. KAHIKINA, P.E.
DIRECTOR

CHRIS TAKASHIGE, P.E.
DEPUTY DIRECTOR

January 31, 2012

Mr. Richard McGerrow
Wil Chee- Planning & Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

Environmental Assessment (EA)
Pre-Assessment Consultation Request
Geary Property at Kokokahi Place Master Plan

The Department of Design and Construction has no comments on this project.

Thank you for the opportunity to review and comment. Should there be any questions, please contact me at 768-8480.

Sincerely,

Lori M. K. Kahikina, P.E.
Director

LMKK:pg(447728)

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Lori M. K. Kahikina, P.E., Director
Department of Design and Construction
CITY AND COUNTY OF HONOLULU
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Dear Ms. Kahikina:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of January 31, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that the Department of Design and Construction has no comments on the project.

A copy of the Draft Environmental Assessment (DEA) will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 • FAX: (808) 768-3487 • WEBSITE: http://envhonolulu.org

PETER B. CARLISLE
MAYOR

TIMOTHY E. STEINBERGER, P.E.
DIRECTOR

MANUEL S. LANUEVO, P.E., LEED AP
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
PRO 12-001

January 11, 2012

Mr. Richard McGerrow
Wil Chee Planning & Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

Subject: Environmental Assessment Pre-Assessment Consultation Request
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place, Kaneohe, Hawaii 96744
Tax Map Key No. (1) 4-5-032:001

We have reviewed your letter dated January 2, 2012, regarding the subject request, and have the following comments:

1. The proposed action appears to have no effect on our current wastewater and solid waste facilities and services.

2. Our department has proposed construction of a deep gravity sewer tunnel which will run below this property. Details are available in the *Kaneohe-Kailua Wastewater Conveyance and Treatment Facilities Final Environmental Impact Statement*, published on May 23, 2011. A sewer easement in favor of the City will be proposed for the new sewer, after the exact alignment has been determined. Because the sewer tunnel will be very deep, there will be no manholes and no planned maintenance activities from the surface, within the subject property.

3. It appears the City's proposed sewer tunnel project and land owner's proposed project are compatible and we anticipate these projects will have no significant impact on each other.

Should you have any questions, please call Jack Pobuk, CIP Program Coordinator, at 768-3464.

Sincerely,

Timothy E. Steinberger, P.E.
Director

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Timothy E. Steinberger, P.E., Director
Department of Environmental Services
CITY AND COUNTY OF HONOLULU
1000 Uluohia Street, Suite 308
Kapolei, Hawaii 96707

Dear Mr. Steinberger:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of January 11, 2012, which was sent in response to our request for early consultation for the subject project. Your letter contains the following information:

1. The proposed action appears to have no effect on the Department of Environmental Services' current wastewater and solid waste facilities and services.

2. The Department of Environmental Services has proposed construction of a deep gravity sewer tunnel which will run below the subject property. A sewer easement in favor of the City will be proposed for the new sewer, after the exact alignment has been determined. There will be no manholes and no planned maintenance activities from the surface within the subject property because of the depth of the proposed sewer tunnel.

3. Your finding is that the City's proposed sewer tunnel project and land owner's proposed project are compatible and the two project will have no significant impact on each other.

A copy of the Draft Environmental Assessment (DEA) will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

HONOLULU FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

636 South Street
Honolulu, Hawaii 96813-5007
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd

PETER B. CARLISLE
MAYOR

KENNETH G. SILVA
FIRE CHIEF

EMMIT A. KANE
DEPUTY FIRE CHIEF

January 19, 2012

Mr. Richard McGerrow, Senior Planner
Wil Chee - Planning & Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

Subject: Environmental Assessment
Preassessment Consultation Request
Geary Property at Kokokahi Place Master Plan
45-234 A Kokokahi Place
Kaneohe, Hawaii 96744
Tax Map Key: 4-5-032: 001

In response to your letter dated January 2, 2012, regarding the above-mentioned subject, the Honolulu Fire Department reviewed the material provided and is unable to offer comments at this time, as the plan lacks necessary information.

Please resubmit your plans and include the proposed distance of the shelters to an approved apparatus access road via an approved route.

Should you have any questions, please contact Battalion Chief Socrates Bratakos of our Fire Prevention Bureau at 723-7151 or sbratakos@honolulu.gov.

Sincerely,

EMMIT A. KANE
Acting Fire Chief

EAK/SY:jl

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Emmit A. Kane, Acting Fire Chief
Honolulu Fire Department
CITY AND COUNTY OF HONOLULU
636 South Street
Honolulu, Hawaii 96813-5007

Dear Mr. Kane:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of January 19, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that you have reviewed the material provided, but that the Fire Department is unable to offer comments at this time, as the plan lacks necessary information.

In answer to your question regarding proposed distance of the pet shelters to an approved apparatus access road, we can state that there is an unpaved roadway approximately 12 feet wide that leads from Kokokahi Place, a County access road, to the pet shelters in the valley below known as the "Meadow." Total distance from Kokokahi Place to the pet shelters along this roadway is approximately 1,200 feet. A plan showing the roadway with a graphic scale will be presented in the forthcoming Draft Environmental Assessment (DEA)

A copy of the DEA will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

PETER B. CARLISLE
MAYOR

LOUIS M. KEALOHA
CHIEF

DAVE M. KAJIHIRO
MARIE A. McCAULEY
DEPUTY CHIEFS

OUR REFERENCE JT-LS

January 12, 2012

Mr. Richard McGerrow
Senior Planner
Wil Chee – Planning & Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

This is in response your letter dated January 2, 2012, requesting comments on the Pre-Assessment Consultation, Environmental Assessment, for the Geary Property project located at 45-234A Kokokahi Place.

This project should have no significant impact on the facilities or operations of the Honolulu Police Department.

If there are any questions, please call Captain Dagan Tsuchida of District 4 (Kaneohe) at 247-2166.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By
JOHN THOMPSON
Acting Assistant Chief
Support Services Bureau

Serving and Protecting With Aloha

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Louis M. Kealoha, Chief of Police
CITY AND COUNTY OF HONOLULU
Police Department
801 South Beretania Street
Honolulu, Hawaii 96813

Dear Chief Kealoha:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of January 12, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that this project should have no significant impact on the facilities and operations of the Honolulu Police Department.

A copy of the Draft Environmental Assessment (DEA) will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

February 7, 2012

Wil Chee – Planning, Inc.
Attention: Mr. Richard McGerrow
1018 Palm Drive
Honolulu, Hawaii 96814

via email: rmcgerrow@wcphawaii.com

Dear Mr. McGerrow:

SUBJECT: Pre-Assessment Consultation for an Environmental Assessment (EA) for the Sharon E. Geary Property at Kokokahi Place Master Plan – 45-234A Kokokahi Place, Kaneohe, Oahu; TMK: (1) 4-5-032:001

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from (a) Engineering Division; (b) Office of Conservation & Coastal Lands; and (c) Land Division – Oahu District on the subject matter. Should you have any questions, please feel free to call Darlene Nakamura at 587-0417. Thank you.

Sincerely,

Russell Y. Tsuji
Land Administrator

Enclosures

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

'12 JAN 19 AM 11:21 ENGINEERING

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 13, 2012

MEMORANDUM

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division
_X_ Div. of Forestry & Wildlife
___Div. of State Parks
_X_ Commission on Water Resource Management
_X_ Office of Conservation & Coastal Lands
_X_ Land Division – Oahu District
_X_ Historic Preservation

RECEIVED
LAND DIVISION
2012 FEB -3 A 11:08
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Assessment Consultation for an Environmental Assessment (EA) for the Geary Property at Kokokahi Place Master Plan
LOCATION: 45-234A Kokokahi Place, Kaneohe, Island of Oahu; TMK: (1) 4-5-032:001
APPLICANT: Wil Chee Planning & Environmental on behalf of Sharon E. Geary

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by February 2, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Darlene Nakamura at 587-0417. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____
Date: 2/1/12

cc: Central Files

DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

LD/DarleneNakamura
Ref.: PreAssessConsultationKokokahiPlaceMasterPlan
Oahu.877

COMMENTS

( ) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone ___.

(X) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zones D and X. The Flood Insurance Program does not have any regulations for developments within Flood Zones D and X.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

( ) Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

( ) Mr. Robert Sumitomo at (808) 768-8097 or Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Frank DeMarco at (808) 961-8042 of the County of Hawaii, Department of Public Works.

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Ms. Wynne Ushigome at (808) 241-4890 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

_____

( ) Other: _____

_____

Should you have any questions, please call Ms. Suzie S. Agraan of the Planning Branch at 587-0258.

Signed: _____
CARTY S. CHANG, CHIEF ENGINEER

Date: 2/1/12

OA-12-169
164

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RECEIVED
OFFICE OF CONSERVATION
AND COASTAL LANDS
2012 JAN 19 A 8:49

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

January 13, 2012

MEMORANDUM

RECEIVED
LAND DIVISION
2012 JAN 27 P 3:16
DEPT. OF LAND & NATURAL RESOURCES
STATE OF HAWAII

TO: **DLNR Agencies:**
___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division
_X_ Div. of Forestry & Wildlife
___Div. of State Parks
_X_ Commission on Water Resource Management
_X_ Office of Conservation & Coastal Lands
_X_ Land Division – Oahu District
_X_ Historic Preservation

FROM: Russell Y. Tsuji, Land Administrator
SUBJECT: Pre-Assessment Consultation for an Environmental Assessment (EA) for the Geary Property at Kokokahi Place Master Plan
LOCATION: 45-234A Kokokahi Place, Kaneohe, Island of Oahu; TMK: (1) 4-5-032:001
APPLICANT: Wil Chee Planning & Environmental on behalf of Sharon E. Geary

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by February 2, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Darlene Nakamura at 587-0417. Thank you.

Attachments

( ) We have no objections.
( ) We have no comments.
(✓) Comments are attached.

Signed: _____
Date: 1.26.2012

cc: Central Files

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:TM

Correspondence: OA 12-164

JAN 26 2012

Richard McGerrow
Wil Chee Planning
1018 Palm Drive
Honolulu, HI 96814

SUBJECT: Pre-Environmental Assessment (EA) for the Geary Kokokahi Master Plan Located at Kaneohe, Oahu, TMK: (1) 4-5-032:001

Dear Mr. McGerrow:

The Office of Conservation and Coastal Lands (OCCL) has reviewed the subject matter for the proposed horticulture and agricultural land uses. According to your information, a variety of flora including fruits and vegetables are proposed to be planted in phases; terraced planter boxes and access stairs are proposed in two steep areas; utility upgrades, perimeter fencing, a duck pond, and pet shelters for up to 6 goats, 6 sheep, 24 chickens and 12 ducks are proposed. No roosters or drakes shall be kept as pets. No commercial use is proposed. The plantings, animals and by-products are for the landowner's use and enjoyment. A management plan for the care and maintenance of the pets shall be included with the Conservation District Use Application and EA.

As noted, the proposal shall require the filling of a CDUA and EA. The proposed uses are identified land uses pursuant to the Hawaii Administrative Rules (HAR) §13-5-23 L-1 Agriculture, within an area of more than one acre, defined as the planting, cultivating, and harvesting of horticultural crops, floricultural crops, or forest products, or animal husbandry. A management plan approved simultaneously with the permit is also required. Preliminarily, this proposal does not appear to require a public hearing; however the Department retains the right to require a public hearing upon reviewing the completed CDUA.

Regarding the application, please include a timeline of planting phases. Plantings shall be appropriate to the site location and shall give preference to plant materials that are endemic or indigenous to Hawaii. The introduction of invasive plant species is prohibited.

The management plan should also discuss waste management and maintenance of the duck pond. Will the animal waste be utilized or stored on the property? How and where? Or will it be hauled off site? Please provide scheduling of pick up, storage capacity and mitigation should the capacity be exceeded.

Maintenance of the duck pond should also be discussed. Of concern would be to control or eliminate mosquito breeding in this water feature.

Based upon past comments from a previous CDUA, during storm events, water runoff from the property may present challenges to adjacent properties. Please consider how the improvements may affect drainage.

The OCCL strongly suggests that community conversations take place prior to filing the CDUA. You may wish to contact the Kaneohe Neighborhood Board and the Kokokahi Community Association and present the proposal to the neighbors.

For your information, we have 3 approved CDUPS on file. These are public records that may be reviewed during our business hours. Chapter 13-5, HAR, the rules and regulations of the Conservation District has recently been amended and our CDUA has been updated. Please visit our website at hawaii.gov/dlnr/occl for the current rules and application. Should you have any questions regarding this correspondence, contact Tiger Mills of our Office at (808) 587-0382.

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

C: ODLO
City & County of Honolulu, DPP

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

January 13, 2012

MEMORANDUM

FROM: TO: **DLNR Agencies:**

___Div. of Aquatic Resources
___Div. of Boating & Ocean Recreation
_X_ Engineering Division
_X_ Div. of Forestry & Wildlife
___Div. of State Parks
_X_ Commission on Water Resource Management
_X_ Office of Conservation & Coastal Lands
_X_ Land Division – Oahu District
_X_ Historic Preservation

TO: FROM: Russell Y. Tsuji, Land Administrator

SUBJECT: Pre-Assessment Consultation for an Environmental Assessment (EA) for the Geary Property at Kokokahi Place Master Plan

LOCATION: 45-234A Kokokahi Place, Kaneohe, Island of Oahu; TMK: (1) 4-5-032:001

APPLICANT: Wil Chee Planning & Environmental on behalf of Sharon E. Geary

Transmitted for your review and comment on the above referenced document. We would appreciate your comments on this document. Please submit any comments by February 2, 2012.

If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Darlene Nakamura at 587-0417. Thank you.

Attachments

( ) We have no objections.
(✓) We have no comments.
( ) Comments are attached.

Signed: _____
Date: 1/20/2012

cc: Central Files

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Russell Y. Tsuji, Land Administrator
STATE OF HAWAII
Department of Land and Natural Resources
Land Division
Post Office Box 621
Honolulu, Hawaii 96809

Dear Mr. Tsuji:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of February 07, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that the Land Division distributed a copy of the information on the subject project to DLNR Divisions for their review and comments. The comments received were as follows:

a) Engineering Division: "Please take note that the project site, according to the flood Insurance Rate Map (FIRM), is located in Flood Zones D and X. The Flood Zone Program does not have any regulations for developments within Flood Zones D and X."

b) Office of Conservation and Coastal Lands: See letter of January 26, 2012 from OCCL addressing the subject project.

c) Land Division – Oahu District: No comments.

A copy of the Draft Environmental Assessment (DEA) will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

LORETTA J. FUDDY, A.C.S.W., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD/CWB

02005PDCL.12

February 2, 2012

Mr. Richard McGerrow
Senior Planner
Wil Chee – Planning, Inc.
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

SUBJECT: Comments on Pre-Assessment Consultation Request for the Preparation of an Environmental Assessment (EA) for the Geary Property at Kokokahi Place Master Plan Kaneohe, Island of Oahu, Hawaii

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated January 2, 2012, requesting comments on the subject project. We have reviewed your letter and offer these comments on your project. Please note that our review is based solely on the information provided in your letter and its compliance with Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at http://www.hawaii.gov/health/environmental/env-planning/landuse/CWB-standardcomment.pdf.

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

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

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

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

2. You may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of wastewater, including storm water runoff, into State surface

waters (HAR, Chapter 11-55). For the following types of discharges into Class A or Class 2 State waters, you may apply for NPDES general permit coverage by submitting a Notice of Intent (NOI) form:

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

b. Hydrotesting waters.

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

3. For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA waters, you may need an NPDES individual permit. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. The NPDES application forms may be picked up at our office or downloaded from our website at http://www.hawaii.gov/health/environmental/water/cleanwater/forms/indiv-index.html.

4. The EA should clarify if there will be any pollutant discharges to State waters from the pet shelters and/or feeding/watering facilities.

5. If this project involves any work in State waters, including wetlands, the U.S. Army Corps of Engineers, Regulatory Branch (Tel: 438-9258) should be consulted with respect to the Department of Army permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may **result** in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40, Code of Federal Regulations, Section 122.2; and Hawaii Administrative Rules (HAR), Chapter 11-54.

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

If you have any questions, please visit our website at http://www.hawaii.gov/health/environmental/water/cleanwater/index.html, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

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

DCL:ml

c: DOH-EPO # 12-003
Mr. Richard McGerrow, Wil Chee – Planning, Inc.
[via email rmcgerrow@wcphawaii.com]

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Alec Wong, P.E., Chief
STATE OF HAWAII
Department of Health
Clean Water Branch
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Dear Mr. Wong:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001
EMD/CWB 02005PDCL.12

Dear Mr. Wong:

Thank you for your letter of February 02, 2012, which was sent in response to our request for early consultation for the subject project. Your letter included the following comments.

1. Any project and its potential impacts to State waters must meet the following criteria:
   a) Antidegradation policy (HAR, Section 11-54-1.1)
   b) Designated uses (HAR, Section 11-54-3) as determined by the classification of the receiving State waters.
   c) Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).

2. The property owner may be required to obtain a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

3. For types of wastewater not listed in Item 2 above or wastewater discharging into Class 1 or Class AA water, the owner may need an NPDES individual permit.

4. The EA should clarify if there will be any pollutant discharges to State waters from the pet shelters and/or feeding/watering facilities.

5. If this project involves any work in State waters, including wetlands, the U.S. Army Corps of Engineers, Regulatory Branch should be consulted. \

6. All discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards.

The comments mentioned above will be addressed in the Environmental Assessment (EA). A copy of the Draft Environmental Assessment (DEA) will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

NEIL ABERCROMBIE
GOVERNOR

GLENN M. OKIMOTO
DIRECTOR

Deputy Directors
JADE T. BUTAY
FORD N. FUCHIGAMI
RANDY GRUNE
JADINE URASAKI

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

IN REPLY REFER TO:
STP 8.0745

February 13, 2012

Mr. Richard McGerrow
Senior Planner
Wil Chee – Planning and Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Dear Mr. McGerrow:

Subject: Geary Property at Kokokahi Place Master
Pre-Assessment Consultation Request

Thank you for requesting the State Department of Transportation's (DOT) review of the subject project.

DOT understands the landowner proposes to use 5-7 acres of the 56 acre parcel to develop gardening and planting space and to house and care for a small number of pets. The landowner does not plan to construct any residential dwelling on the property. Access to the property will be from Kokokahi Place.

Given the location and the nature of the project, DOT does not anticipate any significant adverse impacts to the State transportation facilities.

DOT appreciates the opportunity to provide comments. If there are any other questions, please contact Mr. Elton Teshima of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7978.

Very truly yours,

GLENN M. OKIMOTO, Ph.D.
Director of Transportation

c: Russell Y. Tsuji, Department of Land and Natural Resources, Land Division
Joe Simmons, Pacific Project Solutions, Inc.

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Glenn M. Okimoto, Ph.D., Director of Transportation
STATE OF HAWAII
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Dr. Okimoto:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of February 13, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that given the location and nature of the project DOT does not anticipate any significant adverse impacts to the State transportation facilities.

A copy of the Draft Environmental Assessment (DEA) will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GUY H. KAULUKUKUI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF:OCCL:TM

Correspondence: OA 12-164

JAN 26 2012

Richard McGerrow
Wil Chee Planning
1018 Palm Drive
Honolulu, HI 96814

SUBJECT: Pre-Environmental Assessment (EA) for the Geary Kokokahi Master Plan Located at Kaneohe, Oahu, TMK: (1) 4-5-032:001

Dear Mr. McGerrow:

The Office of Conservation and Coastal Lands (OCCL) has reviewed the subject matter for the proposed horticulture and agricultural land uses. According to your information, a variety of flora including fruits and vegetables are proposed to be planted in phases; terraced planter boxes and access stairs are proposed in two steep areas; utility upgrades, perimeter fencing, a duck pond, and pet shelters for up to 6 goats, 6 sheep, 24 chickens and 12 ducks are proposed. No roosters or drakes shall be kept as pets. No commercial use is proposed. The plantings, animals and by-products are for the landowner's use and enjoyment. A management plan for the care and maintenance of the pets shall be included with the Conservation District Use Application and EA.

As noted, the proposal shall require the filling of a CDUA and EA. The proposed uses are identified land uses pursuant to the Hawaii Administrative Rules (HAR) §13-5-23 L-1 Agriculture, within an area of more than one acre, defined as the planting, cultivating, and harvesting of horticultural crops, floricultural crops, or forest products, or animal husbandry. A management plan approved simultaneously with the permit is also required. Preliminarily, this proposal does not appear to require a public hearing; however the Department retains the right to require a public hearing upon reviewing the completed CDUA.

Regarding the application, please include a timeline of planting phases. Plantings shall be appropriate to the site location and shall give preference to plant materials that are endemic or indigenous to Hawaii. The introduction of invasive plant species is prohibited.

The management plan should also discuss waste management and maintenance of the duck pond. Will the animal waste be utilized or stored on the property? How and where? Or will it be hauled off site? Please provide scheduling of pick up, storage capacity and mitigation should the capacity be exceeded.

Maintenance of the duck pond should also be discussed. Of concern would be to control or eliminate mosquito breeding in this water feature.

Based upon past comments from a previous CDUA, during storm events, water runoff from the property may present challenges to adjacent properties. Please consider how the improvements may affect drainage.

The OCCL strongly suggests that community conversations take place prior to filing the CDUA. You may wish to contact the Kaneohe Neighborhood Board and the Kokokahi Community Association and present the proposal to the neighbors.

For your information, we have 3 approved CDUPS on file. These are public records that may be reviewed during our business hours. Chapter 13-5, HAR, the rules and regulations of the Conservation District has recently been amended and our CDUA has been updated. Please visit our website at hawaii.gov/dlnr/occl for the current rules and application. Should you have any questions regarding this correspondence, contact Tiger Mills of our Office at (808) 587-0382.

