

1996-08-08-0A-FEA-Fence construction

AUG - 8 1996

Paohole Natural Area Reserve

FILE COPY

ENVIRONMENTAL ASSESSMENT

for

FENCE CONSTRUCTION

PAHOLE NATURAL AREA RESERVE

in accordance with
CHAPTER 343, HAWAII REVISED STATUTES

Proposed by:

State Division of Forestry and Wildlife
U.S Fish and Wildlife Service

July 1996

TABLE OF CONTENTS

I.	SUMMARY.....	1
	Projects action summary.....	1
	Project location.....	1
	Agencies consulted.....	2
II.	PROJECT DESCRIPTION.....	2
	General.....	2
	Location.....	3
	Project progression.....	3
III.	DESCRIPTION OF AFFECTED ENVIRONMENT.....	3
	Flora.....	3
	Fauna.....	4
	Sensitive habitats.....	4
IV.	ENVIRONMENTAL IMPACTS/ <i>MITIGATION MEASURES</i>	5
V.	ALTERNATIVES CONSIDERED.....	6
	Alternative 1.....	6
	Alternative 2.....	6
	Alternative 3.....	6
	Alternative 4.....	7
VI.	EA PREPARATION INFORMATION.....	7
VII.	LIST OF APPENDICES.....	7

I. SUMMARY

Projects Action Summary:

The Division of Forestry and Wildlife (DOFAW), Natural Area Reserves program (as lead) in a cooperative effort with the U.S. Fish and Wildlife Service (USFWS) proposes constructing an enclosure fence line around the ridge top portion of Pahole Gulch (See APPENDIX A) as part of ongoing efforts to protect native forest ecosystems, and rare, threatened and/or endangered flora and fauna found within this enclosure. This route has been surveyed for botanical and invertebrate impacts with a negative declaration.

The project involves clearing by hand a corridor no more than six feet wide and erecting a fence line using: 6' galvanized steel posts alternated with treated wood posts; 36" galvanized hog wire with one strand galvanized barb wire on bottom. This fence will create a management unit of approximately 230 acres. The ultimate goal of the project is to reduce feral pig populations to zero density to aid in securing the section as a natural ecosystem, habitat for rare plants, and as an ecosystem size rare species out planting site.

Land ownership over the project site is State land under administration of DLNR/DOFAW Oahu/Natural Area Reserve System. On the southern boundary is an existing anchor fence line separating Makua Military Reservation from Pahole Natural Area Reserve.

There is one section on the western boundary encompassing approximately 10 acres of degraded Christmas berry slope that is part of the Mokuleia Forest Reserve.

All project lands are within the Conservation District. Maps indicating land ownership and proposed fence line can be found in Appendix A.

Project purpose and need:

Installation of the proposed fence line will help to more effectively and efficiently control populations of feral pigs (*Sus scrofa*) in the project area. Feral pigs pose a major threat to existing areas of somewhat intact mesic lowland forests. Pigs consume and destroy understory plants, create conditions favoring non-native plant infestation and establishment, prevent the establishment of ground rooting native plants, and disrupt soil nutrient cycling. The cumulative effects are the decline of native forest ecosystems including the decline of suitable habitat for threatened and endangered forest birds, plants and invertebrates. The project area is essential habitat for no

fewer than 13 listed, proposed, or candidate plant species and endangered tree snail species.

This project is aimed at the protection of ecosystems as well as particular species. If the long term viability of rare and endangered organisms is to be achieved, large tracts of land need to be protected. This is in keeping with the USFWS policy of an "ecosystem approach" focusing on management of natural communities, and with the Natural Area Reserve law, which states a system of reserves be established to "...preserve in perpetuity specific land and water areas which support communities as unmodified as possible, of the natural flora and fauna..." (Chapter 195, Hawaii Revised Statutes)

As this area is targeted as essential critical habitat for the out planting of rare plants and tree snails, it is essential that the threats of feral ungulates be controlled in conjunction with a comprehensive threats management program to include fire, weeds, rats, cats, mongooses, and human disturbance.

