

REVISED
ENVIRONMENTAL IMPACT STATEMENT
FOR
WAIMEA CANYON MULE TOURS
(Kukui Alternate Equestrian Trail)

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REVISED
ENVIRONMENTAL IMPACT STATEMENT
FOR
WAIMEA CANYON MULE TOURS
(Kukui Alternate Equestrian Trail)
on
Kaua'i, Hawaii

Applicant:

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Accepting Agency:

Board of Land and Natural
Resources, State of Hawaii

August, 1979

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SUMMARYI. PROPOSED ACTION

The applicant is requesting permission to operate a commercial Mule Tour in Waimea Canyon, within or partly within Waimea Canyon State Park, Puu Ka Pele Forest Reserve, and West Kauai Water and Soil Conservation District. Components of the proposed project include construction of an equestrian trail down into the canyon to the floor, provision of two dry latrines and a picnic/rest roofed shelter at the terminus, and construction of a building on a site across from Kukui Trail's head, housing office space, lounge and toilet facilities. The back of the structure will also serve as a mule staging area within a corral. This EIS is part of the CDUA requirements for the proposed action.

II. DESCRIPTION OF THE ENVIRONMENT

A detailed description is provided in terms of the following criteria: Geology, Geomorphology, Hydrology, Climatology, Biology - Flora and Fauna, Archaeology, History, and Scenic Resource.

III. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

Land use objectives are presented in terms of the area's physical parameters and its ability to provide recreational opportunities. Policies are excerpted from extensive statewide plans formulated by Dept. of Planning and Economic Development, State Land Resources Policy Development Project; State Comprehensive Outdoor Recreation Plan (SCORP) issued by the same department; and Dept. of Land & Natural Resources, Div. of Forestry, Program for the State Forest Lands of Hawaii.

IV. PROBABLE ENVIRONMENTAL IMPACTS

The primary impact is the high erosion potential and deterioration of the physical environment through increased exposure due to improved access. Secondary impacts addressed are: pollution - land, water, and air; plant species, animal and bird species, and wilderness experience. Projections were estimated for the effects of local population and growth increases resulting from primary and secondary users of Ka'e Trail.

V. MITIGATION MEASURES

Mitigation measures are listed under the headings: Erosion Control, Pollution Minimization, Public Health, Fire Hazard, Trail Safety, Trail Misuse, and Flora Protection.

VI. ALTERNATIVES

Seven alternatives are presented and discussed:

1. Similar Mule Tours operation but of smaller magnitude
2. Waimea River right-of-way
3. Canyon Rim route
4. Wailua Falls, Kapaia trails
5. Kalepa Ridge trails
6. Mokihana Ridge area trail Div. of Forestry proposal
7. No Action

INTRODUCTION

This is a Revised Environmental Impact Statement for the Waimea Canyon Mule Tours project at Waimea Canyon State Park, Kaua'i, Hawaii. The project involves construction of an equestrian trail, staging facilities, picnic/rest shelter site and temporary staging facilities at the bottom of the canyon, and an office-lounge with restroom facilities building across from the origin of Kukui Trail. The primary purpose of the proposed project is to construct an equestrian trail open to public use, which will provide access to the bottom of Waimea Canyon. The mule-train technique will be utilized for the commercial operation of Mule Tours, providing a pleasant, non-mechanical, environmentally compatible means of conveying visitors to and from the canyon floor.

Approximately 55 animals will be available for concession use, providing mounts for a maximum of 48 customers, 5 guides, and a pack mule for lunches and beverages at the bottom of the trail. Each section of the train will accommodate 12 riders with a trained, experienced guide at the head of the column. The last section to go down for the day will be followed by a guide as well, along with the pack mule. The ride will take at most five and one half hours, from 9:00 - 2:30 for the first group, and about 9:30 - 3:00 for the last group. One and one half hours is estimated duration of the descent, and two and one half hours for the ascent.

Each group will have one and one half hours for lunch period, to rest, walk around for relief from the saddle, eat, and visit an archaeological/historical taro field site a few hundred yards makai along the Waimea River. A guide will accompany visitors to explain the cultural significance of the site, and to ensure protection for the relicts. A secondary objective of the Mule Tours is to provide some exposure of Hawaiian culture to visitors to enable them to more fully appreciate the past, and present day, lifestyle of Hawaii's peoples.

CHAPTER I. DESCRIPTION OF THE PROPOSED PROJECT

INTRODUCTION

This Environmental Impact Statement for the construction of Kukui Alternate Equestrian Trail and mule staging facilities is submitted by Waimea Canyon Mule Tours. The applicant wants to construct a trail to be used by equestrians only, from Puu Kukui to the bottom of Waimea Canyon; picnic/rest shelter and latrine facilities at the bottom; and one building to provide office space and mule staging within a corral located off Kokee Road at the origin of the proposed trail. Hereafter this trail shall be referred to as Ka'e Trail, "Ka'e" being both an acronym for Kukui Alternate Equestrian, and the Hawaiian term for "rim, ridge, or face of a hill." Because the proposed project lies within the boundaries of a Conservation District, a Conservation District Use Application (CDUA KA-4/2/79-1129) was filed with the State Department of Land and Natural Resources (DLNR). In addition, the applicant desires to lease approximately three (3) acres of State Park land ewa of Kokee Road for the office/staging building and parking facilities. The major part of Ka'e Trail will be located in Puu Ka Pele Forest Reserve. Therefore, the approving agency is DLNR - Divisions of Conveyances, Forestry, Land Management, and State Parks.

A. LOCATION

The location of the proposed project is in the Waimea Canyon area on the island of Kaua'i. The office/staging facilities and origin of Ka'e Trail will be reached by crossing Kekaha Ditch, one (1.0) mile makai on Kokee Road from the turnoff to Waimea Canyon Lookout. This site is across the road from Iliau Native Plant Nature Loop and the origin of Kukui (Hiking) Trail. The proposed Ka'e Trail will follow the terrain on the ewa side of Kokee Road, crossing the road about one quarter (.25) mile makai of the Kukui Trail. After crossing, it will proceed in a southerly direction until meeting a power line transmission tower. At a safe distance the proposed trail will begin the descent into Waimea Canyon proper. It will make the descent utilizing the topography in such a manner as to minimize effects of erosion during construction and subsequent use of the trail. Near the bottom, Ka'e will intercept Kukui because of terrain limitations, and then proceed to the terminus at the Waimea River, mauka of Kukui and several hundred yards mauka of Wiliwili Camp. The picnic/rest area and latrines will be located above the 100-year flood elevation, as determined by the Division of (Sewers and) Drainage, Public Works Dept., County of Kauai. (telephone communication, 8/2/79)

Detailed trail map
inside back
cover

B. OBJECTIVES

The primary purpose of this proposal is to develop a pleasant, non-mechanical, environmentally compatible means of conveying visitors to and from the floor of Waimea Canyon. Many visitors do not feel they have the time nor energy to hike down into the canyon, and mule tours will provide an alternative method. Secondly, since Ka'e Trail will be public, it can be utilized, legally, by local

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hunters on horseback and others who ride for pleasure.

C. TECHNICAL AND ENVIRONMENTAL CHARACTERISTICS

The factors most affecting the operations of the mule tour concession are the soils in the area and their characteristics. The General Soil Map included shows number 10, Rough mountainous/broken land-Rock outcrop association for most of the area under consideration. For the area at office/reception building, the map shows number 8, Mahana-Kokee association. Another Generalized Soils Map was produced by Land Study Bureau of University of Hawaii, with classifications "basically in accordance with the system used by the Soil Conservation Service and the *Soil Survey of the Territory of Hawaii*, with modifications to correlate with environmental conditions." The proposed Ka'e Trail and surrounding area is characterized by the Lithosol Group, which encompasses all of the rough broken lands not included in any of the other eleven Great Soil Groups mapped on Kaua'i. This is a soil lacking definite genetic horizons, consisting of a freshly and imperfectly weathered mass of hard rock or hard rock fragments. The sloping uplands area ewa of Kokee Road, where the building and corral facilities will be constructed, is composed of Humic Ferruginous Latosols. These tend to be relatively inert and easily eroded as is evidenced by numerous "badland" type soil exposures. This erosive tendency is an inherent characteristic of the soil. The Water Resources Research Center at University of Hawaii also states that the soil of this area is Mahana and Mahana Badlands complex soils.

Fig. 1

A detailed soil survey was undertaken by Land Study Bureau and mapped, utilizing field data and aerial photographs. Map #18, at an approximate scale of (14,600 - Ground Elevation) Feet/ 6 Inches includes the majority of the trail, and Map #24, at an approximate scale of (14,900 - Ground Elevation) Feet/ 6 Inches contains the part of the trail that approaches the canyon bottom. There are five Land Types that the proposed trail encounters, and their characteristics are listed on the insert following this page.

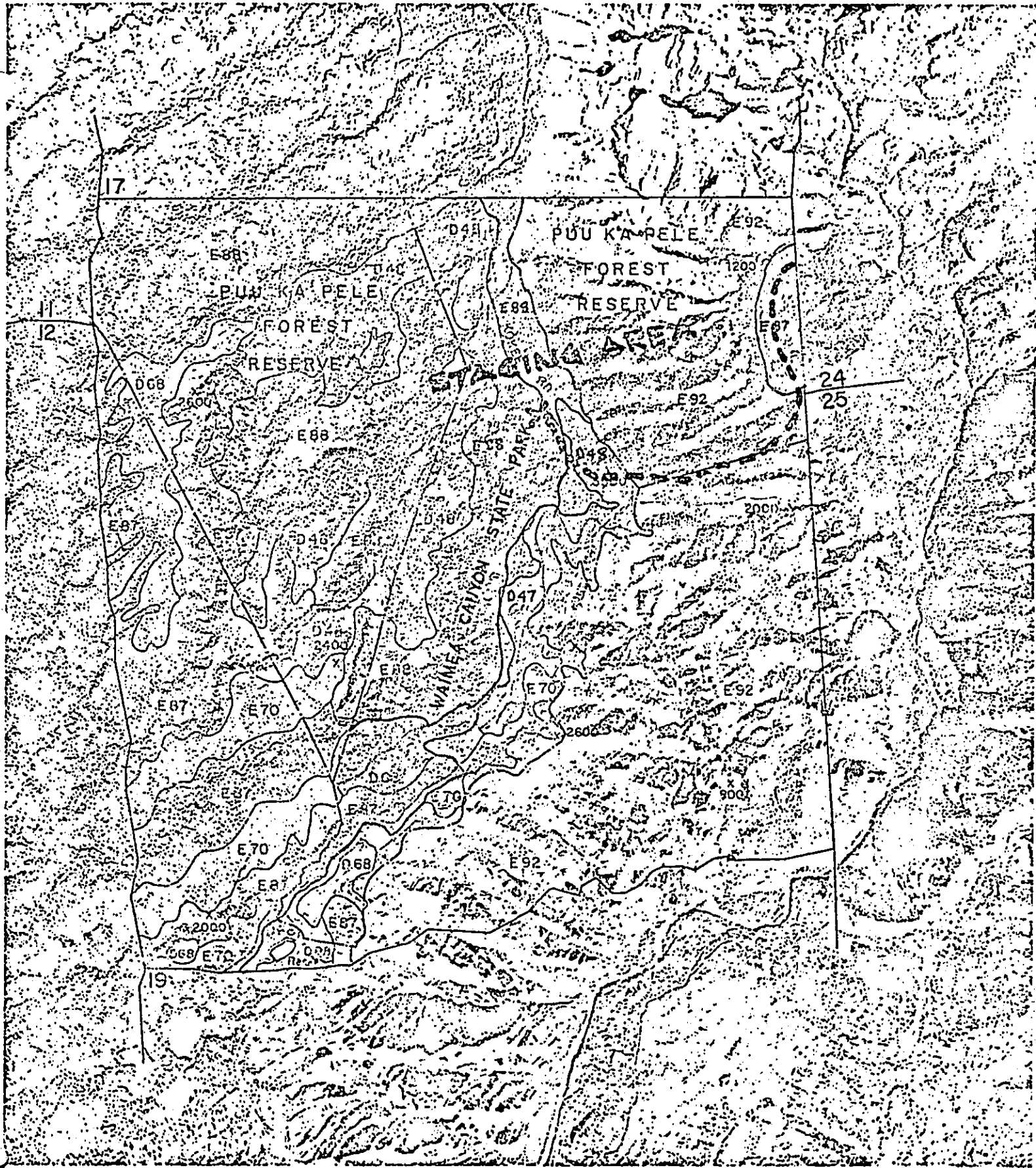
Fig. 2a, b

1. TRAIL CONSTRUCTION

The width of Ka'e Trail will be four (4) feet, unless geological constraints (e.g., rock outcropping) dictate that three feet is a more suitable width. At switchbacks, a greater width is anticipated to allow two animals space to wait for a mule train to pass. The width at switchbacks will be at least eight (8) feet, and a minimum of these will be constructed so as to minimize erosion. Because of this limitation, it was thought Ka'e Trail should be lengthened from its original length of 2.5 miles, to 3.5 miles. This includes the .25 mile Access Trail to be constructed on the ewa side of Kokee Road. The clearance height of Ka'e will be ten feet so riders will not be endangered by any overhanging trees or other vegetation. During clearing and grubbing, as few trees as possible will be removed; those one-half foot (6") or less at chest height will be removed. The vegetative matter cleared will be redistributed adjacent the clear to help minimize erosion.

DETAILED LAND CLASSIFICATION - ISLAND OF KAUAI

Fig. 2a Map No. 18



Land classification data field mapped 1967.

LAND CLASSIFICATION SYMBOLS:

- Master Productivity Rating
- Land Type. Number and letter "i" if irrigated; number only if unirrigated. (See sections of text where Land Types are defined and rated by selected uses.)



Approx. North

U.S.G.S. Quad References: Kekaha, Waimea Canyon

Approximate Scale (ft./in.)=14,600- Ground Elevation
6

Aerial Photographs: U.S. Dept. of Agriculture, A.S.C.S.

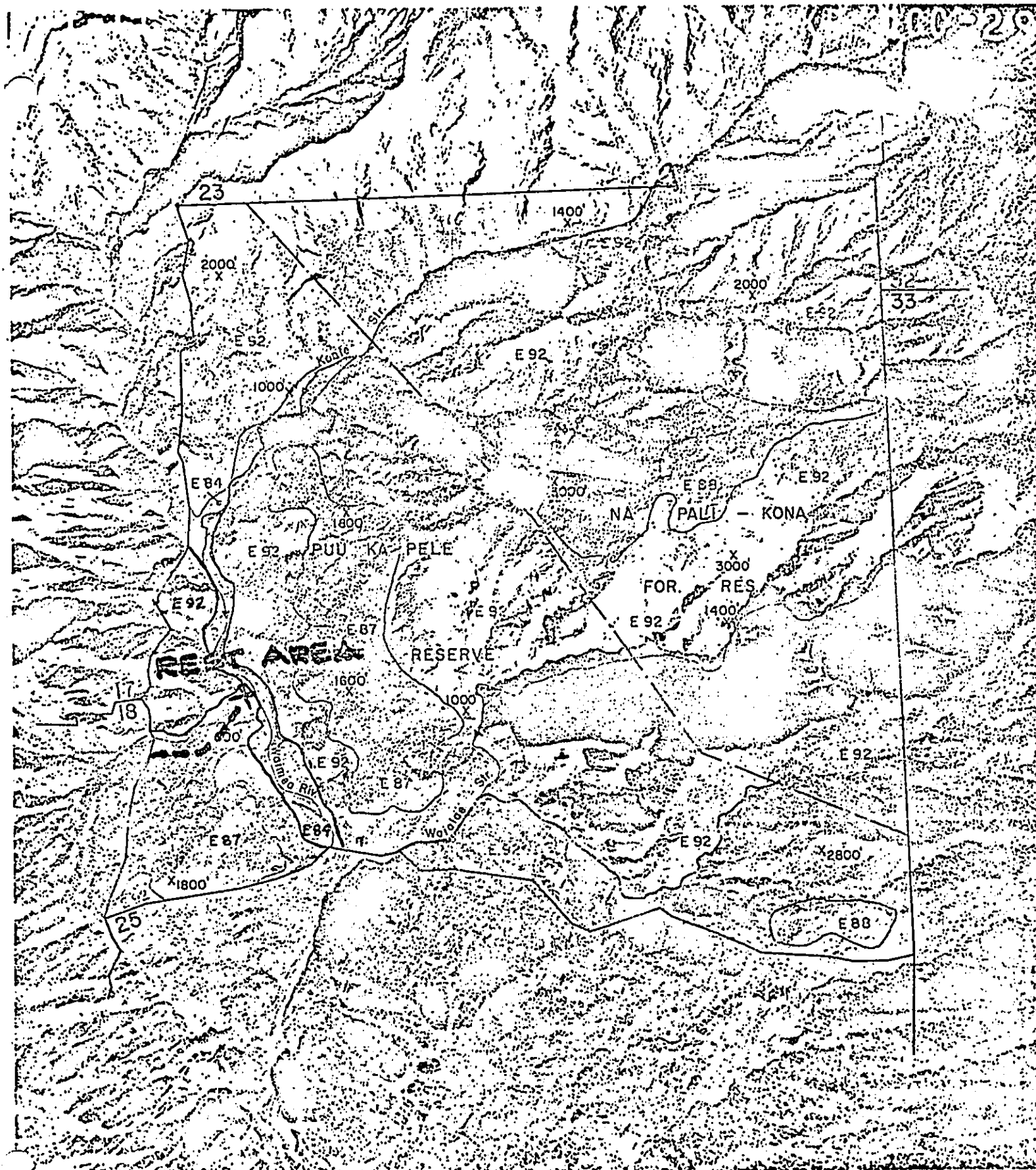
LAND STUDY BUREAU - UNIVERSITY OF HAWAII

DETAILED LAND CLASSIFICATION - ISLAND OF KAUAI

5

Fig. 2(cont.)

Map No. 24



Land classification data field mapped 1967.

LAND CLASSIFICATION SYMBOLS:

- Master Productivity Rating
- Land Type. Number and letter "i" if irrigated; number only if unirrigated. (See sections of text where Land Types are defined and rated by selected uses.)



U.S.G.S. Quad References: Waimea Canyon

Approximate Scale (ft./in.)=14,900 - Ground Elevation

6

Aerial Photographs: U.S. Dept. of Agriculture, A.S.C.S.

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Fig. 2b

TABLE I. LAND TYPES ENCOUNTERED FROM ORIGIN TO TERMINUS OF PROPOSED KA'E TRAIL, WAIMEA CANYON

Land Type	Stoniness	Depth (in.)	Slope (%)	Texture	Drainage	Med. Annual Rainfall (in.)	Elevation (ft.)	Soil Series
88	Nonstony to Rocky	Generally deep	36 - 80	Medium to Fine	Well-drained	55 - 70	1800 - 3500	Rough broken lands
48	Nonstony	Deep, over 30	21 - 35	Mod. Fine to Medium	Well-drained erosive soil	30 - 45	1200 - 3000	Mahana and Paaiki
92	Nonstony to Rocky	Variable	80+	Variable	Well-drained	20 - 450	0 - 5000	Pali lands
87	Nonstony to Rocky	Variable	36 - 80	Medium to Fine	Well-drained	40 - 60	0 - 2500	Rough broken lands
84	Rocky	Variable	0 - 35	Medium to Fine	Well-drained	20 - 40	0 - 1000	Rocky lands

5A

Taken from "Detailed Land Classification - Island of Kauai," Land Study Bureau, University of Hawaii, L.S.B. Bulletin No. 9, December 1967.

The grading and excavation process will be supervised by a licensed Construction Engineer, following specifications required or advised by Division of Forestry. The trail's layout will be determined specifically pending approval of this project, with the site inspection crew consisting of a consulting Archaeologist/Historian, Wildlife Botanist, Engineer, and the mule Wrangler. The Soils Scientist will have already collected samples, run the tests for soil characteristics (e.g., permeability, depth, texture, water retention, etc.), and made the data available for the engineer. Ka'e Trail will lend itself so well to the existing natural contours that a minimum amount of earth removal and shifting is anticipated. No heavy earth-moving equipment will be required, but light machinery will probably be used for approximately 20% of the trail. There are three areas - one each at the top, middle, and bottom - of the trail which would benefit from utilizing a diesel-fueled D4 crawler type tractor. The D4 is about five feet wide, having a tread width of about eighteen inches, and is equipped with an angled blade which doesn't extend beyond the tractor's width. Most of the trail will be constructed by manual labor which is less abrasive to the terrain. Ka'e Trail's elevation ranges from about 2900' to about 600' at the picnic shelter. In order to not interfere with the hiking (Kukui) trail activities, the equestrian (Ka'e) trail will be laid out predominantly out of view of the existing hiking trail. The distance will vary from about 30 to 100 yards, and only at one point on the lower reaches of Ka'e will it intercept Kukui. At this juncture, a modest sign will inform users which trail is for which user; a sign each at the bottom and top (at Kokee Road) of Ka'e Trail will identify it, indicating that its use is restricted to equestrians. If the managing State agency feels a gate or barrier of some sort is necessary or desirable to restrict entry from law-breaking dirt motorcyclists, such a barrier will be erected.

Erosion prevention techniques will be utilized during construction and will constitute the major component of a trail maintenance program. The method of carrying surface water off of each trail section will be determined in advance, along with the location, type, size, and construction details of all drainage structures. To handle sheet water, the trail will be tilted at the correct gradient so as to carry the water across the surface with the least concentration, and thus with the least danger of erosion. Established channels will determine the location of culverts, and the amount of water to be served can be estimated with reasonable accuracy. The culvert will be large enough to carry flood water, and its floor will be at the level of the channel bed. Culverts will be PVC tubing, of various diameters according to maximum flow anticipated. If suitable rocks are recovered from excavation, these will be utilized to construct natural swales. Log waterbreaks will be inserted at the proper depth and angle so as to prevent silting or a cutout. They will be placed as needed: (1) At changes in the trail grade (above the break); (2) On sharp curves, where a breaker will be set at the uphill entrance; and (3) Where there is a depression or wash, where the breaker will be set below.

Trail finishing should be carried to the point that erosion will be discouraged and natural growth will be encouraged. Finishing a trail so that maintenance will be kept to a minimum is one of the guiding factors in trail construction. Waimea Canyon Mule Tours will maintain constant (daily) surveillance of Ka'e Trail, noting any conditions which may encourage erosion or other hazards.

2. BUILDING HOUSING OFFICE/LOUNGE

A single story building of about 2,000 square feet will be constructed utilizing a rustic stone and wood design. Any logs, trees, or other materials recovered from the site will be incorporated into railings, posts, or decorative features. As many trees and shrubs as possible will be left intact, as for the trail, to screen the building from Kokee Road and to provide shade and wind breaks. The building will provide office space, and a reception and waiting area for customers prior to mounting the mules. Fig. 3

3. SOLID WASTES DISPOSAL - HUMAN

Two flush toilets will be provided inside the building, requiring 3.5 gallons per flush. A cesspool system will be built under the direction of a sanitation engineer and a soils engineer. (A discussion of the soil suitability may be found in the section LOCAL GEOLOGY in Chapter II. Description of Environmental Setting.) The cesspool will be thirty (30) feet deep, and have a six foot diameter.

At the bottom of Ka'e Trail, two dry latrines will be provided as suggested by the County Board of Health, based on their experiences with such latrines of Forest Reserve lands. Chemical toilets would have to be serviced, and could not be done because there will not be vehicle access to them. The dry latrines will be treated with lime, which will be stored on site in a dry enclosed place.

SOLID WASTES DISPOSAL - MULE

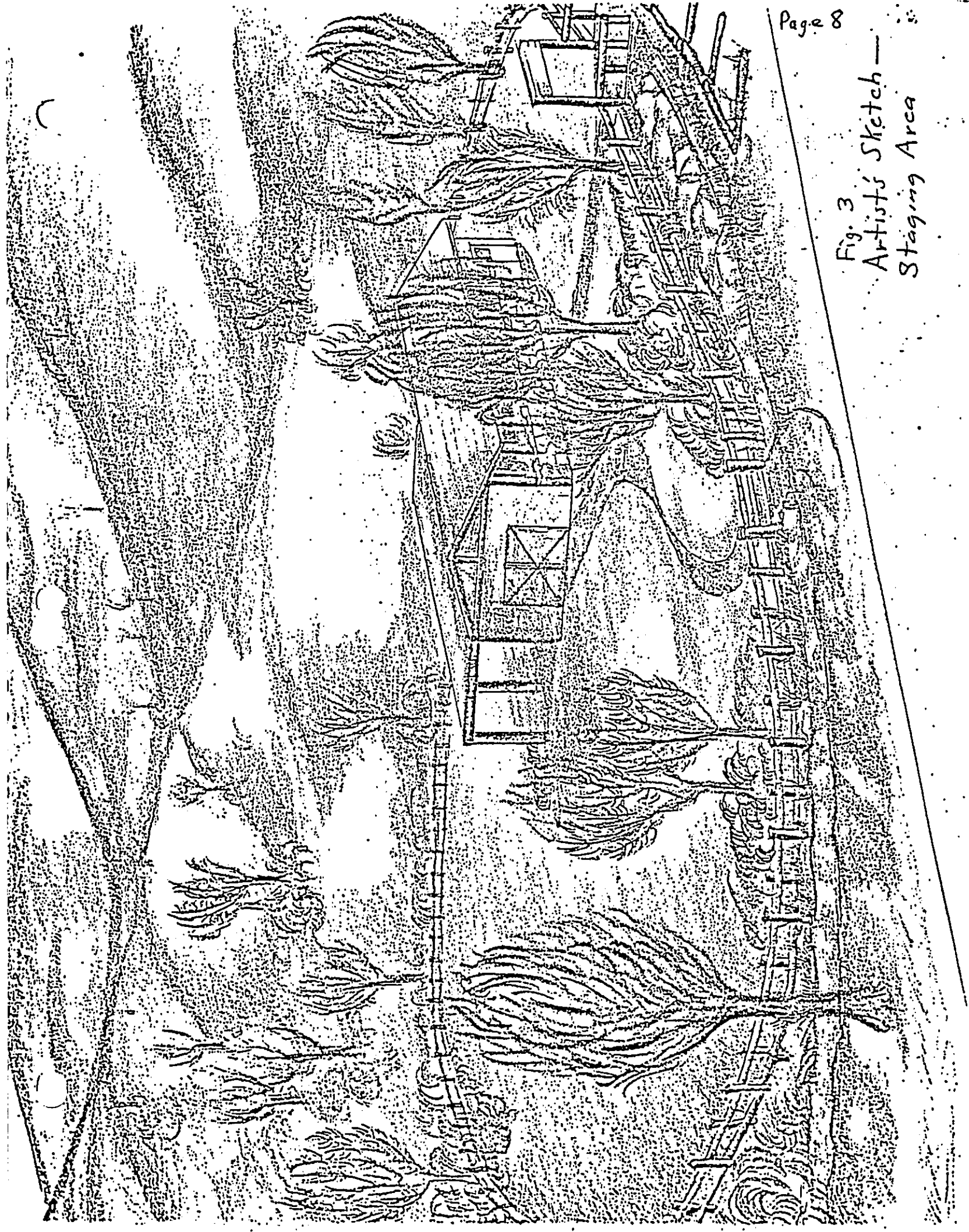
At both staging areas, a fine-mesh screened structure will be built to contain mule manure for drying. Manure will be added on a daily basis, and packed out as often as is necessary, after being sacked at the lower staging area. At the upper staging area, it will also be sacked when dry, and all manure will be sold as fertilizer if such a demand can be found or created. The concessionier hopes to make an arrangement with farmers for manure pickup on a regular basis. If the supply is more than the farmers' demand, it will be offered for sale to anybody as fertilizer. If there is still an excess, the sacked manure will be transported to the nearest Sanitary Landfill (Kekaha).