Sincerely,

Samuel J. Lemmo, Administrator
Office of Conservation and Coastal Lands

C: ODLO
City & County of Honolulu, DPP

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Samuel J. Lemmo, Administrator
State of Hawaii
Department of Land and Natural Resources
Office of Conservation and Coastal Lands

Dear Mr. Lemmo:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001
OCCL Correspondence: OA 12-164

Thank you for your letter of January 26, 2012, which was sent in response to our request for early consultation for the subject project. Up to 6 goats, 6 sheep, 24 chickens and 12 ducks are proposed to be kept as pets on the subject property. As mentioned in your letter, a management plan for the care and maintenance of the pets will be included in the Draft Environmental Assessment (EA) and the Conservation District Application (CDUA). The Pet Management Plan (PMP) will be included as Appendix B in the forthcoming Draft EA.

As suggested in your letter, a five-year timeline of planting phases will be presented in the EA and this timeline will also include the schedule for introducing pets to the site. A Landscape Master Plan and detailed Planting List will be included in the EA.

A detailed waste management plan will be included as part of the PMP. Design and maintenance of the duck pond will also be addressed in the PMP, and mitigation measures for the breeding of mosquitoes in the duck pond will be discussed.

Water run-off will be discussed in the EA under Section 3.2 Hydrology and Rainfall. The proposed action is not expected to affect drainage because no impermeable surfaces will be added to the property. Also, increased biomass due to planting will tend to decrease runoff.

As suggested, community conversations will take place prior to filing the CDUA. Presentations will be made to the Kaneohe Neighborhood Board and/or the Kokokahi Community Association. A copy of the Draft EA will be sent to all neighboring property owners as well as all relevant government agencies.

Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

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

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

HRD11/6083

January 30, 2012

Richard McGerrow, Senior Planner
Wil Chee Planning and Environmental
1018 Palm Drive
Honolulu, Hawai'i 96814

Re: Pre-Draft Environmental Assessment Consultation
Kokokahi Place Master Plan
Kane'ohe, island of Hawai'i

Aloha e Richard McGerrow,

The Office of Hawaiian Affairs (OHA) is in receipt of your January 2, 2012 letter requesting comments ahead of a draft environmental assessment (DEA) which will be prepared to support a Conservation District Use Application to facilitate the Kokokahi Place Master Plan (project) on approximately 7.5 acres of land situated within a larger 56.28 acre tax map key parcel in Kane'ohe on the Island of O'ahu which is owned by Ms. Sharon E. Geary.

Project activities will consist of the phased planting and cultivation of plant, shrub and tree species. Erosion control measures (terraces) and access stairs will be constructed and utilities will be installed. Shelters and facilities to support goat, sheep, chicken and duck husbandry will also be constructed.

OHA has no comments to offer ahead of the DEA at this time. Please send one electronic copy of the DEA to OHA attn: Compliance Program when it is available. Should you have any questions or concerns, please contact Keola Lindsey at 594-0244 or keolal@oha.org.

'O wau iho nō me ka 'oia'i'o,

Richard Pezzulo
Interim Chief Executive Officer

RP:kl

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Richard Pezzulo, Interim Chief Executive Officer
STATE OF HAWAI`I
Office of Hawaiian Affairs
711 Kapi`olani Boulevard, Suite 500
Honolulu, Hawai`i 96813

Dear Mr. Pezzulo:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001

Thank you for your letter of January 30, 2012, which was sent in response to our request for early consultation for the subject project. Your letter states that OHA has no comments to offer ahead of the DEA at this time.

An electronic copy of the Draft Environmental Assessment (DEA) will be sent to your office (attn: Compliance Program) when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

In Reply Refer To:
2012-TA-0146

FEB 0 3 2012

Mr. Richard McGerrow
Wil Chee Planning and Environmental
1018 Palm Drive
Honolulu, Hawaii 96814

Subject: Pre-Draft Environmental Assessment for the Geary Property at Kokokahi Place Master Plan, Oahu

Dear Mr. McGerrow:

We received your letter on January 4, 2012, requesting early consultation for development of a draft Environmental Assessment (DEA) for proposed gardening and to house and care for agricultural pets including development of a pond for domestic female ducks. The 56.28 acre property at Kokokahi Place is located within the State of Hawaii Conservation District.

The following species is known to occur in the vicinity of the proposed project area: the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*). In addition, the pond creation if not enclosed, could attract the endangered Hawaiian coot (*Fulica alai*), Hawaiian duck (*Anas wyvilliana*), Hawaiian moorhen (*Gallinula chloropus sandvicensis*), and Hawaiian stilt (*Himantopus mexicanus knudseni*) (collectively referred to as waterbirds).

The DEA should address issues related to potential presence of the Hawaiian hoary bat to include information addressing construction or clearing activities. We recommend avoiding removing or pruning any trees taller than 15 feet during the Hawaiian hoary bat pupping season of June 1 through September 15.

The DEA should also address the potential attraction of Hawaiian waterbirds to the pond if it is not enclosed. Use and maintenance of the pond may impact these species particularly if some of the birds nest in the vicinity of the pond. In particular the created pond could result in increased predation pressure from non-native predators such as rats, feral dogs and cats. Avian botulism outbreaks are common in Hawaii and can be a significant localized cause of waterbird mortality. Botulism can occur in any area with standing fresh or brackish water frequented by waterbirds. There is a possibility the proposed project may increase the risk for an outbreak of avian botulism. We recommend coordination with our office to develop avoidance and minimization measures for the protection of federally listed species that may be impacted by the proposed project.

If you have any questions regarding our recommendations please contact Aaron Nadig, Fish and Wildlife Biologist (phone: 808-792-9400; fax: 808-792-9581). We hope this information assists you in your planning effort.

Sincerely,

Jesse Newton, acting for.

Loyal Mehrhoff
Field Supervisor

WIL CHEE – PLANNING & ENVIRONMENTAL

April 18, 2012

Loyal Mehrhoff, Field Supervisor
U.S. Department of the Interior
FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122, Box 50088
Honolulu, Hawaii 96850

Dear Ms. Mehrhoff:

Subject: Pre-Assessment Consultation for the
Geary Property at Kokokahi Place Master Plan
45-234A Kokokahi Place
Kaneohe, Oahu, TMK: (1)4-5-032:001
Fish and Wildlife Service Reference No.:2012-TA-0146

Thank you for your letter of February 03, 2012, which was sent in response to our request for early consultation for the subject project. Up to 6 goats, 6 sheep, 24 chickens and 12 ducks are proposed to be kept as pets on the subject property.

According to your letter the following species are known to occur in the vicinity of the proposed project area: the federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*). In addition the proposed duck pond, if not enclosed, could attract the endangered Hawaiian coot (*Fulica alai*), Hawaiian duck (*Anas wyvilliana*), Hawaiian moorhen (*Gallinula chloropus sandvicensis*), and Hawaiian stilt (*Himantopus mexicanus knudseni*) collectively referred to as water birds. These species will be mentioned in the forthcoming Draft Environmental Assessment (DEA).

Issues related to potential presence of the Hawaiian hoary bat will be mentioned in the DEA. These will include information addressing construction or clearing activities. The Fish and Wildlife Service's recommendation to avoid removing or pruning any trees taller than 15 feet during the Hawaiian hoary bat pupping season of June 1 through September 15 will be mentioned in the Biological Resources section of the DEA.

In accordance with your recommendation, the potential attraction of Hawaiian waterbirds to the proposed duck pond will be mentioned in the DEA. The potential dangers posed to the wild waterbirds such as increased predation pressure from non-native predators and the spread of avian botulism due to the proposed duck pond will be discussed in the DEA, and mitigation measures will be proposed.

A copy of the DEA will be sent to your office when it is published. Thank you for your time and interest in the subject project.

Sincerely,

Richard S. McGerrow
Wil Chee - Planning, Inc.

ENVIRONMENTAL ASSESSMENT FOR THE MASTER PLAN OF THE GEARY PROPERTY AT KOKOKAHI PLACE
EARLY CONSULTATION QUESTIONS AND COMMENTS FORM

Written questions or comments pertaining to the proposed project at the Geary Property at Kokokahi Place may be written on this form

CONTACT INFORMATION

Name: Kazuo Akita
Organization:
E-Mail:
Address: 45-117 Mimo Pl.
Kaneohe, HI 96744

The environmental assessment of the project should address the following:

- Any animal and other waste disposal.
- Any possible odor generation as a result of the project.
- Any changes to the drainage pattern of the project site.

MAILING INSTRUCTIONS

1. Please flip over this form once completed
2. Seal the bottom edge with tape
3. Include your return address
4. Affix the proper postage

February 14, 2012

Mr. Kazuo Akita
45-117 Mimo Place
Kaneohe, HI 96744

Dear Mr. Akita,

Geary Property at Kokokahi Place
Environmental Assessment for the Master Plan
45-234A Kokokahi Place - Kaneohe, Hawaii
Tax Map Key – (1) 4-5-032:001

Thank you for your letter in response to our project update and overview dated January 10th, 2012. We appreciate your comments in regards to Ms. Geary's proposed plan for the conservation land located at 45-234A Kokokahi Place.

As you noted in your letter, the assessment will address and detail plans to manage the following items:

Management of animal and other waster disposal
Management of odor generation as a result of the proposed project
Management of drainage patterns resulting in changes from proposed project

Please be assured that the three items you've pointed out will be addressed in detail in our draft Environmental Assessment. We understand the importance of these areas and know it is critical to the success of Ms. Geary's project. We plan on providing detailed plans to all property neighbors and the community in the Draft Environmental Assessment in the next couple months.

We appreciate your participation in this review process. Your letter and this response will be included in the draft Environmental Assessment submission.

As always, if you have any questions of comments please feel free to contact me via my cell, 808.497.1034, or email, joe_simmons@pacprojsol.com.

Sincerely,

Pacific Project Solutions, Inc.

Joe Simmons
Principle

cc: Richard McGerrow, Wil Chee Planning
Sharon Geary, Land Owner

Delivered-To: wcprichi@lava.net
Authentication-Results: mx.google.com; spf=neutral (google.com: 67.210.98.245 is neither permitted nor denied by best guess record for domain of joe_simmons@pacprojsol.com) smtp.mail=joe_simmons@pacprojsol.com
Subject: Fwd: Jack Bauer Comments 1/18/2012 re EIA
From: Joe Simmons <joe_simmons@pacprojsol.com>
Date: Thu, 19 Jan 2012 16:21:10 -1000
Cc: Angelyn Davis <adavis@wcphawaii.com>
To: Richie McGerrow <rmcgerrow@wcphawaii.com>
X-Mailer: Apple Mail (2.1084)
X-Provags-ID: V02:K0:j7D4OxpQ4JhS5vE60wEhfecaw+sWi5/8NUdRuewSv84
nbdq/fbKMEQPQSw2FfAm/qzjnPb8b5Pg9WfwlNhGVcOGbDQvnL
j3L9P211RnZbt9VWTHUSq2MfApXjJXen2Q4lUi/8b8CdsnMcaL
qhk1qhgD6qwvPwx5dguWHgq6GfZXU/eQtGZuQ7zoha5ORdhBM7
SZeTCreZ/959qyhDXeHFkYB34bDH/zR29n/T3W5ZN16RRrM9mn
6YtPwLpmLdrgKeb73qs/QAkMwUuMUxH8GraEtK9xxkt0h0Cij2
Ak2ulp0ScqHLlwPLLiZOaWmhQyouQYTd12dAqxRj6wdkw4EGdo
MScmoZ9EjR9OV5ghm0ve/KAUDop3fCDh+eZ2NnNaCggdw8tOH2
Guy4qgvedHrEw==
X-AntiAbuse: This header was added to track abuse, please include it with any abuse report
X-AntiAbuse: Primary Hostname - mantus.lunarmania.com
X-AntiAbuse: Original Domain - wcphawaii.com
X-AntiAbuse: Originator/Caller UID/GID - [47 12] / [47 12]
X-AntiAbuse: Sender Address Domain - pacprojsol.com
X-Source:
X-Source-Args:
X-Source-Dir:

Begin forwarded message:

> **From:** "Jack Bauer" <jackandbarbbpi@hawaii.rr.com>
> **Date:** January 19, 2012 3:12:45 PM HST
> **To:** <joe_simmons@pacprojsol.com>
> **Subject: Jack Bauer Comments 1/18/2012 re EIA**
>
> Dear Mr. Simmons,
>
> I appreciate the information you provided today regarding the plans Ms. Sharon Geary has for the conservation property that my two lots on Kokokahi Place border. When I first saw the plan I was concerned that her plan included a fence of some type enclosing the entire 56.28 acre parcel. My concern was that without fairly constant mowing of the grass next to my property a fire hazard could develop. If that was the case, I was going to request permission to install a gate (at my expense) for the purpose of keeping a fire break.

When I purchased my home in 1971, the lot where my house is located had a lawn and two or three decorative palm trees and a sprinkler system extending onto the conservation property, and for a few years I thought I owned the property. As soon as I learned that it was not my property I disconnected that part of the system. Me, and several of my neighbors made a down payment on 100 feet of the conservation land to hopefully keep a housing development from building right at my back door. After a few years we found that the Department of Land and Natural Resources would not allow the owner to sell. Of course I was disappointed because I felt that a day would come when someone with the right connections would be able to get the conservation land changed to residential.

I had planned to contact you sometime in the future to see if I could get approval to top some trees that are blocking our view. The previous owner had no objections. I never asked for permission to remove a tree, but just for permission to top them to restore my view. Sometime in the not too distant future I may be requesting permission to restore my view. As I told you I am now handicapped and can no longer do the work myself so I will have to wait for my son, who just retired to do the work for me. He told me he had a list of honeydo projects from his wife before he would be able to do anything.

Please tell Sharon that I am very pleased with her vision for the property. I am 82 years old, and I doubt that I will be around when anyone finally has the connections to ruin this beautiful precious piece of property.

Sincerely,

Jack Bauer

My phone number is 808 247-1135

Email is jackandbarbbpi@hawaii.rr.com

Joe Simmons

Cell - 808.497.1034
Fax - 808.263.9395

PastedGraphic-14.tif

February 14, 2012

Mr. & Mrs. Jack Bauer
254 Kokokahi Place
Kaneohe, HI 96744

Dear Mr. & Mrs. Bauer,

Geary Property at Kokokahi Place
Environmental Assessment for the Master Plan
45-234A Kokokahi Place
Kaneohe, Hawaii
Tax Map Key – (1) 4-5-032:001

Thank you for your letter in response to our project update and overview dated January 10th, 2012. We appreciate your comments in support of Ms. Geary's proposed plan for the conservation land located at 45-234A Kokokahi Place. As we've discussed in person, Ms. Geary's vision is to maintain and enhance the land for her personal enjoyment while maintaining the natural beauty of the area.

We appreciate your participation in this review process. Your letter and this response will be included in the draft Environmental Assessment submission.

As always, if you have any questions of comments please feel free to contact me via my cell, 808.497.1034, or email, joe_simmons@pacprojsol.com.

Sincerely,

Pacific Project Solutions, Inc.

Joe Simmons
Principle

cc: Richard McGerrow, Wil Chee Planning
Sharon Geary, Land Owner

ENVIRONMENTAL ASSESSMENT FOR THE MASTER PLAN OF THE GEARY PROPERTY AT KOKOKAHI PLACE
EARLY CONSULTATION QUESTIONS AND COMMENTS FORM

Written questions or comments pertaining to the proposed project at the Geary Property at Kokokahi Place may be written on this form

CONTACT INFORMATION

Name: PHILIP HELFRICH
Organization:
E-Mail: helfrichp001@hawaii.rr.com
Address: 45-274 Kokokahi Pl.
Kaneohe, HI 96744

Thank you sharing with us the Environmental Assessment for the Master Plan of the Sharon E. Geary property on Kokokahi Place in Kaneohe. We were pleased to hear of her plans to pursue limited development of her property. We have no objection to the planned gardening and care for the small number of pets that she proposes to keep.

We had encountered feral swine that inhabited the Geary property in the past. They were quite bold, and often ate and drank from the containers we used to feed our dogs and cats. Since Ms. Geary initiated control measures several months ago, we have not seen or heard any swine.

There is a flock of feral chickens that inhabit the Geary property adjacent to our residences at 274-268 Kokokahi Place. This flock numbers 15-20 with hatchlings joining the flock every month or so. We feed them kitchen scraps, and they seem to also feed on insects that inhabit the forest litter. We periodically trap the male chickens and give them to friends in Kailua. We have no objections to continuing this practice, if it does not interfere with the flocks of chickens and ducks planned for the Geary property.

In summary, we are very pleased with the proposed modest agricultural endeavor proposed by Ms. Geary, and we wish her all the best. As one of the oldest residents of Kokokahi Place (we built our home here in 1960) we enjoy the rural and somewhat secluded environment here, and we sense that this feeling is shared with Ms. Geary.

Please do not hesitate to inform us if there is anything we can do to assist the Geary development on Kokokahi Place.

Aloha, Phil and Maybelle Helfrich

MAILING INSTRUCTIONS

1. Please flip over this form once completed
2. Seal the bottom edge with tape
3. Include your return address
4. Affix the proper postage

February 14, 2012

Mr. & Mrs. Philip Helfrich
274 Kokokahi Place
Kaneohe, HI 96744

Dear Mr. & Mrs. Helfrich,

Geary Property at Kokokahi Place
Environmental Assessment for the Master Plan
45-234A Kokokahi Place
Kaneohe, Hawaii
Tax Map Key – (1) 4-5-032:001

Thank you for your letter in response to our project update and overview dated January 10th, 2012. We appreciate your comments in support of Ms. Geary's proposed plan for the conservation land located at 45-234A Kokokahi Place. Ms. Geary's vision is to maintain and enhance the land for her personal enjoyment while maintaining the natural beauty of the area.

We appreciate your participation in this review process. Your letter and this response will be included in the draft Environmental Assessment submission.

As always, if you have any questions of comments please feel free to contact me via my cell, 808.497.1034, or email, joe_simmons@pacprojsol.com.

Sincerely,

Pacific Project Solutions, Inc.

Joe Simmons
Principle

cc: Richard McGerrow, Wil Chee Planning
Sharon Geary, Land Owner

ENVIRONMENTAL ASSESSMENT FOR THE **GREARY PROPERTY AT KOKOKAHI**

Walter J. & Mary Ann U. Prohorenko
45-114 Moakaka Place
Kaneohe, HI. 96744

We are concerned about anyone raising a bunch of animals above us because of the enormous rain we have near these mountains. And yes we do have watefalls and streams here. We for many years (40+) have a great flow of water that does come down on Moakaka Place and my back yard also has a great flow of water. We have rock walls both sides and when we made the wall we also included good drainage (40 years ago) because of the flow of water that comes from the mountain. So, because we are a resident here we do not want any animal droppings, etc. coming through our residence during the rainy times.

Also, it may bring the value of our property down. Maybe not right now but i'm quite sure it will in the future. I believed that the land on the other side of my back yard was resident dwelling only.

In all i am against the raising of animals in a residential area. And non-native plants in the mountains, we absolutely have enough. Also it will ruin the beauty of whats left of our small mountain. Take it away and we'll loose the beauty and the value of our property. It's beautiful just the way it is.

Tuesday, January 10, 2012

ENVIRONMENTAL ASSESSMENT FOR THE MASTER PLAN OF THE GEARY PROPERTY AT KOKOKAHI PLACE
EARLY CONSULTATION QUESTIONS AND COMMENTS FORM

Written questions or comments pertaining to the proposed project at the Geary Property at Kokokahi Place may be written on this form

CONTACT INFORMATION

Name: WALTER & MARY ANN PROHORENKO
Organization:
E-Mail:
Address: 45-114 MOAKAKA PL. KANEOHE, HI. 96744

We are concerned about anyone raising a bunch of animals above us because of the enormous rain we have near these mountains. And yes we do have waterfalls and streams here. We for many years (40+) have a great flow of water that does come down on Moakaka Place and my back yard also has a great flow of water. We have ~~a~~ rock walls on both sides and when we made the wall we also included good drainage (10 years ago) because of the flow of water that comes from the mountain. ~~So~~ ~~we~~ ~~d~~. So, because we are a resident here we do not want any animal droppings, etc.. coming through our residence during the rainy times.

Also it may bring the value of our property down. Maybe not right now but im quite sure it will in the future. I believed that the land on the other side of my back yard was resident dwelling only..

In all I am against the raising of animals in a residential area. And ~~#~~ non-native plants in the mountains, we absolutely have enough. Also it will ruin the beauty of whats left of our small mountains. Take it away and we'll loose the beauty and the value of our property. Its beautiful just the way it is.

MAILING INSTRUCTIONS

1. Please flip over this form once completed
2. Seal the bottom edge with tape
3. Include your return address
4. Affix the proper postage

April 24, 2012

Mr. & Mrs. Walter J. and Mary Ann U. Prohorenko
45-114 Koakaka Place
Kaneohe, HI 96744

Dear Mr. & Mr. Prohorenko,

Geary Property at Kokokahi Place
Environmental Assessment for the Master Plan
45-234A Kokokahi Place - Kaneohe, Hawaii
Tax Map Key – (1) 4-5-032:001

Thank you for your letter in response to our project update and overview dated January 10th, 2012. We appreciate your comments in regards to Ms. Geary's proposed plan for the conservation land located at 45-234A Kokokahi Place.

We recognize your concerns about the proposed animals that would be kept on the property. According to the Department of Land and Natural Resources (DLNR) Conservation District Rules (Hawaii Administrative Rules, 13-5-23, L-1, Agriculture), animal husbandry is identified as a land use that may be permitted in the Conservation District with a Board of Land and Natural Resources (BLNR) Permit and an approved management plan.

In regards to the drainage concerns you point out, we are very aware of the issues you've mentioned and will be addressing these in our draft Environmental Assessment. Our proposed plans will not impact existing drainage water coming off the Kokokahi property onto the Moakaka Place properties.

In addition, the location of pets located on the property is based primarily on where there would be no impact on drainage to any neighbors surrounding our proposed pet living area. Our proposed plans have the pets located in a flat area roughly 200 feet away from the slope that leads to your property.

With regards to non-native plants on the mountains near your property, Ms. Geary is as concerned as you are about the existence of non-native plants and their impact to the surrounding area. Our proposed plans work to eliminate non-natives and replace them with state approved native plants. Our current proposal does not address any non-natives near your property.