Agencies consulted during EA preparation:

Federal: U.S. Department of the Interior
U.S. Fish and Wildlife Service
U.S. Department of Defense
U.S. Army

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

Private: Pig Hunters Association of Oahu
Hawaii Audubon Society
Hawaii Nature Centre
The Nature Conservancy of Hawaii

II. PROJECT DESCRIPTION

General:

The proposed fence line will utilize 36" high galvanized hog wire fence fabric with a basal strand of galvanized barb wire. The fence fabric will be supported by galvanized steel fence posts and treated wood posts placed no more than 10' apart the entire length of the fence line. Shorter steel pins will be used as anchors within

the 10 foot span. The fence alignment will be cleared by hand to a width of no more than 6'.

Location: TMK Oahu 6-7-01

The project is located largely within the Pahole Natural Area Reserve, northern Waianae Mountain Range, Island of Oahu. The elevation range is 1500' to 2400'. The fence is approximately 2.0 miles long.

Project progression:

Progression of the project is as follows: In the first place the fence corridor is cleared with hand tools and small power tools. As stated above the clearing is done no more than 6' in width. As a fire pre-suppression action, the cleared vegetation will be dispersed an appropriate distance away from the fenceline to prevent any jumping of fire between debri piles and across the fenceline.

The second phase is the actual installation of the fence. Materials will be flown in by helicopter. Construction work will be done with hand tools and power rock drill. This construction involves driving steel and wood poles into the ground along the corridor no more than 10' apart, attaching one strand of galvanized barb wire along the post at ground level and stretching 36" galvanized hog wire along the posts. Where necessary, anchor posts will be used along the fence, between the posts, to ensure the fencing is close to the ground.

III. DESCRIPTION OF AFFECTED ENVIRONMENT

Flora:

Pahole NAR has some of the best examples of Lowland Mesic Forest in the State. Lowland dry and mesic forest are known for their plant species diversity and the native species richness in the Waianae Range has long been recognized. The species richness in the project area is primarily among the sub-canopy trees, shrubs and ferns. Fifty-eight taxa are considered rare. Many of these are locally common, yet are not found elsewhere in Hawaii. At least eight federally listed endangered species are known to exist in the area (See Appendix B).

Fauna:

Animal life in the area consists of native and non-native bird species, invertebrates such as snails and insects, and both large and small mammals such as feral pigs, mongooses, rats and cats. Cattle from adjoining ranches have, on occasion, gotten into the forest area.

Sensitive habitats:

The entire project area should be considered as sensitive and critical habitat, particularly with regard to listed endangered plants and the resident Achatinellas. The long term management goal for the area is protection of the intact native plant communities. While construction of the fence line will entail a certain level of ground and noise disturbance, the overall benefits resulting from the eventual complete removal of feral pigs, which is impossible without fencing to restrict animal movement, far outweighs the limited effects of fence construction within the six foot corridor.

IV. ENVIRONMENTAL IMPACTS/MITIGATION MEASURES

1. Construction of a continuous fence enclosing the greater portion of Pahole gulch south of the Nike site road would entail clearing a corridor wide enough to permit the efficient installation of the fence and remove hazards to work crews. Some harm to native vegetation would be unavoidable.

A survey of the ridges enclosing Pahole gulch has yielded a routes based on the ease of installation and maintenance, long term survival of the fence from vegetative encroachment, erosion and slides; and the need to limit the impact of construction on native plant communities. Because the route transect predominantly non-native plant communities, degradation of natural areas can be considered minimal. Additionally, soil disturbance is expected to be short term and no changes in the normal runoff or percolation is expected. No native tree with basal diameter greater than 6" will be cut .

2. Initially after closure the feral pig population residing in the gulch would be penned, egress from the area being closed. This could result in a period of amplified pig damage from animals that might otherwise be transiting out of the gulch and into adjacent drainage's.

Following the erecting of the fence intensive control efforts will immediately be implemented to eliminate those pigs remaining in the enclosed area. This will be achieved first with public hunters then staff hunts. No further recruitment of feral pigs into the area is anticipated.

3. Workers could be agents for the unintentional introduction and/or spread of noxious plants along the corridor.

All workers will be instructed on procedures to reduce the introduction of noxious plant seeds and propagules. Species such as Triumfetta semitriloba and Clidemia hirta found to pre-exist along the proposed route and considered susceptible to spread from human activity will be removed prior to fence construction.

4. As the area most easily accessed by improved road, this portion of the presently designated public hunting area would

effectively be removed from the hunting unit insofar as game would be reduced to a negligible level. Thus, a traditionally enjoyed hunting area would be lost for the foreseeable future.