GARBAGE AND REFUSE

All remainders of the sack lunch provided for the customers will be collected and packed out, to be disposed of in the Sanitary Landfill. A sand-filled container will also be provided to serve as a cigarette extinguisher, so butts will not litter the ground.

4. PICNIC/REST SHELTER

There will be six picnic tables which can accommodate eight people each, and protected from the elements from above by a simple roof. Fig. 4
Wooden posts will support a very slightly sloping roof of green-tinted



Page 8

Fig. 3
Artist's Sketch —
Staging Area

14

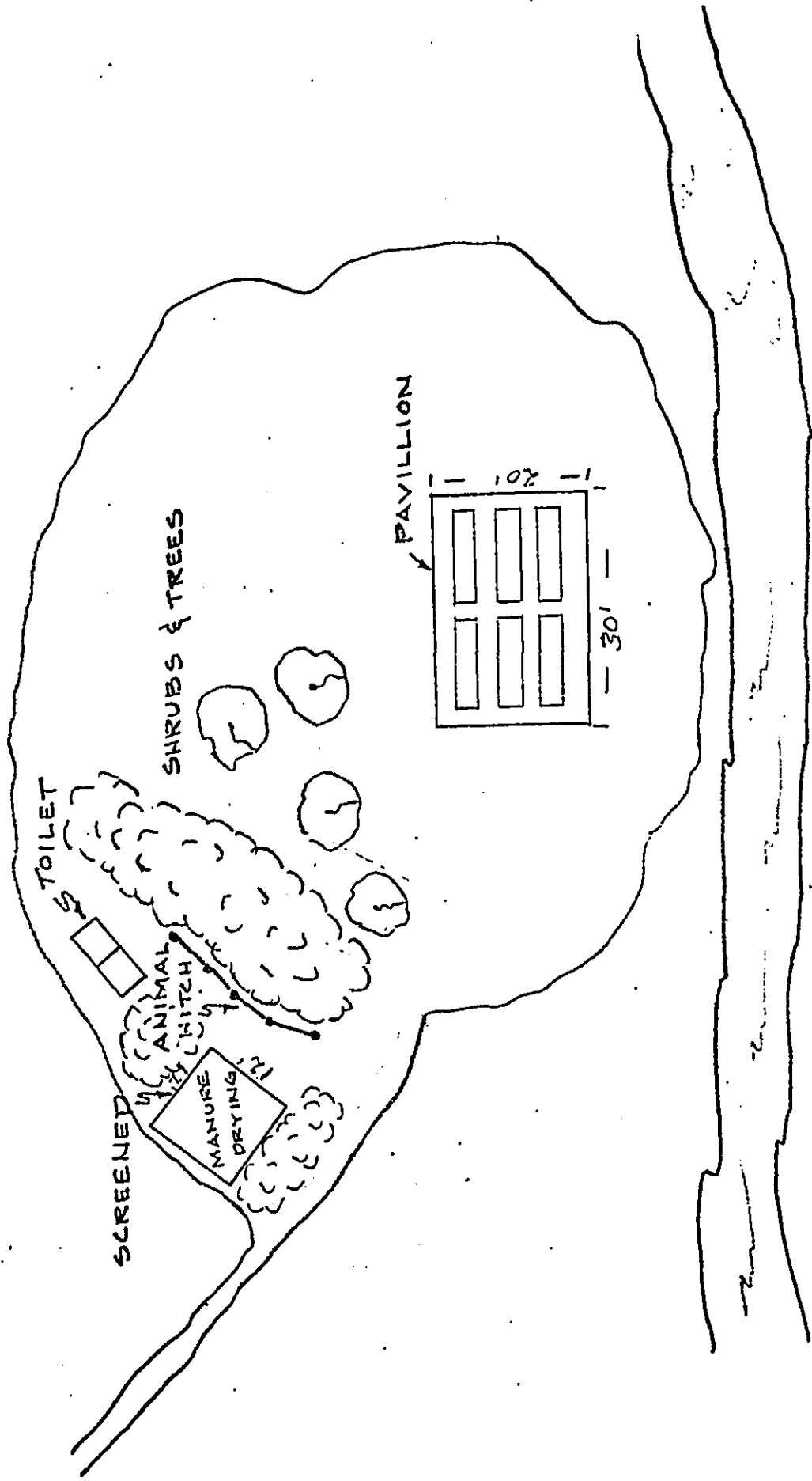


Fig. 4 BOTTOM REST AREA

ribbed (polyurethane) plastic. It is felt that this type of roof would be more aesthetically pleasing than a bright, glaring silver corrugated aluminum roof. The runoff from the roof will be controlled with swales. The sheltered picnic tables will be located closest to Waimea River, with the temporary staging area, and the latrines are equally separated, so that the three facilities form a triangle with the apex at the river.

5. CORRAL/STAGING AREA

The mule shelter is planned to adjoin the office building, which will serve as the headwall for the shelter. The corral will encompass three acres minus the building site, and will have a gate at the origin of Ka'e (Access) Trail. (Fig. 3)

6. UTILITIES

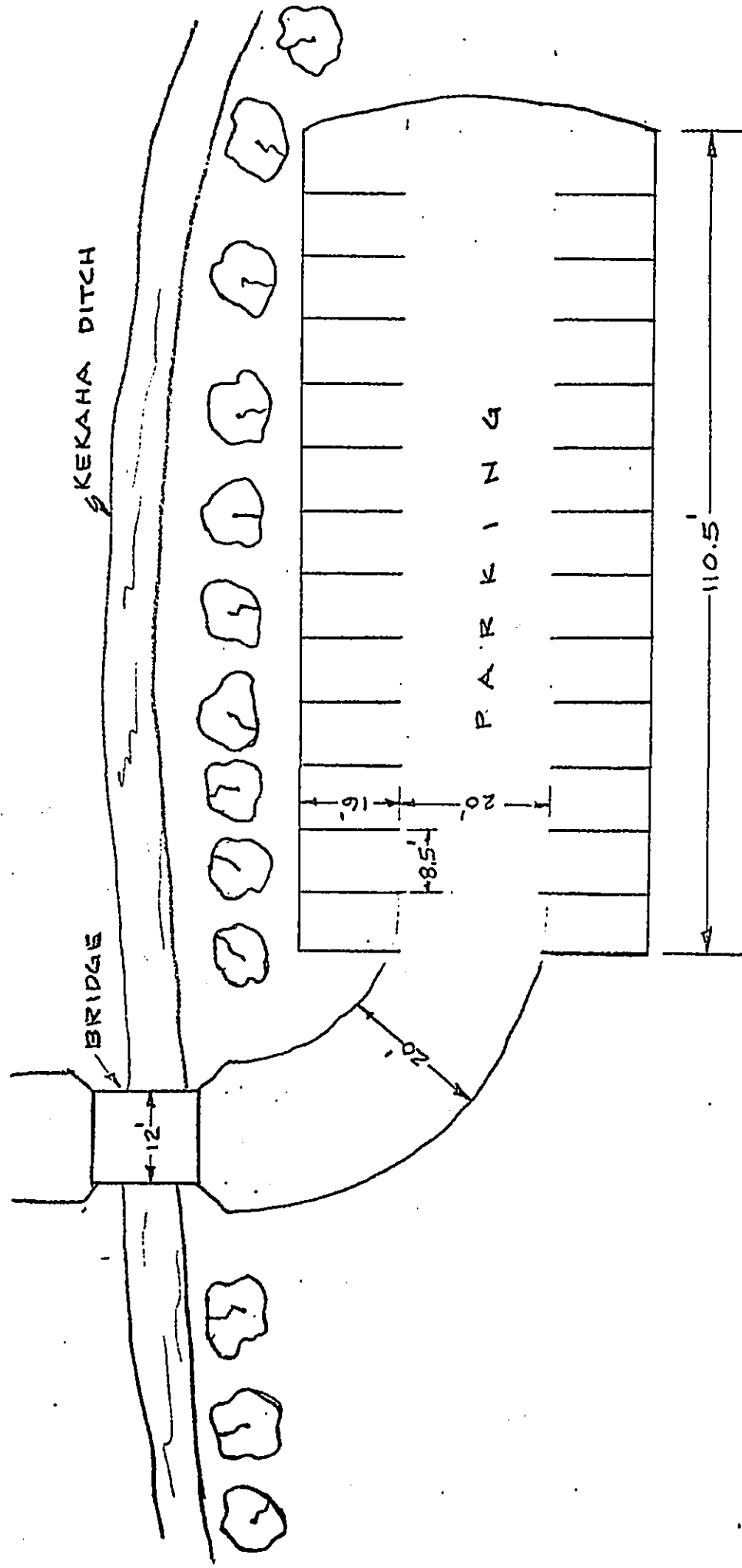
There are telephone and electrical power lines to provide these services. Water is available from Kekaha Sugar Company who controls Kekaha Ditch. This is non-potable water and would be used in the flush toilets, and also as drinking water for the mules, and for regularly scheduled mule washing. This outdoor use of water will be carefully handled so as not to cause damaging runoff down the slope to Mana plain. Potable water for humans would be provided in insulated carboys, since Waimea Canyon State Park informed the concessionier that it did not have potable water, and could not be depended on to provide water for Mule Tour customers.

7. PARKING FACILITIES

In the original EIS, the figure given for parking area was 300 square feet; it was a gross typographical and/or computation error. The corrected figure is 5,750 square feet, enough for 26 vehicles. The concessionier will organize a customer pickup service for guests from hotels on the East Side, especially. The vehicle(s) will be able to transport 10 passengers. Employees will be strongly encouraged to carpool also; there are 5 spaces allotted for employees. Since most visitors travel with at least two persons/car, the remaining 21 spaces would be sufficient for 50 customers, remembering that 10 will arrive by van, and occupy one parking space. It is hoped that as many as 20 customers will utilize the proposed van service. The parking area will be covered with stabilized gravel to provide dust and erosion control, as well as a safer walking material than loose gravel. There will be additional space for cars, should the need arise, but it will not be covered with stabilized gravel. All customer parking will be contained within the three acres, across Kekaha Ditch, screened from Kokee Road. Fig. 5

8. ACCESS

The graveled road leading to/from the parking area will narrow from 20' to form a single lane, 12'-wide bridge crossing Kekaha Ditch. It will be a heavy duty, wood plank and railing bridge, capable of supporting small commercial trucks (supplying feed) and an animal trailer, for instance. The mule-crossing bridge adjacent Kokee Road .25 mile makai of the Ka'e Trail origin will not need to be heavy duty, because it will not (need to) support vehicles. The entrance to the customer parking area will be at the center of a curve in Kokee Road to allow maximum visibility. If considered advisable, two signs, warning "Drive-



Gravel surfaces can be stabilized by sealing with bituminous emulsion and rolling fine gravel into the surface, providing a surface more impervious to weeds and rot subject to displacement by traffic like loose gravel. Bituminous emulsion to BS 434:1960 is sprayed at a rate of 1.5 liters/m² and blinded with coarse dry sand. After a few days a second layer is sprayed at the rate of 1 liter/m² and blinded with fine pea gravel, and rolled with a 300 to 500 kg roller.

Fig.5 PARKING LOT AT STAGING AREA

way" or about a 'T' intersection, may be posted as a safety precaution. Operations of the Mule Tours will commence at 9 A.M. and be completed by 3:00 P.M., and should not interfere with commuter hours. If drivers are obeying the posted speed limit (under 50 m.p.h.) and not speeding - as those familiar with the road (e.g., commuters) are wont and noted to do - there should be no undue traffic hazard.

Similarly, for the mule crossing, signs may be posted warning "Animal Crossing" or "Riders" in the vicinity of the Ka'e Trail where it crosses Kokee Road. If further safety measures are advised, the operators can employ the practice of stopping cars with a red flag.

9. LIABILITY

Waimea Canyon Mule Tours will be insured for its activities, on the premises and on Ka'e Trail. It may place an age limitation on its riders, such as 15 years old, depending on its insurer's disposition.

D. ECONOMIC AND SOCIAL CHARACTERISTICS

Permission to construct a trail and several structures will provide jobs in the construction and engineering industries.

If Waimea Canyon Mule Tours is granted a (long-term) lease from the State DLNR, its operations will provide at least 10 full-time jobs. These include: 7+ guides (rotating days off), wrangler, stable hand, cleanup/maintenance worker, office worker, manager.

The inception of Ka'e Trail will provide access to the spectacular beauty of Waimea Canyon to visitors by a mode of transportation less strenuous (and more pleasant, to them) than hiking. The availability of mule travel affords the handicapped an opportunity to experience the Canyon's splendor. Of course, handicapped riders do not present a major case for approving this proposal, because the handicapped are virtually always a minority. But, it is the expansion of recreation possibilities to the handicapped that contributes to the social merits of the proposed action.

The rest area at the bottom of the canyon will not be far from a known historic site used by Hawaiians to grow taro in terraces. The mule tours offers a method for exposing the visitor to some culture and archaeological remains which will expand his/her understanding and appreciation for Hawaiian culture of olden times.

E. USE OF PUBLIC LANDS

The proposed project lies within the boundaries of a Conservation District. Also, State lands are involved which are designated State Parks, and Puu Ka Pele Forest Reserve. For all these factors, Ka'e Trail would be a public access trail into Waimea Canyon and other Forest Reserves.

F. COST AND SCHEDULE

The estimated cost of \$205,000 can be broken down as follows:

Trail construction	60,000
Building construction	50,000
Animals + equipment	65,000
Corral, Parking	15,000
Miscellaneous	15,000

Estimated time of construction of Ka'e Trail is 90 - 120 days, depending on weather conditions. The trail should be done in the non-rainy season so as to minimize erosion and runoff potential. It could take a year to complete the building, parking area and corral. The animals need to be purchased and shipped from the Mainland, because the concessionier says about 55 mules are not available in the Islands.

G. SUMMARY OF TECHNICAL DATA

Erosion Control:

1. Slope limitations - maximum of 25-30%; goal of 20% or less
 2. Sensitive clearing and grubbing, attempting to leave numerous trees
 3. Excavation done 80% or more by manual labor; 20% to be done by D4 crawler type tractor
 4. Tilt the trail bed towards valley to carry off sheetwater
 5. Proper emplacement of culverts of size adequate for flood water
 6. Proper location and gradient of waterbreaks on trail
 7. Trail finishing in accordance with minimum maintenance demands
- Trail Dimensions: 4' x 10' x 3.5 miles

Appendix

Wastes Disposal:

1. Human wastes at lower rest area deposited in dry toilet, treated with lime as needed
2. Human wastes at reception area deposited in flush toilet, equipped with cesspool of dimensions 30' deep x 6' diameter
3. Mule manure will be collected, placed in screened drying sheds, bagged when dry, and disposed of by sale as fertilizer or in sanitary landfill (approved)

Appendix

Parking Provision:

1. Area 5,750 square feet to be covered with stabilized gravel
2. Capacity of 26 vehicles

H. HISTORIC PERSPECTIVE

Our country's National and State parks have a long history of being accessible for enjoyment by visitors and residents by mule or horseback. For well over a century, ranchers living on the edges of our larger parks, such as Yellowstone and Yosemite, have rented horses and mules to visitors. The mule train ride down into the Grand Canyon has been enjoyed by many persons who would not have otherwise experienced the beauty of the canyon. It is said that our famous American composer Ferde Groffe, wrote the well known Grand Canyon Suite after making the tour by mule. The "On the Trail" part, with its mule theme, has been used many times in movies and music appreciation courses. The 300 pound Mr. Groffe might have found it difficult to make the trip in any way other than muleback. Today, there are over 80 listed mule and horse concessions which utilize public parks and forests. Here in Hawaii, there are horseback trips into Hawaii National Park and Haleakala National Park, and the most widely publicized mule tour at Kaulapapa, on Molokai.

CHAPTER II. DESCRIPTION OF ENVIRONMENTAL SETTINGA. PHYSICAL ENVIRONMENT

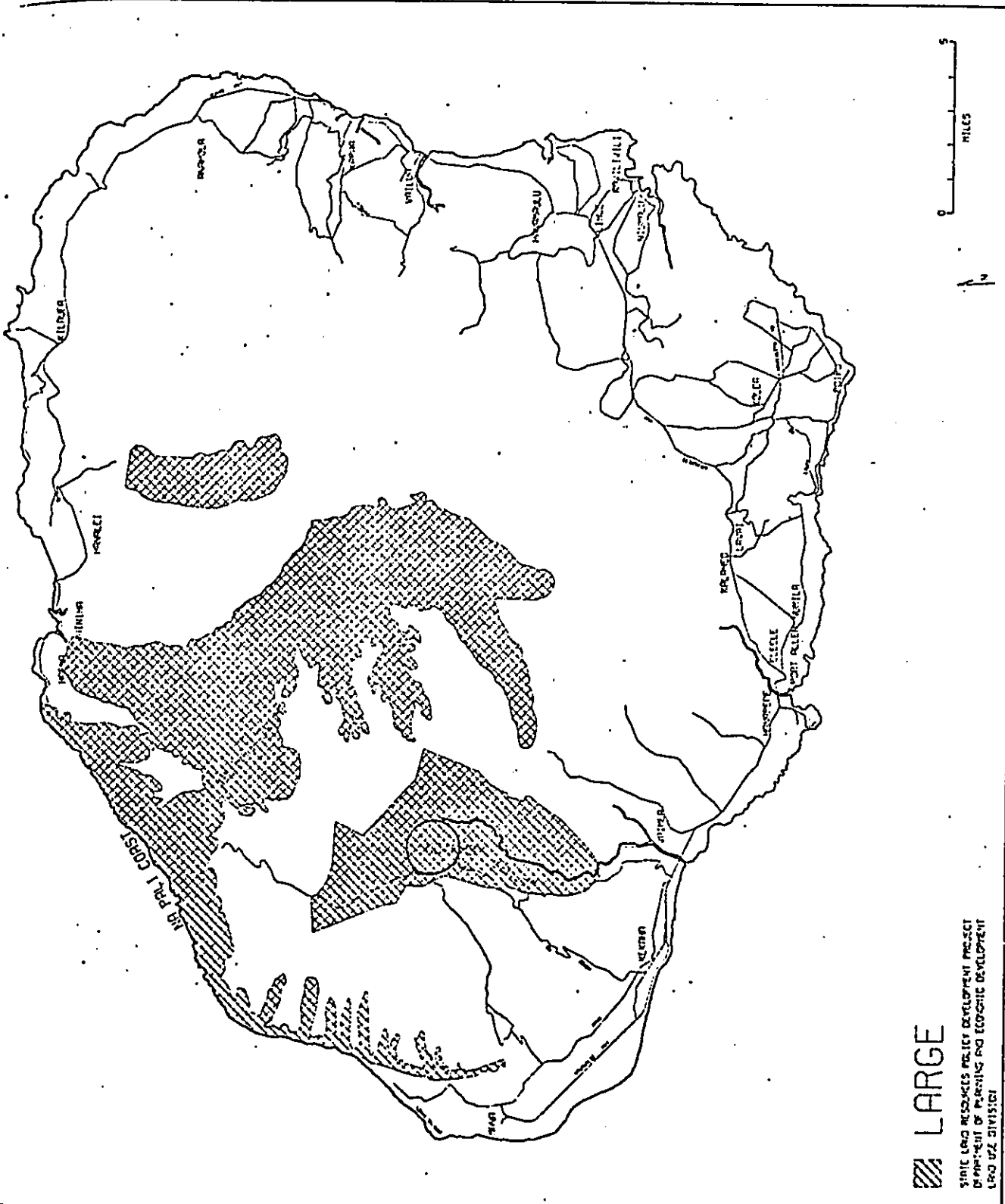
1. GEOLOGY

Waimea Canyon is a geomorphic phenomenon resulting from the interaction of the three major volcanic periods in the history of Kaua'i, and the intervening and subsequent periods of weathering and erosion. The island originally formed as a typical dome-shaped volcano. Near the end of the first phase, the summit collapsed to form a broad caldera in the Kokee-Waialeale region. The other two periods are termed the Waimea Canyon volcanic series, occurring in the Pliocene era, and the more recent igneous activity, in the Pleistocene, is called the Koloa series.

Waimea Canyon series is composed of four formations: Na Pali, Haupu, Olokele, and Makaweli, in order of decreasing age. The first formation, Na Pali, occurred after a quiescent period, with lava erupting in rapid succession from narrow fissures. It has an exposed thickness of 2700' in Na Pali sea cliff, and is characterized by thin flows which accumulated on the flanks of the original dome. The west wall of the canyon contains this formation, traversed by frequent dikes, to a depth of 2400'. The second formation, Haupu, is composed of olivine basalts, arranged in horizontal layers, and is not significant in the canyon. The third formation, Olokele, is a result of flows ponding in the caldera, forming massive, dense beds 40 - 100 feet thick in nearly parallel arrangement. The west wall of the canyon is the west boundary of the Makaweli depression, which was formed by the collapse of a northward pointing V-shaped segment of the island. The east boundary of the collapsed segment is obscured by lavas that poured out from the ancient caldera and partly filled the depression. These lavas are called the Makaweli formation. A few well-sorted conglomerate beds 2 - 25 feet thick are found intercalated with the lava beds; in the spur below Puu Ka Pele, which is an eroded core of a cone, the breccia, named the Mokuone member, is 1000' thick. Fig. 6

2. GEOMORPHOLOGY Fig. 7

The upper staging area and building are located on what is known as Puu Ka Pele Dissected Upland. The degree of dissection is evidenced by the master drainage patterns established - slopes are cut by numerous major valleys, indicating erosion has been occurring for a long time, even by geologic standards. Waimea Cliff and Valley area show little evidence of former slope; the area exhibits high, nearly vertical cliffs and amphitheater-headed valleys. Waimea Canyon has been crowded westward by lava flows that erupted subsequent to its original cutting. The canyon measures 14.5 miles long and 2,750' deep. Later flows belong to the Makaweli formation and the original position of Waimea River was probably along a fault, a little further east bounding a graben. The aberrant course of the river seems to have been determined by a fault zone traversing the island in a north-south direction. The block on the west stood higher than that on the east, and consequently deflected the drainage from the summit plateau.



LARGE

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Fig. 7 LARGE-SCALE LANDFORMS AND LANDSCAPES

Figure 20

3. HYDROLOGY

The hydrology of Kaua'i is determined by the characteristics of the lavas which form the island. The basal groundwater occurs as fresh water floating in and displacing sea water in permeable rocks; the volcanic composition of the island(s) promote and control the existence of this Ghyben-Herzberg lens of fresh groundwater. In much of Kaua'i the rocks above and below sea level are thick-bedded, massive, dense, and of generally low permeability. In these rocks, the fresh water may not occur as buoyant systems that are characteristic of well-developed Ghyben-Herzberg lenses in rocks of higher permeability. In some areas where the extent of permeable rock is large, as is Waimea Canyon, the recharge of fresh water is apparently too small to maintain well-developed lenses of fresh water. This means that the water table elevation is not very high above mean sea level, and would not be affected by seepage (from a cesspool) at an elevation of about 2800'. The existence of dikes contributes to high-level ground water being perched or impounded by relatively impermeable rocks. Dikes in the lavas of Na Pali formation are numerous, but the absence of springs on the west wall of Waimea Canyon indicates that high-level supplies in the area probably are very small. A few small perched springs or seeps flow from the rocks of the Makaweli formation, but the development of high-level water from these rocks in amounts of more than a few gallons a minute would not be possible at any place.

Soils in the Waimea Canyon area have a very high potential for runoff, and this area is a watershed for Waimea River. The relative volume of runoff from a saturated soil subjected to high intensity rainfall is the definition of runoff potential. This is an index of the upland potential for flood runoff; it does not refer to the magnitude of downstream flood discharges or flood plain dimensions.

Fig. 8
Fig. 9
Fig. 10

4. CLIMATOLOGY

Isohyetal lines show that average annual rainfall for the Ka'e Trail area is between 40 - 50 inches. The temperature ranges for this area do not extend to freezing; therefore, erosion potential from frost action (push-pull, creeping, etc.) is not a problem.

There can be periods of intense rainfall, contributing to flash flood conditions when runoff is very high over a short period of time. The flashy condition which streams exhibit, is caused in part by the generally small area of the watersheds or drainage basins, but it is primarily caused by the extremely high permeability of the volcanic rocks and soils. Basalts are among the most permeable rocks on earth, and Hawaiian basalts are especially so because the individual lava flows occur in thin layers.

5. BIOLOGY

FLORA:

The *Atlas of Hawaii* considers the Ka'e Trail region to be in a vegetation zone defined by being below 2500' in altitude, and receiving 40 - 60 inches of rain per year. This open guava forest with shrubs classification includes the following flora: guava, koa haole, lantana, Spanish clover and Bermuda grass. The staging area is located in a region labeled exotic forest, and disturbed native forest is not in the vicinity.