Last, in response to your concerns about the impact to your property value, we feel our proposed plans will be transparent to local property values and if anything will help provide the piece of mind that Ms. Geary's stewardship of the land will maintain property values and continue to support their continual rise.

Please be assured that the items you've pointed out will be addressed in detail in our draft Environmental Assessment. We understand the importance of these areas and know it is critical to the success of Ms. Geary's project. We plan on providing detailed plans to all property neighbors and the community in the Draft Environmental Assessment in the next couple months.

We appreciate your participation in this review process. Your letter and this response will be included in the draft Environmental Assessment submission.

As always, if you have any questions of comments please feel free to contact me via my cell, 808.497.1034, or email, joe_simmons@pacprojsol.com.

Sincerely,

Pacific Project Solutions, Inc.

Joe Simmons
Principle

cc: Richard McGerrow, Wil Chee Planning
Sharon Geary, Land Owner

APPENDIX B

ANIMAL AND WASTE RESEARCH

APPENDIX B

ANIMAL AND WASTE RESEARCH
Geary Property at Kokokahi Place Master Plan

Kāneʻohe, Island of Oʻahu, Hawaiʻi
TMK: 4-5-032:001

July 2012

Prepared For
Sharon E. Geary

Prepared By
Wil Chee - Planning, Inc.
1018 Palm Drive
Honolulu, Hawaiʻi 96814

Table of Contents

LIST OF FIGURES

LIST OF TABLES

1.0 Introduction

Sharon E. Geary, the property owner, proposes housing and caring for a variety of domestic animals on her property at 45-234A Kokokahi Place, Kāneʻohe, Hawaiʻi. The owner regards these domestic animals as pets. This document is a compilation of research which addresses facilities and land-use management requirements related to keeping these animals at the property, regulatory and land-use management concerns, and sanitation and waste management requirements that would be associated with this project. It is intended to be the technical basis for the "Management Plan" which is a requirement of the Conservation District Use Application (CDUA) process.

1.1 Property and Land Use Information

The property is located in Kāneʻohe, in the Koʻolaupoko District of the island of Oʻahu, and is identified as tax map key (TMK) 4-5-032:001. The total land area of the property is 56.28 acres; however, the area proposed for housing and caring for the pets discussed in this document would be limited to approximately 3.5 acres.

The parcel is zoned as *P-1 Preservation/R-10 Residential* under the City and County of Honolulu Land Use Ordinance (LUO). Land zoned as P-1 is under the jurisdiction of the State of Hawaiʻi and is exempt from the land use regulations of the City and County of Honolulu LUO. Sec. 21-3.40-1 of the LUO determines that all uses, structures, and development standards within the P-1 land use designation shall be governed by appropriate state agencies. For this project, the Department of Land and Natural Resources would be the appropriate state agency to govern land-use and development decisions.

The property is also designated as *Conservation* by the State of Hawaiʻi Land Use Commission. Conservation Districts are administrated by the State Board of Land and Natural Resources, and uses within these districts are governed by rules promulgated by the State Department of Land and Natural Resources. Projects proposed within the Conservation District require approval by the Board of Land and Natural Resources. Approval is obtained through submission of a Conservation District Use Application and completion of an environmental assessment.

1.2 Purpose and Intent

The purpose of this document is to address the shelters and other improvements (such as fencing) that would be necessary to house and care for animals at the property. This research is also intended to help ensure that the project complies with state regulations regarding keeping domestic animals on Conservation District land.

The property owner intends to keep these animals as pets, strictly for the purposes of personal enjoyment and companionship. There would be no commercial use associated with keeping these animals.

1.3 Types and Numbers of Animals

This document addresses the needs related to housing and caring for up to 6 goats, 6 sheep, 12 ducks, and 24 chickens. In the event that any of the animals mate and produce offspring, the offspring would be kept on the property until they are old enough to be weaned, and then relocated. Homes would be found through networking and advertisements.

2.0 Shelters and Other Improvements

In order to meet the needs of each animal, a variety of shelters and other improvements would be required, including rest and storm shelters, areas for feeding and grazing, areas for exercise, and fencing and enclosures. Figure 1 provides configurations and dimensions for the proposed shelters and other improvements proposed for this project.

2.1 Shelters and Outdoor Spaces

Goats and Sheep

Shelter for the goats and sheep would be designed to provide shade relief and shelter from wind and rain. At minimum, the shelter would measure approximately 10 feet by 18 feet (180 square feet), providing 15 square feet of space per animal A 3.5 acre pasture would provide outdoor browsing, grazing, and exercise space for the goats and sheep. The goats and sheep would be permitted to range freely within their shelter and the enclosed pasture. Additional shade relief would be provided by trees and other large vegetation at the property.

Chickens

Shelter for the chickens would be provided by a coop and shaded run. The coop would accommodate up to 24 adult hens and would provide approximately four square feet of roosting space per hen (96 square feet total). The run would provide approximately 240 square feet of shaded outdoor space (10 square feet per hen) for the hens to exercise. This space would be separated from the pasture by a fence to prevent the goats and sheep from entering the run and coop area, yet would allow the chickens to have access to the pasture. The chickens would be permitted to range freely within their coop and run, within the space for the ducks, and within the 3.5 acre pasture.

Ducks

Shelter for the ducks would be provided by a duck house and shaded run. The duck house would accommodate up to 12 adult ducks and would provide approximately four square feet of space per duck (48 square feet total). The run would provide approximately 100 square feet of shaded outdoor space for the ducks to exercise. Additionally, the ducks would be provided with a pond that would have a surface area of approximately 100 square feet and would measure about four feet deep, providing 400 cubic feet of water in which the ducks could exercise and bathe. The duck house, run, and pond would be enclosed by a fence that would separate their space from the pasture. The ducks would be permitted to range freely within their spaces, the spaces for the chickens, and within the 3.5 acre pasture.

2.2 Pasture

The proposed pasture contains a variety of grasses, weeds, and shrubs—an ideal diet for multispecies grazing by small ruminants—and will encompass the combined Meadow and Bluff areas or approximately 3.5 acres of pasture. An acre of pasture is typically enough for two to three sheep or goats, depending on their size and age. It is estimated that a 3.5 acre pasture may be suitable for up to 12 goats or sheep, or a mixture of the two.

The pasture would be managed through a multispecies grazing system. Goats and sheep can share pasture efficiently because they tend to eat different plants or parts of plants. In multispecies pasture situations, goats tend to graze a wide range of grasses, legumes, and a variety of browse-plants, including brush, shrubs, trees, and woody vines. Sheep tend to graze grasses, clover, and forbs. Any additional dietary needs of the goats and sheep would be met by provision of feed.

Neither goats nor sheep will browse or graze in areas of the pasture that contain excessive animal waste. To keep the pasture in optimal browsing and grazing condition, manure from areas where waste accumulates would be periodically collected and composted, where it will break down and provide soil nutrients in the field.

2.3 Feed and Feed Storage

Feed would be provided to the goats and sheep as a dietary supplement as needed, and would be distributed to the goats and sheep within or adjacent to their shelter. Feed for the chickens and ducks would be provided daily at feeding locations adjacent to their respective shelters.

All feed kept on site would be stored within a storage shed and held in airtight containers to prevent pest infestation. Any excess feed not consumed by the pets would be collected daily and composted for use as fertilizer.

Although there is no residential development at the site, and one is not proposed, potable water is available at the property through a line that served a previous home. Fresh water will be provided from this source to the pets, at sites adjacent to each shelter.

2.4 Fencing

Fencing would be installed on the property to separate the pasture used by the goats and sheep from the remainder of the property, as well as to separate spaces for the ducks and chickens from the ruminants. The enclosure for the chickens and ducks would be contained within the pasture. This design would help keep predators out of the chicken and duck enclosures and allow the chickens and ducks to range freely throughout the pasture. Access to all enclosures will be controlled by gates that are designed to permit entry into the enclosures by foot or with a small work vehicle to facilitate regular cleaning and maintenance.

<u>Goats and Sheep</u>

The pasture for goats and sheep, consisting of approximately 3.5 acres, would be surrounded by fencing to contain the pets and to keep out wild pigs and feral dogs. The fencing would be

constructed of woven wire or a similar material that would contain the goats and sheep in the pasture. Woven wire fencing consists of horizontal lines of smooth wire held apart by vertical wiring, forming a grid-like pattern. This material would be held in place over metal posts firmly anchored in the ground.

Chickens and Ducks

The chickens and ducks will share an enclosed space, but each will have their own shelter and run. This shared space will be enclosed with fencing designed to allow the chickens and ducks access to the pasture without allowing the ruminants entry into the space intended for the chickens and ducks. This enclosure would contain the duck pond and prevent the sheep and goats from entering the area and fouling the pond. A small opening would allow the chickens and ducks to pass back and forth between their enclosure and the pasture.

2.5 Duck Pond Design and Maintenance

Duck Pond Ecology

The duck pond can be viewed as a miniature and delicately balanced ecosystem. The system would be composed principally of ducks, fish, aquatic plants, protists, bacteria, and insects. An overabundance of any of these organic materials can kill pond life; therefore, it would be prudent to keep the duck pond clean and ecologically balanced. Harsh chemicals would not be used because they would be dangerous to ducks and other pond life. The goal of duck pond maintenance is to set up a healthy ecosystem that would help to prevent the development of disease in ducks and fishes. Botulism is one typical result of a dirty poorly maintained pond.

Ducks

Ducks are at the top of the food chain in the pond ecosystem. They feed on aquatic plants, string algae, fish, and a supplement of commercially prepared duck feed provided by the owner. Their waste is a source of nourishment for algae and aquatic plants.

Algae

Duck waste is full of nutrients which will cause the growth and proliferation of algae and other protists. Algae are a group of simple autotrophic plants. They are photosynthetic and “simple” because they do not have the many distinct organs found in land plants. Algae are a food source for some fishes.

Fish

The introduction of suitable poeciliid fishes such as guppy, molly, and mosquitofish would eliminate the breeding of mosquitoes. These small fishes would easily multiply, but since they are a food source for the ducks, the ducks would help to keep their population in check. In addition to poeciliids, fish such as koi, tilapia and grass carp could be introduced to feed on and reduce the proliferation of algae.

Aquatic Plants

Higher wetland plants such as water lily or water hyacinth would constantly recycle nutrient-rich water to produce edible vegetation and oxygen. These plants would help balance nutrient levels in the duck pond and reduce algae growth. Water lilies and water hyacinth prevent algae proliferation by blocking excess sunlight to photosynthetic algae. Water lilies also help to oxygenate the pond and balance the pond's pH levels. Water lilies and water hyacinth can become too prolific and maintenance removal is required. Ducks will also contribute to control of growth since they eat aquatic plants. Aquatic and wetland plants that can be completely submerged in the water will remove excess minerals and decaying material from the pond. These plants would help to improve overall water quality in the duck pond.

Mechanical Maintenance

Since there is no natural circulation of water in the human-made duck pond, cleaning pond water with aquatic plants must be supplemented by a mechanical filtration/pump system. This system runs on the same general principles as a freshwater aquarium tank, but on a larger scale. Care would be taken to keep the filtration system clear so that it does not become clogged with pond waste. An underwater pre-filter or surface skimmer system (similar to swimming pools) would be employed to remove large debris such as feathers, leaves and twigs that could clog the pump. A clear indication of clogging is if the flow of water through the pump is significantly reduced. The pre-filter and filter apparatus would be checked frequently and hosed down every three to four weeks. Another mechanical device essential to pond maintenance is an aerator. The aerator would move water from the bottom of the pool to the top and bubbling action would both oxygenate the pond and degass the water to prevent odor. To further oxygenate the water submerged water jets would be installed by tapping into the pump line or having a dedicated pump for water jets. The submerged water jets would create water movement and break up animal waste so that it could be more easily filtered.

Manual Cleaning

The pool would be shallow enough to allow manual cleanout by maintenance personnel of any visible debris. Sludge composed of duck waste and other debris that has sunk to the bottom of the pond and has decomposed or has started to decompose needs to be dredged and removed periodically or at least once a year. This would be done with a sludge vacuum and pump. The sludge is nutrient rich and would be reused as fertilizer to nourish planting throughout the property.

3.0 Waste Management Plan

Two of the principal proposed uses of the property, horticulture (planting and landscaping) and the keeping of pets, are complementary activities that would be balanced by the process of composting. The intent of this symbiosis is to recycle and reduce as much of the waste matter produced on the property as possible. Since the number of animals is limited and the planting area large, most of the recycled pet waste is likely to be used to fertilize planting on the property.

Waste matter would include both plant waste and animal waste, including manure and soiled bedding (straw, sawdust, etc.) from the pet shelters. Plant waste would include landscape trimmings and the gathering of dead material from both planted and existing vegetation. Both types of waste matter would be naturally reduced to compost, a desirable form of waste which would be used to fertilize new planting throughout the property. Proper waste management will result in the use of manure nutrients to enhance the soil; protection of health and safety for the pets, as well as the public; and prevention of surface and ground water contamination.

3.1 Waste Management System Overview: Six Basic Functions

3.1.1 Production

"Production is the function of the amount and nature of agricultural waste generated by an agricultural enterprise" (University of Hawaii, 1998). Production of manure in the project is based on not more than: 24 chickens; 12 ducks; 6 goats; and 6 sheep.

Manure Characteristics and Volume

- **Poultry** (chickens and ducks): Poultry manure is very high in nitrogen and is one of the most nutrient rich manures. Poultry manure is very moist. Because of its high nitrogen content, it requires a large carbon amendment when used in compost. High nitrogen content and high pH may contribute to odor from ammonia. Poultry manure should be composted before it is used as fertilizer in gardens.
- **Goat and Sheep:** These small ungulates produce manures that are high in nutrients. Their manure is relatively dry compared to other animals such as horses, cattle and poultry. The manure is produced in pellet form, has less odor and attracts less flies than moister types of manure. A combination of goat or sheep manure and bedding can average approximately 10 pounds per day per animal (Bradley, 2008).

Table 1
Estimated Amount of Manure per Animal per Day

Animal	Animal Weight (lbs.)	Manure (lbs.)	Manure (cu.ft.)	Nitrogen Content	C:N Ratio
Poultry (chickens/ ducks)	4	0.21	0.0035	8.0%	6:1
Ungulates (goats/sheep)	100	4	0.062	2.7%	16:1

(Klickitat County, no date)

Based on the number of pets and the data in the table above, the approximate volume of waste generated by all pets per day would be:

- Poultry (chickens/ducks): 7.56 pounds or .126 cubic feet
- Ungulates (goats/sheep): 48 pounds or .744 cubic feet

It should be noted, however, that the amount of waste for an ungulate in the data above is based on a 100-pound animal. Since the owner would have dwarf goats and hair sheep, these pets would most likely weigh less than 100 pounds each and would, therefore, produce less manure than indicated. Also, since manure randomly deposited in the grazing areas would not be collected, the amount of manure for recycling or storage would be approximately half of the total indicated (Bradley, 2008).

Pasture Management

Pasture management has a direct bearing on production of manure. Rotating grazing areas is the preferred way to evenly distribute manure in pastures and prevent overgrazing. The Meadow would be subdivided into two areas. The goats and sheep would graze in one area until grass is left standing at about two to three inches. The ungulates would then be rotated to the second grazing area until the grass in the first grazing area grows back to about eight inches. In heavily trafficked areas of the pasture such as pet shelters, shady areas and feeding/watering areas, manure would tend to accumulate. This accumulation would be collected and composted.

Sheep and goats would not be allowed to graze in the pasture during heavy and prolonged rainy periods because soils may become saturated leading to soil compaction, erosion and manure run-off. At such times temporary pastures could be fenced in Kokokahi Valley or the Terrace. Temporary pastures could also be fenced in areas where grazing by goats and sheep would reduce the amount of vegetation and brush, thereby reducing fire hazard or aiding vegetation management objectives. The temporary pastures, to be used up to two weeks at a time, would be fenced with “T” posts and woven wire, using a smaller “T” post and lighter gauge wire than the permanent pasture fence.

3.1.2 Collection

Collection “refers to the initial capture and gathering of the waste from the point of origin or deposition to a collection point” (University of Hawaii, 1998). Since all the pets would be allowed to free-range throughout the Meadow and Bluff, manure would be deposited at random in these areas. Randomly deposited waste would remain in the grassed and vegetated areas and be allowed to decompose naturally as soil nutrients for the Meadow and Bluff. However, in areas where waste accumulates, such as near pet shelters, feeding/watering areas, and shady areas, it would be collected and composted before being reapplied as soil nutrients to the grazing and planting areas of the property.

Places on the property where manure would tend to accumulate are the pet shelters, feeding and watering areas and areas that provide shade under large trees. These areas will be visually inspected daily. On a weekly basis, manure in the pet shelters and elsewhere it accumulates will be manually removed and immediately placed in composters. Waste to be mixed in the

compost would include both manure and soiled bedding from the pet shelters. Bedding in the shelters serves the purpose of catching and partially absorbing pet manure and urine. Bedding materials such as straw, wood chips, sawdust, newspaper bedding and locally available materials such as coconut husks are carbonaceous and play an important role in the composting process. (See Section 3.2 Composting, below.)

3.1.3 Storage

"Storage is the temporary containment of the waste" (University of Hawaii, 1998). In the event that manure and soiled bedding cannot be immediately accommodated in composting bins, they will be stored in large plastic garbage containers with lids and fasteners located in the composting area. This would be temporary storage until the waste can be composted or arrangements made for utilization of excess waste off-site. According to the five-year site development plan, pets will be introduced to the property gradually. Not more than 24 chickens will be introduced in the first year; in the second year not more than six goats will be added; not more than 12 ducks will be introduced in the third year, and finally in the fourth year not more than six sheep will be added to the property.

With the addition of each pet increment, if the temporary storage containers are found to be inadequate, a larger and more permanent storage bin constructed of landscape timbers would be built in the composting area. (See Bin System, Section 3.2.2 below.)

3.1.4 Treatment

"Treatment is any function designed to reduce the pollution potential of the waste, including physical, biological and chemical treatment" (University of Hawaii, 1998). The owner is committed to organic methods of landscape and land maintenance and will make every effort to avoid use of harsh chemicals on the property. Therefore, chemical treatment of pet waste is not being considered. The chosen method of waste treatment for the project is composting.

<u>Definition of Composting</u>

"Composting is a controlled and managed aerobic ("with air") decomposition process for manure, bedding, and other organic materials (yard waste, food scraps, etc.) It produces a stable, nutrient-rich, humus-like material that can be used as soil amendment on fields and gardens" (Bradley, 2008).

<u>Advantages/Disadvantages of Composting</u>

Composting manure is an efficient waste management technique and would provide the following benefits:

- Composting would provide the owner and others with a free source of fertilizer.
- It would remove manure from areas of accumulation which would reduce flies by eliminating their breeding ground.
- The heat generated in the composting process kills parasite eggs and reduces the chance of parasite-reinfestation of pets.
- Composting reduces the chance of manure-contaminated runoff from the property contaminating surface and ground waters.

- By removing manure from areas of accumulation, composting reduces the amount of mud in shelters which can be harmful to the health of pets.
- Composting prevents the introduction of foreign weeds by sterilizing weed seeds found in the manure.
- Composting reduces the volume of solid waste. Sound waste management is waste reduction at its best.

(Washington Sate University Cooperative Extension, no date)

The only disadvantage of composting is the amount of labor required by the owner and maintenance workers to keep the system running. This disadvantage, however, is far outweighed by the many benefits of composting. See Section 3.2 below for a more detailed discussion of composting.

3.1.5 Transfer

"This refers to the movement and transportation of the waste throughout the [waste management] system. It includes the transfer of the waste from the collection point to the storage facility, to the treatment facility, and to the utilization site" (University of Hawaii, 1998).

Collection points where manure would tend to accumulate include pet shelters, feeding and watering areas, and shaded areas such as under large canopy trees. The storage and treatment facility (composting) would be located in the Meadow, close by manure collection points. Because of the adjacency of these elements transfer distance and time would be minimized. Much of the manure transfer from collection points to storage and composting units would be done by hand with a wheelbarrow, five-gallon buckets, and basic implements such as pitchforks and shovels. For tasks requiring more power, a Kubota low-impact utility vehicle would be available for use. The utility vehicle would also be used to transport finished compost to utilization sites in various parts of the property. Excess manure and finished compost would be transferred from the Meadow to the Bluff using the Kubota utility vehicle, and then transported to off-site utilization areas by pick-up truck.

3.1.6 Utilization

"Utilization includes recycling reusable waste products and reintroducing non-reusable waste products into the environment. Agricultural wastes may be used as a resource of energy, bedding, animal feed, mulch, organic matter, or plant nutrients" (University of Hawaii, 1998).

<u>Land Application</u>

In this type of utilization, untreated raw manure is spread uniformly over large fields as fertilizer. Since the project does not include planting of single crops over a large area, this method of utilization would not be applicable. The overall size of the property is large, but only a small part of it will be used for planting. Applying too much untreated manure or applying it improperly causes "leaching" of nutrients and bacteria into water.

<u>On-Site Application of Finished Compost</u>

The ideal situation is to recycle pet waste produced on-site and reapply the finished compost as fertilizer or mulch on the property where it was produced. This is the most environmentally

efficient use of the waste. Compost used as a soil amendment improves the condition of both plants and soil. Compost makes the soil more porous and enables the soil to hold more plant nutrients and moisture. The correct method to apply compost to a planting area or pasture is to sprinkle a thin layer (less than one inch per application) on the surface. It can also be used as a mulch to retain moisture and retard weeds.

Sharing Waste Resources with the Community

Although the intent is to recycle and utilize all of the pet waste on-site, due to the uncertainty of weather and the irregular demands of landscaping and planting, it may not be possible to utilize all the manure and compost produced on-site at all times. Therefore, opportunities for off-site utilization and sharing of resources with the community will be explored by the owner prior to the installation of pets on the property. Windward organizations, farmers and businesses who would like to share manure and compost resources will be sought. When there is excess of either untreated manure or finished compost, it would be donated to local farmers, botanical parks, community gardens, etc. Finished compost would also be donated to neighbors who need soil amendment.