Efforts will be made to enhance access for hunters to the upper Keawapilau and West Makaleha areas in the Mokuleia Forest Reserve where hunting pressure on feral pigs have generally been low. As well, NARS has been assisting DOFAW Wildlife for several years in managing more degraded areas for sustainable pig hunting as well in establishing game bird hunting areas.

V. ALTERNATIVES CONSIDERED

Alternative 1: Build ridge line fence around Pahole Gulch.

This is the recommended method as a fence can be constructed on the predominantly non-native ridge line without greatly disturbing the sensitive slopes and gulches. It will be both cost effective to build one large fence rather than many small enclosures and create the least impact on the land.

The fence line will also act as a marker to notify hunters of the highly sensitive nature of the gulch and as a fire break should a fire escape from Peacock Flats campgrounds.

Alternative 2: Build small enclosures around existing rare plants.

This is impractical as most of the rare plants exist on very steep slopes due partly to selective pressure from pigs. These fences are very difficult to build and damaging to the sensitive slopes which we are striving to protect.

Alternative 3: Enclose all of Pahole NAR

This ambitious project would provide a neat administrative solution for the long term reduction and eventual elimination of feral pigs from the reserve. However, such a plan does not recognize the largely degraded and reforested tracts of land in the Kapuna and Keawapilau drainages below 1800' elevation which do not warrant intense management. Conservation practices in the eastern portion of Pahole NAR should remain site specific until additional resources become available. The eastern leg of the proposed fence along the ridge separating Pahole drainage from the eastern drainages will

provide an anchor line from which to extend future fences should they be deemed appropriate.

Alternative 4: No action

This alternative effectively accepts the deterioration over time of this unique resource by allowing feral animals to remain. While public hunting occurs in the area, without physical barriers to limit the movement of these destructive animals, it is doubtful animal numbers can remain low enough to allow these native natural communities to remain viable.

As this area has been designated as an out planting site for rare plants, the planting and watering of these areas will attract pigs and will lead to the destruction of these plants which so much time and effort has gone into preserving.

VI. EA PREPARATION INFORMATION

This Environmental Assessment was prepared for DLNR by:
Randall W. Kennedy and Talbert K. Takahama,
Natural Area biologists
DLNR Division of Forestry and Wildlife
1151 Punchbowl Street
Honolulu, HI. 96813
TEL. (808) 973-9785, FAX 973-9781