Fig. 11

RUNOFF POTENTIAL KAUAI

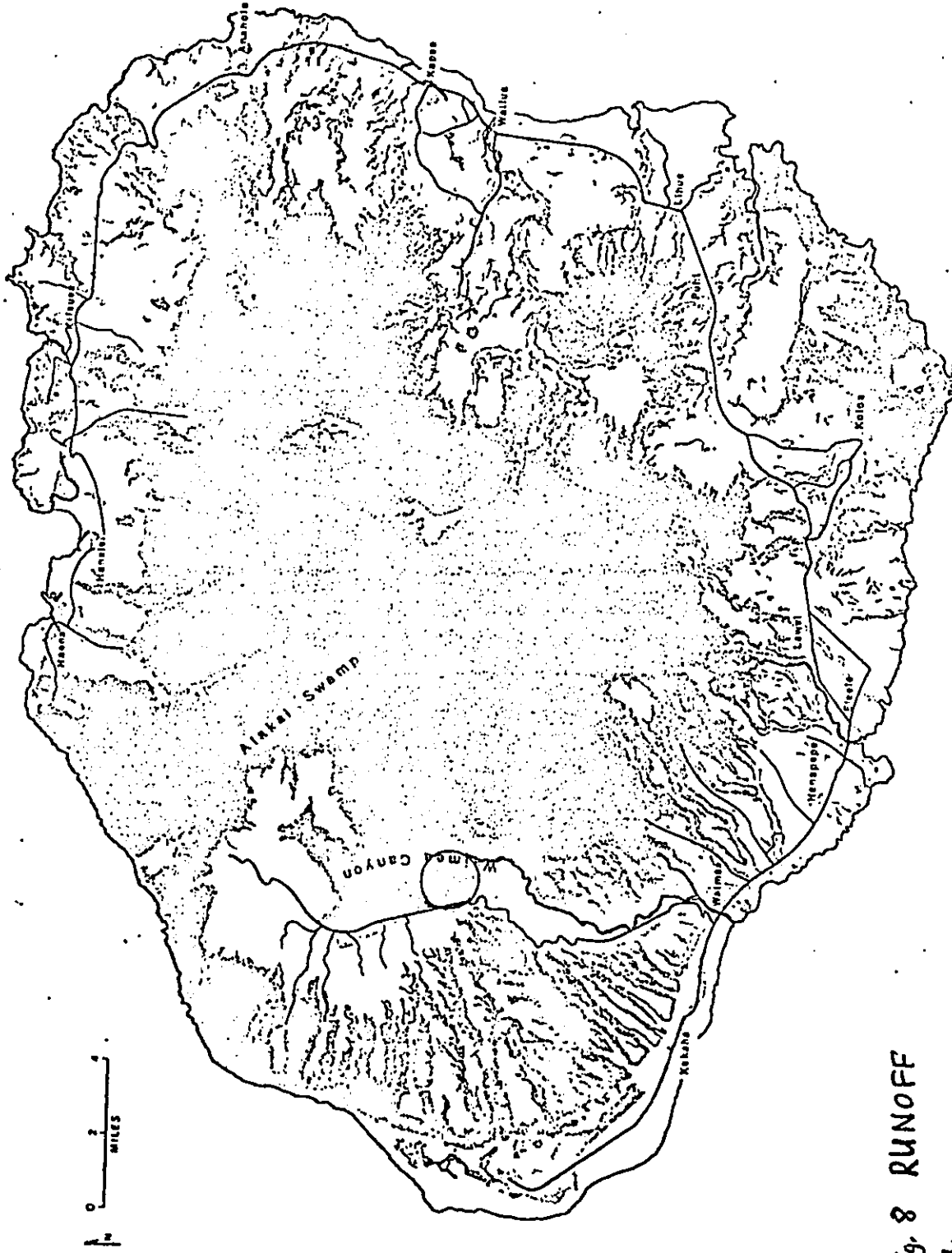


Fig. 8 RUNOFF

Soils with Very High Runoff Potential

Figure 24

LANDSLIDE POTENTIAL
KAUAI

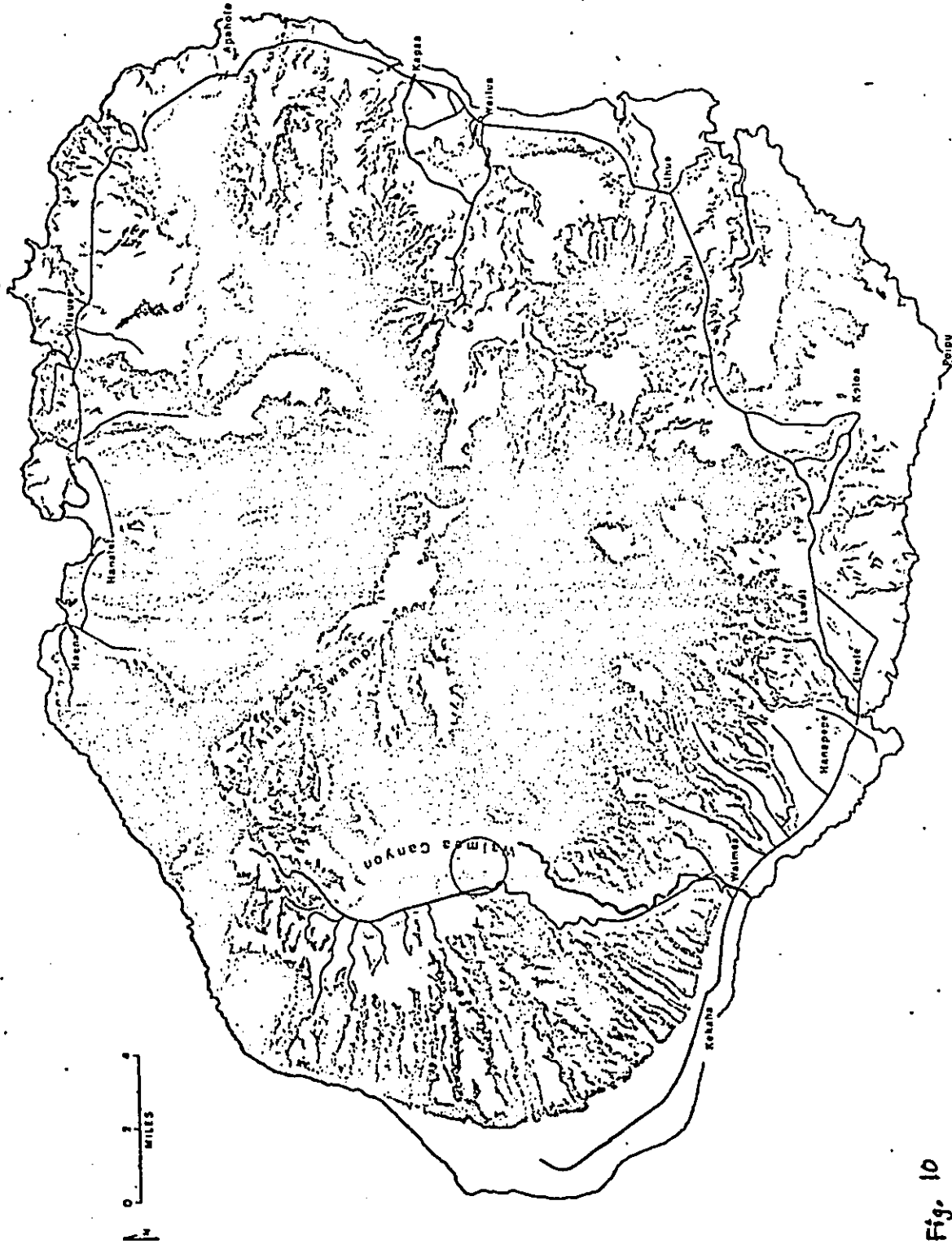


Fig. 10

Soils with High Landslide Potential

Figure 23

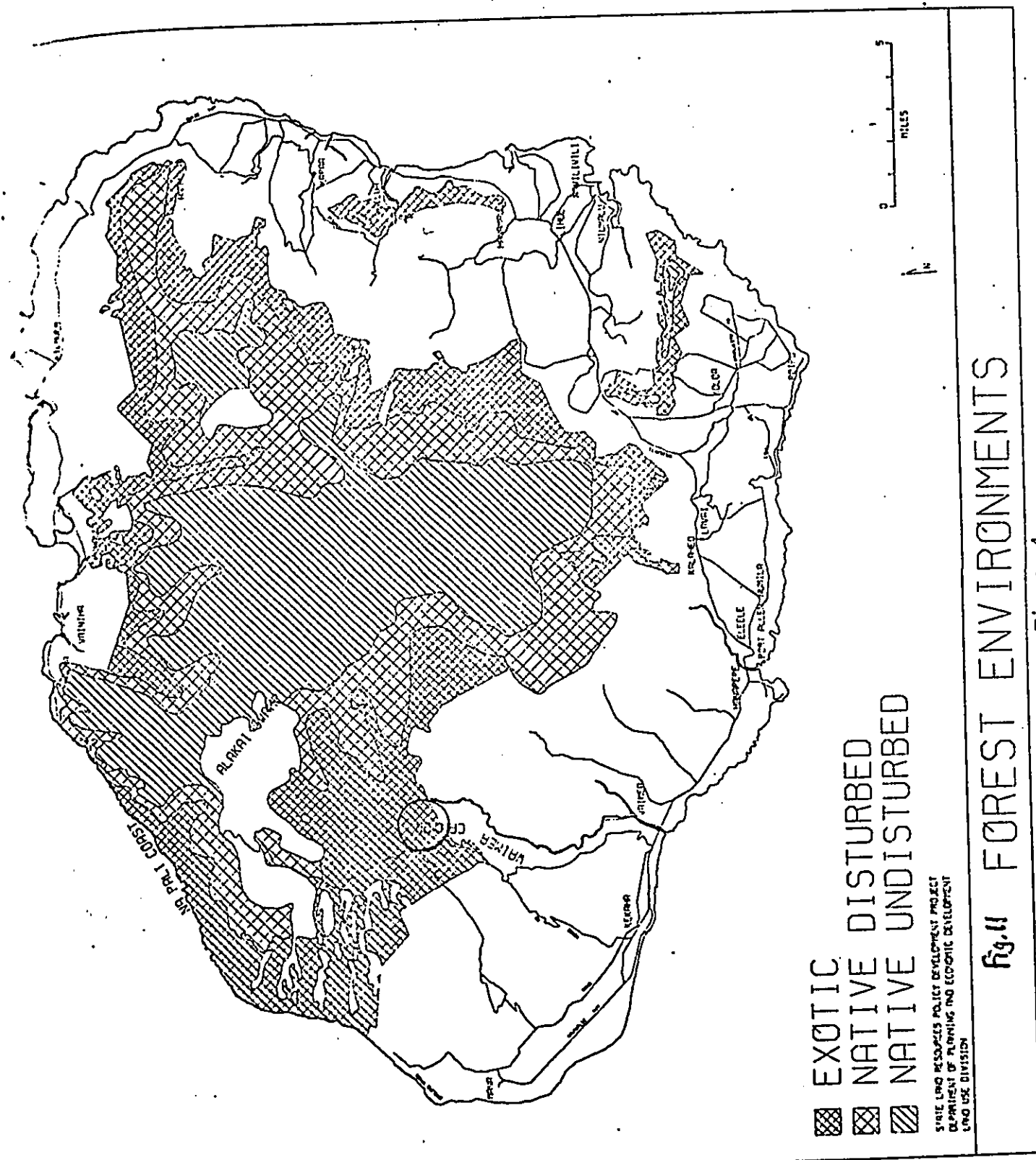


Fig. 11 FOREST ENVIRONMENTS

Figure 4

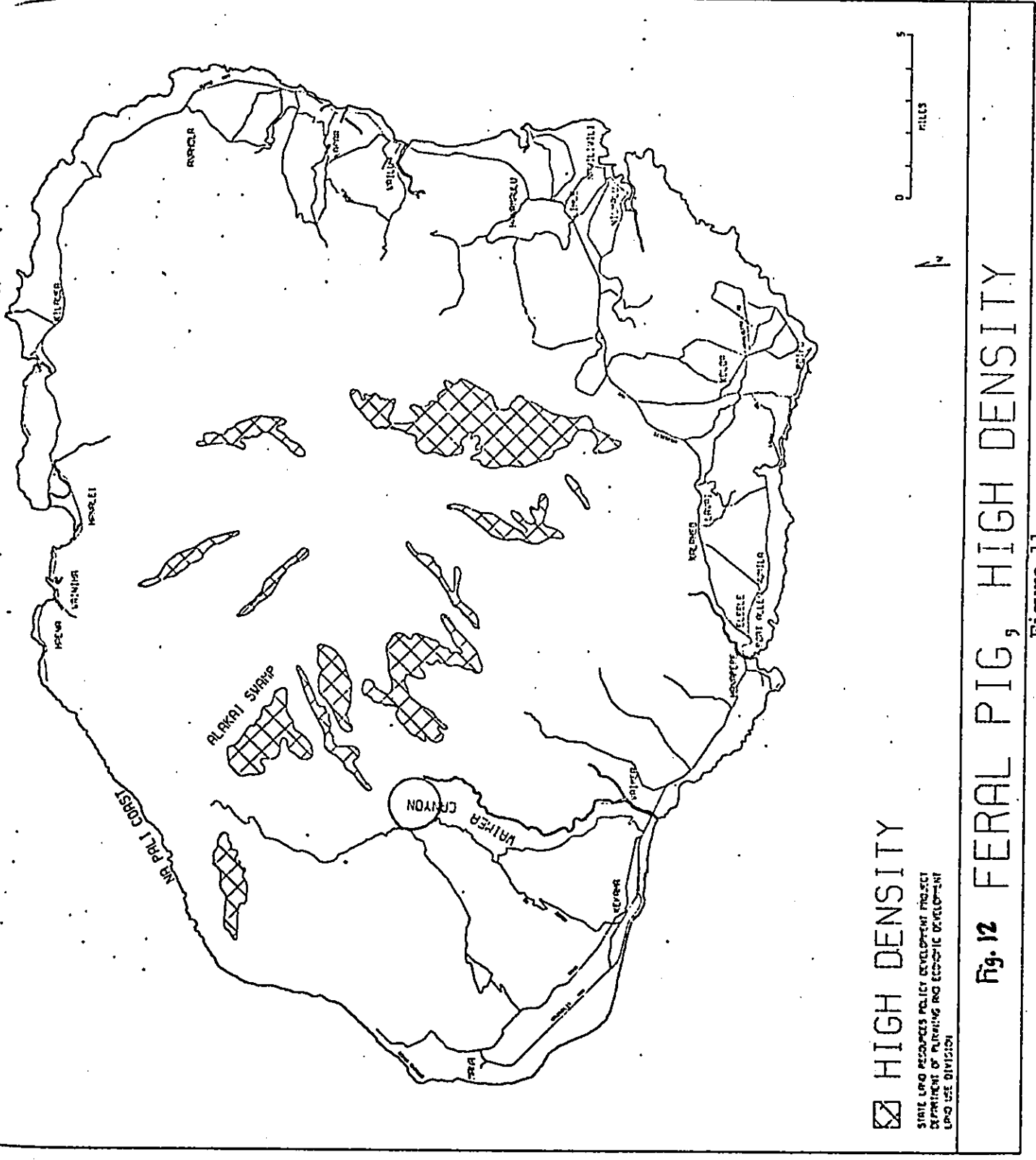
A comprehensive list is presented below; these flora are reported to exist in the area by Thelma Hadley, of Kokee, and Ralph Daehler, District Forester of Kaua'i. They are listed in no particular order.

SCIENTIFIC NAME	COMMON NAME	ORIGIN - Ralph Daehler's	key:
<i>Dodonaea eriocarpa</i>	'a'ali'i	E	E=endemic
<i>Styphelia tameiameia</i>	pukiawe	I	I=indigenous
<i>Bidens</i> spp.	ko'oko'olau	E	C=pre-Cook, and
<i>Erythrina sandwicensis</i>	wiliwili (fire tree)	E	D=post-Cook
<i>Dianella sandwicensis</i>	'uki'uki	E	introduction
<i>Acacia koa</i>	koa	E	
<i>Pteridium aquilinum</i>	kilau	I	
<i>Psilotum nudum</i>	moa	I	
<i>Viola trachelifolia</i>	waioleka	E	
<i>Lantana camara</i>	lantana-	D	
<i>Grevillea robusta, banksii</i>	silk oak	D	
<i>Passiflora edulis</i>	liliko'i	D	
<i>P. edulis</i> f. <i>flavicarpa</i>	yellow liliko'i	D	
<i>Melaleuca leucadendra</i>	paper bark		
<i>Eucalyptus robusta</i>	swamp mahogany		
<i>Cordyline terminalis</i>	ti	C	
<i>Lampranthus glomeratus</i>	akulikuli (ice plant)		
<i>Wikesia gymnoxiphium</i>	iliau	E	
<i>Plantago major</i>	laukahi	D	
<i>Santalum pyrularium</i>	iliahi	E	
<i>Cocculus viragatus</i>	huehue	E	
<i>Metrosideros collina</i>	ohia-lehua	E	
<i>Scaevola gaudichaudi</i>	naupaka kuahiwi	E	
<i>Gahnia becheyi</i>	uki	E	
<i>Aleuvities moluccana</i>	kukui	C	
<i>Pithecellobium saman</i>	monkey pod	D	
<i>Eugenia cumini</i>	java plum	D	
<i>Opuntia megacantha</i>	pa-nini	D	
<i>Hibiscus tiliaceus</i>	hau	C	
<i>Melia azed arach</i>	inia-	D	
<i>Caesalpinia major</i>	kakalaioa	I	
<i>Eragrostic variabilis</i>	emo-loa	E	
<i>Heteropogon contortus</i>	pili	I	
<i>Myoporum sandwicense</i>	naio	E	
<i>Calocasia esculenta</i>	kalo	C	
<i>Psidium Guajava</i>	guava	D	
<i>Setaria glauca</i>	yellow foxtail	D	
<i>Pritchardia</i> spp.	loulu	E	
<i>Furcraea foetida</i>	mauritiu hemp	D	
<i>Sida</i> spp.	ilima	I	
<i>Mangifera indica</i>	mango	D	
<i>Tamarindus indica</i>	tamarind	D	
<i>Sapindus oahuensis</i>	lonomea	E	
<i>Hibiscus waimea</i>	kokeo keo keo	E	
<i>Dubautia</i> spp.	naenae	E	
<i>Carica papaya</i>	papaya	D	
<i>Citrus Aurantium</i>	orange	D	
<i>Melinis minutiflora</i>	molasses grass	D	
<i>Erigeron canadensis</i>	horsetweed	E	

Mr. Daehler did not note any particular native flora species which are considered rare or endangered. There is no list available yet from the State Division of Forestry. In a State publication of 1978: "A botanist has been hired to deal with its endangered plant species responsibilities. Review of candidate species is underway, with the result to be a recommended list of endangered species for approval by DLNR. Additionally, botanical surveys of the wildlands of the State are being planned. The results of the surveys will provide needed knowledge on the identity, abundance, distribution, and habitats of plants. Priority for botanical surveys will be given to those forest areas that are being considered for other uses in the near future." The applicant respectfully suggests that the State take the responsibility for conducting such a survey on their land, and making the findings public. Failing that, he intends to retain a Field Botanist from Pacific Tropical Gardens, Lawai, Kaua'i, who will carry out a statistically defensible survey, looking especially for any endangered native plants which may have found a habitat in gullies. In a preliminary survey, the Botanist did not find any rare or endangered plants in the area of Ka'e Trail.

Iliau Nature Loop trail is located near the proposed trail, by Puu Kukui on the western edge of Waimea Canyon. The State curtailed a march of introduced plants in an area which contained a good representative selection of native dryland-scrub species of that region of Kauai. Since this trail coincides with (the origin of) Kukui Trail, it appears that immediate accessibility is not damaging to the Iliau. Therefore, it does not appear that an equestrian trail, not in the immediate vicinity, would act as a hazard to the Iliau.

Several concerned parties wished the EIS to address the problem of the Banana poka vine encroaching on vegetation in the area. It is a severe (in places) forest weed spread by moister stream bottoms, the primary agent being the wild pig. It has been noted that the Banana poka is already in the area, so the mule tour operation would not be introducing it as a consequence of trail usage. Furthermore, there are very few moister, or even moist, stream bottoms along the west wall of the canyon. Streams are intermittent, there are no springs seeping from the wall, and runoff is high thus precluding the possibility of a moist stream bottom. Finally, there are very few pigs in the area; it is not shown to have a high density of pigs. Should the mule train guides note any incidence of this vine in the vicinity of the trail, they will cooperate to the utmost with the Forestry Division in eradicating it from the area. Fig- 12



[X] HIGH DENSITY
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Fig. 12 FERAL PIG, HIGH DENSITY

Figure 11

FAUNA

These are the wild and feral mammals found in Waimea Canyon region: bat, cattle, deer, mule, dog, goat, horse, and pig. Fig. 12 shows the location of the highest density of feral pigs; the highest density of feral goats is to the north and west of the proposed trail. The State Fish and Game Division estimates that the population of black-tailed deer for the range west of Waimea Canyon is 750 animals, on the basis of browse surveys.

The following is excerpted from a Fish and Game publication of 1974. Fig. 13
Endangered native birds:

- The Kauai Thrush (Kamao) is rare. Few in number and localized in distribution, the small Kauai Thrush, or Puaiohi, is found only in the Alakai Swamp where it lives a largely secretive life.
- The small Oo, was formerly abundant on Kauai. Its population has been declining for decades. Only a few dozen birds remain in the deep reaches of the Alakai Wilderness Preserve.
- Of the four kinds of Akialoa (Sicklebills), only the one inhabiting Kauai may still exist. It has not been seen in the last thirteen years. The Kauai Nukupuu is extremely rare today. Small populations of Ou (Thickbills) exist in the Alakai Wilderness Preserve on Kauai.
- The A'o (Newell's Shearwater) is not known to breed only on the island of Kauai. It nests in burrows in the lowland forests. Nesting areas of the A'o need protection from fire, grazing, and predators.

Not endangered:

Kauai Elepaio (Flycatchers): These friendly little forest dwellers can and do invade the mixed native-introduced vegetation zones in the lower valleys and along ridges where other native forest birds are seldom, if ever, found. It is doubtful that the Elepaio could exist indefinitely in these disturbed areas if the populations were not constantly being replenished by birds moving down from the higher elevation native forests. Lack of suitable food items (insects) have been suggested as being a possible limiting factor in the lower habitats.

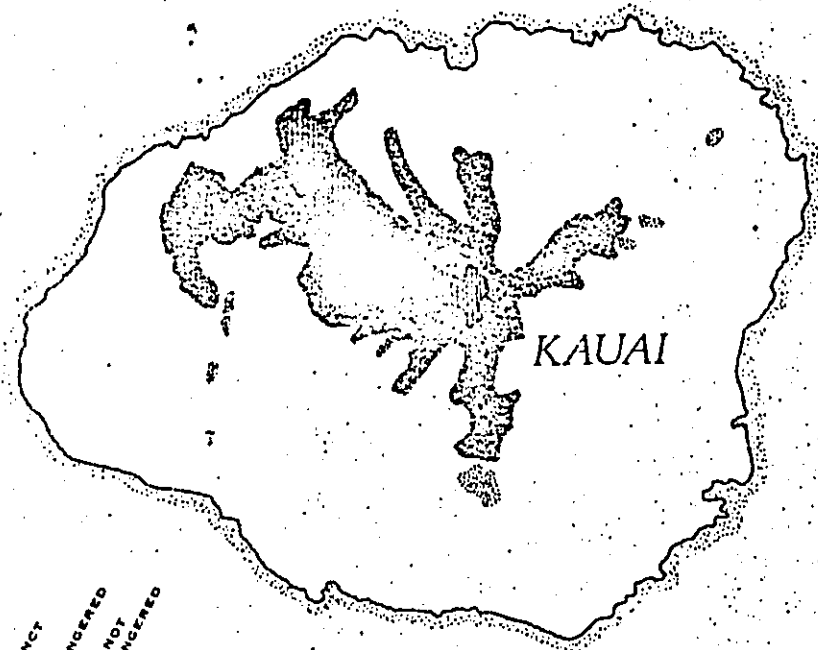
Kauai Amakihi, Anianiau, Kauai Creeper, Kauai Akepa = close relatives
They feed on insects, nectar, and other plant materials in a wide range of native forest and scrub habitats.

Apapane (Honeycreeper) is relatively common today on all the larger forested islands.

Iiwi (Honeycreeper): Once plentiful on all six major islands, it, too, is becoming less common, having disappeared on Lanai, and being endangered on Oahu and Molokai.

The A'o is believed to nest in the cliff areas adjacent to Kukui Trail, but not confirmed. Fire could be a hazard to nesting populations, but it is not too likely to be much of a problem as vegetation is sparse. The only time that an observer can readily see the A'o is in the evening from sunset to dark. After breeding season (May - October), the birds seem to leave the vicinity of the islands and possibly move further into the open Pacific Ocean. This species is [1967] not as rare as was thought.

- Normal range — native forest birds.
- ▨ Critical habitat — endangered species.
- ☐ Nesting area of the Ao.



ISLAND OF KAUAI

- Kauai Thrush (Kamao)
- Pualohi
- Kauai Elopalo
- Kauai Oo
- Kauai Amakihi
- Anianiau
- Kauai Creeper
- Kauai Akapa
- Kauai Akiakoa
- Kauai Nukupuu
- Ou
- Apapane
- Iiwi
- Newell's Shearwater (Ao)
- Dark-rumped Petrel (Uau)

EXTINCT
ENDANGERED
NOT
ENDANGERED

- ◆
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The 4,000-5,000 foot high Alakai Wilderness Preserve isolated by high cliffs, except on its western end, is the best sanctuary in the Islands for native birds. However, it is being invaded by exotic plants and birds which are a serious threat to the ecological integrity of the area. Enlargement of the eastern end of the preserve and vigorous control of foreign plants are needed. Nesting areas of the Ao need protection from fire, grazing and predators.

Fig. 13 - Native Bird Habitats

Koloa Maoli (Anas platyrhynchos wyvilliana): A very secretive bird, it will generally take to flight before the watcher can locate it. The Koloa, native Hawaiian duck, occasionally is found in Waimea River proper, and regular human and livestock activities may cause minimal disturbance to them, but not so as to warrant real concern, as long as the area remains in wildland recreational management.

Thoughtless hunters may occasionally shoot wild birds in the area (illegally), but this is a very insignificant problem at present. Game bird hunting is not permitted within Waimea Canyon, as it is not really a suitable bird hunting area. Most of the bird species in the area are exotic introductions which are widespread and generally speaking, not much affected by human activities in that area. In conclusion, there is no significant impact on any bird species resulting from hunters, hikers, or horseback riders in the Kukui Trail area.

6. ARCHAEOLOGY

An archaeological reconnaissance on Kukui Trail did not disclose any features or remains of archaeological significance. The consultant will be a member of the survey team to contribute to the final, and specific determination of proposed Ka'e Trail. He did feel that there would be no features along the proposed route, makai of Kukui. Linear strips bounding Waimea River are included in the listing of known archaeological and historic sites. As part of the recorded site 3012 (ARCH files) are a number of well-preserved former irrigated taro fields. These "lo'i" are located on sloping terrain at the base of the canyon, and are defined by remains of terracing.

The consultant feels that: As far as visitor impact on the archaeological features in areas at the base of the canyon, this area is already open to the public and therefore previously open to potential impact. Furthermore, the features examined consist of terrace walls and lo'i which are in good, stable condition and it is our judgment that increased visitation of the type that you propose will not damage them, but will have the beneficial effect of increasing public appreciation of Hawaiian culture.

A parcel of land approximately .25 mile mauka of Kukui Trail along Kokee Road was also examined for archaeological remains. This area has been previously modified by modern usage (military storage area) and is devoid of any remains. This is the parcel proposed for the mule staging and office/reception building. Further modification of this area will have no impact of an archaeological, historic nature.