Disposal in Landfills

Although it is common practice of some livestock and agricultural operations, disposal of untreated manure in municipal landfills would be avoided. Disposal in landfills would waste the nutrient value of manure, and hauling and disposal fees would add to the financial burdens of the owner. More importantly from an environmental standpoint, disposal of organic materials such as manure in landfills would lead to an increase in greenhouse gas emissions (Bradley, 2008).

3.2 Composting

A small area within the Meadow would be used to compost excess feed, pet waste, and other organic material associated with housing and caring for pets on the property. The composting and manure storage area would be situated close to the pet shelters for ease of transfer. The compost area would be maintained to prevent odor and infestation by pests. Proper maintenance, ventilation, turning, and application of “green” and “brown” plant materials to the compost would prevent odors from developing, and prevent insects and other pests from infesting the compost.

Green materials (nitrogen rich) would consist of uneaten supplemental animal feed (grain or hay), fresh vegetation, manure from the animals, and garden and yard trimmings. Brown materials (carbon rich) would consist of bedding, dry leaves, dead plant material, wood chips and sawdust, and other carbonaceous material. A good ratio of brown to green materials prevents insect infestation and odors. Adequate moisture and aeration enhances the composting process and speeds development of the compost.

3.2.1 The Composting Process

“Composting is a controlled and managed aerobic (“with air”) decomposition process for manure, bedding, and other organic materials such as yard waste” (Bradley, 2008). An efficient compost process will stabilize the breakdown and loss of valuable nutrients in the manure.

Stabilized nutrients would then be utilized for future plant growth. Composting requires the proper mixture of materials, oxygen, moisture, and temperature to create an environment suitable for microbial activity. These microbes digest and process the manure and bedding. If this process is properly maintained, temperatures in the compost pile will rise high enough to kill pathogens, weed seeds, residual hormones, antibiotics and pesticides. Manure and bedding which composed the original pile will be reduced by about 60 percent after the composting process is completed (Bradley, 2008).

C:N Ratio

All organic matter contains substantial amounts of carbon (C) combined with a smaller amounts of nitrogen (N). The carbon-to-nitrogen ratio (C:N ratio) indicates the balance of these two elements in an organism. In composting, the microorganisms that perform the breakdown of waste require the correct proportion of carbon for energy and nitrogen for protein production. Scientist have determined that to produce fertile sweet-smelling compost, a C:N ratio of 25-30:1 must be maintained in the compost mix. If the C:N ratio is too high, meaning that the compost mix contains too much carbon, the rate of decomposition will slow down. If the C:N ratio is too low, meaning that the mix has too much nitrogen, odor will increase in the pile (Planet Natural Garden Supply, no date).

The Compost "Recipe": Mixture of Materials

Most ingredients that are composted do not have the ideal C:N ratio of 25-30:1. Therefore, the compost pile must be mixed to create the desired "compost recipe." High C:N ratios can be lowered by adding green materials such as garden clippings and manure. Low C:N ratios can be raised by adding paper, dry leaves and other carbonaceous materials. Generally, for chicken, duck, goat and sheep manure a mixture of two parts bedding to one part manure is sufficient to initiate the composting process.

"The art of composting" is discovering the mix of materials that will provide the best environment for the compost process. Mixing materials of different sizes and textures helps to provide structurally stable and well drained compost. Diverse material also helps maintain the right C:N ratio and an efficient process" (Klickitat County, no date).

Maintaining the proper structure and moisture level of the compost pile will result in:

1. rapid stabilization of the naturally occurring chemical compounds in the manure; this will lessen the likelihood that compounds will escape into the environment with an adverse affect;
2. the manure and bedding material will produce a rich soil amendment; and,
3. the volume of waste material will be reduced to about one-third of its original mass. (Klickitat County, no date)

Aeration

The microorganisms that decompose organic matter in the composting process need oxygen in order to function. Thus, the key to successful composting is getting enough oxygen into the pile or mixture. This can be accomplished through "turning" the pile or by inserting pre-drilled PVC pipes that allow oxygen to reach the interior where composting takes place. Generally, the

more often the pile is turned the faster finished compost will be produced. Turning the pile will also allow the heat generated by the composting process to kill parasites and weed seeds (Bradley, 2008).

Moisture

Moisture is the second essential element needed for composting. A moisture content of 40 to 65 percent is recommended for the most efficient composting. Material added to the compost pile should be watered so that it is uniformly moist. The pile may also need to be watered each time it is turned (Bradley, 2008). For larger piles the same pre-drilled PVC pipes mentioned above to feed oxygen into the interior of a compost pile may also be used to add moisture.

Temperature

A compost pile, if properly maintained, will generate heat through microbial action in the decomposing compost materials. Under ideal conditions a pile should reach temperatures of 120 to 160 degrees Fahrenheit within two days. The temperature needs to be at least 131 degrees for 15 days in order to ensure the killing of pathogens, parasites and weed seeds (Bradley, 2008). A composting thermometer of two to three feet length would be used to penetrate the pile and measure the temperature in the interior of the pile.

Timing

Under optimal conditions, the compost can be ready as soon as 21 days. Normally it takes one to three months to complete the composting process. Compost is ready when it looks evenly textured and has the crumbly consistency of soil. Compost is "finished" when all of the nutrients in the pile are consumed by the microorganisms and bacterial activity declines, even when the pile is turned or aerated.

Record Keeping and CTAHR-CES Consultation

The owner will consult the local College of Tropical Agriculture and Human Resources (CTAHR) Cooperative Extension Service (CES) livestock agent for recommended compost mixtures for each type of pet manure. Records will be kept concerning the type and volume of materials used, the amount of turning, and amount of watering applied to the pile. This will help the owner to derive the best "composting recipe" for each type of manure. It should be noted that Ms. Geary received her Master Gardener Certification through CTAHR's extension service.

3.2.2 Methods/Equipment:

Pile

The basic method of composting in a larger agricultural operation is the "compost pile." This is a mixture of materials to be composted that is deposited directly on the ground without any containment. A tarp cover must be maintained on the compost pile to prevent it from becoming soggy from rainfall or becoming dried out from sun exposure. A secure tarp will also prevent nutrients from being washed out and causing surface and ground water contamination. Too much moisture would slow down the composting process and increase odors. Due to the large amount of rainfall on the property, and periodic inundation from extreme weather conditions, it was decided not to employ this method of composting.

Manufactured Compost Units

The owner has chosen to use manufactured compost units constructed of green or black polyethylene. These self-contained units consist of two rotating drums, an inner and an outer drum, which gradually move compost into a collection chamber. The outer drum is initially filled with green and brown waste matter and water in the correct proportion. To aerate the compost mix the drums are rotated three to five rotations twice a week. The outer drum and composting matter inside it acts as insulation for the inner drum making it warmer and speeding up the composting process. The capacity of each unit is approximately 100 gallons.

The owner will start with two to four compost units per type of pet and will add more as needed. For consistency of compost recipe, each compost unit will only be used for one type of pet waste. Food waste would be processed in a separate unit and not mixed with manure.

Bin System

With the addition of each pet increment, if the manufactured composting bins and temporary storage containers are found to be inadequate and need to be supplemented, a larger and more permanent storage bin system constructed of landscape timbers would be built in the composting area. The pad or flooring of the storage bin would be elevated slightly above the surrounding ground. The pad would be on hard-packed or compacted soil covered by an impermeable liner. Each bin would have walls on three sides to contain the waste and an opening on one side for access. When the storage bin is not being actively used, a tarp would be securely fastened over the bin to prevent water infiltration and access by pests. (University of Hawaii, 2000).

A three bin system would function well and would include one bin to temporarily store fresh manure and bedding, a second bin to build a compost pile where the actual composting process would take place, and a third bin to store finished compost until it can be utilized (Washington State University, no date).

3.2.3 The Finished Product

"Finished compost is a crumbly, earthy-smelling, dark material that looks like commercial potting-soil mixture" (University of Hawaii, 1998). Used as a soil amendment, finished compost can:

- improve soil structure, making the soil easier to cultivate and encouraging root development
- provide plant nutrients and enable their increased uptake by plants
- aid water absorption and retention by the soil, reducing erosion and run-off and thereby protecting surface waters from sedimentation
- help bind agricultural chemicals, keeping them out of waterways and protecting groundwater from contamination
- increase levels of beneficial soil organisms
  (University of Hawaii, 1998)

Salt concentrations can build up in finished compost, if not used immediately. To counteract the salt build up compost should be blended with soil, one part compost to two or three parts soil (Bradley, 2008).

3.3 Prevention of Water Contamination

One of the most serious potential impacts to the environment that may be caused by poor waste management is surface and ground water contamination. The property experiences approximately 60 inches of rainfall per year. Since the property is heavily vegetated most of the water either percolates into the ground or exits the property as runoff via sheet flow or via one of two intermittent storm water drainage beds that have formed in the V-gulches of the property's two main valleys.

Existing Conditions

Two existing site conditions would mitigate against water pollution:

- The two areas of the property that would contain manure, the Meadow and the Bluff, were leveled and graded by a previous owner. Thus the slopes in these areas are less than 40 percent and nearly flat throughout most of the two grazing areas. This would allow water to percolate into the ground water system, and reduce the amount of sheet flow that leaves the property.
- Surface water contamination is unlikely since there are no perennial streams, natural ponds, wells, storm drains nor any other surface bodies of water on the property.

The Proposed Project

The proposed project would contribute three mitigation measures against water pollution:

- The installation of two sets of terraced planter boxes and the increase of biomass on the property as guided by the master landscape plan would reduce runoff and create an environment conducive to rainwater percolating into the groundwater system, rather than exiting the property as sheet flow.
- The findings of this waste management research include timely removal of manure and bedding from areas of accumulation. This would tend to reduce the likelihood of water contamination through sheet flow. Additionally, pet shelters and storage/composting facilities would be elevated above grade to prevent inundation during extreme weather events
- The master landscape plan includes a buffer of screen planting along the property line on the northwestern end of the Meadow facing neighboring residential lots. During extreme weather events this screen planting would tend to filter out manure residue in the Meadow before the sheet flow exits the property.

Leaching

Fresh manure tends to lose its valuable nutrients into the air and water when the C:N ratio is out of balance or when the pile is exposed to uncontrolled amounts of rain water. Leaching nitrogen compounds can have a negative impact on nearby bodies of water and produce

nuisance odors. The preference for composted manure instead of fresh manure for fertilizer on the property would tend to reduce the chances of leaching.

Overgrazing

Overgrazing would result in damaged and eroded pastures which would lead to increased manure run-off and water contamination (Bradley, 2008). Periodic visual inspection of the grazing areas would help to prevent overgrazing.

Dead Pets

Dead pets are a type of waste that requires different handling. Decomposing animals may be a concentrated source of pollutants in the form of nutrients and microorganisms. They must be removed from the property as soon as possible and would be disposed of in a state-approved municipal landfill. Incineration is usually reserved for large animals such as horses and cattle. Burial on site may lead to water pollution (University of Hawaii, 2000). Dead animals over 70 pounds require 24-hour advance notice to the landfill. (Hawaiian Humane Society, 2011).

4.0 Predator and Pest Control

Small predators and pests may enter the property and might include rodents (rats and mice), mongooses, feral cats and dogs, and a variety of insects. Rats, mice, and mongooses may be attracted to the property by the chicken and duck eggs, and they may also target chickens and ducks. Feral and stray cats and dogs may also attack poultry; dogs may target the goats and sheep as well.

A well maintained fence constructed of a hard material, such as metal, would help deter larger animals such as feral dogs and pigs. The main perimeter fence around the pasture would serve as the primary defense against predators. A secondary inner fence enclosing the space for the chickens and ducks would serve as another line of defense.

Pest infestation would be controlled by using proper feed storage, provision of fresh water, and routine maintenance of the composting area. Feed would be kept in air-tight containers, and any excess feed would be composted. Pet waste would be managed as needed, to control flies and other insect pests and other vermin.

Rats

Rats, other pests and feral pigs are attracted to fatty food scraps such as meat, bones, milk, cheese, butter, sour cream, peanut butter, mayonnaise, etc. Since the subject property does not contain a residence, food scraps will not be added to compost piles containing manure, therefore rodents will not be attracted to them. Rats are also attracted to the eggs which chickens and ducks produce. If proliferation of rats becomes evident, a licensed pest control contractor would be retained to install and maintain bait stations for rodents.

Flies

Regular removal of manure and urine soaked bedding from the pet shelters would help to limit fly infestation. Removal of accumulated manure in any area would help to reduce fly infestation (Bradley, 2008).

Feral Pigs

Feral pigs have been seen on, and removed from, the property and periodically descend to neighboring properties from their larger range in the Ko`olau Mountains and Oneawa Hills. Pigs turn over large volumes of the soil's surface when rooting and foraging, which results in damage to crops and natural ecosystems. Feral pigs can also be effective predators – lambs, kids, and poultry have been known to become prey.

Though a rare occurrence, feral swine can transmit disease to humans who eat food products contaminated with feral pig feces, or to those who handle dead pigs (such as hunters when field dressing the carcass). Diseases associated with eating contaminated food include toxoplasmosis, tularemia, trichinellosis, swine influenza, salmonella, E. coli, and a variety of bacterial diseases that can cause sickness and, in some cases, death. Food collected from areas pigs have access to should be adequately washed to prevent consumption of contaminated food products.

Brucellosis is a disease associated with swine, and while largely eradicated from the swine industry, may persist in wild populations. This disease can be transmitted to people when blood or other body fluid from an infected animal comes into contact with a person's eyes, nose, mouth, or open wound. A specific strain of brucellosis can infect dogs, though the vast majority of dog infections do not result in human illness. The Center for Disease control does not consider pet owners at risk for infection, as it requires the owner to come into contact with bodily fluids (and is not transmitted in fecal matter or urine). Undercooked pork from an infected pig is another transmission vector to humans. Although brucellosis can be found worldwide, it is more common in countries that do not have good standardized and effective public health and domestic animal health programs. Hunters should take care to avoid direct contact with pig tissue or blood or other body fluids when handling carcasses.

In 2009 the owner's agent consulted DLNR regarding the increased sightings of feral pigs on the property. DLNR suggested that the Oahu Pig Hunters Association be contacted to come on the property to reduce the pig population. The hunters were allowed on the property for six months and during that time they took approximately 15 to 20 feral pigs. For the past 15 months there have been no signs of new feral pigs: nothing has been dug up, no fresh markings left at the base of trees, and no complaints have been received from neighbors. Should feral pigs again be sighted and show signs of proliferation, the Oahu Pig Hunters Association will be contacted.

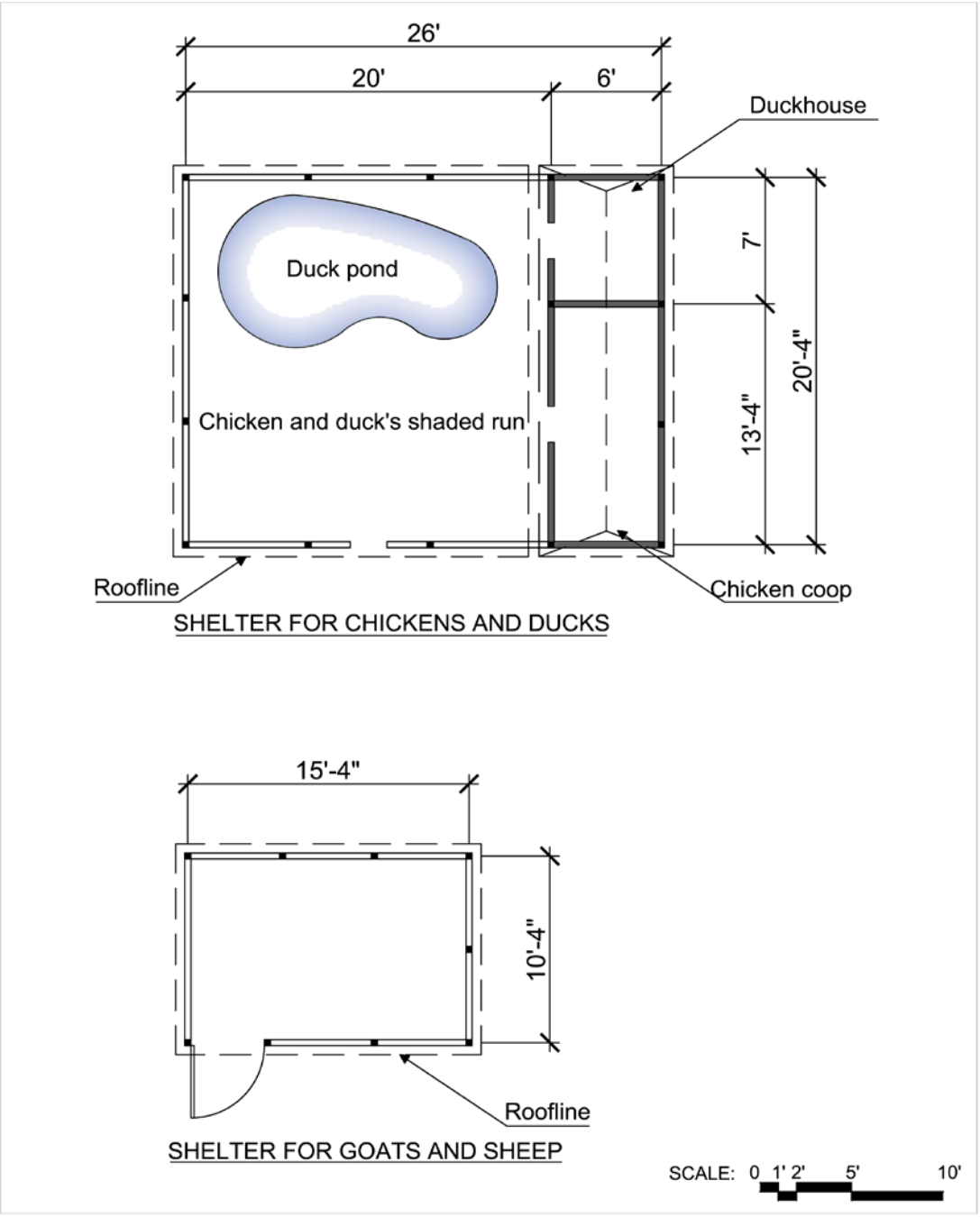


Figure 1. Spatial Configurations for Pet Shelters

5.0 References

Bradley, Athena Lee. Northeast Recycling Council, Inc. June 2008. *Manure Management for Small and Hobby Farms.* http://www.nerc.org/documents/manure_management/manure_management_handbook.pdf (accessed January 10, 2012).

Coffey, Linda. 2001. *Benefits of Multispecies Grazing.* Appropriate Technology Transfer for Rural Areas (ATTRA). http://attra.ncat.org/attra-pub/multispecies.html (accessed April 20, 2012).

Coyne, Kelly and Erik Knutzen. 2008. *The Urban Homestead: Your Guide to Self Sufficient Living in the Heart of the City.* Process Self Reliance Series. Process Media. Port Townsend, WA.

Hawaiian Humane Society. *Oahu Directory Animal Service Agencies*. 2011. http://www.hawaiianhumane.org/sites/default/files/2011_Animal_Services_Directory.pdf (accessed March 20, 2012).

Klickitat County, Washington, Solid Waste Department. No Date. *Composting Livestock Manure*. http://www.klickitatcounty.org/solidwaste/ContentROne.asp?fContentIdSelected=313956151&fCategoryIdSelected=965105457 (accessed January 22, 2012).

Lemus, Rocky and Kipp Brown. 2008. *Feeding Small Ruminants: Developing a Grazing System for Sheep and Goats.* Forage News. Mississippi State University Extension. http://msucares.com/crops/forages/newsletters/08/7.pdf (accessed April 20, 2012).

Luginbuhl, J.M., J.T. Green, J.P. Mueller, and M.H. Poore. 1998. *Forage Needs for Meat Goats and Sheep.* North Carolina State University, Department of Animal Sciences. http://www.cals.ncsu.edu/an_sci/extension/animal/meatgoat/MGFrgnds.htm (accessed April 20, 2012).

Planet Natural Garden Supply. No Date. *Composting 101.com: A Balancing Act (Carbon-to-Nitrogen Ratios)*. http://www.composting101.com/c-n-ratio.html (accessed March 1, 2012).

Revised Ordinances of Honolulu (ROH). *Chapter 7: Animals and Fowl.* http://www1.honolulu.gov/council/ocs/roh/7.pdf (accessed April 20, 2012).

Revised Ordinances of Honolulu (ROH). *Chapter 21: Land Use Ordinance.*

Shoenian, Susan. 2008. *Small Ruminant Information Sheet: Sheep and Goats as Pets.* University of Maryland Extension. http://www.sheepandgoat.com/articles/pets.html (accessed April 20, 2012).

University of Hawaii at Manoa, College of Tropical Agriculture & Human Resources, Cooperative Extension Service. July 1998. *Composted Animal Manures: Precautions and Processing*. Appendix D of *Guidelines for Livestock Waste Management*. http://hawaii.gov/health/environmental/water/wastewater/pdf/livestock_appendix.pdf (accessed January 26, 2012).

University of Hawaii at Manoa, College of Tropical Agriculture & Human Resources, Cooperative Extension Service. December 2000. *Minimizing Pollution Risk from Livestock Operations*. http://www2.ctahr.hawaii.edu/oc/freepubs/pdf/HF-7.pdf (accessed March 1, 2012).

University of Hawaii at Manoa (UHM). 2009. *Goat Pasture Management.* College of Tropical Agriculture and Human Resources. Cooperative Extension Services. http://www.extension.org/pages/19924/goat-pasture-management#Co-and_Multi-Species_Grazing (accessed April 20, 2012).

University of Hawaii-Manoa, Cooperative Extension Service, College of Tropical Agriculture and Human Resources. January 19, 2010. *Guidelines for Livestock Waste Management.* http://hawaii.gov/health/environmental/water/wastewater/pdf/livestock.pdf (accessed January 26, 2012).

United States Center for Disease Control (CDC). No date. Wild Hog Hunting (brochure). http://www.cdc.gov/nczved/divisions/dfbmd/diseases/brucellosis/brucellosis_and_hog hunters.pdf (accessed July 20, 2012).