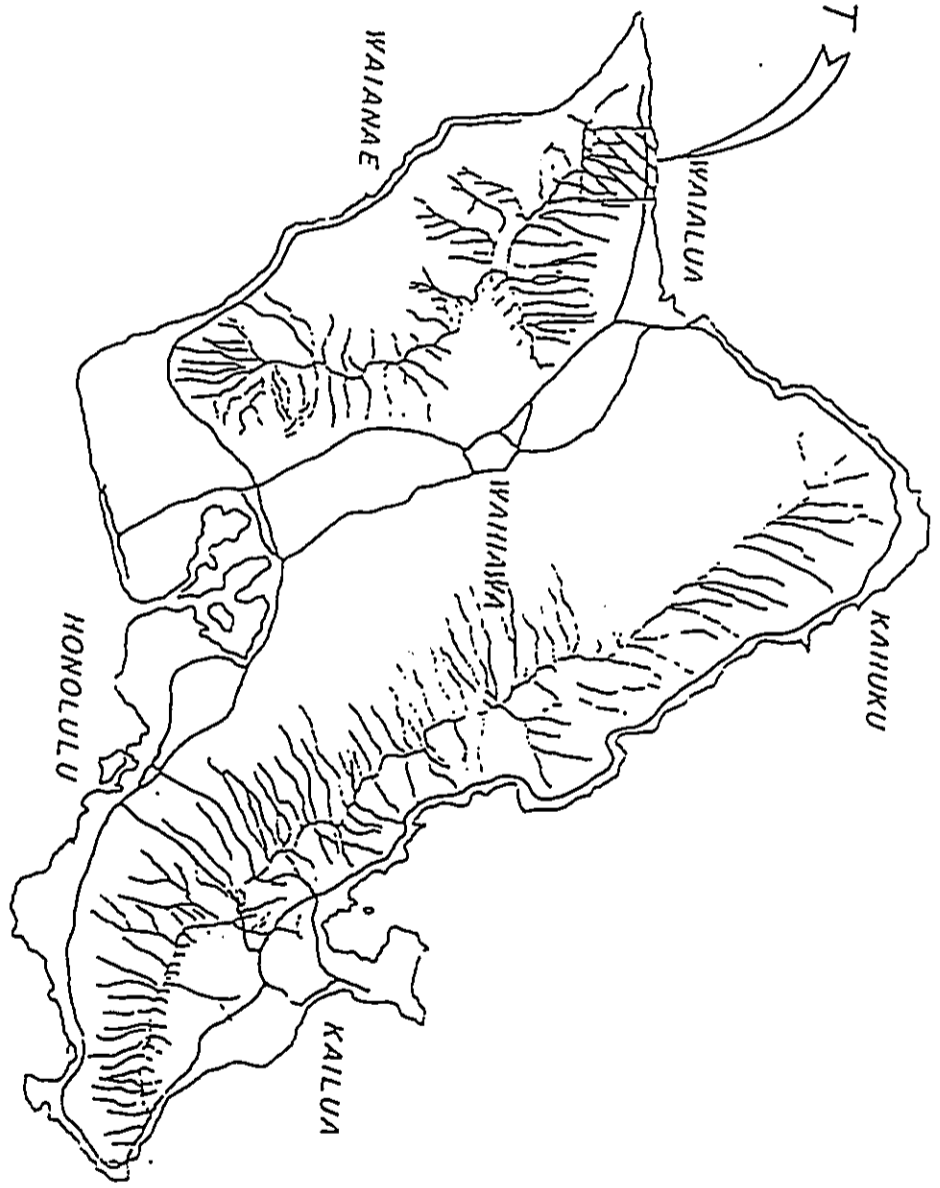
VII. LIST OF APPENDICES

- APPENDIX A: Maps of Project
- APPENDIX B: Endangered and Candidate Plant Species Known to Exist in the Project Area
- APPENDIX C: Native Birds Known to Exist in the Project Area
- APPENDIX D: Endangered and Rare Invertebrates Known to Exist in the Project Area
- APPENDIX E: Proposed Endangered and Rare Plant Species to be Out planted in the Project Area