7. HISTORY

Farther up Kokee Road, halfway between the above-mentioned site and Puu Ka Pele summit (elev. 3662'), was a village of canoe makers. Foundations of houses and a heiau are to be found in the forest. Built by the skilled craftsmen, called "Kahuna ka lai wa'a," or "priests of the canoe," these dwellings and religious structure served as temporary shelters for sleeping and canoe-blessing purposes. Koa logs were first

hollowed out where they fell; and then dragged to the finishing sheds at Puu Ka Pele. It is probable that some of the completed canoes were transported down the more gentle slope of today's Kokee Road, to the sea. None of the koa trees in the proposed staging area are of canoe size or could be considered a significant specimen which might have been suitable for a canoe. The native bird, elepaio, was significant to canoe makers, aiding them in choosing sound wood. Because the elepaio is an insect and worm eater, the Kahunas would observe its interest among the koa trees. If the bird lingered on them, it was an indication that the tree was unfit for use as a canoe. Because the elepaio is found in the exotic forest reaches of Kokee, and is an inquisitive bird, it would not be unlikely that visitors to this area might spot this native bird.

This area, Puu Ka Pele, was also used as a camp by Hawaiians who hunted wild cattle in the upland forests. This was not a permanent settlement, however, so few archaeological artifacts would have been deposited there.

The upper mule staging area could have been traversed by the Hawaiian bird catchers, in passing on their way to Halemanu. They came to the mountains to gather the colored feathers, usually red and yellow, for cloaks and helmets for the royal chiefs and chiefesses. Native birds whose feathers were plucked after their capture include the i'iwi, o'o, and apapane, all of which are considered endangered even today.

8. SCENIC RESOURCE

The Waimea Canyon is a large-scale geomorphic landscape of indescribable beauty. The aesthetic qualities of the canyon have been likened to those of the Grand Canyon, by many visitors, local and non-local. The volcanic origins of this feature have resulted in a spectacular display of hues, resulting from chemical and physical weathering. The lava beds can be seen as distinct, predominantly horizontal layers, and rock outcrops form bluffs and scarps to contrast with the sharp swales and valleys. Waimea Canyon is awe-inspiring at any time, from pre-sunrise to post-sunset, and in nearly any weather conditions, from misty sprinkles to sudden, brief downpours. The vegetation, not luxuriant, does add green hues to the reds, oranges, yellows, and browns of the rock formations. These words serve as an inadequate description of the grandeur and breath-taking loveliness of Waimea Canyon; one must really see the canyon to fully appreciate this work of natural processes.

CHAPTER III. THE RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES, AND CONTROLS

A. Dept. of Planning and Economic Development, 1978

The State Land Resources Policy Development Project developed the format and data base of the RBI (Resource Base Inventory) in a prototype demonstration for the Island of Kauai. Following are some resources which apply to the Waimea Canyon region, defined and discussed in terms of management objectives.

- I. Full Preservation with Restricted Use
Unique, threatened or endangered land ecosystem
- II. Protection with Limited Use
Known archaeological and historic sites
Natural, wilderness, and cultural heritage areas with outstanding recreational opportunities
- III. Conservation with Appropriate Use
Large-scale landforms and landscapes
Scenic areas (which constitute panoramas of outstanding scenic value)
- IV. Non-Degrading Use with Limited Modification
Streams providing water for irrigation use (Kekaha Ditch)
Watershed for streams
- V. Sustained Use with Long-Term Availability
Exotic non-commercial forest (more than 50% introduced species)
- VI. Full Use with Reversible Change
Range of exotic non-game birds

Policy developers also defined resources in terms of hazard conditions.

1. Forest Fire Hazard: In general, all dry lowland forest is vulnerable to fire. The hazard is higher if brush clogs the forest.
2. Erosion Potential: Refers to soil moved only a short distance from its original position as well as soil which appears as downstream sediment yield or as windblown deposits. Erosion potential is a function of inherent physical/chemical soil properties in combination with slope steepness, exposure, and climate.
3. Landslide Potential: Soil or rock prone to mass movement ranging from imperceptible creep to sudden slumping. This is a function of physical/chemical soil properties, slope instability, and rainfall.

The objective is to manage natural hazard areas according to the degree of risk which may exist, employing a combination of management controls, and treating hazards as qualifiers of other land resource policies and emphasizing preservation in areas of high risk to life and property.

In summary, landscapes and landforms which are significant components of Hawaii's scenic beauty, or which are representative of its geological history should be preserved, enhanced, and restored; development should be compatible with natural features of value and public enjoyment of these resources should be ensured by establishing physical and visual access.

B. Dept. of Land & Natural Resources, Div. of Forestry

The following is excerpted from "A Program for the State Forest Lands of Hawaii," published in 1975.

Some areas, such as areas of unusual scenic value, must be managed primarily for the single paramount purpose -- but even here some subordinate uses will usually be practicable. When the whole scale of values is considered, restrictive use is presumed to provide the greatest overall benefits from that particular site. Accepted practice is to optimize the development of one resource through multiple-use philosophy.

1. WATER RESOURCE

Waimea Canyon area is a watershed for Waimea River, and is a dry to moderately moist forest environment. The objective is to protect and improve the condition of vegetative cover and soil to retard rapid run-off of storm flows, prevent soil erosion, and help ensure water yields of the quality and quantity needed. Policy and program proposals are:

- Tree planting or grass sprigging, and installing and maintaining drainage on 50 miles of trail.
- Share watershed research knowledge and management expertise.
- Plan, initiate, and carry out intensified soil-vegetation surveys on all forest lands of the State of Hawaii.

2. PROTECTION

From Fire: An operational fire danger rating system was implemented early in 1977; it provides a 24-hr. forecast as to the chances of a fire starting. (Source: Report to the Governor, 1976-77.)

From Insects and Disease: Monitoring of insects and diseases generally associated with introduced animals will decrease potential health hazards to Forest Reserve users.

From Plant Pests: An entomologist was engaged to review work on such problems as banana poka, and clidemia. Also other undesirable exotic plants such as black wattle, firetree (*Myrica faya*), blackberry (*Rubus*), gorse (*Ulex*), melastoma, and lantana.

3. RECREATION HABITAT RESOURCE

State forest lands are diverse enough to provide all these activities /eleven listed, including hiking, hunting, fishing, and riding/ and many more. Access is a major limiting factor to providing recreation opportunities on State forest lands. Access to the public is further limited by restricted rights-of-way across private lands. The management policy is to coordinate the development of recreation opportunities with other resource uses and activities to achieve aesthetically acceptable landscapes adjacent to areas of important recreation use, including travel.

4. ACCESS TO STATE FOREST LANDS

The present system of 235 miles on foot and horse trail is inadequate. Forest resources in many areas cannot be properly managed or utilized. Accessibility influences all phases of forest management and utilization; it contributes or detracts from the balanced use of recreation, hunting, and fishing areas. Policy and program proposals: Build 170 miles of horse and foot trails to provide more interesting opportunities. Ten-year costs of trail construction are estimated at \$744,800, with maintenance costs running to \$1,104,800 for the 170 proposed miles, and the 235 miles of existing trails.

C. State Comprehensive Outdoor Recreation Plan (SCORP); 1975

Summary of Recommendations for Kauai Region, Development Programs

1. Pursue means of acquiring access to mauka areas for hunting, hiking, camping, and related activities. Additionally, programs should be initiated to provide more opportunities for inland active and passive recreation areas.
2. For Kalaheo-Kekaha area: encourage the development of inland active and passive recreational areas; promote access to (shoreline and) mauka areas to accommodate fishing, hunting, hiking, and other related activities.
3. The State is generally responsible for: trail maintenance by the Div. of Forestry; providing access to large land areas for low intensity resource-oriented recreation experiences.
4. Areas of joint responsibility include: Private enterprise should be encouraged to provide recreation areas, facilities, and programs as an integral part of the State's recreation system. Guidelines for the private role should be established as part of continuing planning under SCORP.

Recreation access systems are of initial importance to improving the State's ability to provide a full range of recreation experiences. While zoning and regulation can hold resources for the public enjoyment it must have a tandem program of assuring public access to these resources.

It would seem that the inception of Ka'e Trail complies with most of the land use policies and recommendations presented above. Ka'e Trail will be a public trail, providing those who ride for pleasure or for hunting a legal access into Waimea Canyon from the west wall. As it is now, hunters illegally ride down the foot trail, Kukui, or ride into the canyon along the floor, where there is no right-of-way. The Waimea River route forces the rider to cross the river about a dozen times, contributing to pollution and riverine life disturbance. Riders on Kukui Trail pose a health, safety, and aesthetic problem because of mule or horse manure, and crowding of hikers. The development of recreational facilities in the mountains by private enterprise is encouraged, and the applicant has decided to proceed with his proposal notwithstanding the absence of full reconciliation between conservation land preservation policies and recreation facilities provision goals.

CHAPTER IV. PROBABLE IMPACT OF THE ACTION ON THE ENVIRONMENT

A. PRIMARY

Erosion and deterioration processes would be intensified by the addition of an equestrian trail to Waimea Canyon's floor from the west wall summit. Increased access to wilderness areas would most likely catalyze the weathering and erosion of rocks and soil of the area in question. Soil conservation steps will be taken during construction and followed during use of the proposed trail. One should keep in mind that erosion occurs continuously in the wild. Often, the introduction of humans and their civilization degrades the environment more abrasively than would occur had the area remained as wilderness. Sometimes, however, man can help reduce erosion by designing and engineering his works so that runoff is slowed down, or soil is held in place by introducing vegetation. The availability of a trail designed for stock use will eliminate the excessive erosion of Kukui Trail which is now used by equestrian hunters, illegally, because it is the only access into the canyon from Waimea/Kekaha area.

B. SECONDARY

1. Pollution

Land - Ka'e Trail will experience an increase in animal droppings; these will probably be ground into the earth as animals following the defecator will step in the manure. However, solid waste is biodegradable, and the quantity dropped will be slight; therefore, it should not overload the capacity of the ecosystem for degrading.

Water - There will probably be a minimal increase in water pollution, affecting Waimea River via surface water runoff. Since the soils along the proposed trail route are very permeable, it is not too likely that very much runoff, which would have come into contact with manure, will enter the river and cause its quality to be significantly lowered. The soils at the lower staging site are somewhat less permeable, thus protecting against groundwater being contaminated from manure or human wastes, and entering Waimea River.

There is no data available to establish the existing quality of that stretch of Waimea River, between Koaie Stream to the north, and Waialae Stream confluence to the south. An accurate assessment of the water-polluting activities of the Mule Tours operation could be made only if a water gauging and quality control station were established below the lower staging area and above Wiliwili Camp on the River.

Air - A miniscule increase in air pollution might occur from vehicles associated with Mule Tours operations, e.g., the truck bringing feed for the animals, a vehicle bringing pre-packaged lunches and potable water for the riders. Probably the visitors who take advantage of the mule tour would have been going up to Kokee, Waimea Canyon Lookout and further up, anyway. There will probably not be a disproportionate quantity of visitors to this area; thus, air pollution from vehicle exhaust would not increase noticeably.

2. Plant Species

The mule tours may have a potential secondary adverse effect on some plants proposed for listing as endangered. The increased access and greater ease of access will probably result in increased traffic on both the present and proposed and alternate trails. The cumulative effect would be an increased use of the secondary trails, stemming from the main trails, along which some of these plants occur. These plants would then be vulnerable to destruction, whereas they are relatively secure now because of the low level of traffic on the trails. Some of the species which may be affected are the Hau kuawihī, Uhiuhi, 'Akoko, Koki'o, and Mahoe.

The use of Kukui Trail by hikers and hunters has not had any direct appreciable effect on the surrounding plant species composition. Indirectly, however, there have been detrimental effects to protective vegetation due to water runoff erosion. This erosion has been caused by improper trail layout and by trail users cutting switchbacks, thereby causing damaging drain channels to develop. These problems would not occur for proposed Ka'e Trail because it will be laid out with expert consultation, and trail users would not be making indiscriminate turnouts. (See Chapter VIII. Mitigation Measures.)

At the lower Kukui Trail area there's been some serious damage and continuing tree mortality to the native Wiliwili trees due to occasional trespass horses gaining access from the Waimea River drainage. Horses strip and eat the bark of that species. This type of damage would not be a problem with Mule Tours because the animals will not be tied near Wiliwili trees.

3. Animal and Bird Species

As described in Chapter II., there is no significant direct or indirect impact on bird species from hikers, hunters, and horseback riders in the Kukui Trail area.

A concern has been expressed about the possible proliferation of exotic species from having a ready supply of seed from mule feed at the upper staging area. It does not appear to be a significant problem, and if the exotic species should increase drastically, it may be appropriate to institute wild bird hunting in this area.

Very little wildlife resides in this area since vegetation is sparse and grazing, therefore, is most difficult. As shown and discussed earlier, the high densities of feral pigs and goats is mostly to the north, east, and somewhat west of Ka'e Trail area. The Ka'e Trail will probably have an insignificant impact on wildlife habitats.

4. Wilderness Experience

There are pros and cons on this issue. Hikers feel that the stock trail will encroach on the visual experience in the canyon, and encourage more users. Some people don't want any more people entering the area, or going down into the canyon proper. The pro side of the issue is that the introduction of an equestrian trail will enable the visitor to experience the magnificence of Waimea Canyon from close up even though he/she may not have the energy or time to hike down and back.

C. VISITOR AND GROWTH PROJECTIONS

PRIMARY: The upper limit is, of course, a theoretical maximum.

365	days	365	days
<u>x 54</u>	mules	<u>x 53</u>	people
19710		19345	

A more reasonable figure, takes into account days of rain, when there would be no mules or riders from Waimea Canyon Mule Tours using Ka'e Trail.

340	days	340	days
<u>x 54</u>	mules	<u>x 53</u>	people
18360		18020	

However, the best estimate of the projected usage of Ka'e is arrived at by using the average number of riders expected, which the applicant feels would be about 40 per day, including the trail guides.

340	days
<u>x 40</u>	people
13,600	visitors

To estimate if this many people would represent a phenomenal, or even significant, increase in the number of people going up to Kokee, calculations were made based on the number of visitors reported at Waimea Canyon Lookout for the Fiscal Years 1978, 1977, 1976 by Div. of State Parks.

June 30, 1978...	1,295,132	*an 11.4% increase
1977...	1,162,900	* a 27.3% increase
1976...	913,792	

If one assumes that the United Airline strike did not occur, and assumes an increase in visitors of 10.0%, each, for the next two years, the projected number of visitors would be:

June 30, 1979...	1,424,645
1980...	1,567,110

The estimated average number of customers for mule tours, 13,600, is 0.95% for 1979, and 0.87% for 1980. The point is that the operation of a mule tour concession in this location would not contribute to air pollution or traffic congestion, at an appreciable level. Similarly, this number of people would not place a burden on water resources and cesspool handling capabilities.

SECONDARY: Other users of Ka'e Trail would include the estimated 30 - 40 trips made by hunters, illegally, on Kukui Trail. Since Ka'e Trail will be public access trail, it is quite possible that more hunters would use it to get to hunting areas, a boundary of which is just north of the lower terminus of the trail. In addition, several local equestrians might want to use Ka'e for a pleasurable and quite scenic ride. These non-concession riders would not contribute to the daily total in any significant way. There might, however, be some parking along the side of Kokee Road, near the entrance to Waimea Canyon Mule Tours office and entrance; there might be some horse trailers in addition to cars, but the daily average would be so low as to be uncountable. Fig. 15

CHAPTER V. PROBABLE UNAVOIDABLE ADVERSE IMPACTS

A. SHORT TERM EFFECTS (during construction)

1. Noise: From the D4 tractor, periods of noise at 70 - 85 dB(A) levels, when the equipment is being used for initial trail excavation. If the tractor is used for 20% of the total trail, the period of time should be under 20% of the total construction time because the tractor is faster than manual labor. The estimated schedule of completion was 90 - 120 days; 20% of 90 days is 18 days; 20% of 120 days is 24 days. The total number of 'noisy' days, not consecutive, would probably be less than 18 days.

2. Air Contaminants: Dust motes from initial trail construction will probably increase in concentration. Noxious fumes from the diesel-fueled D4 tractor will be present for about 18 or less days.

3. Water Pollution: A very slight increase in coliform bacteria or any similar kinds of organisms from mule manure, may occur in Waimea River due to rapid runoff during a heavy rainstorm. This should not be a problem because wild and feral animals also defecate on trails, and even close to and in the river. This has not appeared to affect water quality to an appreciable degree, so a carefully controlled domestic manure program should not cause much water pollution. Hunters often let their horses defecate in streams and rivers when they are being watered; such actions should be eliminated through public education.

B. LONG RUN EFFECTS (during usage)

1. Perhaps more erosion than would occur naturally will result from the addition of a trail down the west wall of the canyon. If a strong trail maintenance program is initiated and followed, however, erosion and deterioration will be minimized and may even be reduced.

2. The loss of natural vegetation for widths of 4 - 5 feet in most places along Ka'e Trail, and up to 8 - 9 feet at switchbacks.

3. Intrusion into the "wilderness" of a manmade example of "civilization," which has different psychological, and spiritual ramifications for people. Some would prefer not to see any signs of man, not even another person; others would welcome the addition of a latrine for their personal comfort as well as the consideration of others in the "wilderness." Technically, Waimea Canyon area is not true wilderness because there has been human habitation: The temporary shelters for canoe builders, hunters, and feather gatherers up at Puu Ka Pele, and taro farmers along the river. In the long run, one could say that the wilderness will be harder and harder to find; solitude is found at too high a cost. Another could say that if there is a good thing available, you wish to share it with others with, of course, some limitations on the "amount" shared. The latter is the attitude of the applicant.

CHAPTER VI. MITIGATION MEASURES

A. EROSION CONTROL

1. Primary use of manual labor during construction stressed.
2. Minimum of cut and fill; about 225 cu. yds.; excess cut will be sensitively deposited on the downhill slope of the trail.
3. Approved trail construction standards and guidelines will be used; waterbreaks, swales and culverts, shoring on shoulders, etc.
4. To stabilize soil, grass may be sprigged if the District Forester and Field Botanist recommend such a measure.
5. No herbicides will be used to control trailside growth, but humans.
6. The groundcover replaced from the trail route itself will be replaced on the shoulders or wherever appropriate along the trail.

B. POLLUTION MINIMIZATION

1. Land: Manure at staging areas will be collected, deposited in a drying shed, constructed at each end of the trail. The drying platform will be screened to deter insect habitation, the dried manure will be sacked, and sold or hauled to a sanitary landfill.
2. If approval is contingent upon this, manure dropping on the trail can be prevented by the use of canvas bags tied on the rear end of the animals. They will have to be cleaned out, and may contribute to water pollution anyway from cleaning water runoff.
3. Litter removal will be a daily responsibility; all garbage and lunch refuse will be packed out for deposition at the landfill.
4. A sand-filled cigarette extinguisher will be provided at the picnic/rest area.
5. Water: The mule staging areas and manure drying areas will be graded in such a way so as to prevent contaminated runoff. Bagasse, sand, and/or wood shavings will be utilized as needed at the upper staging area to keep the ground dry.
6. No swimming will be allowed in Waimea River unless the Board of Health does otherwise approve it.

C. PUBLIC HEALTH

1. Unless the water quality is deemed safe for swimming, none shall be allowed in Waimea River.
2. To discourage rodent proliferation in stored feed, a mild but adequate rodenticide may be used at the upper staging area.
3. To ensure that the mules don't have any animal pests or diseases, they will be checked regularly by a veterinarian.
4. First aid equipment will be on hand at the office, as well as fire extinguishers.

D. FIRE HAZARD

1. NO smoking will be permitted on the trail. Cigarette extinguishers provided at the lower rest area.

E. TRAIL SAFETY

1. The grade shall be no more than 30%.

2. Where the trail is questionably narrow or "scary," a wooden railing will be installed, being about four feet high.
3. At the approved distances before the road crossing, signs shall be installed, warning motorists of "Rider Crossing." If authorities advise, the concessionier will instruct the trail guides to act as red flaggers, at the time of crossing. The delay should be no longer than two minutes to allow thirteen mules at a time to cross.
4. The hours of operation are from 9 A.M. to 3 P.M., so customer traffic should not interfere with commuter traffic to Kokee installations.

F. TRAIL MISUSE

1. Unauthorized use of Ka'e Trail by motorcyclists will be restrained by installing a gate at the head of the trail on the canyon rim, if such a contingent is required for this project's approval. Enforcement of the law after business hours is the same for any other public access trail - within the jurisdiction of Div. of Forestry and/or Div. of State Parks.
2. Indiscriminate turnoffs by non-customer riders may occur if steps are not taken to prevent such irresponsible behavior. Customers will be forbidden to leave the trail, but, nonetheless, barriers of wood posts and cross ties may have to be erected at overt opportunities for the rider to leave the trail.

G. FLORA PROTECTION

1. If the Field Botanist, contracted to help delineate the final route of Ka'e Trail, does find any native flora which might be damaged from trail use and proximity, it may be moved to a similar habitat. With his recommendation and that of Div. of Forestry, a suitable site will be found, perhaps in Native Forest in Alakai.
2. The Waimea Canyon Mule Tours will do all they can to help eradicate or control forest weed pests, under Div. of Forestry supervision.
3. There will be no proliferation of weed species from mule feed because it will be commercial feed having few seeds in prime condition, and, more importantly, the climate would not be favorable for their growth.
4. The parking area will be surfaced with stabilized gravel to deter weeds from growing between stones, as they could from under loose gravel.
5. The corral ground is dirt, and mules will not be grazing, thereby perhaps having the opportunity to spread weeds on the trail.
6. The stabilized gravel also allows surface water to percolate down and into the soil beneath, thus preventing rapid runoff and erosion, or the removal of incipit vegetation.

CHAPTER VII. ALTERNATIVES

1. The operation could function with not so many as 48 mules for customers. The operators feel that the absolute minimum would be 30 mules for customers. It would be less environmentally damaging in a quantitative sense, but the same concerns would apply to the same operation of a smaller magnitude.

2. Entering Waimea Canyon from the floor along Waimea River is an alternative that has been suggested. The advantage to this route is not an environmental one, but rather, is one of convenience to the rider. To wit, hunters do use this route because it is such a short ride from Waimea into hunting areas. However, there are many problems which beset this alternative. Perhaps the most significant is the legal aspect: private property bounds the river on the east bank, and there is at present no legal right-of-way. Because of the configuration of the riverbanks, one is forced to criss-cross the river about a dozen times - not the best of practices relative to water pollution and rider safety. When hunters are on the east side of the river, they are violating trespass laws and could be arrested. The approving agency of the Ka'e Trail proposal is also considering acquiring right-of-way status from the landowners, due to a request signed by many concerned hunters.
 Other issues of concern include the flash flood hazard. If a sudden rainstorm should occur, riders would be stranded upstream. Also, riding right next to the river would tend to create good probabilities of contaminated runoff entering the stream, as well as causing damage to riverbanks. They are often quite moist, and fragile, having a significant potential for landsliding and cave-ins. Much topsoil would cling to hooves because of the moisture and plasticity, and be carried away by the horses or mules. In addition, the pleasure of seeing the geologic history of the canyon unfold as one descends, is lost if one enters already on the base of the landscape.

3. A route along the canyon rim would be scenic, but not as enticing as a ride going down into the canyon. The soils and erosion potential are most probably less of a constraint on trail construction. There seem to be few adverse environmental impacts for this alternative at first glance, but, as with any addition to the natural environment drawbacks will crop up. This is probably the second most acceptable to the applicant; the first being the first alternative discussed above.

4. A riding and hiking trail into the upper forested lands from Wailua Falls, Kapaia, Kaua'i, could be utilized for the proposed operation. The trail leads along cane fields, down into the river bottom along old Hawaiian sites, and could tie into Forest Reserve trails planned by Div. of Forestry. There are several objections to this idea: the trail is not very scenic, other than Wailua Falls which is seen at the beginning of the trail; it is not very interesting riding;

down by Wailua River, the ground is very boggy and muddy; and finally, the historic Hawaiian sites face deterioration from increased visitation unless there are no known archaeological artifacts at the site.

5. There are Forest Reserve trails on Kalepa Ridge, out of Hanamaulu which might be utilized. The applicant is aware that a commercial riding venture has already been tried there; it went out of business after five or six years of operation. Mr. Joe Rapozo, operator of Kauai Stables, folded because of the lack of demand for riding on that trail.
6. Div. of Forestry also has plans to add some land to the Forest Reserve and construct an equestrian-approved trail up from Waimea Canyon to Mokiha Ridge area and back down again via Waiialae drainage. They felt that the applicant could utilize that trail for his operations, but he was less than enthused about that proposal because of the lack of demand he envisioned for that route. It is questionable whether there would be room for parking at the origin of the trail in the valley. That is prime agricultural land, and local people nor County government would probably not approve of converting such land to a commercial venture.
7. The final alternative to be discussed is No Action. If no action is taken, riding hunters will continue to use Kukui Trail, creating and sustaining conflicts with hikers. No Action is contrary to the stated objectives of several State agencies regarding making more inland recreation land available to the public. The cost of constructing Ka'e Trail will be undertaken by the applicant, as well as the maintenance responsibilities. On the other hand, if preserving Conservation District land carries more weight than the other stated goals, then the State should not construct any more trails either. Yet, DLNR has proposed constructing 170 miles of trails, and spending nearly \$2 million in construction and maintenance costs over the next ten years, as of five years ago. They seem to have resolved the conflict between Conservation lands preservation and recreational opportunities provision goals.

CHAPTER VIII. THE RELATIONSHIP BETWEEN SHORT TERM USES AND LONG TERM
PRODUCTIVITY

Short term losses include the adverse impacts usually associated with construction of anything: unpleasant noise levels; dust particles in the air which land on clothes, skin, and hair; and some unavoidable soil loss from runoff prior to completion of erosion prevention measures. On a qualitative level, introduction of these adverse impacts is usually synonymous with reduction in the quality of the wilds.

Long term benefits which offset these short term impositions are:

1. Termination of the overuse and misuse of Kukui Trail, caused primarily by illegal horse usage.
2. Termination of unchecked erosion, and inception of controlled runoff.
3. Availability of Ka'e Trail for State and County agencies to carry out land management programs, and to monitor parameters of Forest Reserves.

Construction of Ka'e Trail for equestrian use does not limit it to that use only, unlike construction of a hiking trail not designed for stock use. Hikers may be allowed to use Ka'e in the future. In fact, an arrangement could be worked out whereby hikers would be allowed to use Ka'e at certain times; for instance, before 9 A.M. and after 3 P.M. In the very long run, either or both hikers and equestrians may safely use the trail because it would have been designed, engineered, and constructed for the heavier use. The proposed action does not foreclose future options regarding user characteristics.

IX. IRREVERSIBLE COMMITMENT OF RESOURCES

There is the possibility of a landslide accident during construction or use of Ka'e Trail.

Greater access to Hawaiian archaeological and historical remains and site indicates a greater potential for damage to these resources. Although measures can be taken to reduce the possibility of deterioration or outright damage to these resources to a minimum, this possibility cannot be totally eliminated.

Building a trail signifies an irreversible commitment of the land resource; once a trail is built it should be maintained to prevent erosion from accelerating. If a trail is abandoned, subsequent weathering and erosive tendencies may very well be intensified because a manmade trail is a modification to the natural contours that existed previously. Anything that has locomotion affects the environment whether it be a snail, or a seagull, or a pig or human being. Because of man's relatively large size, his modifications to the environment are more significant in the long run than those of the lower animals. We have the ability to ponder our actions before undertaking them because it is to our benefit to do so; our actions must be integrated into the ecosystem as well as we can.