United States Department of Agriculture (USDA) Animal and Plant Health Inspection Services (APHIS) Wildlife Services. No date. Feral Swine: Damage and Disease Threats (brochure). http://www.aphis.usda.gov/publications/wildlife_damage/content/printable_version/feral_swine.pdf (accessed July 20, 2012).

United States Department of Agriculture (USDA) Animal and Plant Health Inspection Services (APHIS) Wildlife Services. January 2008. *Environmental Assessment: Feral Swine Damage in Hawaii County*. http://www.aphis.usda.gov/regulations/pdfs/nepa/HI Feral Swine EA.pdf (accessed July 20, 2012).

Washington State University Cooperative Extension. No date. *Stewardship Gardening: Composting Livestock Manure*. http://gardening.wsu.edu/stewardship/compost/manure/manure1.htm (accessed February 7, 2012).

APPENDIX C

BIOLOGICAL RESOURCES ASSESSMENT

AECOS CONSULTANTS
45-309 AKIMALA PL
KANEʻOHE, HAWAIʻI 96744
(808) 236-1782

Biological Resources Update for the Geary Property (TMK: (1) 4-5-032: 001) in Kāneʻohe

This letter report describes an assessment of natural resources made for the Geary Parcel in Kāneʻohe, Oʻahu. This property (TMK: 4-5-032: 001) comprises 56.3 acres of gulch and secondary ridge areas along Kokokahi Ridge (a local name for Oneawa Hills) above Kāneʻohe Bay Drive and facing Kāneʻohe Bay. A reconnaissance survey of a portion the subject property (roughly around the 200-ft elevation) was conducted by myself on July 19, 2011. Although my survey concentrated on the area where activities are proposed (existing entrance roadway, house pad, and a pasture downslope), I did traverse well beyond these areas into several of the gulches and interfluves in order to better assess the extant flora on this hillside property.

In addition I reviewed an earlier report on botanical resources prepared by Sunshine Landscape Company, Inc. (Helber Hastert and Fee, 2006). That survey was conducted in February 2006 in order to 1) "Prepare a general description of the vegetation…" and 2) "Search for threatened and endangered species…" to be used for a Conservation District Use Application (CDUA) by a former owner of the subject parcel. The Sunshine Landscape Company report provides a general description of the larger plants present in the vicinity of the entrance road, house pad, and adjacent small pasture, which presumably were the limits of the survey area. Although a complete species list was not provided, the species mentioned in the text are those I would include as still very prevalent today, an exception being that Guinea grass (*Panicum maximum*) was likely misidentified as California grass as the dominant pasture grass present.

The report text included the following:

> In areas that are not adjacent to the roadway or the house pad, a mixture of Guava (*Psidium guajava*), Java Plum (*Syzygium cumini*) Koa hale [sic] (*Leucaena leucocephala*) Octopus tree (*Schefflera actinophylla*) Brazillian Pepper tree (*Schinus terebinthifolius*) Fern tree (*Filicium decipiens*) Lemon Scented Gum (*Eucalyptus citriodora*) Mango (*Mangifera indica*) and Avocado (*Persea americana*) were observed.

I confirm that this description remains accurate based on my recent observations on the tree flora present in the impact area. Other than a few native trees planted by the owner as ornamentals, I saw no native species of plants at all during my reconnaissance survey.

In September 2010, I conducted a botanical survey for a Hawaiian Electric Co. (HECO) repeater replacement along the ridgeline on TMK: 4-5-033: 001) very close to the upper elevation end of the Geary parcel. For this survey, all ferns, conifers, and flowering plants in a small area (under 1 ac) along the ridgeline were identified and relative abundances described. The dominant plants along the Oneawa Hills ridgeline (at the 750-ft elevation in the survey area) are Christmas berry, strawberry guava (*Psidium cattleianum*), fiddlewood (*Citharexylum caudatum*), and octopus tree. The dominant understory and herbaceous plants are grasses (mostly *Axonopus fissifolius*), Spanish clover (*Desmodium incanum*), *huehue haole* (*Passiflora suberosa*), and two ferns: *lauae* (*Phymatosorus grossus*) and sword fern (*Nephrolepis multiflor*a). A total of 39 species were identified, of which only three (8%) are indigenous plant species: *ʻilima* (*Sida fallax*), *huehue* (*Cocculus trilobus*), and *ʻuhaloa* (*Waltheria indica*). One Polynesian introduction (*noni* or *Morinda citrifolia*) was recorded. These "natives" are all very common on windward Oʻahu and no doubt would be found on the Geary property if all 56 acres were subjected to a botanical resources survey. None was observed in the more limited survey conducted at lower elevations on July 2011.

The nature of the vegetation in the areas surveyed—and taking into account other personal observations including the HECO repeater site as typical for the Oneawa Hills ridgeline—suggests that the property, and particularly the part of the property proposed for improvements, is devoid of botanical resources of interest or concern. In Oneawa Hills, the native component of the flora tends to increase inland (towards higher elevations; David and Guinther, 2009). No listed plants or animals are known from the vicinity of the Geary parcel.

Sincerely,

Eric Guinther, botanist
AECOS Consultants
Kāneʻohe Hawaiʻi

January 23, 2012

References Cited:

David, R. E., and E. B. Guinther. 2009. Biological surveys conducted for the proposed Hawai'i Pacific University, Hawai'i Loa Campus Expansion Project, Kāne'ohe, O'ahu. Prep. for Group 70 International, Inc. Rana Biological Consulting, Inc. 22 pp.

Guinther, E. B., and R. E. David. 2009. HECO Kalaheo Repeater Replacement Project, Kalaheo, Kāne'ohe, Island of Oahu (TMK: 4-5-033: 001). Prep. for Wilson Okamoto Corp. AECOS Consultants AC100: 11 pp.

Helber Hastert and Fee. 2006. Final Environmental Assessment. Cooper Residence at Kokokahi Place, Kāne'ohe, Ko'olaupoko District, City and County of Honolulu, O'ahu. Prep. for He Mea Waiwai Loa LLC by Helber Hastert and Fee, Planners, Honolulu.

APPENDIX D

MANAGEMENT PLAN

Management Plan for
Geary Property at Kokokahi Place Master Plan

Kāne`ohe, Island of O`ahu, Hawai`i
TMK: 4-5-032:001

October 2012

Prepared For
Sharon E. Geary

Prepared By
Wil Chee - Planning, Inc.
1018 Palm Drive
Honolulu, Hawai`i 96814

Table of Contents

List Of Figures

Attachment

1.0 Introduction

Sharon E. Geary, herein referred to as the property owner, proposes using portions of her property at 45-234A Kokokahi Place, Kāne`ohe, O`ahu, Hawai`i for landscaping and non-commercial animal husbandry, as allowed under the State of Hawaii's Conservation District. No residence is proposed. The owner's interest in horticulture and permaculture (a system of cultivation that creates a self-sustaining ecosystem) is reflected in the techniques documented in this Management Plan. The landowner holds a Master Gardener Certification from University of Hawaii's College of Tropical Agriculture and Human Resources extension service.

Upon acquisition of the property in 2008, the landowner sought approval from Department of Land and Natural Resources' Office of Conservation and Coastal Lands (OCCL) for initial management activities. Several approvals were given for various activities between 2008 and 2011. This Management Plan, accompanying Conservation District Use Application (CDUA) and associated Environmental Assessment seek to gain approval for land-uses related to landscaping and maintaining small flocks of domestic animals (goats, sheep, chickens and ducks) on the property. The property owner regards these domestic animals as pets. The Management Plan will be processed concurrently with the CDUA, and is consistent with the Hawai`i Administrative Rules Chapter 13-5, Exhibit 3.

1.1 Project Location and Land Use Information

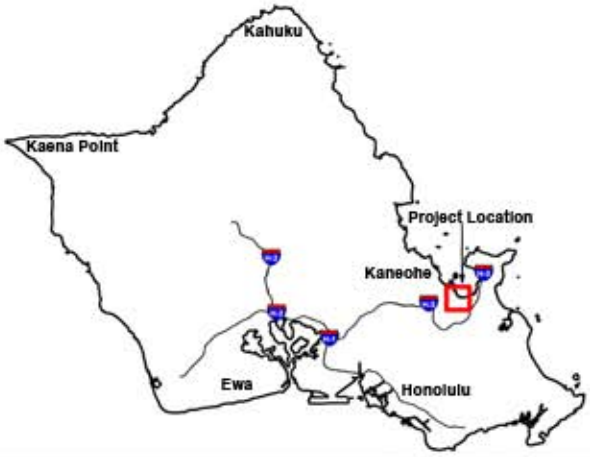
The project is located on the windward side of the Ko`olau mountain range on the slope of the Oneawa Hills in an area known as Kokokahi (Figure 1). At its closest point the property is approximately one-quarter mile from the shoreline at Kāne`ohe Bay, separated by Kāne`ohe Bay Drive, residential areas and other urban land uses. Public road access is from Kokokahi Place. The total parcel size is 56.28 acres, of which approximately 12 acres within the central portion of the property will be used for new planting and landscaping. Within the 12 acres, roughly 3.5 acres will be used for pasture and pet shelters.

1.2 Purpose and Intent

The landowner's vision for the property is to improve and maintain its natural condition by using plants to reduce erosion and to provide a variety of fruits and other edible plants for personal use. Plants to be introduced include native and non-native grasses, fruits, vegetables, flower, shrubs, and trees, all known to exist in Hawai`i and not considered noxious species. Erosion control and soil improvement are proposed as a means to support landscaping. Soil improvement in key areas (those to be planted or prone to erosion) would include use of jute or other erosion-control fabric, planting ground cover species appropriate to the site, and adding nutrients to support the plant. Nutrients would be provided in the form of compost that includes animal waste from the pets proposed for the property.

The purpose of this Management Plan is to document specific management techniques to be used by the landowner for landscaping and non-commercial animal husbandry care of pets.

Figure 1. Project Location Map



NORTH 0 335 670 1,340 Feet

2.0 Existing Conditions and Assessments

The property is predominantly covered with non-native vegetation typical of disturbed and formerly grazed lands. Approximately 3.5 acres were cleared by a previous owner, of which approximately 0.5 acre was leveled. Cleared areas include access from the public road along an unpaved 10-foot wide driveway which leads to the leveled 0.5 acre. The foundation of a former single family home destroyed by fire in 2001 and not rebuilt, remains on the site. This upper area accessible by the driveway is known as the "Bluff" (Figure 2).

Down gradient from the Bluff (to the north/northeast) lies an approximately 3-acre, previously cleared area known as the "Meadow". The remainder of the property is heavily vegetated with introduced species typical of disturbed lowland areas in Hawai`i. The terrain consists of steep slopes and ridges connected by small valleys; unimproved trails meander through areas of the property. There is no surface water on the property; intermittent storm waters run off through sheet flow or along drainage beds formed in the valley bottoms.

2.1 Facilities and Utilities

No buildings exist on the property. Remnants of the former single-family home destroyed by fire include a small concrete slab, concrete columns, and a concrete masonry wall. In 2011, the current owner received approval from OCCL to erect three small pre-fabricated cedar sheds to store equipment and maintenance materials. Two sheds have been erected on the Bluff, and one in the Meadow.

Electrical, water and cable services were established by a previous owner and remain available; the property is not connected to the municipal sewer system. (One of the sheds on the Bluff contains a composting toilet.) The owner has no plans to construct a dwelling or to reside on the property; however, utility services are needed for maintenance and security purposes. In March, 2011, OCCL approved replacement of old PVC water pipes with new material and installation of hose bibs (OCCL Correspondence: OA 11-42). Landscaping and erosion control along the driveway were also approved at that time.

2.2 Biological Resources

The plant species on the property are predominantly introduced (non-native) species. Flora identified in uncleared portions of the 56.28-acre site include species such as Christmas berry, Guava, Java plum, Haole koa, Mango, African tulip, Monkeypod and Wedelia. Previously cleared portions of the property (the Meadow and the Bluff) are predominantly covered with California grass. A row of money trees was planted on the northeastern property boundary toward Malulani Street by a previous owner. Interspersed at low-densities in the meadow are a single Silky Oak, three Monkeypods, a Banyan, and a small grove of Swamp mahogany (a species of eucalyptus).

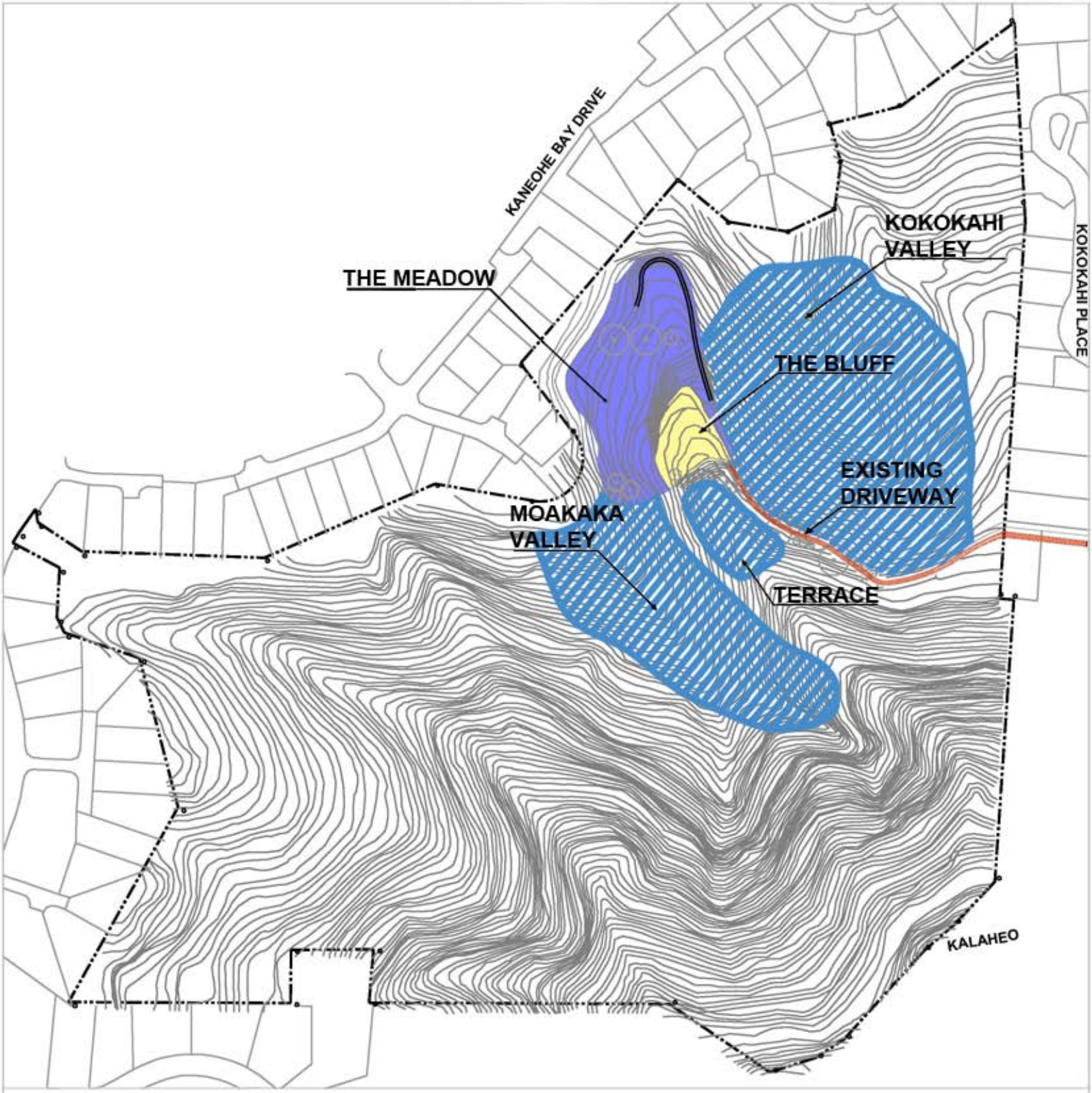


Figure 2. Overview of Proposed Project Locations on the Property

Faunal species that may be present on the property include feral mammals common throughout O`ahu, including domesticated dogs, domesticated cats, mongoose, rats, and mice. Feral pigs migrate throughout the Oneawa Hill area and adjacent Ko`olau Mountain Range, and have been observed on the property. Neighbors previously raised concern regarding whether livestock attract feral pigs to a site. The State wildlife biologist for the O`ahu District responded that feral pigs are not typically attracted to livestock, and that properties adjacent to large forest reserves on O`ahu often report feral pigs in their backyard as these large watersheds provide the habitat to support feral pigs. If there are signs of increased feral pig activity on the property, the owner will request removal by hunters from the O`ahu Pig Hunters Association.

The Division of Forestry and Wildlife (DOFAW) classifies the area as having a low concentration of threatened and endangered species. No rare, threatened or endangered species were observed during botanical surveys or are known to exist on the property. U.S. Fish and Wildlife Service (USFWS) pre-consultation identified the possible presence of the federally endangered Hawaiian Hoary bay (*Lasiurus cinereus semotus*). Though bats are uncommon on O`ahu and there are no reports of habitat use in the Kokokahi area, bats are highly mobile and their endangered status mandates protection. To address the USFWS pre-consultation recommendation, this Management Plan and the associated Environmental Assessment recommend avoidance of tree removal or pruning any trees taller than 15 feet during the bat's pupping season of June 1 through September 15.

2.3 Archaeological and Cultural Resources

In 2006, an archaeological field check and literature review was conducted by Cultural Surveys Hawai`i, Inc., to investigate the presence and condition of Ahukini Heiau, which was determined to have been located on or near the property. The findings of the 2006 archaeological field study determined that the Ahukini Heiau was demolished around 1974 for construction of a single family dwelling. The property is not currently used by native Hawaiians for cultural, historical or natural resources. The property is only utilized by the owner.

2.4 Geological Resources

Past soil erosion has left portions of the property bare. To mitigate the erosion hazard on the site, the landowner would treat exposed areas with natural, bio-degradable soil erosion matting, such as jute mesh or coconut fiber matting and then re-establish these areas with native groundcovers. There are no anticipated impacts to groundwater or surface water resources at the property, and implementing the proposed land use is anticipated to reduce or slow down storm water runoff exiting the property.

2.5 Natural Hazards

There would be no increase in risk or exposure to natural hazards from the proposed land use. None of the components of the proposed land use would contribute to flooding, earthquakes, or landslides, nor would they create an environmental condition that would increase the risk to human health, life, or property from these events. The property is elevated above the coastline and is not in a tsunami inundation area, nor is it in the vicinity of any active volcanoes.

3.0 Proposed Land Uses and Best Management Practices

The project proposes to improve areas of the property by planting a variety of native and non-native flora, implementing erosion control, and repairing and upgrading the existing utilities for management and security of the property. The project would also construct pasture fences and pet shelters; animal waste will be used on-site to support the property's landscaping and plantings. The project's system of interconnected uses, based on permaculture techniques, is intended to create a sustainable nutrient cycle for soil improvement.

Structures to support the proposed land use will be limited to repair and upgrade of utilities, construction of terraced planter boxes, and installation of fences and shelters (with accessory water and feed facilities) for the pets. Clearing, grading and grubbing of large sections of land are not anticipated for the proposed land use. Best Management Practices (BMP) will be followed using erosion control methods such as ground cover vegetation and various soil stabilization and protection materials. BMPs specific to various uses are included in the pertinent sections of the management plan; general BMPs for site management follow:

1. Repair bare portions of the site, which are subject to erosion and siltation. Introduce temporary ground covers until native Hawaiian ground covers can be grown to bind the soil. These erosion control methods will slow down the speed of surface runoff and allow rain water to soak into the ground.
2. Maintain existing drainage patterns over the property and periodically monitor drainage ways to ensure that they do not become overgrown and clogged with deadwood and debris.

3.1 Horticulture and Landscaping

Gardening and cultivation of plants on the property would be for personal enjoyment and use of the resultant products; no commercial use will be undertaken on the property. In total, the landscaping and planting components of the proposed land use would be disbursed over 12 acres of the 56.28 acre property; however, only a small fraction—less than one acre—of that would be disturbed.

Property landscaping and planting would include a variety of native and non-native grasses, fruits, vegetables, flowers, shrubs, and trees typical to the area. The owner proposes to plant a wide variety of species in small quantities and various combinations. Most of these will be planted along footpaths for ease of access.

A detailed plant list and a landscape master plan have been prepared for the property (Figure 3). The landscape plan is depicted in site plans and serves as a guide to what types of trees, shrubs, and other flora would be best suited to particular areas—it does not indicate where and how many trees would be planted on the property. The number of plants to be installed and where they would be installed would ultimately be determined by the property owner's ability to install the plants passively, with as little disturbance to the existing vegetation and soil as possible. A goal of landscaping is to increase the biomass of the property with plants that produce flowers, fruits, and scents without clearing or grubbing sections of the land.