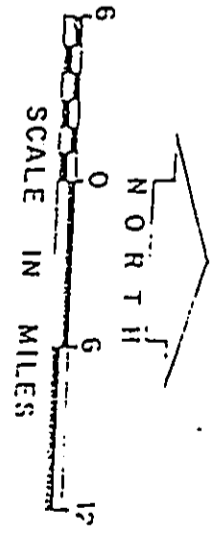
Appendix A--Map 1

TMK Oahu 6-7-01

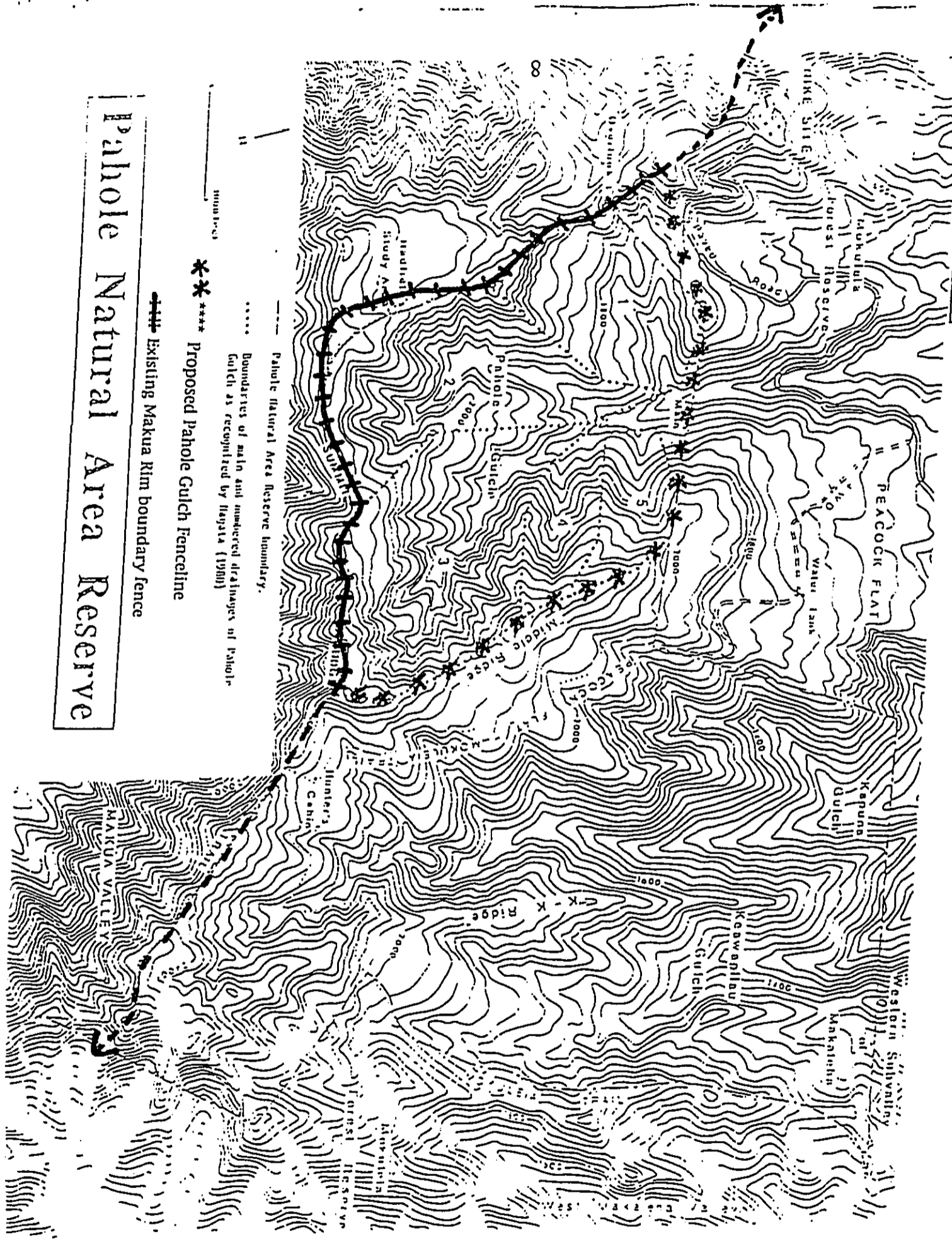
PROJECT
SITE



ISLAND OF OAHU



Appendix A--Map 2



Pahole Natural Area Reserve

- Pahole Natural Area Reserve boundary.
- Boundaries of main and numbered drainages of Pahole Gulch as recognized by Mapata (1980).
- * * * * * Proposed Pahole Gulch Fenceline
- ||||| Existing Makua Rim boundary fence

APPENDIX B: Endangered and Candidate Plant Species
Known to Exist in the Project Area
(as of December 1994)

ENDANGERED SPECIES

Alectryon macrococcus var.
macrococcus

Alsinidendron obovatum

Cyanea grimesiana ssp. obatae

Cyanea superba ssp. superba

Diellia falcata

Flueggea neowawraea

Heyotis degeneri

Schiedea kaalae

CANDIDATE SPECIES

Cenchrus agrimonioides var. ag-
rimonioides

Cyanea grimesiana ssp. grime-
siana

Cyrtandra dentata

Delissea subcordata

Schiedea nuttallii var. nuttallii

APPENDIX C: Native Birds Known to Exist in the Project Area

Chasiempis sandwichensis ibidis

Common name: Oahu 'Elepaio

Federal status: Category 1 candidate (USFWS 1994c)

APPENDIX D: Endangered and Rare Invertebrates Known
to Exist in the Project Area

Achatinella mustelina, and species of Tornatellides,
Philonesia, Succinea, and Cookeconcha

APPENDIX E: Proposed Endangered and Rare Plant Species
to be Out planted in the Project Area

ENDANGERED SPECIES

Abutilon sandwicensis

Alectryon macrococcus var.
macrococcus
Alsinidendron obovatum
Caesalpinia kavaiensis
Cyanea grimesiana ssp. obatae
Cyanea superba ssp. superba
Diellia falcata
Flueggea neowawraea
Hesperomannia arbuscula
Heyotis degeneri
Lobelia niihauensis
Lipochaeta tenuifolia
Schiedea kealie

CANDIDATE SPECIES

Cenchrus agrimonioides
var. agrimonioides
Cyanea grimesiana
ssp. grimesiana
Cyrtandra dentata
Delissea subcordata
Lepidium arbuscula
Phyllostegia hirsuta
Schiedea nuttallii var. nuttallii
Schiedea hookeri
Silene lanceolata