X. OTHER GOVERNMENTAL POLICIES RELATIVE TO PROPOSAL

Responsibility of Div. of Water and Land Development, West Kauai Soil and Water Conservation District:

A non-paid District Director is called upon by the County and State to continuously monitor cooperator's plans for compliance to soil erosion and grading ordinances.

Creating opportunities in all aspects of life, including recreational, for people who have the misfortune to be handicapped. This may, of course, not be a major reason for granting approval of the proposed project, but it should be considered as part of the Federal program to provide opportunities for an oft-overlooked minority, the handicapped.

Areas of known historic and cultural value should be preserved and protected, and restorative and interpretive programs established for public enjoyment. One characteristic of the Mule Tours program is that of providing access to an area of known historic and cultural value. In addition, the guides will be explaining and interpreting the site and also some background information about taro farming, and other aspects of Hawaiian life. For example, he/she could include information about the canoe builders and wild cattle hunters who temporarily made Puu Ka Pele their camp, and relate the story of royal birdcatchers and impress upon visitors the seriousness of the endangered native bird species. This policy was expressed by the proposers of the State Land Resources Development Policies.

They also advised: Hunting should be conducted wherever game animal and bird populations are inflicting damage to natural resources, and encouraged only where it can serve the purpose of resource protection and avoid conflicts with other uses.

It should be pointed out that according to the map they prepared (Fig. 15) the Ka'e Trail site is a bit south of a southern boundary of Hunting Areas. Therefore, there should be no likelihood of an accident whereby a hunter inflicts damage upon a trail-user. In addition, all hunters, whether on foot or on horseback, should have his dog leashed, in compliance with the law, while still on any trail. There is as much, if not more, danger involved in a dog-human confrontation as in a dog-mule confrontation.

It has been noted that overgrazing by goats is destroying the (protective) vegetation of Waimca Canyon. The observer feels that the State should adopt a policy of open season goat hunting instead of only eight weekends. Ever since Captain Cook's introduction of the goat to the Islands, it has been proliferating and causing irreparable, irreversible damage. With the introduction of Ka'e trail, perhaps more hunters will utilize this new access to hunting areas, and help to reduce the goat population. Perhaps it should be a State policy to try to eradicate the very harmful goat. Meanwhile, approval of Ka'e Trail will make access to the Canyon a little easier for wilderness enthusiasts - equestrians will have a legal right-of-way, and hikers will be less crowded on Kukui Trail.

XI. SUMMARY OF UNRESOLVED ISSUES

There is one major unresolved issue; it must be resolved by the DLNR prior to commencement of the proposed action, on the basis of State policies for land use and management. The conflict is between Conservation on the one hand, and Development, in this case, of recreation opportunity, on the other. The dominating factor in this struggle centers around the sub-issue of access; should the State recommend the Limitation or the Promotion of Access?

If the overriding goal is the Conservation Ethic, then the resolution will focus on maintaining the status quo, i.e., not allowing any development. If there is a stronger argument for opening up State forest lands for the people's enjoyment, then the resolution will be to allow limited development with controls. To resolve this fundamental issue, the approving agency must examine the evidence presented in this Revised EIS, and make a determination as to whether Waimea Canyon Mule Tours should be entrusted with the responsibility of providing increased access to a recreation resource, while simultaneously preserving the natural ecosystem in as pristine a condition as is humanly possible.

LIST OF APPROVALS

STATE OF HAWAII - GOVERNOR - FOR

Department of Land and Natural Resources for which the project lies within the boundaries of West Kauai Soil & Water Conservation District, Puu Ka Pele Forest Reserve and hunting areas.

Department of Transportation - Highway Division for permission to install equestrian crossing signs.

Department of Health - Environmental Health Services

COUNTY OF KAUAI - MAYOR - FOR

Department of Public Works - Building permit for staging area, parking lot, barn, excavation and grading.

REFERENCES

- Carlquist, Sherwin, "Hawaii, A Natural History," 1970.
- Hadley, Thelma H., "Waimea Canyon and Kokee, A Nature Guide," for Hui O Laka, 1966.
- Hinds, Norman E. A., "Geology of Kauai and Niihau," Bernice P. Bishop Museum Bulletin 71, 1930.
- MacDonald, G. A., et. al., State of Hawaii, Division of Hydrography, Bulletin 13, "Geology and Ground-Water Resources of the Island of Kauai, Hawaii," 1960.
- Malo, David, "Hawaiian Antiquities," 1951.
- Merlin, Mark David, "Hawaiian Forest Plants," 1976.
- Stearns, H. T., "Geology of the Hawaiian Islands," 1967.
- Tandy, Cliff, ed., "Handbook of Urban Landscape," Great Britain, Whitney Library of Design, 1971.
- State of Hawaii, Dept. of Land & Natural Resources, "Report to the Governor 1976-77."
- , Div. of Fish & Game, "Hawaii's Endangered Forest Birds," 1974.
- , "Hawaii's Endangered Wildlife," 1968.
- , Div. of Forestry, "A Program for the State Forest Lands of Hawaii," 1975.
- "Hawaii's Resources: Inventory and Policies; a prototype demonstration for the Island of Kauai," final report of the State Land Resources Policy Development Project, 1978.
- State of Hawaii, Dept. of Planning & Economic Development, prepared by Kotani & Hartwell Associates, Inc., "State Comprehensive Outdoor Recreation Plan (SCORP)," 1975.
- , Office of Tourism, "State Tourism Study, Physical Resources," 1978.
- Univ. of Hawaii, Dept. of Geography, "Atlas of Hawaii," 1973.
- , Land Study Bureau, "Detailed Land Classification - Island of Kauai," aerial photographs supplied by USDA Soil Conservation Service, 1967.
- U.S. Dept. of Agriculture, Soil Conservation Service Report R41, "Soil Survey Interpretations, Kauai," 1972.
- U.S. Dept. of the Interior, USGS Water-Data Report HI-78-1, Vol. 1 Hawaii, "Water Resources Data for Hawaii and Other Pacific Areas," 1979.

Trail Construction

A raw cut through a woodland is not a trail. A trail should look as though it has always been there; an integral part of the landscape.

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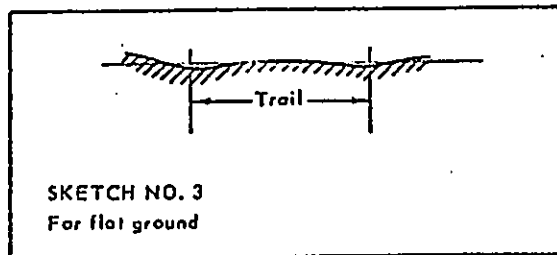
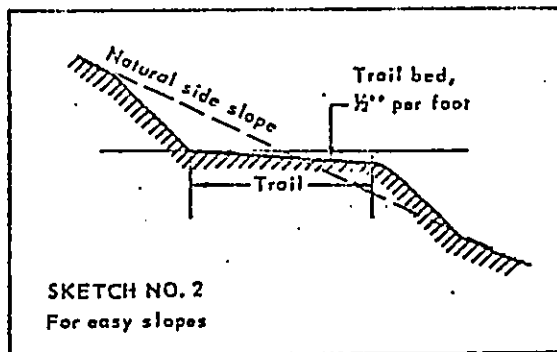
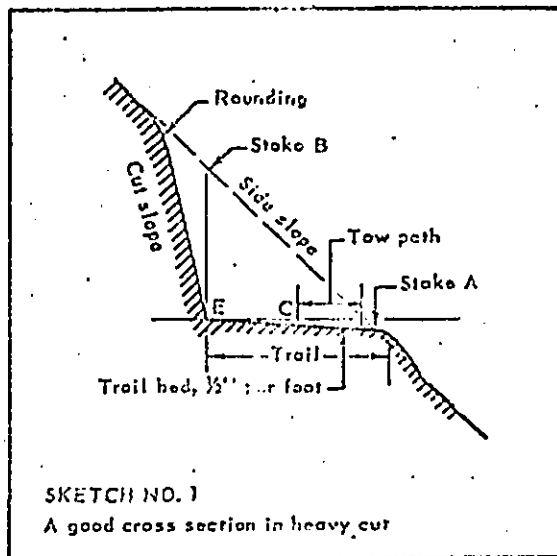
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Excavation

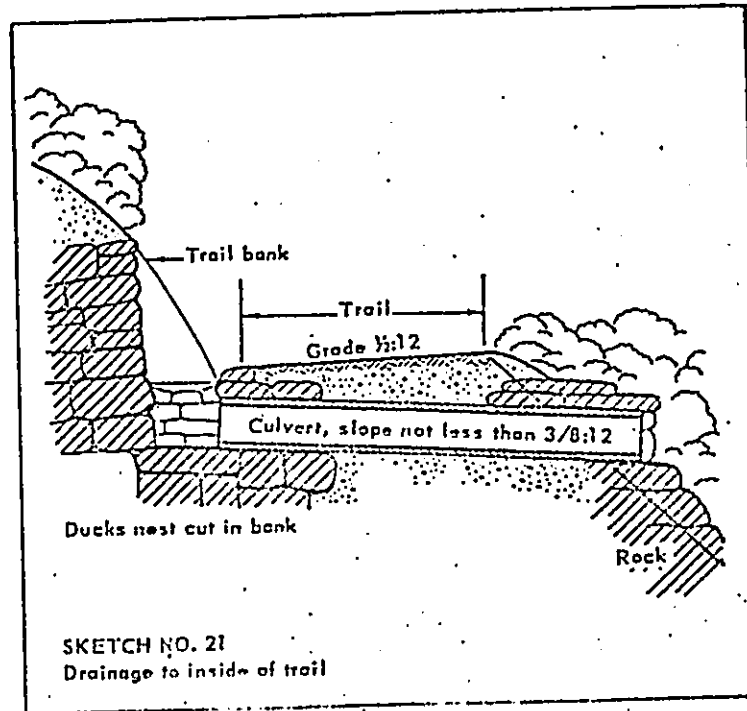
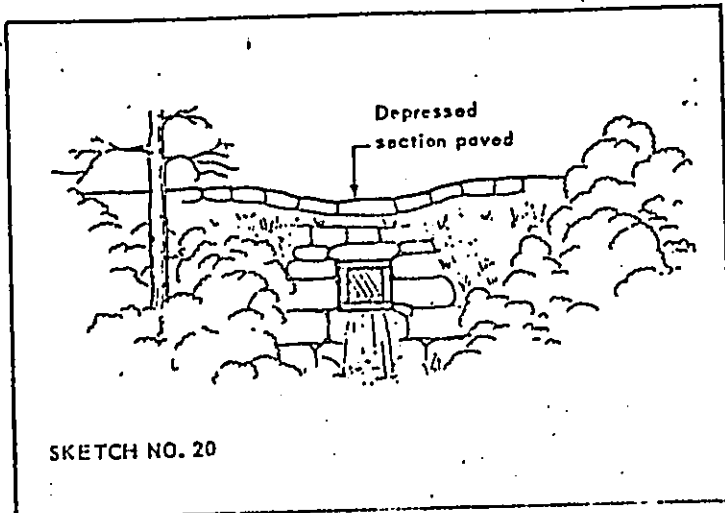
A narrow tow path about 18 inches wide is worked out at the base of the cut along line "A" and excavated back to "C". This path then establishes the line for excavation of the remainder of the trail and its grade. If alterations need to be made, less time is lost than if the entire trail were graded. The next step is to excavate to the full width.

The slope of the banks must then be treated. The top of the slope, point "E" (sketch 4) should be marked or staked on the ground and the slope cut straight from "E" to "F". The slope is then finished with fill and feathered down onto the natural grade.

There are two primary objects in sloping of trail and truck banks: (1) It is a particular aid to the control of erosion in that it establishes slopes that are more nearly natural, thus enabling growths of various types to catch quickly and cover the new cut and fill surfaces; (2) It eliminates materially the possibility of having the trail narrowed by earth loosened through the action of frost and rain water.



United States Department of the Interior, National Park Service		TRAIL CONSTRUCTION	
THE PARK PRACTICE PROGRAM		CONTRIBUTED BY	
National Society of Park Resources • National Recreation and Park Association		Guy E. Arthur	
DATE October 1975	PLATE 1023 B	U.S. Dept. of the Interior	
INDEX B-3113	CONTROL S-1:58-B		



DRAINAGE

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or steep and narrow. This topography calls for drainage structures, and the shape and area of a hollow determine their location, type and size.

Surface water should not be forced to concentrate in channels to a greater extent than it does naturally. To compel it to back up behind culverts in new locations is to invite destructive erosion and unsightly ditches. Several small culverts should be used rather than one large one. And the trail should be raised enough to impound a rush of storm water until it can flow through the culverts, without cutting new channels in the drainage basin, or across the trail.

In gullies, nature has already determined the type of structure to be employed, a culvert big enough to carry all the water that comes down. The gully has already established a temporary balance between the scour of the stream and its bed. This balance should not be disturbed, so the floor of the culvert should be at the level of the gully bed. Then the elevation of the trail, compared with the elevation of the gully bed, may dictate a wide, shallow culvert, or a deep, narrow one. But the wider the culvert the easier it will take water, and the less danger there will be of destructive cutting on the discharge side.

In many places where a small culvert seems to be needed it would be better to build a low-water crossing, which is

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Side Drainage Combined with Trail Surface Drainage. Sometimes it is necessary to drain a trail surface to the inside, against a bank, providing a catch basin, or "duck's nest", at the end of the culvert. The amount of water shedding off the trail, as compared with the amount coming from the side, may be large or small. Draining a surface in this way should be avoided, but where it is necessary, the side ditches should be paved with flat stones, to prevent undermining of the slope. (See sketch 21)

The only particular requirement for this type of culvert is to carry the catch basin well into the bank, even channelling into the slope to keep it away from traffic. The back wall of the catch basin should be carried far enough up the slope of the stable, and all danger of erosion around it should be foreseen and prevented.

Water in Natural Channels. Established channels determine the location of culverts, and the amount of water to be served can be estimated with reasonable accuracy. Any depression, even one coming from a small spring, is the established drainage channel in that area. This can be proved by the absence of erosion, and the presence of cover on nearby surfaces. The amount of run-off at flood stage can be estimated by lines of drift left by high water, scouring at the bases of trees, root

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

Wilson Jones

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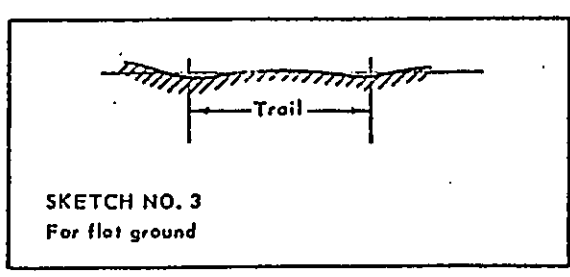
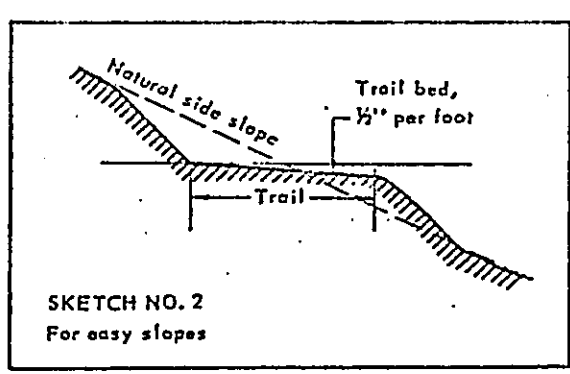
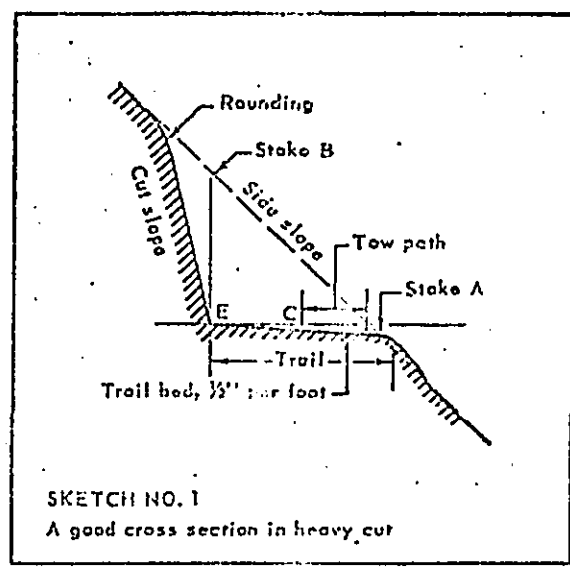
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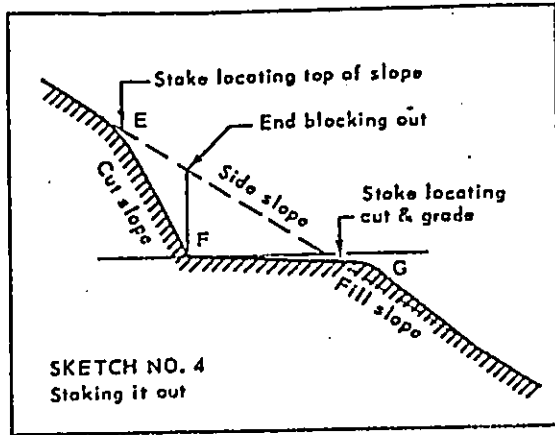
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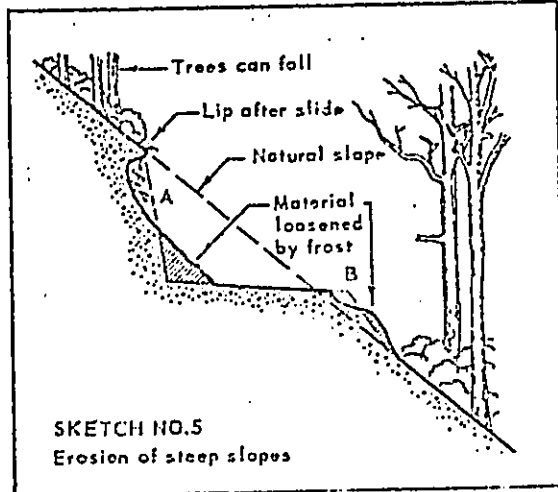
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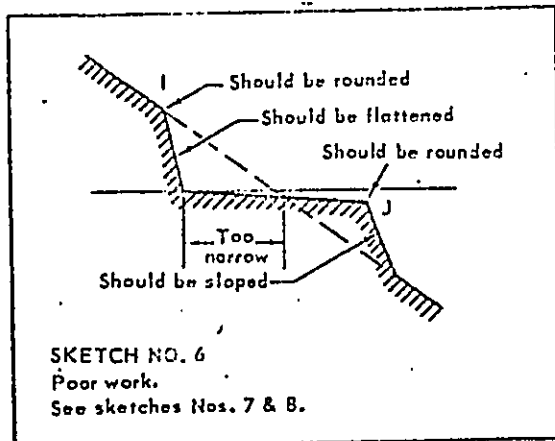
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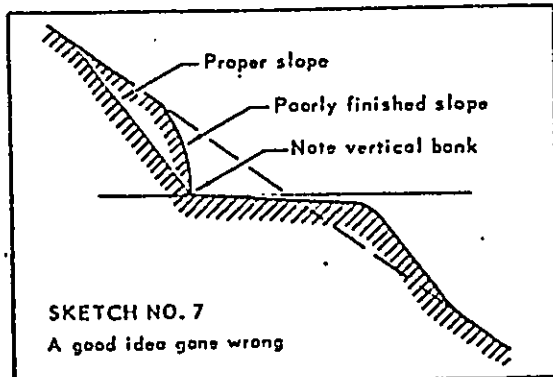
SKETCH NO. 4
Staking it out



SKETCH NO. 5
Erosion of steep slopes



SKETCH NO. 6
Poor work.
See sketches Nos. 7 & 8.



SKETCH NO. 7
A good idea gone wrong

(Sketch 5 shows the action of frost on a poorly constructed trail.) The combined action of water and frost at "A" loosens the material which drops to the trail, in some cases to such an extent that the trail is impassible.

Sketch 6 illustrates a section of a poorly finished trail. The filled edge at "J" will soon be washed down the hillside by storm water leaving the narrow bed of the trail on solid ground. In this case the builder did not go far enough into the side slope to get the required amount of trail floor on solid earth. Earth should never be finished to corners as at "I" and "J" but should be rounded over to meet the existing grade above and below the trail. Cut slopes should never be finished as shown in sketch 7.

Sketch 8 illustrates an ideal trail section, well finished, with banks and trail bed properly sloped and corners of cuts and fills properly rounded.

The question of how far to cut back a slope (or bank) is often a problem. Where the cross slope is easy the bank may be taken back on a 2 to 1 slope, that is, two feet back for each foot in height. A 1½ to 1 slope is good, and a 1 to 1 slope is about as steep as earth will lie on a slope. The 1 to 1 slope should be regarded as a maximum slope to give a bank except in the situations where it would be necessary to grade 30 or 40 feet up a steep bank to get this 1 to 1 slope. This would require removing too much established growth. Such situations should be solved by the staking of the top of the cut bank to get the best solution possible.

TO KEEP THE SLOPE UNIFORM

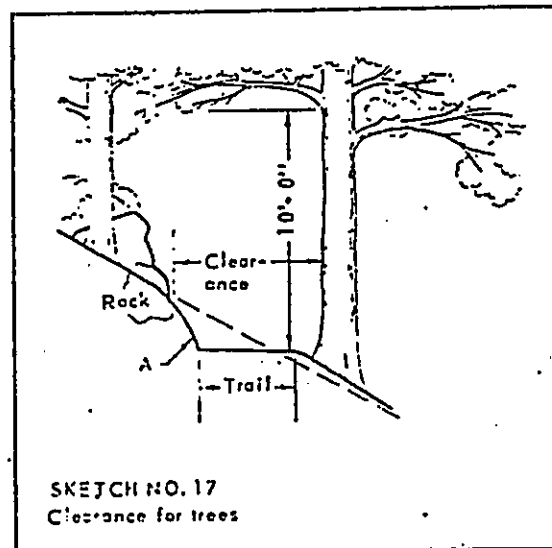
It is sometimes difficult to keep a slope uniform when the bank varies in height. If the slope is to be 2 to 1, measure the height of the bank, then measure back twice this distance from the vertical face of the cut, and set your slope stake. These stakes should be set from five to ten feet apart to maintain a smooth, uniform slope.

TRAIL WIDTH

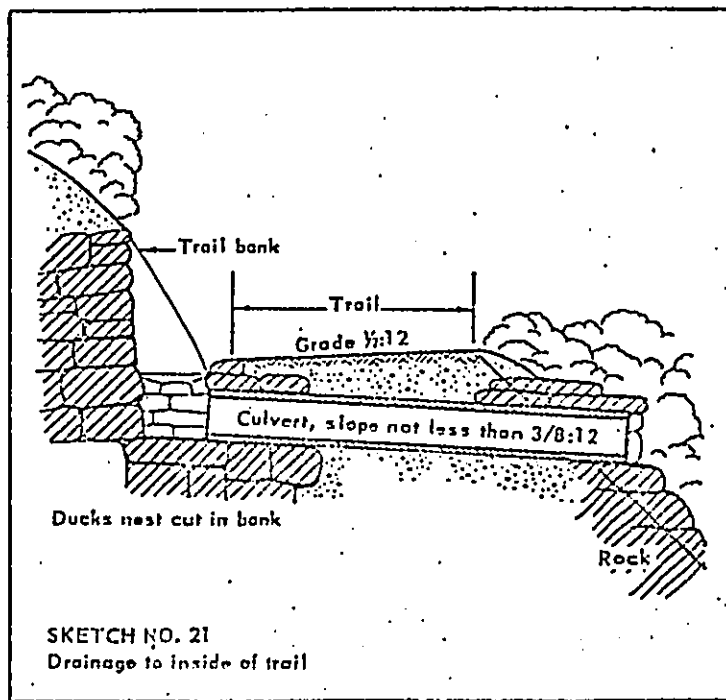
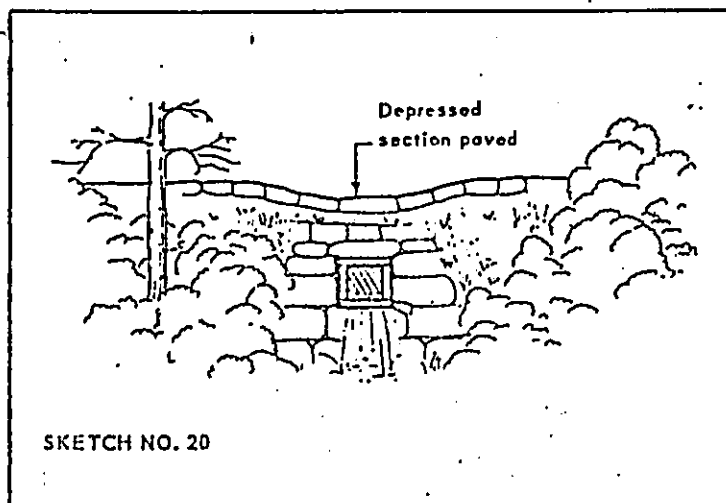
A four foot width is desired for horse trails. This width should not be measured out to a sharp edge which is not substantial. It should be measured from the outside of the trail where the fill slope starts to round over, to a point just out from the base of the cut slope, allowing for rounding out at point "A". (See sketch 17)

Where there is a wall on the lower side of the trail, the width should be measured from the inside of the wall. The top of the wall should not be included in the width of trail.

Where there is a steep dangerous bluff or drop-off below the trail, the trail bed should be widened to seven or eight feet, exclusive of wall width. On the normal trail there should be at least one foot clearance beyond each side of the trail to permit passage for pack animals. This distance may be increased where there is a dangerous condition below the trail. Tree branches that overhang the trail should be removed to permit passage of horseback riders. (See sketch 17)



SKETCH NO. 17
Clearance for trees



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systems exposed by scouring, fresh surfaces on rocks below old stain-bands, shrubbery tilted down hill, and other signs.

The culvert must be large enough to carry flood water. And its floor must be at the level of the channel bed. These two factors determine the size and shape of the structure. Where there is any choice, the culvert should be wide, rather than deep.

If the drained slopes are bare, and erosion is to be retarded until cover grows, a catch basin can be built at the intake end of the culvert with dry walls built high enough to form an impounding basin behind them, where the flood water can

deposit its silt before seeping into the culvert. But in such a case special care must be taken to protect the culvert with wing walls, so that impounded water will not find a passage along the walls of the structure and eventually wash out the trail.

Types of Culverts. Preferably all culverts should be made of stone using dry or mortar joints as prescribed by plans, general instructions or local conditions. The ends of the walls should be flared, as a usual practice, to hold the fill above and to prevent scouring by flood water. Care should be taken to keep the inside surfaces uniform and smooth to prevent debris from catching. A culvert should ex-

tend a foot or two beyond the edge of the trail on each side, and the trail widened at the head walls of the culvert. The bottom of the culvert should slope not less than $\frac{3}{8}$ " per foot.