The landscaping plan divides the property into three zones. The first zone contains the Bluff, the Meadow, the Terrace, and the driveway (Figure 3). The second zone is Kokokahi Valley and

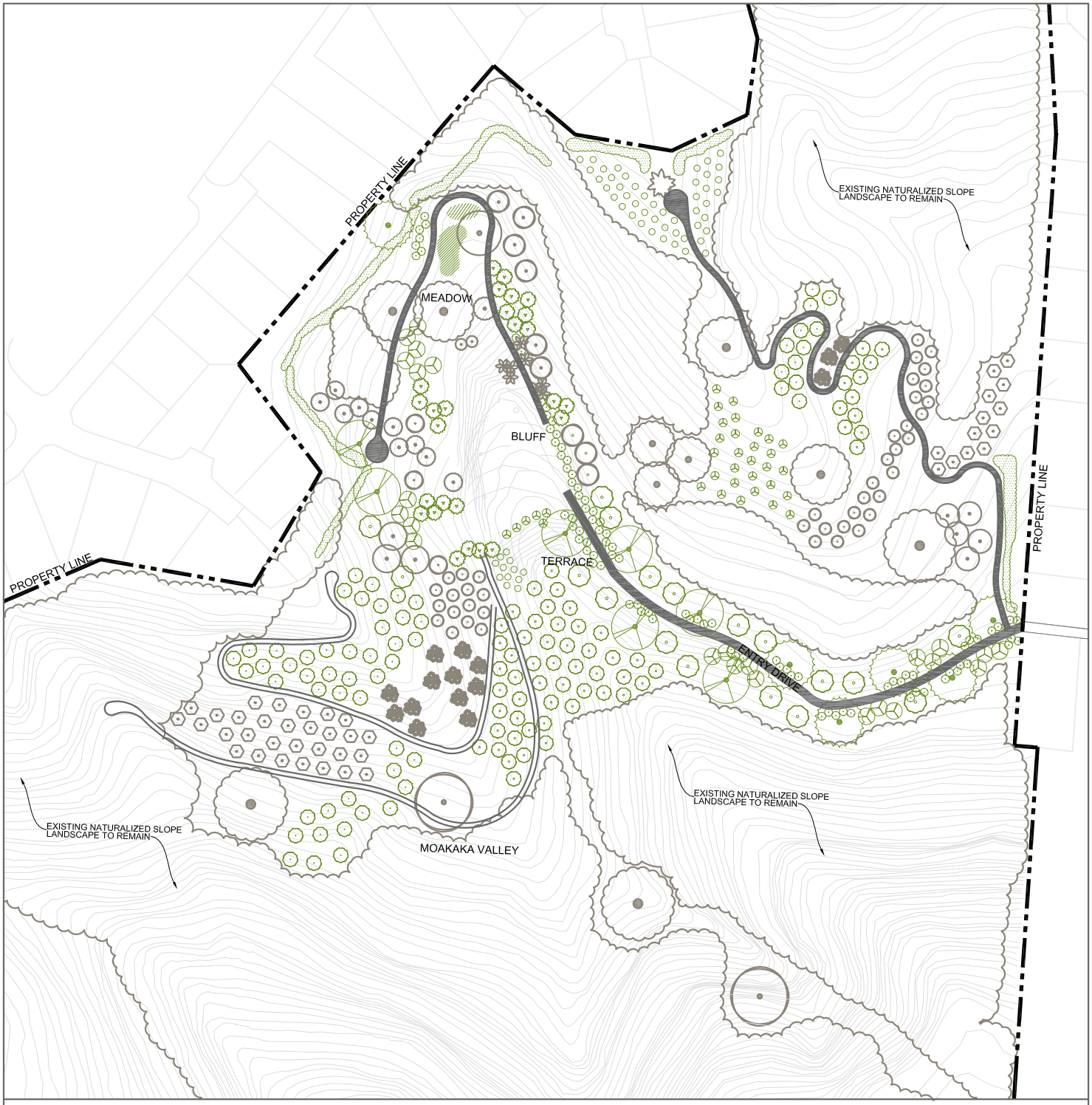


Figure 3. Landscape Master Plan

Prepared by Umemoto Cassandro Design Corporation

LEGEND

Service path (for small, low impact utility vehicle) and Entry Drive (for passenger vehicles)

Existing Footpath

Proposed Plantings, Trees & Shrubs

Existing Plantings, Trees & Shrubs

NOTE

Location and numbers of trees and shrubs depicted are intended to provide a guide for landscaping. Plant species will be selected from the approved plant materials list and specific planting sites will vary based on filed conditions at the time of planting.

NORTH

0' 30' 60' 120' 180'

Scale: 1"= 180'-0"

the third zone is Moakaka Valley. The first zone is the most developed and encompasses the previously cleared areas of the property with vehicular access and connection to utility systems. The remaining two zones—Kokokahi Valley to the east and Moakaka Valley to the west—retain the natural topography and are uncleared.

3.1.1 Planting

Zone 1 – Bluff, Meadow, Terrace and Driveway

The Bluff was formerly the site of a residence. With its central location, access to utilities, and direct access to a public street, the Bluff is the hub and the main staging area for the owner's current landscaping and grounds-maintenance activities. The Meadow—an area previously cleared by a former owner of approximately 3 acres—is located between the Bluff and neighboring residential properties to the northwest. The Terrace rises steeply to the south of the Bluff and is a part of the natural ridge that is currently uncleared.

The owner intends to build terraced planter boxes in two areas within Zone 1: (1) immediately south (upgradient) of the Bluff on the steep slopes toward the Terrace; and (2) northwest (downgradient) of the Bluff, on the steep slopes that lead to the Meadow (Figures 4 and 5). The terraced planter boxes at these locations would reduce runoff and erosion by adding flat, vegetated surfaces along the slopes, which would slow runoff and allow rainwater to collect and percolate into the ground (Figures 6 and 7). The size of the planter box to be installed on the Terrace is 1,500 square feet. The size of the planter box to be installed on the Bluff is 1,125 square feet. Combined they add 2,625 square feet of landscaping and terracing along two notably steep slopes within the project area.

Zones 2 and 3 – Kokokahi and Moakaka Valley

Kokokahi and Moakaka valleys are dominated by invasive species, such as Haole koa and Christmas berry. To the extent possible invasive species will be removed and replaced, particularly in areas where new planting will be located. Plants planned for these areas consist mostly of fruit and flowering trees, native species, and trees suitable for restoration. Each valley has individual characteristics that will drive the selection of tree species to be planted. Microclimates in different locations within each valley may offer specific conditions that favor certain species.

Past soil erosion has left portions of the two valleys bare. As a solution, the property owner would treat exposed areas with natural, bio-degradable soil erosion matting, such as jute mesh or coconut fiber matting and then re-establish these areas with native groundcovers such as Pa`uohi`iaka (*Jaqueamontia ovalifolia* subsp. *sandwicensis*), Naio papa (*Myoporum sandwicense*), `Ulei (*Osteomeles anthyllidifolia*) and `Akia (*Wikstroemia uva-ursi*).

In addition to being a tool for decreasing runoff and controlling erosion in these two areas, the planter boxes would be used for gardening. Access to the planter boxes will be by a rustic staircase designed to ease gardening, weeding, and maintenance of the areas (Figure 7).

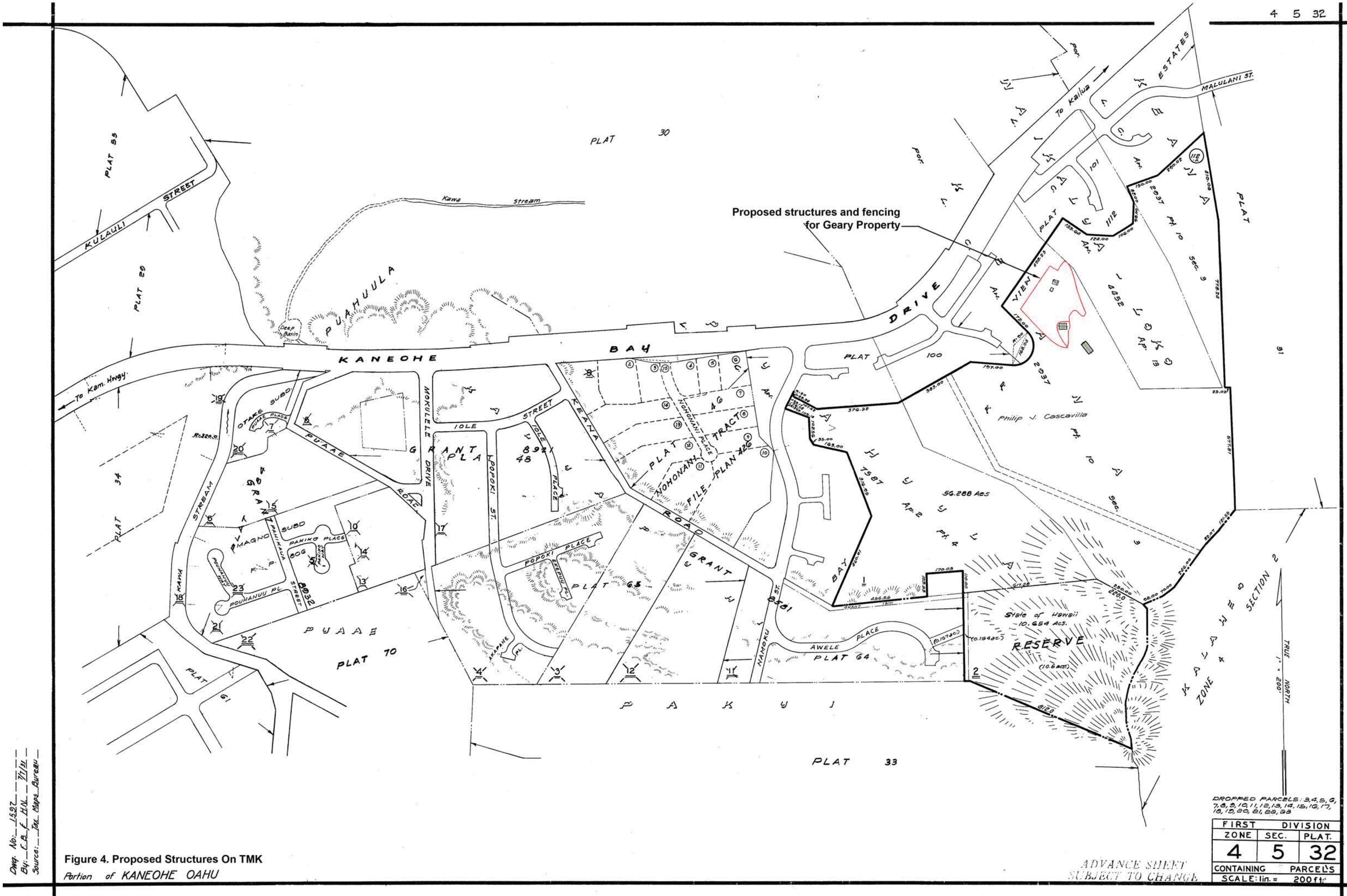


Figure 4. Proposed Structures On TMK

Backside Figure 4

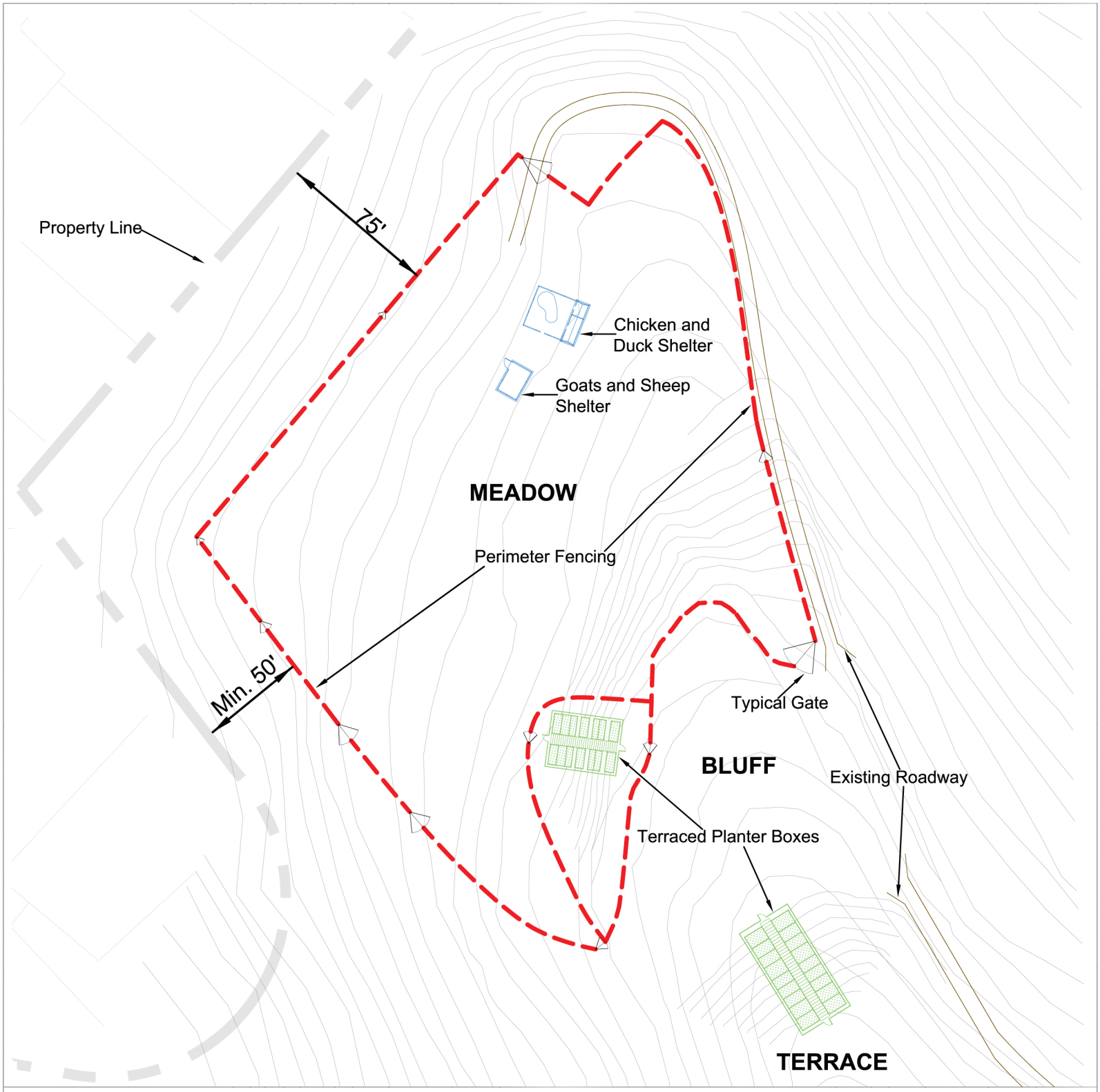
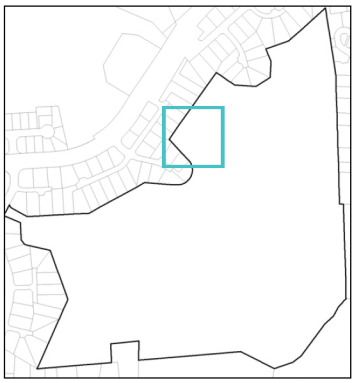


Figure 5. Proposed Structures



NORTH

0' 20' 50' 100'
10' 30'

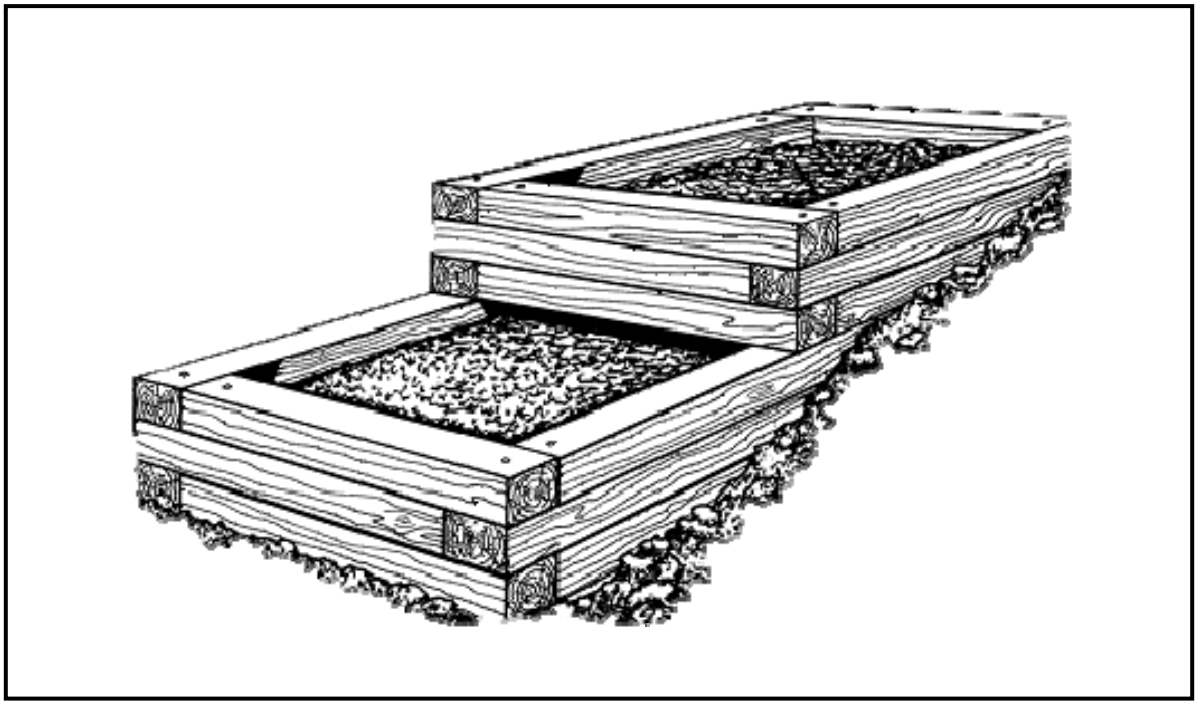


Figure 6. Schematic of Proposed Terraced Planter Boxes
(Image Source: Backyard Conservation, 1998)

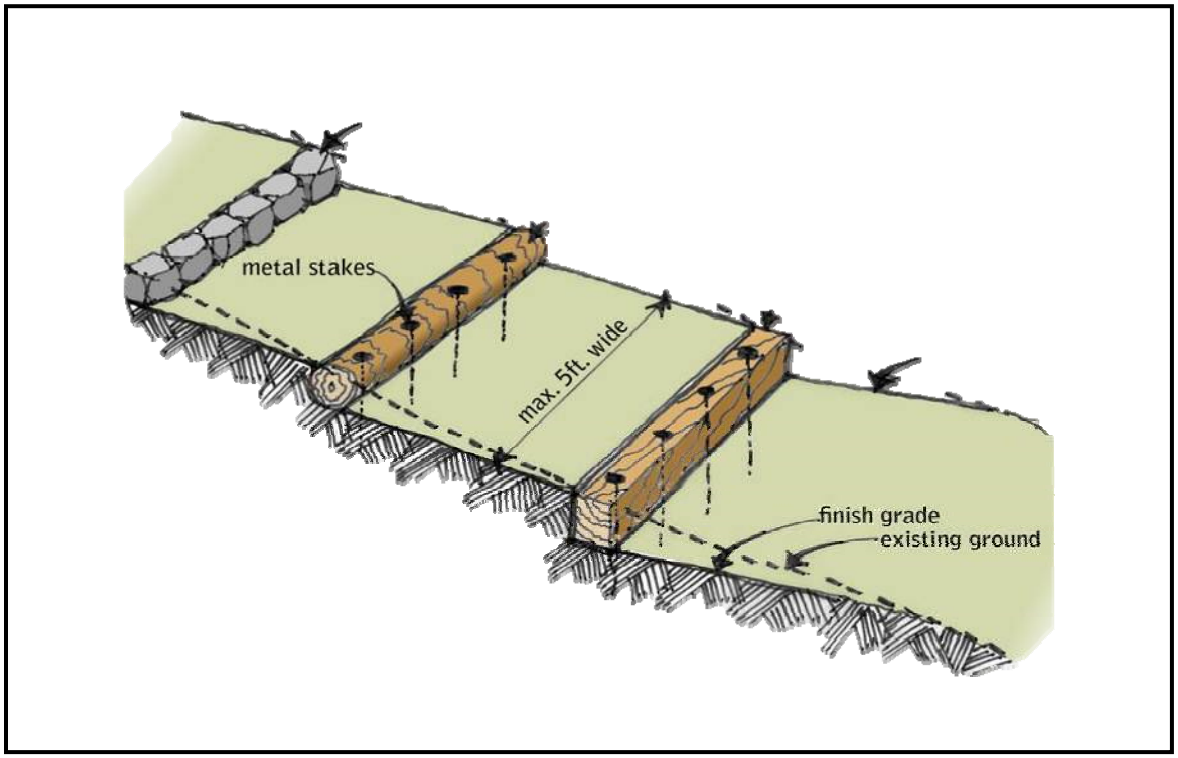


Figure 7. Schematic of Proposed Stairs

Best Management Practices

BMPs for planting include:

1. Plant trees and shrubs in pits just large enough for the root ball. Existing weedy groundcover would be kept in place, and other vegetation would be trimmed back only as much as would be required to enable planting. The planting pit methodology would maintain the existing foliage cover so that the existing roots and biomass continue to provide a natural vegetative soil erosion mat.
2. Soil amendments, pest control and fertilizers will be natural and bio-degradable in composition. From a conservation standpoint, application of materials such as pesticides or herbicides should only be applied when a situation has become so invasive the benefit of aggressive treatment outweighs the benefit of natural control.
3. Use mulching to temporarily and permanently stabilize cleared or freshly seeded areas. Mulching is the application of certain materials to prevent erosion by protecting the soil surface and fostering growth of planted seedlings. Types of mulches include organic materials such as bark or other wood fibers.
4. Remove and prevent the spread of invasive species as determined by the Hawaii Ecosystems at Risk (HEAR) Project.
5. Encourage the growth of native Hawaiian plant species to restore the natural habitat of the site.
6. An irrigation system utilizing hose bibs located in the Bluff area of the property is available in times of extreme drought to support the soil retaining plants.

3.1.2 Foot and Service Paths

A system of footpaths and service paths would facilitate and ease landscaping maintenance activities. These pathways currently exist on the property (Figure 3), though one service path requires select removal of non-native vegetation to allow passage by a low-impact utility vehicle. The path beds are compacted native soil.

Service paths would be used to haul pruned dead wood or potentially hazardous fire fuel, including diseased or damaged non-native trees, back upslope to prevent an accumulation of potential fire fuels near neighboring properties. Where practicable, this material will be chipped for use as mulch. Tree saplings, erosion control materials and soil amendments would also require transport along the pathways for planting in the Meadow and Kokokahi Valley areas.

The Kokokahi Valley service path is currently a foot path that will be widened to six feet to allow Ms. Geary's Kubota service vehicle to access the valley floor. In order to widen the path, a number of invasive plants and trees will be removed. The majority of plants along the path are Christmas berry and Java plum. There are also a number of dead trees that have fallen over the years that will be removed as well.