Blind Drains. These are not as desirable as they might be. At first they carry water very well, but there is always the likelihood that their surfaces will clog with silt, so that they will not continue to function. Their worst fault is that they remain frozen in the spring after the trail surface has begun to thaw. At the time when the trail surface is least able to carry traffic and withstand erosion, the frozen drain will not take water.

WATERBREAKS

A waterbreaker should be extended far enough into the bank on the upper side of the trail to prevent water from cutting around it. It may be necessary to cut a trench into the bank to accomplish this, tamping the dirt back afterward. Both ends should be anchored behind rocks or trees, or firmly staked in place.

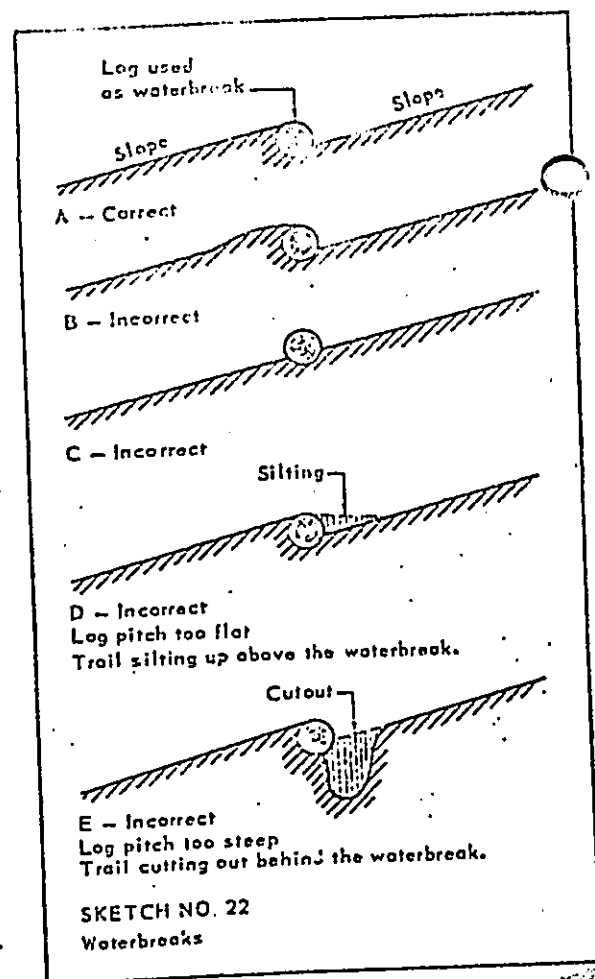
The pitch of a waterbreaker, or the angle at which it lies across the trail, is very important. A definite relation between the slope of the trail, and the pitch of the waterbreaker, must be established by experience in each location. This relation depends upon the nature of the soil, and may vary greatly on different sections of the trail. On one section there may be a stiff clay which does not wash. On another stretch there may be alluvial soil, which will wash badly.

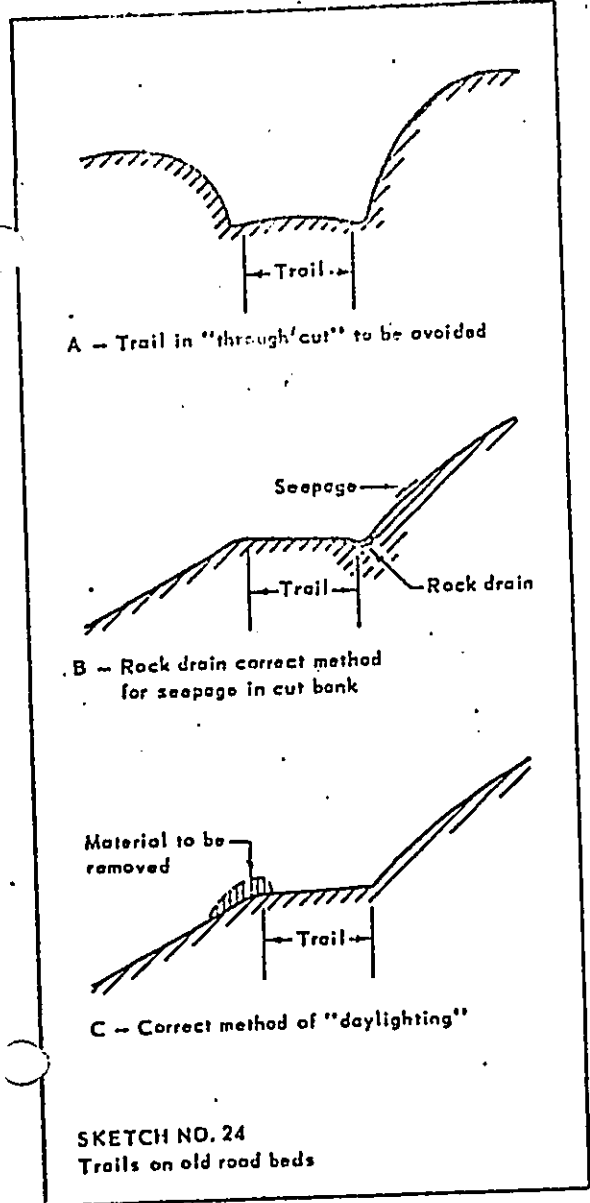
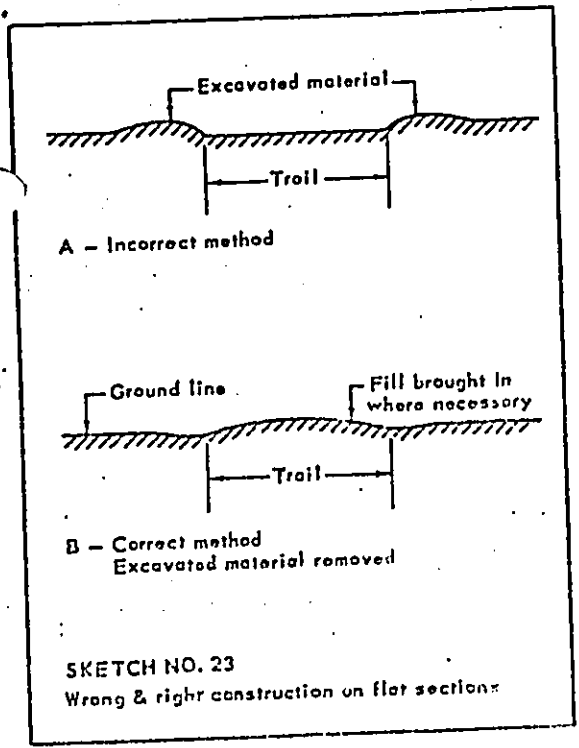
As one of two extremes, take a section in tough clay on a flat slope. Here there is very little danger of washing, and the breaker can lie on a steep ditch carrying off all of the water quickly. If it were laid on a flatter pitch, there would be danger of depositing silt behind the breaker, and putting it out of use, as in sketch 22, Figure D.

For the other extreme, consider a section in alluvial soil on a steep slope. Washing will occur here on the slightest incline, so the breaker must lie almost straight across the road. If it is given a more pronounced pitch the water will hit the breaker, turn off across the trail, and wash a cross-ditch as in Figure E. The breaker log will be washed out, and the water will go on down the trail, making an additional load for the next breaker to carry off.

The spacing of breakers cannot be determined by any rule, but there are three particular locations where they should be placed: (1) Where there is a depression or wash, the breaker should be set below; (2) On sharp curves, the breaker should be set at the up-hill entrance of the curve; and (3) At changes in the trail grade, the breaker should be set just above the break in grade.

No harm is done if some excess water goes over a breaker that is carrying a full load off to the side. It is better to set them so that this occurs in heavy downpours, than to pitch the breakers so that excessive scouring occurs alongside the logs. If careful study is given to the behavior of breakers in different soils, and on different slopes, it will be possible to reach a reasonable balance between scouring, as one extreme, and silting up, as the other.





In sketch 22, "A", "B", and "C" indicate three methods of setting breakers. "A" is the correct method with the grade below the breaker finishing flush with the top of the log. When setting it is better to fill rather full back of the breaker and then tamp the soil well to prevent settling and the consequent exposure of the breaker. The grade above and below the breaker should feather nicely into the grade of the trail and not leave a "bump" as shown in "B". When breakers are set in this manner they are secure and, since the grade at the lower side rides the breaker, these are not visible when one looks up the trail.

"C" indicates a method not desirable. It is not as secure, is more noticeable and forms a greater obstruction to stumble over.

The following are conditions, frequently encountered, that require careful study to secure proper drainage.

On ground where there is no appreciable cross slope, the trail is frequently built as shown in "A" of sketch 23. Turf is cut from the trail bed and raked off to the sides, making piles that confine water to the trail and wash it out. On such locations, the proper method of construction will usually be to work out shallow, rounded depressions, not ditches, at the sides, and the good soil from these excavations used to slightly raise the trail bed forming a dry, well drained trail bed in wet weather. In some cases it will be necessary to gather additional fill from another section to raise the trail bed. "B" in sketch 23 indicates the correct method of construction in this type of topography.

Water should be directed away from these drainage depressions wherever conditions will permit.

Sketch 24 indicates types of construction used when trails follow old road or railroad grades.

"A". This sketch indicates the method used in "through cut" sections. It is not a desirable solution, however, and should be avoided wherever possible.

"B". This shows a condition frequently encountered where there is a seepage of water for some distance from the bank above the trail which will keep the trail bed continually wet if the water is not disposed of satisfactorily. Here the trail bed is raised and the seepage caught in a rock fill which should extend along the trail for the distance that the seepage exists, and from there connect with one or more culverts.

Mounds of earth similar to those shown in "C" should be graded off, or "daylighted," when they exist on an old road location that is being converted into a trail or truck trail.

SECURING FIRM TRAIL BED

Trails should not be built on top of peat or leaf mould beds. When this condition is encountered as is the case many times when passing through heavy growths of Rhododendron, the entire depth of soft material should be excavated to make a solid bed that is well drained and will remain solid. The leaf mould and peat removed should be used as topsoil on other parts of the trail and for planting operations.

TRAIL FINISHING

The frequently asked question is how far to go on trail finishing. It is not practical to do such refined grading as will not stand up under the relatively small amount of maintenance that those trails will probably receive in the future. The best answer to this question is that trail finishing should be carried to such a point that erosion will be discouraged and natural growth will be encouraged. Such finishing can be justified from the practical standpoint. All trails will require occasional maintenance work in the future to keep them in good condition. Finishing them so that this upkeep will be kept to a minimum is one of the guiding factors in trail construction. When banks are not properly sloped, walls not well built, and drainage not properly provided, there will be a constant maintenance job necessary with the resulting increase in cost of upkeep.

ITEM T50 - CLEARING AND GRUBBING

Description

1.1 This item shall consist of clearing and grubbing in accordance with the following specifications. The area to be cleared and grubbed under this item shall be those sections staked on the ground.

1.2 Clearing shall consist of removing all trees, limbs, and brush from a travelway 8 feet wide (4 feet on each side of centerline) and 10 feet high (above trail tread) to provide proper trail clearance. (See Construction Details). Also, clearing shall include the felling of trees and snags outside of the clearing area that are marked for cutting.

1.3 Grubbing shall consist of removing all stumps within the trail tread area, and the removing of all roots that interfere with or are exposed by tread grading.

Construction

2.1 All standing trees, classed as dangerous (unstable), and that in falling could reach the trail, will be removed. Such trees will be marked by the Forest Service. Trees with major roots exposed by construction to the extent that the tree becomes unsightly or unstable will be removed. Stumps left in the clearing area will be cut 16" or shorter on the lower side of the tread, and as nearly flush with the ground surface as practical on the upper side of the tread. All stumps and roots which are within one foot of the centerline shall be dug out and removed. Blasting to remove stumps located at or near the outer edge of the tread is not permitted. If specifications require such stumps be removed, they will be cut, dug or pulled out. Trees are to be felled at right angles to and downhill from the trail if possible. Healthy trees, over 12 inches in diameter at breast height, which can be avoided by minor change in trail alignment within the permissible limits provided, shall be left standing.

Trees felled, or logs lying within the right of way, will be bucked and removed from the cleared area.

2.2 Disposal of Clearing Debris. All refuse resulting from the clearing operation shall be disposed of as follows:

Slash, limbs, and brush shall be scattered well outside the travelway. Material scattered above the trail shall be so placed that it will not slide or slough into the travelway. On sideslopes 30% and over, slash, limbs, and brush from the clearing shall be scattered on the lower side of the trail.

Logs and felled trees shall be limbed to a 4" tip and the limbs well scattered. Limbed trees and logs may be placed parallel with the trail on the downhill side providing they are far enough removed that they will not interfere with trail grading or pack clearance.

Only when called for in the Supplemental Specifications shall slash, limbs, and brush resulting from clearing be piled and burned.

Stumps shall be deposited below the trail and out of sight wherever practical.

ITEM T51 - TRAIL TREAD EXCAVATION

Description

1.1 This item shall consist of excavating and grading the trail tread to specified widths and gradients which, after settlement, will conform to the lines and grades staked on the ground and the illustrated typical cross-sections in the plans. Normal finished trail tread width shall be 24 inches. Wider tread widths are required for stream fords, steep gully crossings and switchbacks.

1.2 This item shall include the construction of drainage dips in the tread and switchbacks in the trail as staked on the ground.

Construction

2.1 On sections of the trail where the sideslope is 10% and under and the ground material is mixed earth and rock no grading will be required. However, all surface rocks over 2" in diameter within one foot of centerline and all submerged rocks 4" and larger within 6" of grade will be removed as provided for in 2.4.

2.2 On sideslopes over 10% and under 30% where full bench construction is not required, all duff, limbs and debris will be removed down to firm soil before fill material is placed and compacted. Full bench construction will be required on all sideslopes 30% and over, except as provided in 2.6.

2.3 Cut banks will be sloped as shown in Figures 1 and 2, and rounded at the top except that sideslope must be adequate to give full 4' horizontal clearance between the back slope and a point 30" above the centerline of the trail, as shown on Form R6-5600-54.

Backslope in terrain with sideslope 70% and over may be reduced above the clearance point, 30" above and 4' horizontal distance from the centerline of the trail, provided, the bank material is stable and not subject to slides.

2.4 On those sections of the trail where the tread is constructed through earth and rock, all surface rock over 2" in diameter within one foot of centerline and all rocks 4" and larger or portions thereof that are within 6" of grade shall be removed.

2.5 Sections of trail constructed through ledge rock, talus or rubble rock slides where no soil is present, the top 3" of the tread shall contain no rock over 2" in diameter. Holes and cracks immediately under the tread shall be filled with rock and fine material to provide a firm compacted base two feet or more in depth below the trail tread. (See Fig. 3, Form R6-5600-53.)

2.6 On rubble rock slides it shall be permissible to construct the outer 12" of the tread on fill material provided the outer edge of the fill is firmly anchored by large rocks or keyed in boulders that will prevent fill material from sliding out and other conditions provided for in 2.5 above are met.

Shallow Stream Fords

3.1 At small stream crossings where a bridge, culvert or other drainage structure is not required, construction shall consist of a widening of the trail tread to 36" and leveling of the stream bottom to make a smooth and level crossing for foot, horse, or mechanical trail equipment.

3.2 Where stream gradient is 15% and under a dam will be constructed by arranging a large log or well-placed and keyed in large boulders in the stream at the lower side of the 36" trail tread. The top of the dam will be level with the grade of the trail at the ford. The resulting reservoir will be filled with small rock and gravel to provide a level crossing. (See Fig. 8, Form R6-5600-53a)

3.3 Trail gradient into a natural ford shall be not less than 10% for the distance of at least 10' on each side of the ford.

Steep Gullies

4.1 Where sharp, steep gullies are encountered in trail construction the trail tread will be widened to at least 36" and the trail gradient into the gully will not be less than - 10% for a distance of at least 10' on each side.

4.2 Full bench construction will be required from the start of the 36" tread, across the gully and to the end of the widened section. The finished tread will be in solid, undisturbed material for the total length of the widened section.

Drainage Dips

5.1 Drainage dips will be constructed into the trail tread for drainage purposes the entire length of the project, normally at intervals of 100' to 300' and as staked on the ground.

5.2 Construction of a drainage dip shall consist of a reverse in the prevailing grade plus or minus approximately 10% for a distance of 5 feet from the staked location with a corresponding outslope in the trail of approximately 2% for a distance of 10' on the uphill side of the dip. (See Fig. 10, Form R6-5600-53a)

Switchbacks

6.1 Switchbacks shall be constructed at locations staked on the ground by the engineer and in conformity with dimensions shown on the attached individual or typical Switchback Detail Drawing. Tread width shall be not less than 48" from point of turn and hold a level grade on the turn, for any constructed switchback landing. (See Fig. 7, Form R6-5600-53)

6.2 If an adequate natural barrier does not exist, an intersection protection barrier will be constructed of either medium sized logs or large boulders, depending upon the material available and subject to the approval of the engineer. Material to be used, heights, length and other dimensions of the barrier are shown on a typical switchback detail drawing which is attached to and is a part of the contract.

K-248

GRADE

The rate of grade should not be steeper than 15% except in extreme cases, and should be as much less than 15% as possible without unduly extending the trail length. The percentage of grade should vary at appropriate intervals, in order to avoid all the strain being confined to a certain few leg muscles.

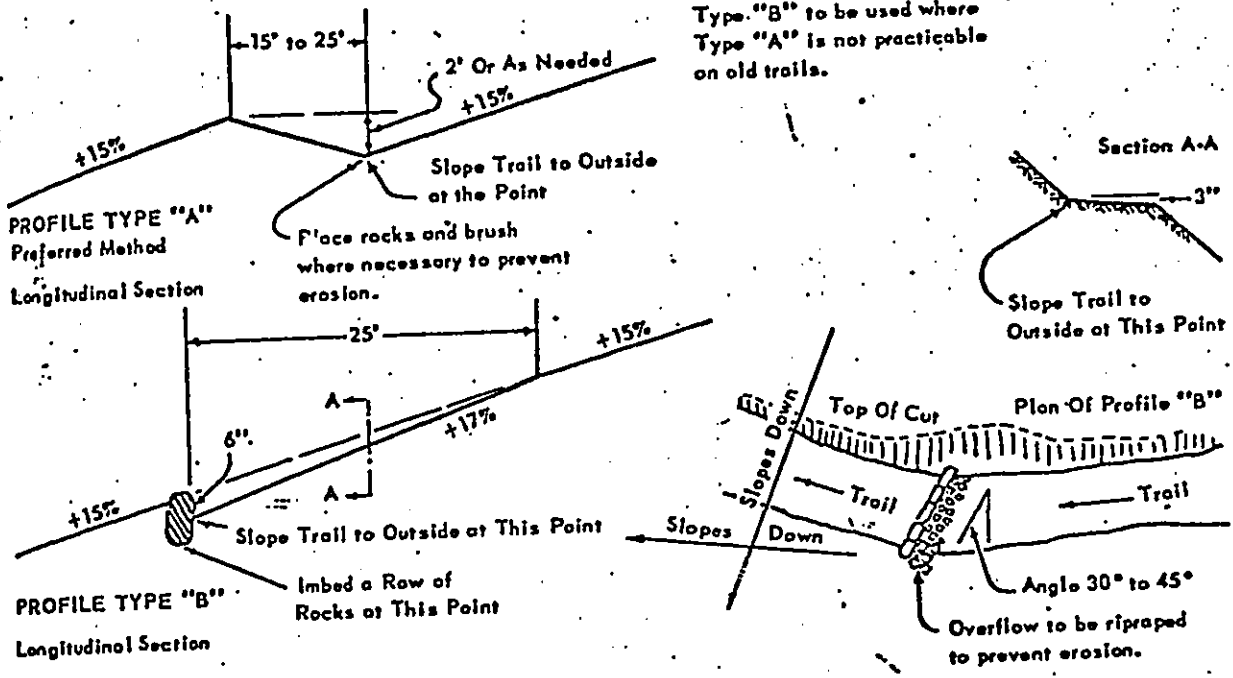
In short stretches of not over 150 feet and in very exceptional cases a grade up to 20% may be permitted, but only after it has been determined that so steep a grade is essential to avoid very excessive construction cost.

A dip in the grade should be provided wherever possible to dispose of drainage water. If conditions are such that it is inadvisable to use the slack grade necessary for a series of dips, water breaks or under drainage should be provided.

7

DETAILS OF WATER BREAK AND DIP

Type "B" to be used where Type "A" is not practicable on old trails.



RECREATION FACILITIES

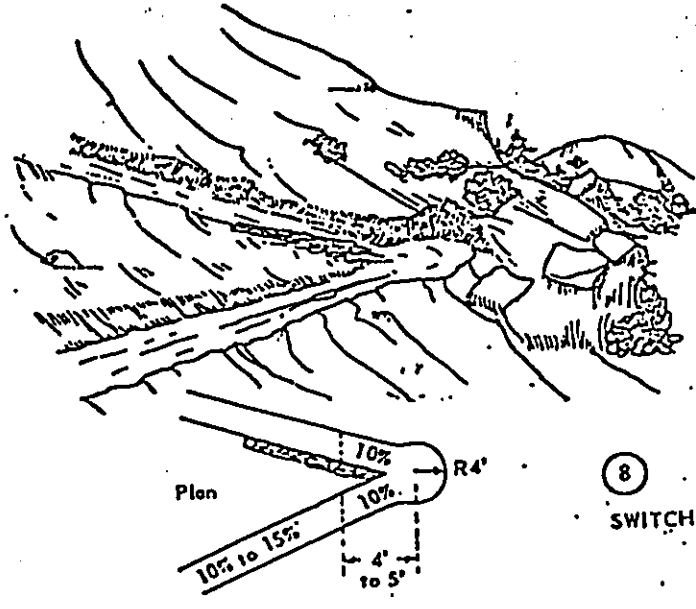
SWITCHBACKS

Switchbacks are not desired if support can be obtained for a curve.

When a switchback is used ample room should be provided for the turn to be made upon level grade if at all practicable.

Guard rail or rock wall 10' to 15' long and 1½' to 2' high. Rock wall may taper from 2' high at turn to about 10" at end. To prevent cross cutting at turns.

Grade should be sloped to 10% within 5' of turn and turn itself should be level if at all practicable.



8

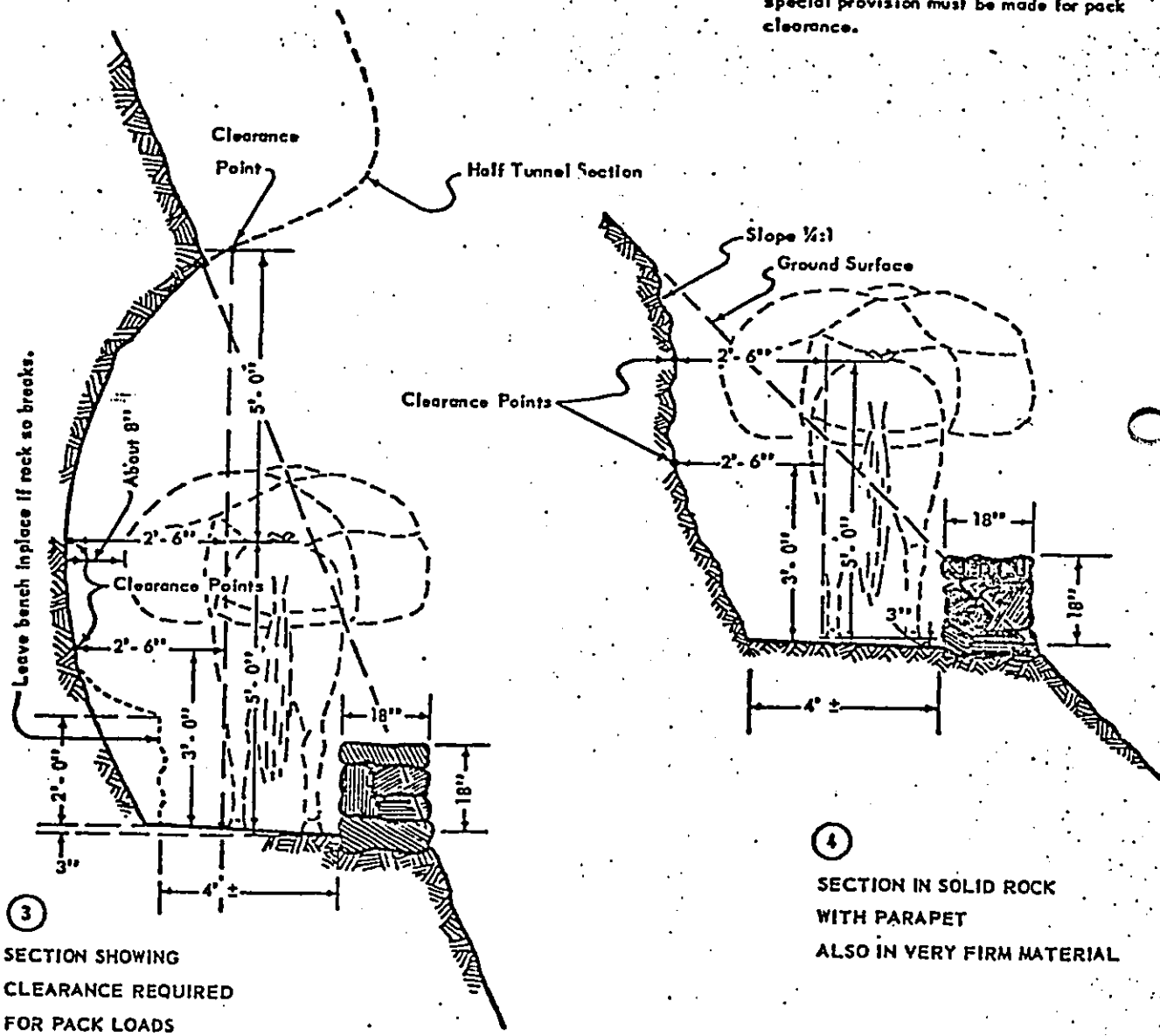
SWITCHBACK

The National Conference on State Parks		TRAIL CONSTRUCTION	
in cooperation with The National Park Service			
date	November 1963	plate	342 B
index	B-3103	control	S.0034-B
		Contributed by NATIONAL PARK SERVICE U.S. Department of the Interior	

CLEARING

Clear trees, brush, and rock to a sufficient width and height to provide an unobstructed passage of loaded pack animals and horsemen, even when the trees are loaded down with snow. Excessive clearing is not desired but should extend to a point at least one foot beyond the limits of the excavation or fill, or wider if required. Clearing shall in all cases extend to a height of 10 feet above trail grade. Cut large trees only where it is impracticable to build around them. Brush and logs from clearing should be burned or removed.

When cut slope is steeper than 65° (5½ x 12"), special provision must be made for pack clearance.



The National Conference on State Parks		TRAIL CONSTRUCTION	
in cooperation with The National Park Service			
date	November 1963	plate	340 B
index	B-3101	control	S-0832-B
Contributed by NATIONAL PARK SERVICE U.S. Department of the Interior			

K-242

LANDSCAPEING

All phases of trail location and construction features affecting landscapeing should be reviewed before construction is undertaken. It is also essential that all evidence of construction outside the trail prism be held to a minimum.

DRAINAGE

A special study of the precipitation and run-off characteristics of a locality should be made to properly determine the methods best suited for disposing of drainage water.

Dips, water breaks, culverts or bridges should be provided where necessary. Particular attention should be paid to so locating the points for cross drainage that shoulders or fills will not be washed out. When suitable conditions do not exist at a point at which cross drainage must be provided, the trail surface and embankment must be adequately protected by rip rap.

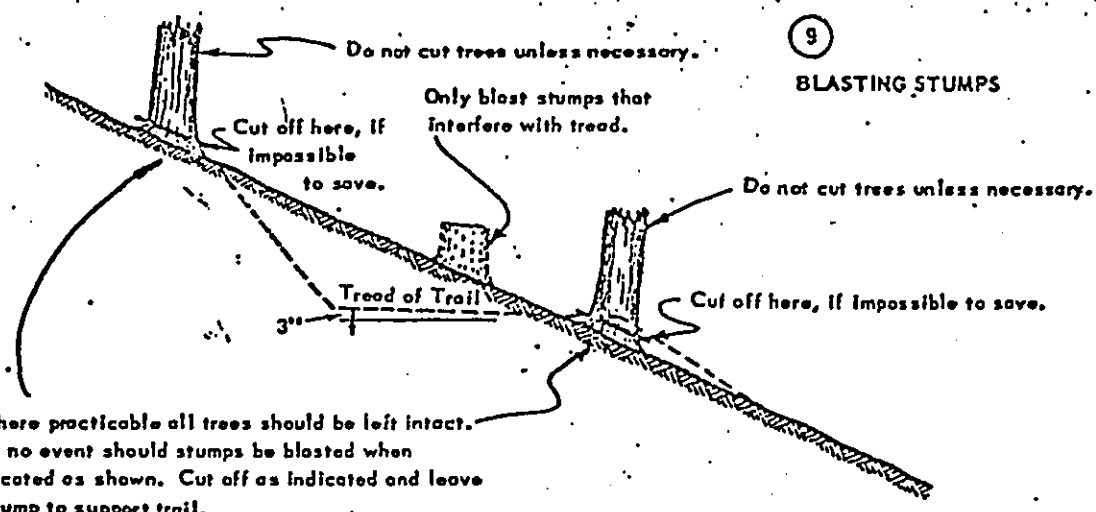
Generally speaking, dips or water breaks are to be preferred to culverts, or bridges, these latter two being considered only where appropriate and necessary.

Drainage from switchbacks will require care to prevent the discharge of a stream of water into the trail below.

ADMINISTRATION

PROTECTION

BASIC FACILITIES



Where practicable all trees should be left intact. In no event should stumps be blasted when located as shown. Cut off as indicated and leave stump to support trail.

10 DRAINAGE

When crossing a ravine or gully give trail a dip centering on water course to avoid washout.



The National Conference on State Parks		TRAIL CONSTRUCTION	
in cooperation with The National Park Service			
date	November 1963	plate	343 B
index	B-3104	control	S-0935-B
Contributed by NATIONAL PARK SERVICE U.S. Department of the Interior			

BILL OF MATERIALS FOR EARTH PIT PRIVY
IN FOUR (4) UNITS AS SHOWN.

MUD SILLS. UNIT 1.

NO.	QTY.	SIZES	KIND	REMARKS
1	"	2x6x12'-0"	Rgh Merch.	Sill
1	"	2x4x10'-0"	"	"
1	"	1x6x12'-0"	Merch. SIS	Soil Guard.

FLOORING. UNIT 2.

2	"	2x4x10'-0"	Rgh Merch.	Frame
4	"	1x6x10'-0"	T&G SIS	Floor

COVER, SEAT & BOX. UNIT 3.

<u>COVER</u>				
1	"	2x4x16'	Merch S&S	Hinge Rail
1	"	1x6x2'-6"	Select "	Cover Cleat
1	"	1x6x6'-0"	T&G S&S	Cover
1	pc.	4"	Hinges	Complete with screws

SEAT

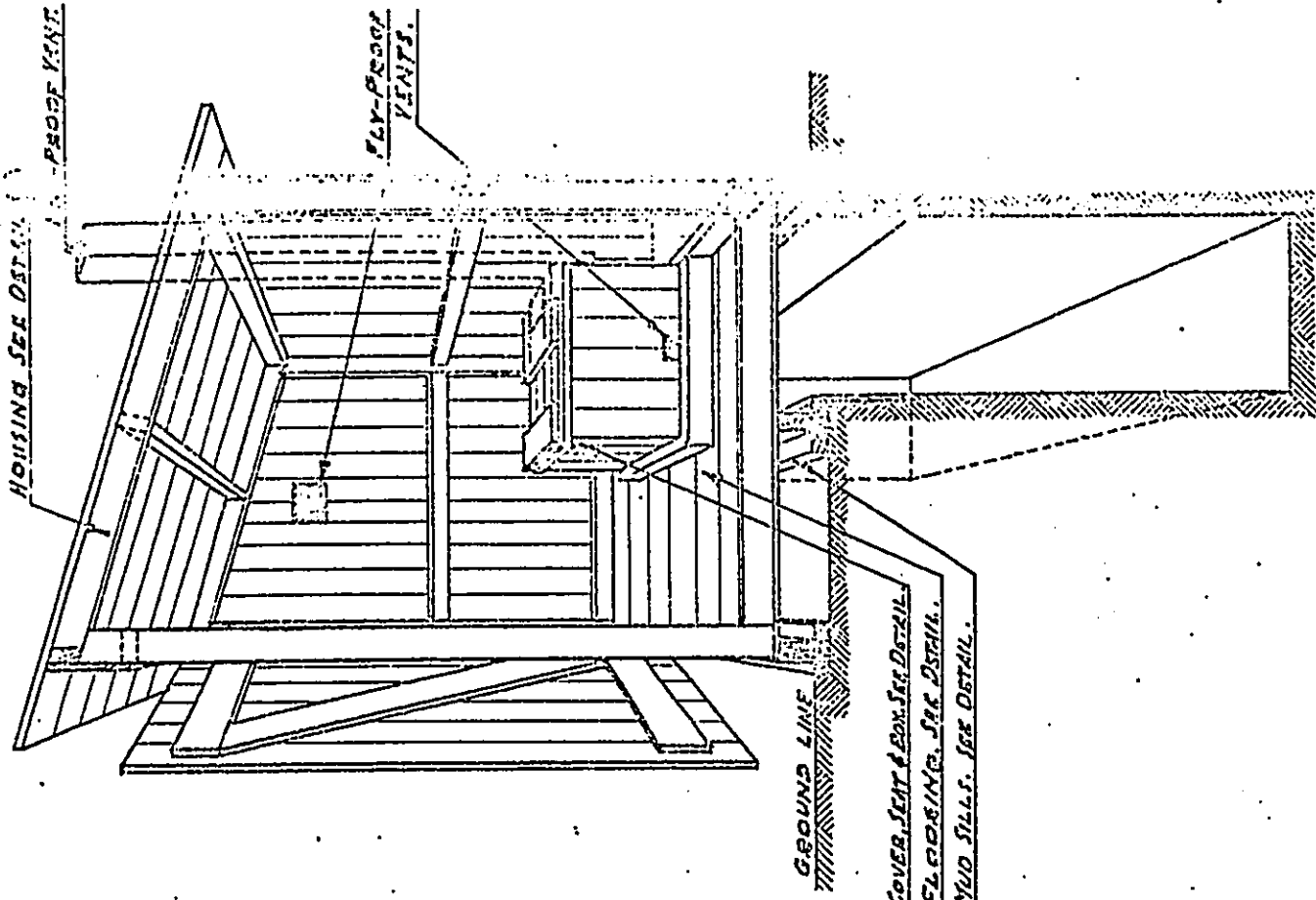
1	pc.	1x16x26"	Select S&S	Seat
---	-----	----------	------------	------

BOX

1	"	2x3x6'-0"	S&S	Frame
1	"	2x4x3'-0"	"	"
3	"	1x6x10'-0"	T&G SIS	Wall
1	"	1x6x12'-0"	"	"

HOUSING. UNIT 4.

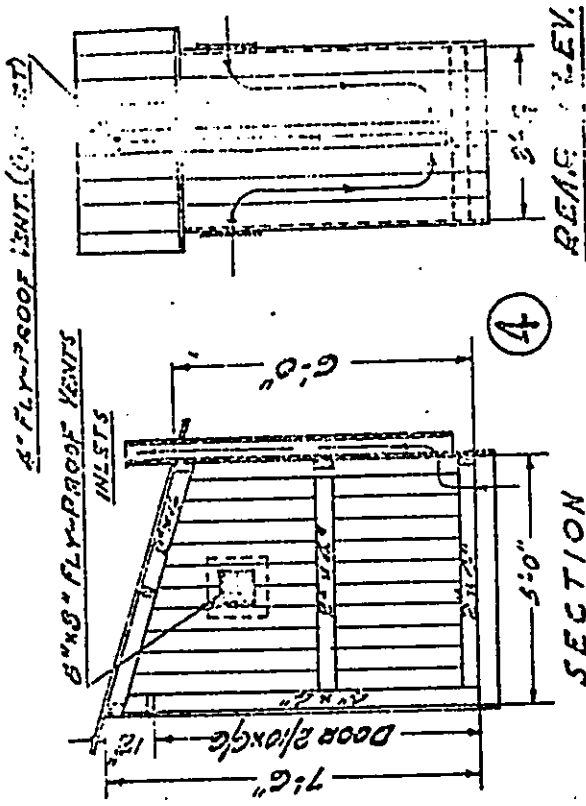
50	"	1x6x16'-0"	T&G SIS	Roof & Walls, Door
3	"	1x6x10'-0"	Rgh Merch.	Door Braces & Vent.
1	"	1x6x16'-0"	S&S	Door Casings
1	"	1x3x10'-0"	"	Screen Frames.
2	"	1x4x7'-0"	Rgh Merch.	Vent.
5	ft.	1/2" wide	Monel or Galv	16 Wire Screen (Class)
1	pc.	4"x4"x15'-0"	Rgh Merch.	Posts
4	"	2x4x12'-0"	"	Rear Posts, Butt etc.
1/2	lb.	# 8 d.	Finishing Nails	Complete for 1 Earth Pit
9	"	# 8 d.	Common "	"
2	"	# 10 d.	"	"
1	"	# 20 d.	"	"
3 1/2	Sq. ft.	Roofing	Aspheltoid	Single



PLAN BY A. B. P. 1911

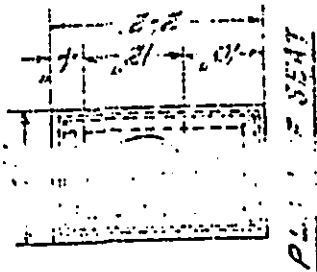
BUILT IN SEPARATE UNITS AS SHOWN & WORKED

COMPILED BY THE BUREAU OF SANITATION
BOARD OF HEALTH - TERRITORY OF HAWAII.

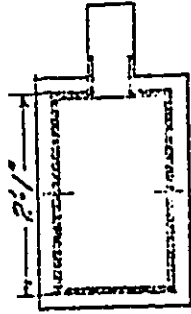


DETAIL OF HOUSING

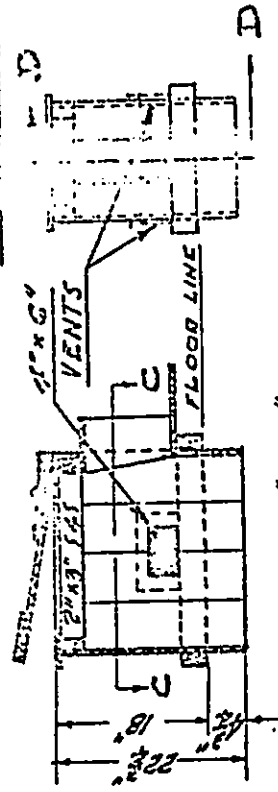
Scale 1/8" = 1'-0"



PLAN OF COVER & SEAT



SECTION 'C-C'

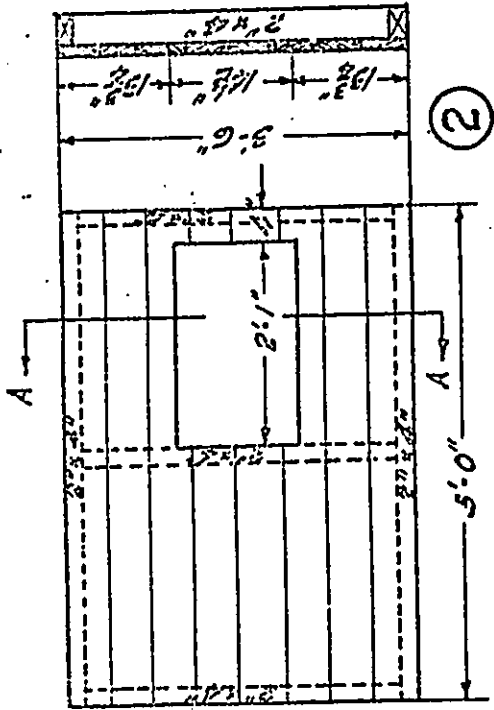


SECTION 'D-D'

DETAIL OF COVER, SEAT & ...

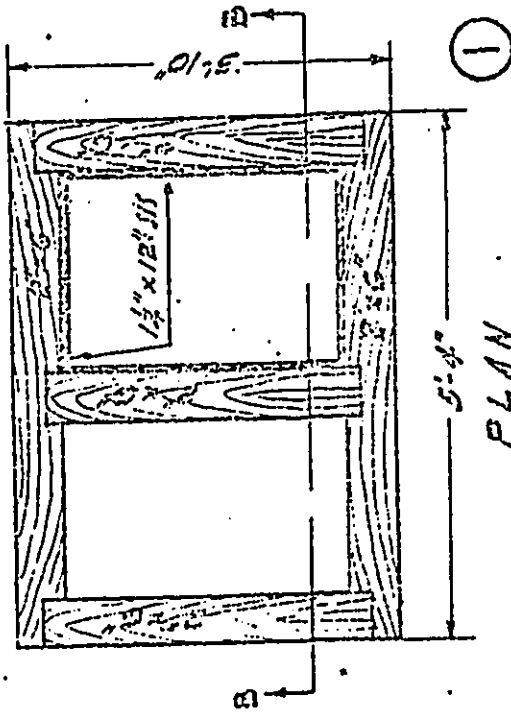
Scale 1/2" = 1'-0"

SECTION A-A

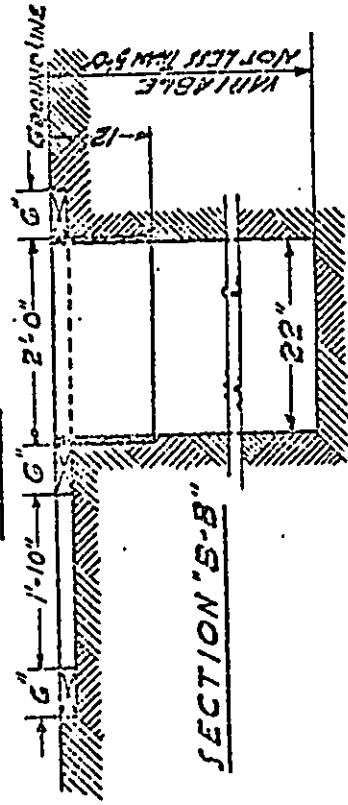


DETAIL OF FLOOR

Scale 1/2" = 1'-0"



PLAN



SECTION 'S-B'

DETAIL OF MUD SILLS

Scale 1/2" = 1'-0"

ORGANIZATIONS AND INDIVIDUALS CONSULTED

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Forestry
Division of Parks
Division of Fish and Wildlife

ORGANIZATIONS

GAY & ROBINSON

KAUAI MUSEUM ASSOCIATION, LTD.

ARCHAEOLOGICAL RESEARCH CENTER HAWAII, INC.

INDIVIDUALS

JOANN YUKIMURA - COUNCILWOMAN

REV. KENNETH W. SMITH - WILDERNESS ENTHUSIAST

WILLIAM YADAO - HUNTER

JAMES SILVA - HUNTER

MAUNEL "LANI" FURTADO - HUNTER, HIKER & COWBOY

JOE MANINI - COWBOY & FARMER

STEVE PERLMAN - FIELD BOTONIST

Waimea Canyon Mule Tours
c/o Abel Medeiros, Vp
P.O. Box 8
Eleele, Hi. 96705

July 6, 1979

Mr. Maurice H. Taylor
Field Supervisor
Division of Ecological Services
U.S. Dept of Interior (Fish & Wildlife Svc)
P.O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Taylor:

In order for me to fulfill the requirements of certain portion of the Environmental Impact Statement for Waimea Canyon Mule Tours I need the following question answered by someone with your qualifications:

What impact has the use of the Kukui area by hunters, hikers, and those on horseback, has had on wildlife species?

I thank you for your cooperation and assistance in this matter, and may I hear from you at your earliest convenience.

Very truly yours,


Abel Medeiros

ATTACHED LETTER (July 6, 1979) TO MR. MAURICE H. TAYLOR

NO REPOSE RECEIVED.



27 1:19

HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY
KAUAI DISTRICT
P. O. Box 1671
LIHUE, KAUAI, HAWAII 96766

April 26, 1979

IN REPLY REFER TO
A-3-181

MEMORANDUM

To: Libert K. Landgraf, State Forester
From: Ralph E. Daehler, District Forester, Kauai
Subject: KA 4/2/79-1129 - Mule Tours, Waimea Canyon
(ref Planning Office memo, undated)

SUSPENSE	
LANDGRAF	
CLARKE	
DAEHLER	
FETTER	
FERRELL	
FETTER	
WAKID	
DAEHLER	
WONG	
NINUKAWA	
PERKINS	
WATKINS	

Owner: State of Hawaii

Managing Agency: DLNR, major portion of request - Division of Forestry.
Other sites State Parks and Land Management.

Applicant: Mr. Abel Medeiros, Vice President
Waimea Canyon Mule Tours

Request:

1. Construct a mule trail from Puu Kukui to the bottom of Waimea Canyon.
2. Lease approximately 3 acres of State Park land across the highway from the Iliau Native Plant Nature Loop.
3. Operate tourist oriented mule riding tours to accommodate 56 persons, including guides, daily.

Considerations:

Increasing levels of demand on a diminishing wildland resource, combined with preserving the unique recreational qualities of wilderness, are making the task of wilderness management increasingly difficult. Kauai is a small island with limited back country opportunities. We have been directing our efforts in the forest reserve canyon area towards wildland recreational emphasis. I feel that large organizational groups and package tour activities will conflict with our management goals.

Attach 1
EIS memorandum dtd 7/1
A-3-181

Libert K. Landgraf, State Forester
April 26, 1979

-2-

In other areas of the United States, pressures on recreation resources are causing decisions to be made to reduce or curtail even long established operations of this type. For example, in Rocky Mountain National Park where equestrian rides have been operating for many years, the operations have been viewed with increasing scrutiny. The first determinations made were that... "extensive horse use has created environmental concerns over increasing soil erosion, trampling of vegetation, grazing, water quality problems, and hiker/rider conflicts." The first remedy approach by the National Parks Service was to initiate controls such as confining horses to certain established trails, not allowing grazing, and limiting the number of riders in a party. More recently the Park Service re-evaluated the operations with an environmental impact statement. Deciding that prior restrictions were not sufficient to control the impact of increasing horse use, the parks "Final Environmental Impact Statement" recommends that the two interior concession-operated stables be relocated outside the park at the termination of their contract in 1979. The "Statement" concludes that "since horse damage is significant inside the park now, alternatives to this operation are limited. It would not be reasonable to continue or increase the current operation."

The Park Study also considered the impact of eliminating horse travel on opportunities for the handicapped. It did not prove to be a major reason for riding.

My feeling is that this mule ride proposal is geared more for a special thrill seeker or "carnival ride type attraction" than towards a wildland appreciation oriented experience. We have set our use priority on the growing band of foot travelers rather than promoting equestrian trail development in this area and consequently even heavier use.

If the mule use were desirable, then I feel the trail should be state built and part of the forest reserve system--not a separate ownership trail because of management complications.

A properly built stock trail for the type of operation recommended at this site would cost at least a quarter million dollars. I believe this is too much of a commitment on a permit basis and would lead to management conflicts within the forest reserve.

We are not against mule or horse travel in all forest reserve areas. We now have some areas designated for stock and others planned for such use.

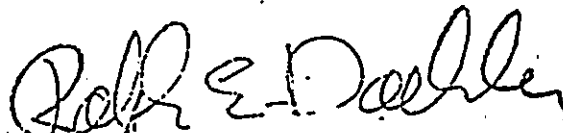
On the westside, negotiations are being finalized for public access into Waimca Canyon from the makai end. This could prove to be a more realistic and viable alternative. At Kokee State Park there are scenic canyon rim trails that could also be alternative routes. Also, at Kokee State Park there is an existing opportunity for riding tours. Already built into the Kokee Lodge lease is a mandatory condition calling for the operation of a riding stable that is not being fulfilled. If they can't make a go of it, why add competition?

Libert K. Landgraf, State Forester
April 26, 1979

-3-

RECOMMENDATION:

Recommend denial of the request but that alternate areas of opportunity be explored.


Ralph E. Daehler
District Forester, Kauai

cc: T. Yamamoto
B. Nishimoto

ENDORSEMENT:

5/2/79

TO: PLANNING OFFICE

Concur with District Forester Daehler's comments.

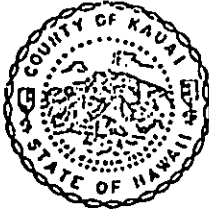

LIBERT K. LANDGRAF
State Forester

DIV. OF FORESTRY - KAUAI

DATE RECD.	FILE REFERENCE
5-4-79	A-3-181
DAEHLER	
KYCHO	INFO.
	OPIN. & RECOMM.
	APP. ACTION
	DRAFT REPLY
	FC&T BUL. DD.
	XEROX

cc: Kauai District

EDUARDO E. MALAPIT
MAYOR



COUNTY OF KAUAI
PLANNING DEPARTMENT
P. O. BOX 111
LIHUE, KAUAI, HAWAII 96766

BRIAN K. NISHIMOTO
PLANNING DIRECTOR

DIV. OF FORESTRY - KAUAI

DATE RECD.	FILE REFERENCE
5-4-79	KA-4/2/79-1129
DAHLER	
KYONO	
Bahn	
State Forester	
	INFO.
	COM. & RECOM.
	APP. ACTION
	DRAFT REPLY
	POST BILL NO.
	XEROX

May 2, 1979

Mr. Susumu Ono
Department of Land & Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Subject: Cдуа KA-4/2/79-1129 for Private Recreational Use on properties identified as TMKs: 1-2-01:4, 1-5-01:1 and 1-5-01:17

In our previous response to this proposal (KA-8/3/78-1080), we noted that Waimea Canyon is regarded as one of Kauai's major scenic assets, and any attempt to utilize this resource for commercial purposes would have to be closely scrutinized. We further raised several questions of which we feel this revised application has not adequately addressed.

1. Can the resource adequately accommodate 50 people per day on 4 mule trains of 12 mules each, without incurring any negative environmental impacts? The application only concludes that no adverse impacts will result without providing adequate justification.
2. The question of maintenance of the trail and liability has not been addressed. Because the proposed trail is located within a hunting zone and the topography of the trail is steep at some locations, it could be hazardous for a tour operation; conflicts with hunters and the need for rescue assistance during emergencies is most likely to occur.
3. Is this type of operation in keeping with the intent of the Conservation District especially since it will occur in one of Hawaii's most scenic spots? This question is of prime concern to us and the application has not addressed it. It further has not provided adequate justification to assure us that this proposal will not adversely affect the fragile nature of the Waimea Canyon and its environs. Based on the information provided, the proposed use appears to be strictly commercial in nature and we cannot see how it will provide any benefits to the State or the public. Since the Conservation District is

Attach 2
BIS memo dated 5/7
A-3-18

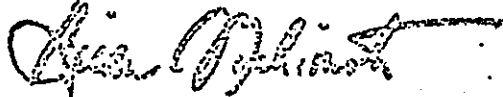
Mr. Susumu Ono
Page 2
May 2, 1979

is considered a public resource, an area that is truly unique as the Waimea Canyon should remain a public resource, and not be exploited for this type of commercial venture.

We are further not aware of any management plan by the State to regulate such uses within the Kokee area, and such a plan should be established before considering any commercial proposal within the area.

Based on the foregoing reasons, we cannot recommend that you approve this application to utilize publicly owned conservation lands for commercial purposes.

Thank you for the opportunity to comment on this proposal, and should you need any further assistance, please do not hesitate to call.



BRIAN NISHIMOTO
Planning Director

cc: Takeo Yamamoto
Ralph Daehler
Sam Lee

COPY



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY
KAUAI DISTRICT
P. O. BOX 1671
LIHUE, KAUAI, HAWAII 96766

IN REPLY REFER TO

F-3a

October 6, 1977

MEMORANDUM

To: Edwin Q. P. Petteys, Acting State Forester
From: Ralph E. Daehler, District Forester, Kauai
Subject: Tropical Rent-a-Mule, Kukui Trail
(In response to your October 5 telephone request for background information concerning above request)

Since the very informal DLNR board on-site field trip to the start of Kukui trail on August 25, I have received no further information concerning the proposal planning from either department channels or Mr. Don Hillis or his representative.

Prior to the August 25 DLNR board trip and subsequent to my memorandum dated August 18, 1977 (copy attached), I had the opportunity to meet with Mr. Don Hillis and Mr. Abel Medeiros. During our meeting on August 18, we exchanged thoughts and points of view and I offered some alternate ideas.

During our discussion about the mule train idea, I reiterated my concerns about the use pressures in the upper Waimea Canyon region and that Kukui trail is not designed for, nor safe for stock use. I mentioned my earlier suggestion of a canyon route in the canyon from Waimea--but Mr. Hillis stated he had been unable to gain permission. (This is on a route the DLNR is considering right-of-way status due to a request from Kauai hunters).

As another alternative, I mentioned considering a ride which I believe would be more scenic, located along the canyon rim, within Kokee State Park, which could incorporate the Canyon and/or Ditch trails.

I also suggested that they might consider other Kauai locations such as from a site near Wailua falls that could route down into the river bottom along old Hawaiian sites and could also tie into forest reserve planned equestrian trails.

Another suggestion was to locate near Hanamaulu and utilize forest reserve trail routes on Kalepa ridge.

Edwin O. P. Petteys
October 6, 1977.

-2-

I also mentioned that it wouldn't help them now, but future forest reserve addition proposal and equestrian use approved trail construction is planned to go up from Waimea Canyon to the Mokihana Ridge area and back down to Waimea Canyon via Waialae drainage.