Once the path has been cleared, Ms. Geary will use the Kubota service vehicle to firm that path bed, and add basaltic pea gravel where needed. The service path is at a slight angle; no digging or grading is planned. Biodegradable matting will be used if erosion becomes an issue along the path. (See Figure 3 for location of service path.)

Best Management Practices

BMPs for service path maintenance include:

1. Use permeable materials, such as basaltic pea gravel, to firm the path bed if needed select areas.
2. Use bio-degradable matting alongside any pathway where erosion control is needed.

3.1.3 Perimeter Tree and Hazardous Fuels Management

One of the landowner's first management actions after purchasing the property was to obtain authorization from OCCL to remove dying or diseased trees along the property line that could pose a hazard to the more than 70 adjacent residences (OCCL Correspondence: OA 10-147). Additionally, the landowner obtained authorization to maintain the 10-foot wide driveway by weeding, pruning and removing new growth along the corridor (OCCL Correspondence: OA 11-5). The CDUA and this accompanying management plan propose additional work to further stabilize soils and minimize deadwood through supplemental plantings and erosion control in the core area of the property.

Kokokahi and Moakaka valleys contain heavy vegetation growth. Periodic pruning and removal of dead wood in these areas would reduce habitat for rodents and other pests, and decrease potential fuel in event of a fire. Interplanting of flowering and fruiting trees (described previously) will bring fresh growth to the area and stabilize soils. Materials removed would be chipped or shredded on property as practicable.

In keeping with the USFWS recommendation (Appendix A of the associated Environmental Assessment), removal or pruning of trees taller than 15 feet would be avoided during the native Hawaiian Hoary bat fledgling season of June 1 through September 15. Though bats are uncommon on O`ahu and there are no reports of habitat use in the Kokokahi area, bats are highly mobile and their endangered status mandates protection.

Best Management Practices

BMPs for tree and hazardous fuels management include:

1. Remove dead trees and plant material before they become fire hazards, particularly near neighboring residences.
2. Periodically prune the overgrowth in the tree canopy and underbrush, to minimize fuel for possible wildfires. This type of fuel removal is recommended as part of regular on-going site maintenance.

3.2 Non-Commercial Animal Husbandry

The small flocks of domestic animals—the owner's pets— would be introduced over a 5-year period, and would consist of up to 24 chickens (no roosters), up to 12 ducks (females only), and up to 6 goats and up to 6 sheep. The animals will not be purposefully bred nor used for commercial purposes. Any offspring produced would be kept on the property until weaned, then relocated. Homes would be found through networking and advertisements. Eggs will be collected for personal consumption and manure will be utilized in compost.

3.2.1 Pasture

These animals are in keeping with the rural character of the site. They will be pastured in a portion of the property approximately 3 acres in size. The pasture's perimeter fenceline will be a minimum of 50 feet from the nearest neighbor; plants such as native hibiscus and the Polynesian introduced sugarcane would be used to screen the fence where needed (Figure 5). Fencing would consist of metal "T" posts pounded into the ground with woven wire stretched between and secured to posts. Posts at corner locations and at gate openings will be appropriately braced, and wire secured to the ground to prevent gaps due to uneven terrain. Fencing design will not only contain the desired domestic animals, but will also serve to exclude predation by feral pigs and dogs.

The proposed pasture contains a variety of grasses, weeds, and shrubs—an ideal diet for multispecies grazing by small ruminants. The pasture would be managed through a multispecies grazing system. Goats and sheep can share pasture efficiently because they tend to eat different plants or parts of plants. The Meadow would be subdivided into two areas to allow rotation of grazing areas, thus preventing overgrazing. Goats and sheep would graze in one area until grass is left standing at about two to three inches. The ungulates would then be rotated to the second grazing area until the grass in the first grazing area grows back to about eight inches. Additional dietary needs of the goats and sheep would be met by supplemental feed.

Occasionally the goats will be moved to temporary pasture areas as needed to graze and remove vegetation. Goats can help reduce fuel loads and thereby reduce fire risk. The temporary pastures, to be used up to 2 weeks at a time, would be fenced with "T" posts and woven wire, though using a smaller "T" post and lighter gauge wire than the permanent pasture fence.

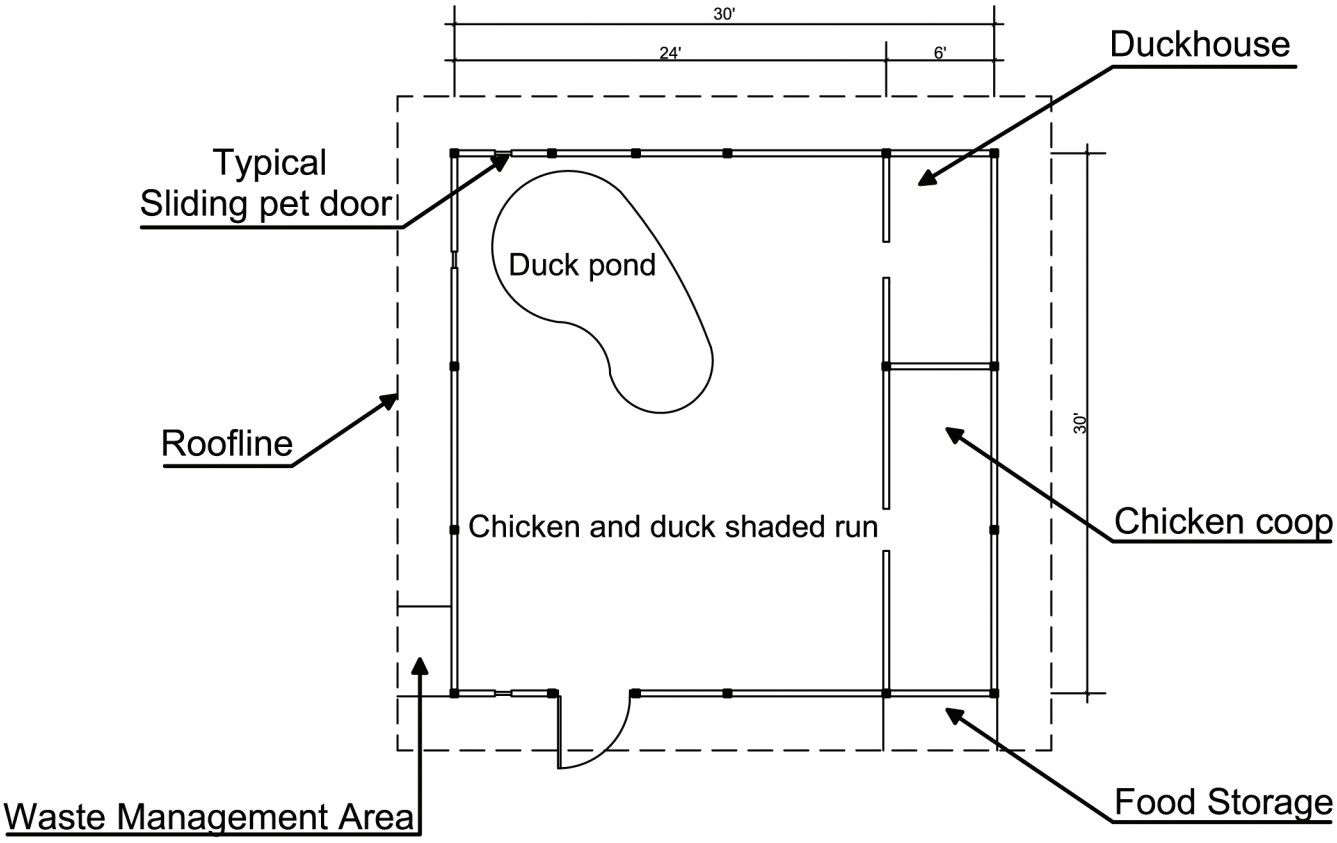
Best Management Practices

BMPs for pasture include:

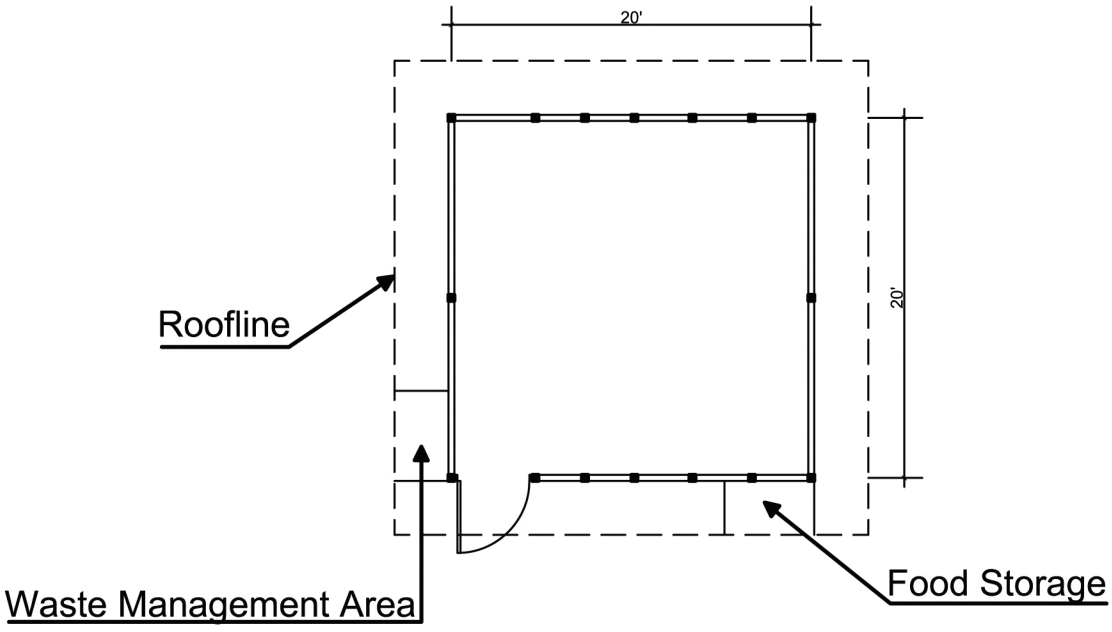
1. Prohibit goat and sheep grazing in the Meadow during periods of prolonged and heavy rain, as saturated soils can lead to soil compaction, erosion and manure run-off.
2. Periodically visually inspect grazing areas to prevent overgrazing. Overgrazing can result in damaged and eroded pastures, which could lead to increased manure run-off and water contamination.
3. Should feral pig activity increase, the O`ahu Pig Hunters Association will be contacted for removal.

3.2.2 Shelters

Small pet shelters will be constructed to provide shade, protection from wind and rain, and feeding and watering facilities. Shelters will be fenced separately and located within the pasture fence proposed for the Meadow. The goat and sheep will share a simple roofed shelter approximately 20' x 20', and will have access to the pasture (Figures 8, 9 and 10). The chickens and ducks will share a shaded run adjacent to a chicken coop and duck house. The combined poultry facility will be approximately 36' x 36' (Figures 8, 9, and 11).



SHELTER FOR CHICKENS AND DUCKS

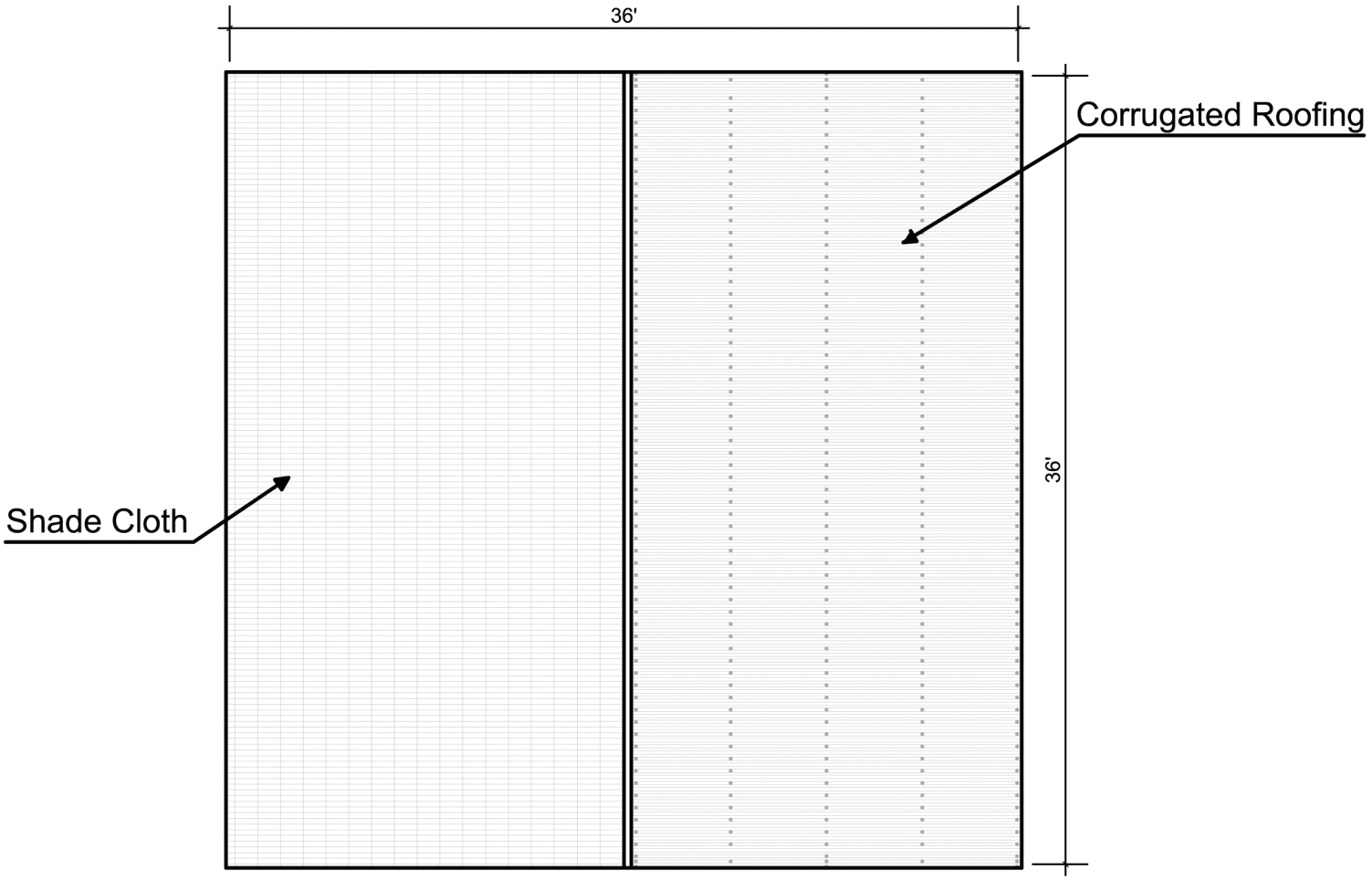


SHELTER FOR GOATS AND SHEEP

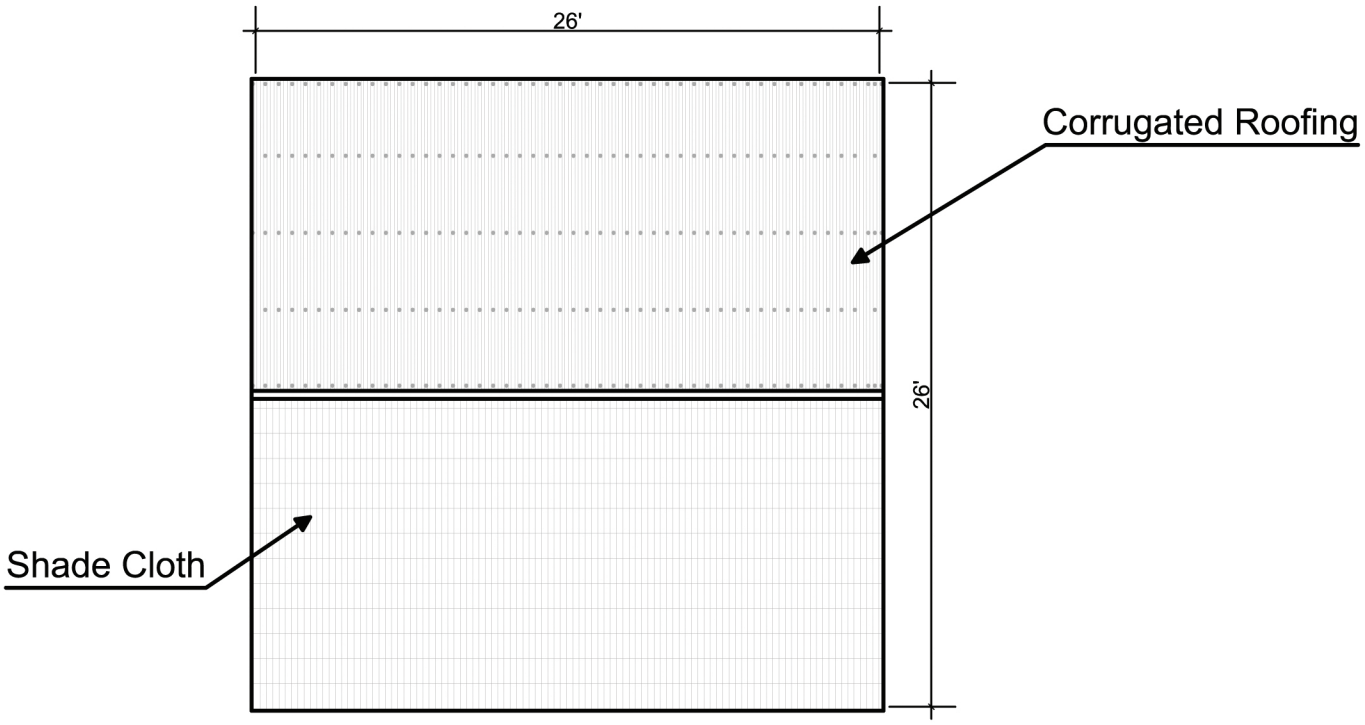
Figure 8. Animal Shelter Plans

NORTH

SCALE: 0 1' 2' 5' 10'



SHELTER FOR CHICKENS AND DUCKS ROOF PLAN

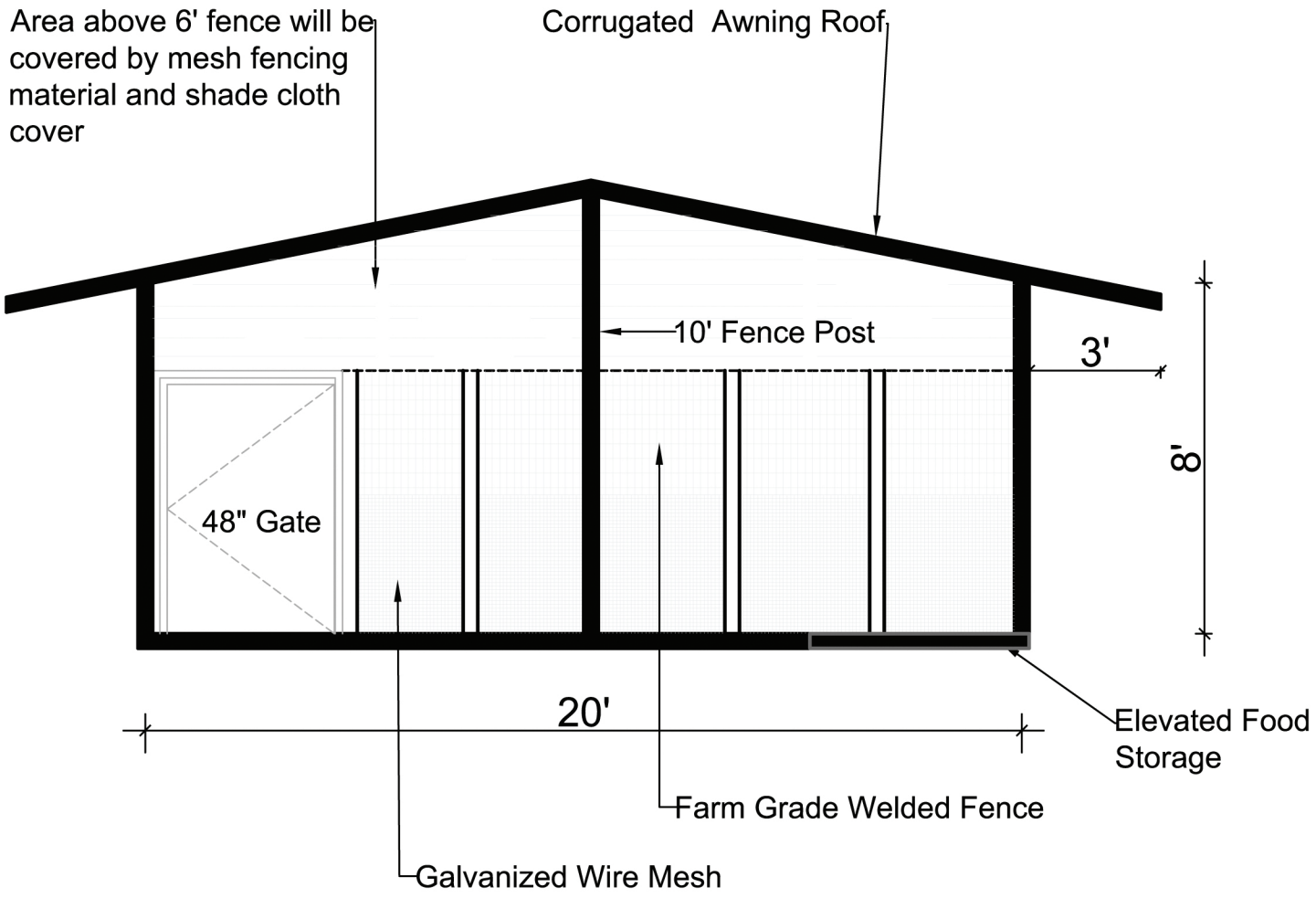


SHELTER FOR GOATS AND SHEEP ROOF PLAN

Figure 9. Animal Shelter Roof Plans

NORTH

SCALE: 0 1' 2' 5' 10'

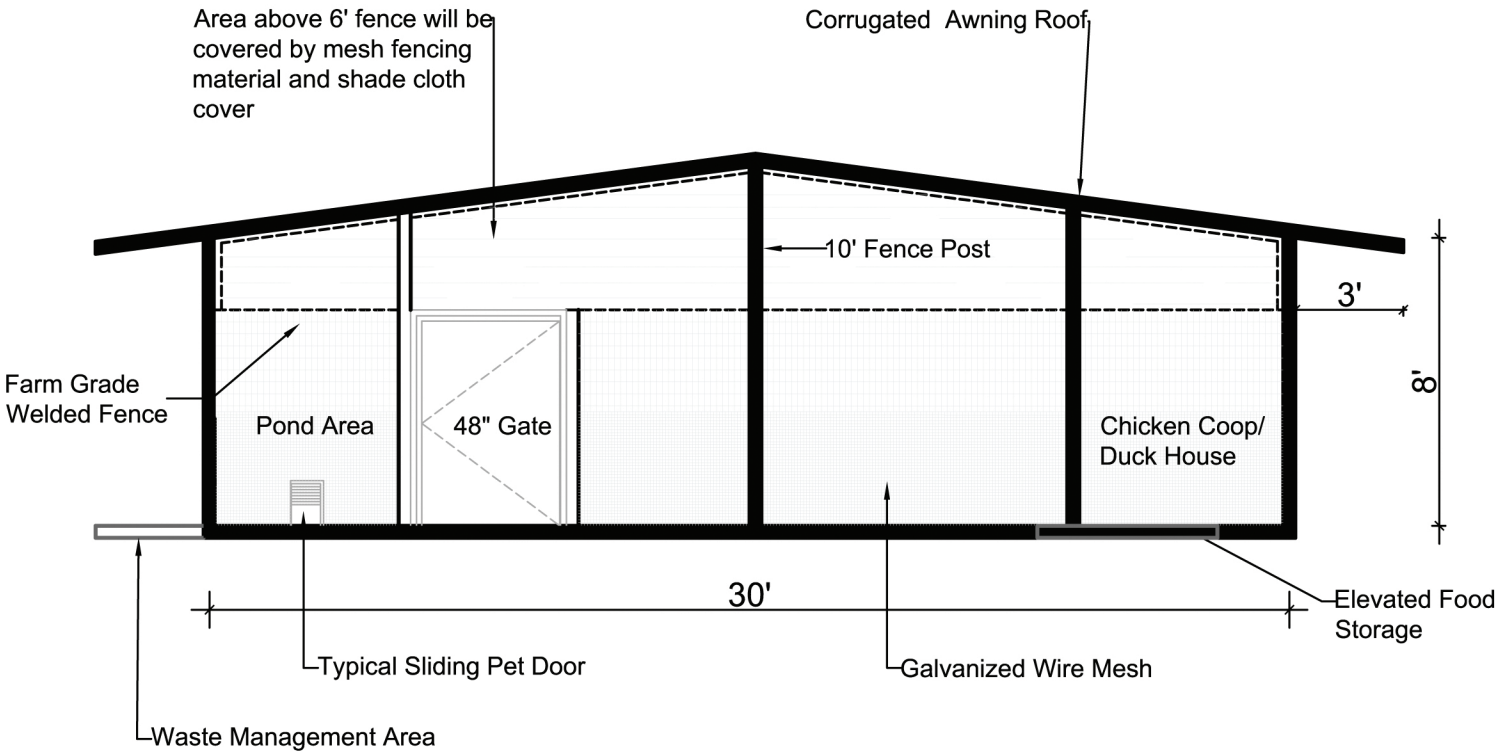


GOATS AND SHEEP SHELTER

Figure 10. Goats and Sheep Shelter Section

NORTH

SCALE: 0 1' 2' 5' 10'



CHICKENS AND DUCKS SHELTER

Figure 11. Chickens And Ducks Shelter Section

NORTH

SCALE: 0 1' 2' 5' 10'

A duck pond will be constructed in the area of the shaded run and will be fenced to prevent the goats and sheep from using the pond. The chickens and ducks will be able to access the full pasture space. The shelters will be located in the central portion of the Meadow more than 150' feet from the nearest neighbor (Figure 5).

The duck pond will be of irregular, curvilinear shape and roughly 8' x 12' in size. Pond depth would vary, sloping to a maximum of 4' deep (Figure 12). This would require excavation of approximately 10 cubic yards of soil. The surface area of the pond would be approximately 100 square feet and its overall volume 2,500 gallons. The duck pond will be established to become a miniature and delicately balanced ecosystem, composed principally of ducks, fish, aquatic plants, protists, bacteria, and insects. A mechanical filtration/pump system will supplement the natural water cleansing of aquatic plants, and an aerator would help oxygenate the pond to prevent odor. The use of a mechanical filtration/pump system and aerator, plus the introduction of suitable poeciliid fishes such as guppy, molly, and mosquitofish, would eliminate potential breeding habitat for mosquitoes in the pond.

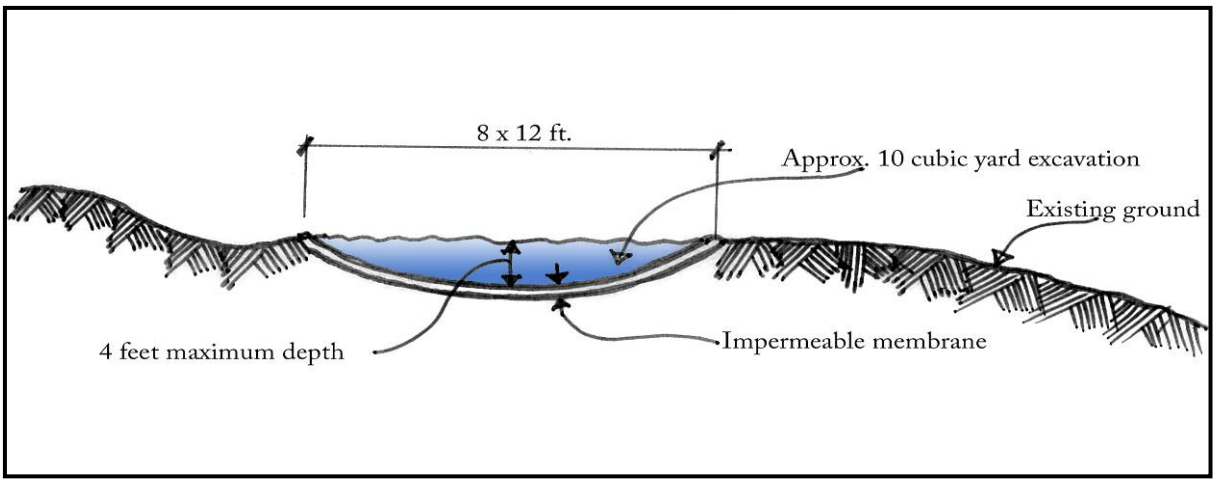


Figure 12. Duck Pond Section

Best Management Practices

BMPs for animal care include:

1. Keep pets clean, well fed and watered to prevent illness and the spread of disease.
2. Store all feed within a storage shed and hold in airtight, sealable containers to prevent pest infestation.
3. Collect any excess feed not consumed by the animals daily and compost for use as pasture fertilizer.
4. On a daily basis, visually inspect manure accumulation within the pet shelters, feeding and watering areas, and shaded areas under large trees; remove as needed.

5. On a weekly basis, manually remove accumulated manure and urine soaked bedding from the pet shelters and immediately place in composters or storage bins. Regular removal will minimize fly infestation.
6. Secure pet shelters and feed storage bins at night to prevent attraction to rodents and pigs. Use licensed pest control contractor to establish and maintain bait stations for rats if evidence warrants. Request pig removal by O`ahu Pig Hunters Association if activity is evident.
7. Remove dead pets from the property immediately and dispose in a state-approved municipal landfill.
8. Keep the pond filtration system clear so that it does not become clogged with pond waste.
9. Use an underwater pre-filter or surface skimmer system to remove large debris such as feathers, leaves and twigs that could clog the pump.
10. Check pre-filter and filter apparatus frequently and hose down every three to four weeks.
11. Dredge and periodically remove (at least once a year) the sludge at the bottom of the pond.

3.3 Animal Waste Management and Composting

Goat and sheep produce manure high in nutrients. Their manure is relatively dry compared to other animals such as horses, cattle and poultry. The manure is produced in pellet form, has less odor and attracts less flies than moister types of manure. Rotating grazing area is the preferred way to evenly distribute manure in pastures and prevent overgrazing (see 3.2.1).

Poultry (chicken and ducks) manure is very high in nitrogen and is one of the most nutrient-rich manures. Poultry manure is very moist. Because of its high nitrogen content, it requires a large carbon amendment when used in compost. High nitrogen content and high pH may contribute to odor from ammonia. Poultry manure should be composted before it is used as fertilizer in gardens.

A small area in the vicinity of the pet shelters would be used to compost animal waste and other organic material associated with housing and caring for animals on the property (e.g., soiled bedding), as well as plant material from pruning and landscaping activities. Manufactured composting units designed to contain odors will be used to produce nutrient-rich compost. Each unit will have a capacity of approximately 100 gallons. The owner will start with two to four composting units per type of animal and will add more as needed. Large plastic garbage containers with lids and fasteners will be provided to temporarily store manure and other material that cannot be immediately accommodated in the composters or until arrangements can be made for off-site utilization. If the temporary storage containers are found to be inadequate with the addition of each animal increment, a larger and more permanent storage bin constructed of landscape timbers would be built in the composting area.

Best Management Practices

BMPs for composting and animal waste management include:

1. Leave goat and sheep pellets (i.e., manure) randomly deposited in the pasture to decompose and naturally fertilize the Meadow.
2. Collect manure from chicken coop and duckhouse, to the extent practicable, and add to the composting bins.
3. Reuse nutrient-rich sludge from the duck pond on-site as fertilizer to nourish planting throughout the property.
4. Place excess manure that cannot be immediately composted into sealable storage bins, or transfer off-site for utilization elsewhere. Excess manure will not be disposed in landfills.
5. Regularly ventilate, turn, water, and apply "green" and "brown" plant materials to the compost to prevent odors from developing and minimize attraction of flies. The composting units should be turned 3 to 5 rotations, twice a week.
6. Use a compost thermometer to monitor interior temperatures of the compost unit. Temperatures should reach at least 131 degrees for 15 days in order to ensure the killing of pathogens, parasites and weed seeds.
7. Each compost unit will only be used for one type of animal waste. Separation of waste facilitates developing a consistent "compost recipe".
8. Keep records concerning the type and volume of materials used, the amount of turning, and amount of watering applied to the composting unit. Record keeping will assist the owner with deriving the best "composting recipe" for each type of manure.
9. Practice efficient waste management and the principles of permaculture, with the goal of incorporating the nutrients from manure into compost and providing nutrients for the soil.

4.0 Project Schedule

The property owner plans to implement the proposed land use over a five-year period, which would start after the CDUP is approved and all conditions have been met. The following schedule is a best estimate of the time it would take the property owner to actualize her vision for the property.

Year 1

Perimeter fencing would be installed in the Meadow to enclose the grazing and exercise area for the pets. Buffer landscaping would be planted along the fence bordering the neighbors. The shelter for the chickens would be built and a small flock of up to 24 chickens would be introduced. Landscaping would be installed along the edges of the driveway, the Bluff and the Meadow; the service path into Kokokahi Valley would be cleared of non-native vegetation to allow access by the low-impact utility vehicle. Terraced planters would be built between the Bluff and the Terrace, and a rustic stairway would be built adjacent to the planters to provide access to the planter boxes. Final planning and design efforts for the duck pond would also be initiated.

Year 2

The shelter for the ruminants would be built and a small herd of up to 6 goats would be introduced. Planting would continue in the Meadow, Bluff, driveway, and in Kokokahi Valley. Construction of the terraced planters between the Meadow and the Bluff would begin, and a rustic stairway would be built adjacent to the planters to provide access to the planter boxes. Utility upgrades and repairs would be planned, and the duck pond would be constructed.

Year 3

A small flock of up to 12 ducks would be introduced on the property. Planting would be 50 percent complete on the Meadow, Bluff, and driveway. The footpath into Moakaka Valley would be cleared as needed to allow access for planting to begin in this area. Construction of terraced planters between the Meadow and the Bluff would be completed. Permits for utility repairs and upgrades would be secured.

Year 4

Up to 6 sheep would be introduced on the property. Planting in Kokokahi Valley would be 50 percent complete, and utilities would be repaired and upgraded.

Year 5

Planting in Moakaka Valley would be 50 percent complete, and all pets would have been introduced to the property.

Years 6 – ongoing

Plantings and removal of dead wood would continue in core areas (Bluff, Meadow, along driveway, Moakaka and Kokokahi valleys). Management of pets and maintenance of the property will continue as documented in this Management Plan.

5.0 Annual Reporting

An annual report will be provided to the Department of Land and Natural Resources including the status of compliance with Conservation District Use Permit conditions, implementation of land uses, and utilization of BMPs as documented in this Management Plan.

The first report will be submitted one year after receiving approval of the CDUA, and will consist of four sections. The first section will list the goals established in the Management Plan Project Schedule for the year the annual report covers. Each item (project or activity) will be evaluated and briefly summarized. This evaluation will discuss progress made towards each goal, problems or challenges encountered, and proposed strategies to mitigate these problems so that the project may proceed to completion.

The second section of the report will include a checklist of BMPs proposed in the Management Plan. Those BMPs that were applicable to projects or activities undertaken during the report year will be briefly discussed.

The third section of the report will summarize the status of compliance with CDUA permit conditions. The discussion will determine whether or not the condition has been met, any problems encountered, and proposed changes.

The fourth section of the report will be a refined planting plan for the upcoming year.

Attachment 1: PLANT MATERIAL LIST
MANAGEMENT PLAN FOR GEARY PROPERTY

Introduction

The plant material list represents potential plants being considered for the Geary Kokokahi property. The status and rating system referenced in the schedule is based on data from the Hawaii Ecosystems at Risk (HEAR) Project posted by the Institute of Pacific Island Forestry, Pacific Islands Ecosystems at Risk (PIER). This matrix provides on-going research information related to plant threats to Pacific region ecosystems. The numbers refer to a risk rating for plant materials to help determine or forecast their potential invasiveness. This information is cited as U.S. Forest Service and located at Pacific Island Ecosystems at Risk (PIER), http://www.hear.org/pier. The intent of this list is to provide the Owner with an on-going reference to make the best possible plant selections. Plants with high scores, meaning likely to be invasive, should not be used on the property.

BOTANIC NAME	COMMON NAME	STATUS	RANKING
TREES:			
Aleurites moluccana	Kukui	H(HPWRA)	12
Artabotrys hexapetalus	Ylang-ylang	L	-1
Cassia spp. (x nealiae)	Shower Tree	L	-8
Calophyllum inophyllum	Kamani	Evaluate	6
Cerbera manghas	Pink-eyed Cerbera	L	1
Cordia subcordata	Kou	L	-3
Crescentia cujete	Calabash Tree	L	-8
Delonix regia	Royal Poinciana	L	-1
Diospyros sandwicensis	Lama	Endemic	
Dracaena marginata	Money Tree	L	-1
Erythrina crista-galli	Coral Tree	L	6
Erythrina sandwicensis	Wiliwili	Native	
Fagraea berterana	Pua Kenikeni	L	-1
Guaiacum officinale	Lignum Vitae	L	-6
Hibiscus tiliaceus	Hau	Native	
Jacaranda mimosifolia	Jacaranda	L	1
Magnolia x alba	Pak Lan	N/A	
Myoporum sandwicense	Bastard Sandalwood/Naio	Native	
Pandanus tectorius	Hala	Polynesian Introduced	
Plumeria obtusa	Singapore Plumeria	L	-6
Plumeria rubra	Plumeria	L	-5
Samanea Saman	Monkey Pod	L	4
Strelitzia nicolai	Giant Bird of Paradise	L	-1
Swietenia mahagoni	West Indian Mahogany	L	-6
Tabebuia donnell-smithii	Gold Tree	L	-4
Tabebuia heterophylla	Pink Tecoma	L	1
Tamarindus indica	Tamarind	L	-3
Thespesia populnea	Milo	Native	
Tectona grandis	Teak	L	-5

BOTANIC NAME	COMMON NAME	STATUS	RANKING
FRUIT TREES:			
Artocarpus altilis	Breadfruit	L	-12
Carica papaya	Papaya	L	2
Citrus aurantifolia	Lime	L	2
Citrus limon	Lemon	L	-3
Citrus sinensis	Orange	L	-2
Coffea arabica	Coffee	H(HPWRA)	2
Ficus carica cv. Brownturkey	Common Fig	L	2
Garcinia mangostana	Mangosteen	N/A	
Laurus nobilis	Bay Tree	N/A	
Litchi chinensis	Lychee	L	-6
Malus spp.	Apple	N/A	
Mangifera indica	Mango	L	1
Musa spp.	Banana	Polynesian-Introduced	
Persea americana	Hass Avocado	L	3
Punica Granatum	Pomegranate	L	3.5
Syzygium aromaticum	Clove	N/A	
Syzygium malaccense	Mountain Apple	L	0
PALMS:			
Pritchardia spp.	Loulu	Endemic/Rare	
Veitchia merrillii	Manila Palm	L	-2
FERNS:			
Cibotium glaucum	Hapu'u Fern	Endemic	
Microlepia strigosa	Palapalai Fern	Native	
Nephrolepis exaltata	Kupukupu fern	Native	
Nephrolepis falcata 'furcans'	Fishtail Fern	N/A	
Odontosoria chinensis	Lace Fern	Native	
Phymatosorus grossus	Lauae Fern	Evaluate	
Psilotum nudum	Moa	Native	
SHRUBS:			
Agave attenuate	Swans Neck Agave	Evaluate	
Aloe vera	Aloe	Evaluate	
Alpinia purpurata	Red Ginger	Evaluate	4
Ananas comosus	Pineapple		
Argemone glauca	Hawaiian Poppy/Pua Kala	Endemic	
Bougainvillea glabra	Bougainvillea	L	-1
Brighamia insignis	Alula	Endemic/Endangered	
Camellia sinensis	Camellia tea	L	-4

BOTANIC NAME	COMMON NAME	STATUS	RANKING
SHRUBS, Con't			
Codiaeum variegatum	Croton	L	-4
Cuscuta sandwichiana	Native Dodder	Endemic	
Dichorisandra thyrsiflora	Blue Ginger	L	1
Etlingera elatior	Torch Ginger	L(Hawaii)	1
Gardenia taitensis	Tiare	L	-4
Gossypium arboretum	Cotton	N/A	
Gossypium tomentosum	Hawaiian cotton / Maÿo	Endemic/Rare	
Heliconia caribaea	Gold Heliconia	L	-1
Heliconia stricta	Lobster's Claw Heliconia	L	6
Hibiscus arnottianus	Kokio keokeo	Endemic	
Hibiscus brackenridgei	Mao Hau Hele	Endemic/Endangered	
Hibiscus clayi	Koki'o 'ula 'ula	Endemic/Endangered	
Hibiscus 'Hula Girl'	Hula Girl Hibiscus	N/A	
Hibiscus kokio	Koki'o 'ula 'ula	Endemic/Rare	
H. kokio subsp. s*aintjohnianus*	Koki'o	Endemic/Rare	
Hibiscus rosa-sinensis	Common Hibiscus	L	-2
Hibiscus waimeae	Koki'o kea	Endemic/Rare	
Jasminum sambac	Pikake	Evaluate	
Orchid spp.	Orchids	N/A	
Piper methysticum	Awa	L	-4
Scaevola taccada	Naupaka	Native	
Sesbania tomentosa	Ohai Ali'i	Native	
Strelitzia reginae	Bird of Paradise	L	-3
Tabernaemontana divaricata	Crepe Jasmine	L	-
Zingiber zerumbet	Shampoo Ginger / 'Awapuhi	L	-1
GRASSES/BAMBOO:			
Bambusa glaucophylla	Malay Dwarf Bamboo	L	-3
Bambusa vulgaris vittata	Giant Golden Bamboo	L	5
Saccharum officinarum	Sugarcane	L	-2
Schizostachyum glaucifolium	Hula Bamboo	L	0
VINES:			
Actinidia deliciosa	Kiwi	N/A	
Alyxia oliviformis	Maile	Native	
Hylocereus undatus	Dragonfruit	Evaluate	
Ipomoea horsfalliae	Kuhio Vine	L	1
Jasminum multiflorum	Star Jasmine	L	2
Vanilla planifolia	Vanilla	N/A	
Vitis vinifera	Table/Wine Grapes	N/A	

GROUNDCOVERS:

BOTANIC NAME	COMMON NAME	STATUS	RANKING
Carex wahuensis	Carex sedge	Endemic	
Dianella sandwicensis	Uki 'uki	Indigenous	
Jacquemontia ovalifolia subsp. sandwicensis	Pa'u o hi'iaka	Endemic	
Myoporum sandwicense	Naio papa	Indigenous	
Osteomeles anthyllidifolia	Ulei	Indigenous	
Sesuvium portulacastrum	Akulikuli	Indigenous	
Sida fallax	Ilima papa	Indigenous	
Vitex rotundifolia	Pōhinahina	Indigenous	
Wikstroemia uva-ursi	Akia	Endemic	

HERBS/VEGGIES:

Allium cepa	Onion		
Allium fistulosum	Green Onion		
Beta vulgaris	Beet		
Cucumis sativa	Cucumber		
Cucurbita spp.	Pumpkin		
Cucurbita spp.	Zucchini		
Cynara scolymus	Artichokes		
Glycine max	Soy Beans		
Ipomoea batas	Sweet Potato		
Lactuca sativa	Lettuce		
Lycopersicon esculentum	Tomato		
Mentha piperita	Mint		
Ocimum basilicum	Basil		
Solanum tuberosum	Potato		
Zea mays	Corn		

KEY:

L	Not Recognized as Invasive
L(Hawaii)	Not Invasive based on history
H(HPWRA)	Likely to be Invasive
H(Hawaii)	Causes Significant ecological harm
Evaluate	Plant Needs Further Evaluation
N/A	Not Appropriate for Site Location

WRA SCORES:

<1	Accept (not likely to be a pest)
1 thru 6	Evaluate
>6	Reject (likely to be invasive)