Our conversation ended still locked in on the Kukui trail site. One of my concerns was cleared up in that they do not propose to use the Iliou Native Plant Nature Loop as a staging area. I made it clear that I could not support this type of operation to our Board for the Kukui trail route, and hoped that they would consider some of the other ideas.

To date we are just dealing with an idea. There is still no proposal nor plan that I know of.



Ralph E. Daehler
District Forester, Kauai

cc: T. Yamamoto
A. Medeiros

Kukui-Waimea Canyon bottom
Flora includes the following:

Origin
E = endemic
I = indigenous
C = Introduced pre-cook
D = Introduced after Capt. Cook

Scientific name	Common name	Origin	
<i>Styphelia tameiameia</i>	putiawe	I	
<i>Wikesia gymnoxiphium</i>	iliau	E	36
<i>Acacia koa</i>	koa	E	70
<i>Cordyline terminalis</i>	ki	C	
<i>Plantago major</i>	lau kahi	D	TH
<i>Pteridium aquilinum</i>	kilau	I	
<i>Dodonaea eriocarpa</i>	aalii kamakua	E	5
<i>Santalum pyrularium</i>	ilihi	E	60
<i>Psilotum nudum</i>	moa	I	
<i>Coccolus viragatus</i>	huehue	E	
<i>Dianella sandwicensis</i>	uki uki	E	33
<i>Metrosideros collina</i>	ohia-lehua	E	
<i>Scaevola gaudichaudii</i>	naupaka kuahiwi	E	
<i>Bidens</i> spp.	kokoolau	E	
<i>Viola trachelifolia</i>	waioleka	E	TH
<i>Gahnia beecheyi</i>	uki	E	
<i>Aleuritica moluccana</i>	kukui	C	
<i>Pithecellobium saman</i>	monkey pod	D	20
<i>Grevillea banksii</i>	silk oak	D	
<i>Eugenia cumini</i>	java plum	D	7
<i>Lantana camara</i>	lantana	D	
<i>Opuntia megacantha</i>	pa-hini	D	
<i>Erythrina sandwicensis</i>	wiliwili	E	19
<i>Hibiscus tiliaceus</i>	hau	C	
<i>Passiflora edulis</i>	liliko'i	D	25
<i>Passiflora edulis</i> f. <i>flavicarpa</i>	yellow liliko'i	D	
<i>Melia azedarach</i>	inia	D	
<i>Caesalpinia major</i>	kakalaioa	I	
<i>Eragrostis variabilis</i>	eno-loa	E	
<i>Heteropogon contortus</i>	pili	I	
<i>Myoporum sandwicense</i>	naio	E	
<i>Calocasia esculenta</i>	talo	C	
<i>Psidium guajava</i>	guava	D	

<u>Setaria glauca</u>	yellow fox tail	D
<u>Pritchardia spp.</u>	loulu	H
<u>Furcraea foetida</u>	mauritus hemp	D
<u>Sida spp.</u>	ilima	H
<u>Mangifera indica</u>	mango	D
<u>Tamarindus indica</u>	tamarind	D
<u>Sapindus oahuensis</u>	lonomea	H
<u>Hibiscus waima</u>	hokeo teo keo	H
<u>Dubautia spp</u>	haena	H
<u>Carica papaya</u>	papaya	D
<u>CITRUS Aurantium</u>	orange	D
<u>Melinis minutiflora</u>	molassesgrass	D
<u>Erigeron canadensis</u>	horseweed	R

Abel

These are the plants I can think of —
the order I have them in doesn't
mean anything, it's just as I thought of
them as I visualized being in the area.

Ralph

8/1/79

Waimea Canyon Mule Tours
c/o Abel Medeiros, VP
P.O. Box 8
Eleele, Hi. 96705

July 6, 1979

Mr. Ralph E. Daehler
District Forester, Kauai
P.O. Box 1671
Lihue, Hi. 96766

Dear Mr. Daehler:

In order for me to fulfill the requirements on certain portion of my EIS I need the following question answered by someone with your qualifications:

What impact has the use of the Kukui area by hunters, hikers, and those on horseback has had on plant species?

Thank you for your cooperation and assistance in this matter. May I hear from you at your earliest convenience.

Very truly yours,

Abel Medeiros
Abel Medeiros



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY
KAUAI DISTRICT
P. O. Box 1671
LIHUE, KAUAI, HAWAII 96766

IN REPLY REFER TO
A-3-181

July 19, 1979

Waimea Canyon Mule Tours
C/O Abel Medeiros
P. O. Box 8
Eleele, Kauai, Hawaii 96705

Dear Abel:

This is in response to your letter dated July 6 in which you pose the question, "What impact has the use of Kukui area by hunters, hikers, and those on horseback had on plant species?"

The use of Kukui trail by hikers and hunters has not had any direct appreciable effect on the surrounding plant species composition. Indirectly, however, there has been detrimental effects to protective vegetation due to water run off erosion. This erosion has been caused by improper trail lay out in some areas and in others by trail users cutting switch backs, thereby causing damaging drain channels to develop. At the lower Kukui trail area we have had some serious damage and continuing tree mortality to the native Wiliwili trees due to occasional trespass horses gaining access from the Waimea river drainage. Horses strip and eat the bark of that species. This type of damage, of course, would not be a problem of a trail rider unless he tied his horse near Wiliwili trees.

Kindest regards,

Ralph E. Daehler
District Forester, Kauai

Waimea Canyon Mule Tours
c/o Abel Medeiros, Vice-Pres.
P. O. Box 8
Eleele, Hi. 96705

July 6, 1979

Mr. Thomas C. Telfer
Wildlife Biologist, Kauai
Lihue, Hi. 96766

Dear Mr. Telfer:

In order for me to fulfill the requirement on certain portion of my EIS I need the following question answered by someone with your qualifications:

What impact has the use of the Kukui area by hunters, hikers, and those on horseback has had on birds species?

Many thanks for your cooperation and assistance in this matter.
May I hear from you at your earliest convenience.

Very truly yours,


Abel Medeiros

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FISH AND GAME
P. O. BOX 1671
LIHUE, KAUAI 96766

July 13, 1979

Abel Medeiros
Waimea Canyon Mule Tours
P. O. Box 8
Eleele, HI. 96705

Dear Mr. Medeiros:

This in response to your request for information on the impact of hikers, hunters and horseback riders on birds in the Kukui area (letter dated July 6, 1979).

There is no significant direct impact on any bird species resulting from hunters, hikers or horseback riders in the Kukui Trail area. Most of the bird species in the area are exotic introductions which are widespread and generally speaking, not much affected by human activities in that area.

The native Hawaiian duck (koloa) occasionally is found in Waimea River proper, and I suppose that regular human and livestock activities may cause minimal disturbance to them, but not so as to warrant real concern, as long as the area remains in wildland recreational management.

The A'o (Newell's Manx Shearwater) is believed to nest in the cliff areas adjacent to Kukui Trail, but not confirmed. Fire could be a hazard to nesting populations of these, but not too likely to be much of a problem as vegetation is sparse.

Thoughtless hunters may occasionally shoot wild birds in the area (illegally of course), but this is a very insignificant problem at present. Game bird hunting is not permitted within Waimea Canyon, as it is not really a suitable bird hunting area.

I hope that these remarks adequately answer your questions. If not please contact me.

Sincerely,

Thomas C. Telfer
District Wildlife Biologist, Kauai

Gay & Robinson
Makaweli, Kauai
Hawaii, 96769

Oct. 23, 1978

Mr W.Y. Thompson
Chairman of the Board
Dept. of Land & Natural Resources
Honolulu, Hawaii

Subject: Conservation District Use Application for Commercial
Use on TMK 1-2-01:8 at Waimea Canyon;

Refer: KA 8/3/78-1080

Dear Mr Thompson:

Thank you for your notice of October 16, 1978 referring
to the above subject.

Gay & Robinson has the following comments on the application

1. If the application is for the use of Kukui Trail for
entering and leaving the Waimea Canyon, we have no objection
to it.

2. Care must be taken, however, that the facilities are
not placed on fee simple Kuliaas owned or controlled by Gay
& Robinson.

3. We are opposed to the application if it allows entry
into the valley through the Kukui Trail and exit down through
the valley bottom. We feel that this would not be compatible
with our ranching operation.

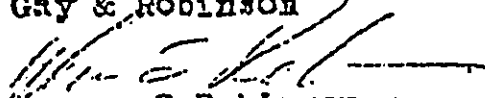
4. We are opposed to vehicle access to the upper valley
by the applicant.

5. All activities in the valley should be limited to the
rest area site with no tours through out the valley.

Thank you for giving us the opportunity to comment on
this application.

Sincerely,

Gay & Robinson


Warren S Robinson
Mgr.



KAUAI MUSEUM ASSOCIATION, LTD.
P.O. Box 248
Lihue, Hawaii 96766

November 30, 1978

DORA JANE COLE
PRESIDENT

HENRY NAKAMURA
VICE PRESIDENT

HILDA CANNON
VICE PRESIDENT

MERVYN MASUMURA
TREASURER

MARY MILDRED JONES
SECRETARY

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HELEN R. ELLIS
MARGARET L. FAYE
HOWARD GRUENBERG
KATHRYN HULME
ALBERT J. KOCHER
BEATRICE LOVELL
WALTER SCOTT
AKIKO SENDA
JULIET RICE WICHMAN
EDITH K. WILCOX

ROBERT A. GAHRAN
DIRECTOR-KAUAI MUSEUM

Mr. Abel Medeiros
P. O. Box 8
Eleele, HI 96705

Dear Abel:

In response to your telephone request concerning the area one fourth of a mile above the Kukui Trail on the Polihale side, I checked with our historic researcher, Catherine Stauder upon her return from the Mainland.

She replies as follows:


"There does not seem to be any historic data to warrant identifying any historic sites in the area in which you are specifically interested.

"Archaeology of Kauai" by Wendell Bennett, the first index of Kauai archaeological sites, does not list anything for this area.

It is not surprising that so few sites for that area are listed either in this archaeological index or in historical data. The general area was not one of permanent occupancy but one to which the natives came to cut timber, gather feathers, and later to hunt wild cattle. There were camps in which the people lived while engaged in their occupations so it would not be surprising if isolated artifacts were found: i. e., the camp site, remains of stone corrals, adzes, etc."

Hope this of help to you. If we can be of any further help, please let me know.

Very truly yours,


Robert A. Gahrn
Director

RAG:ba



ARCHAEOLOGICAL RESEARCH CENTER HAWAII, INC.

P. O. Box 285; Lawai, Kauai, Hawaii 96765; Ph. 332-8521

28
November
1978

Mr. Abel Medeiros
Vice President
Waimea Canyon Tours, Inc.
P. O. Box 563
Koloa, Kaua'i, Hawaii 96756

Subject: Archaeological Reconnaissance of
Kukui Trail, Waimea Canyon State
Park, Kona, Kaua'i Island.
ARCH 14-144 Ia.

Dear Abel:

On the 24th of November, 1978, personnel of Archaeological Research Center Hawaii, Inc., performed an archaeological reconnaissance of the Kukui Trail, Waimea, Kaua'i Island. The reconnaissance covered the trail from its origin at Kōke'e Road to the base of the Waimea Canyon. In addition, a 2,000 foot long portion of the west side of the river bank at the base of the trail was examined, (see enclosed map). No archaeological features were relocated along the descending trail. However, on sloping terrain at the base of the canyon, a number of well preserved former irrigated taro fields (*lo'i*) were located. These features are a part of the previously recorded archaeological site 3012 (ARCH files).

It is our understanding that you intend to innitiate mule rides along the Kukui Trail to the base of the canyon and stage the animals in the flat area fronting the Waimea River before their return up the trail. Both the flat area fronting the river and the trail itself are devoid of archaeological features. Therefore, there will be no direct impact on archaeological resources as a result of your proposed actions.

As far as visitor impact on the archaeological features in surrounding areas at the base of the canyon, this area is already open to the public and therefore previously open to potential impact. Furthermore, the features examined consist of terrace walls and *lo'i* which are in good, stable condition and it is our judgement that increased visitation of the type that you propose will not damage them, but will have the beneficial effect of increasing public appreciation of Hawaiian Culture.

Mr. Abel Medeiros
ARCH 14-144 Ia
November 28, 1978
Page 2

Your plan to provide a brief exploration of the nature of the remains would provide further stimulus for this appreciation.

John Malina and Hal Hammatt enjoyed the trip very much and we would like to thank you for the courtesy which you and Lani Furtado extended to them.

If there are any questions or we can be of any further assistance to you please do not hesitate to contact me. It has been a pleasure to do business with you.

Nā Kau a Kau,

ARCHAEOLOGICAL RESEARCH CENTER HAWAII, INC.



Francis K.W. Ching
President

FKWC/jj

Enclosures

ARCHAEOLOGICAL RESEARCH CENTER HAWAII, INC.

P. O. Box 285; Lawai, Kauai, Hawaii 96765; Ph. 332-8521

28
November
1978

Mr. Abel Medeiros
Vice President
Waimea Canyon Tours, Inc.
P. O. Box 563
Koloa, Kaua'i, Hawaii 96756

Subject: Archaeological Reconnaissance of
Proposed Mule Staging Area,
Waimea Canyon State Park, Waimea,
Kona, Kaua'i Island. ARCH 14-144 Ib.

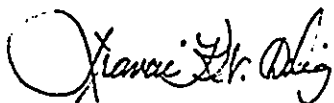
Dear Abel:

As part of the archaeological reconnaissance of the Kukui Trail performed by Archaeological Research Center Hawaii, Inc. personnel on the 24th of November, 1978, we examined a parcel of land approximately ½ mile north of the Kukui Trail along the Kōke'e Road for archaeological sites (see enclosed map). This area has been previously modified by modern usage (military storage area) and is devoid of archeological remains. Further modification of this area will therefore have no impact of an archaeological, historic nature and we recommend immediate archaeological clearance for the proposed mule staging area

If you have any questions concerning the above or we can be of any further assistance to you please do not hesitate to contact me.

Nā Kau a Kau,

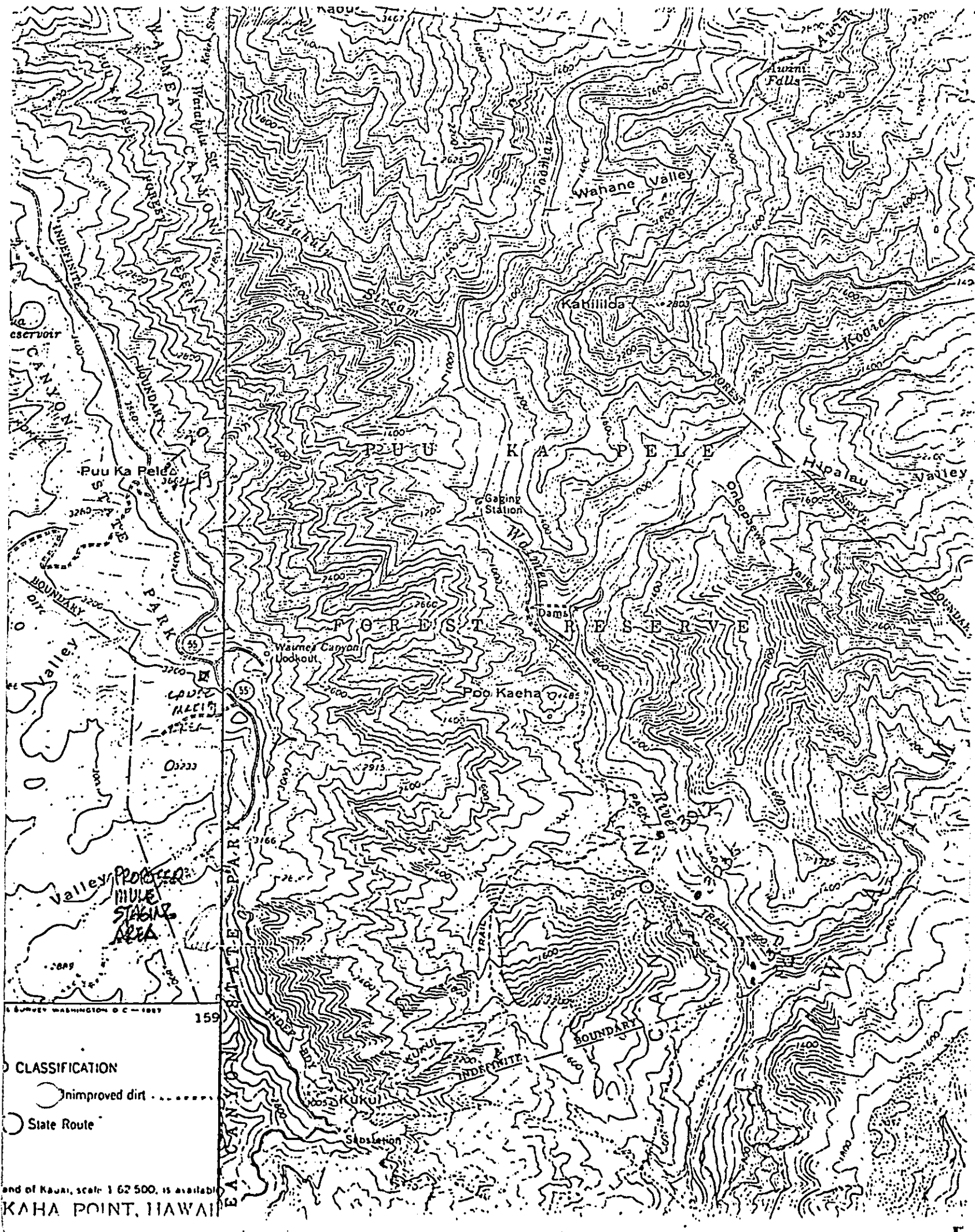
ARCHAEOLOGICAL RESEARCH CENTER HAWAII, INC.



Francis K.W. Ching
President

FKWC/jj

Enclosure:



CLASSIFICATION
○ Improved dirt
○ State Route

and of Kaha, scale 1:62,500, is available
KAHA POINT, HAWAII

COMMENTS and RESPONSES

COMMENTS and RESPONSES



United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:

ES
Room 6307

June 26, 1979

Office of Environmental Quality Control
550 Halekiauila Street, Room 301
Honolulu, Hawaii 96813

Re: Waimea Canyon Mule Tours
(Kukui Alternate Equestrian Trail)
Waimea Canyon State Park, Kauai

Dear Sir:

These comments supplement those provided on June 20, 1979, by Mr. Eugene Kridler, Endangered Species Coordinator, U. S. Fish and Wildlife Service, Honolulu, and involve areas of Service concern other than those relating strictly to endangered species.

We find the Environmental Impact Statement deficient in several critical areas: it lacks a concise, definitive description of the proposed action; it lacks a general description of the flora and fauna of the project area, but rather is limited to brief descriptions of project effects on various facets of area biology; it lacks clear and readable maps which would assist the reader in understanding the project; and relies too heavily on documentation of equestrian operations in mainland areas which, we believe, are in habitat sufficiently different from that to be affected as to preclude their use in evaluating the proposed action.

Our specific comments are as follows:

Page 4. Paragraph 4. How much "earth removal and shifting" is anticipated? What kind of "light equipment" will be used? How will it be brought to the site? What does "... many of the sharp switchbacks can be eliminated" mean?

Page 5. Paragraph 2. What is the "approved disposal method" that will be instituted for manure removal?



Save Energy and You Serve America!

Page 7. Paragraph 5. Very possibly the birds that would be attracted to livestock feed would be exotic species. Their proliferation in an area of native birds cannot be considered as a beneficial aspect of the project.

Page 9. Paragraph 2. The O'o (Hoho braconus) is included in the Federal list of endangered birds, so the statement that it is "rare" is not a definitive description of its status.

Page 10. Paragraph 2. What does the sentence mean that states: "Any deterioration of the Trail (sic) and mitigative measures to stem adverse effects will be assessed, should they occur, when the Trail (sic) is in use."? What type of "deterioration" is envisioned at this time? What corrective measures will be taken?

Page 10. Item No. 4. What equipment?

Page 10. Item No. 6. Concerning impact on birds, the statement is erroneous for reasons outlined for Page 7, Paragraph 5, above.

Although materials accompanying the EIS do not indicate whether this is a draft or final statement, it appears that a number of individuals/agencies have been afforded the opportunity to comment on an earlier manuscript. We note that substantive issues noted in these reviews were inadequately addressed in the subject EIS. Their proper disposition would have negated many of the comments contained in this letter. In view of the deficiencies noted above, it is the recommendation of the U. S. Fish and Wildlife Service that the EIS be rewritten.

We appreciate the opportunity to comment.

Sincerely yours,

Original Signed by
Maurice H. Taylor

Maurice H. Taylor
Field Supervisor
Division of Ecological Services

cc: HA
HDF&G
(Abel Medeiros
Naomi Tanigawa

Waimea Canyon Mule Tours
% Abel Medeiros
P. O. Box 8
Eleele, Hawaii 96705

July 23, 1979

United States Dept. of the Interior,
Fish and Wildlife Service
300 Ala Moana Boulevard,
Honolulu, Hawaii 96850

Attention: Maurice H. Taylor,
Field Supervisor
Div. of Ecological Service

Dear Mr. Taylor:

In reply to your letter of June 26, 1979, we hereby submit our reply to your specific comments as follows:

Page 4 par 4 - The only earth removal or shifting we anticipate doing is to create an equestrian trail wide enough to accommodate the animal to travel down and up the canyon in a safe condition, with areas provided for oncoming traffic. The trail would be approximately 6 feet wide with grades between 15-20 percent, except for the turns at the top/and/or bottoms of the switchbacks as the case may be.

We anticipate using a D-4 crawler tractor with an angle blade to do some of the work, otherwise the work will be by manual labor. The equipment will be brought to the site on a truck trailer.

By making the trail longer along the hillsides, the number of switchbacks would be less as compared to the present Kukui trail. This situation would make it easier on the animal, and of course the rider.

Page 5 par 2 - Manure removal - Mule wastes have been gathered and controlled for many centuries. We feel that our mules will present no unique problems. We plan to construct a screened off area away from the eating area to dry and store the manure at the bottom of the trail. The dried manure will be then sacked and hauled out for disposal either by sale or to the sanitary fill nearest the area. The State's Department of Health will be consulted to the fullest in this regard.

Page 7 par 5 - Thank you for your comment.

Page 9 par 2 - We appreciate your interpretation.

Page 10 par 2 - ?

Page 10 item 4 - A D-4 tractor would produce noise levels between 70-80 dba's and possibly a little higher when working in valleys.

Page 10 item 6 - Thank you for your comment on the matter.

Your summary paragraph can only be answered that approximately 4 organizations and/or individuals requested to be consulted parties and were given copies of the draft only after consulting with members of DL & NR staff, namely Evans and Bautista and also Ken Takahashi of EQC.

Very truly yours,

Abel Medeiros
Abel Medeiros
Vice President

AM/lis



PODED-PV

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858

14 June 1979

Mr. W. Y. Thompson, Chairman
Department of Land and Natural
Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Thompson:

We have reviewed the Waimea Canyon Mule Tours Environmental Impact Statement forwarded to us by the Office of Environmental Quality Control. The proposed activity does not affect any U.S. Army Corps of Engineers water resources development projects or regulatory functions. The proposed activity should be compared to other human uses of Waimea Canyon to determine compatibility with, and impacts to the canyon's ecosystem and other uses.

Sincerely yours,

KISUK CHEUNG
Chief, Engineering Division

Copy Furnished:

✓ Mr. Abel Medeiros, Vice President
Waimea Canyon Mule Tours
P.O. Box 8
Eleele, Kauai, Hawaii

Environmental Quality Commission
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813 w/incl (EIS)

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

P. O. Box 50004, Honolulu, HI 96850

July 13, 1979

Mr. Susumu Ono, Chairman
Board of Land & Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Ono:

Subject: Waimea Canyon Mule Tours, Waimea Canyon State Park, Hawaii

We have reviewed the subject environmental impact statement and have no comments to offer.

Thank you for the opportunity to review this document.

Sincerely,

Jack P. Kanalz
State Conservationist

cc:
Mr. Abel Medeiros, Vice President
Waimea Canyon Mule Tours
P. O. Box 8
Eleele, Kauai, HI 96705

Office of Environmental Quality Control
550 Halekauwila St., Rm. 301
Honolulu, HI 96813



DEPARTMENT OF THE ARMY
DIRECTORATE OF ENGINEERING & HOUSING
UNITED STATES ARMY SUPPORT COMMAND, HAWAII
SCHOFIELD BKS, HAWAII 96857

19 JUN 1979

APZV-EHE-E

Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Gentlemen:

The Environmental Impact Statement (EIS) for Waimea Canyon Mule Tours, Waimea Canyon State Park, Kauai, has been reviewed and we have no comments to offer at this time. There are no Army installations or activities in the vicinity of the proposed project.

The EIS is returned in accordance with your request.

Sincerely,

1 Incl
As stated

JOHN E. PEARSON, JR.
LTC, CE
Acting Director of Engineering
and Housing

CF:
Mr. Abel Medeiros, Vice President
Waimea Canyon Mule Tours
P.O. Box 8
Elele, Kauai 96705

Original signed by
Sanford S. Wazypow

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 15TH AIR BASE WING (PACAF)
HICKAM AIR FORCE BASE, HAWAII 96853



REPLY TO
ATTN OF:

DEEV (Mr Shiroma, 449-1831)

18 JUL 1979

SUBJECT:

EIS, Waimea Canyon Mule Tours

TO:

Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

1. This office has reviewed the subject EIS and has no comment to render relative to the proposed project. Attached is the EIS for your continued use.
2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your project and thank you for the opportunity to review the document.

Original signed by

ROBERT Q. K. CHING
Chief, Engrg & Envmtl Plng Div
Directorate of Civil Engineering

1 Atch
EIS

Cy to: (wo Atch)
Mr Abel Medeiros, Vice President
Waimea Canyon Mule Tours
P. O. Box 8
Eleele, Kauai 96705

cy for Mr Abel Medeiros

HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
002A:amn
Ser 1360

13 JUL 1979

State of Hawaii
Department of Land and
Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Gentlemen:

Environmental Impact Statement for
Waimea Canyon Mule Tours
(Kukui Alternate Equestrian Trail)

The Environmental Impact Statement for Waimea Canyon Mule Tours,
forwarded by the Environmental Quality Commission, has been reviewed
and the Navy has no comments to offer. Per their request, the subject
EIS is being returned to the Commission

The opportunity to review the EIS is appreciated.

Sincerely,

J. W. CARL
LIEUTENANT COMMANDER, CEC, USN
DEPUTY FACILITIES ENGINEER
BY DIRECTION OF THE COMMANDER

Copy to:
Mr. Abel Medeiros, Vice President
Waimea Canyon Mule Tours
P. O. Box 8
Eleele, Kauai 96705

State EQC (w/ EIS)

July 19, 1979

MEMORANDUM

EPHS-SS

To: Mr. Susumu Ono, Chairman of the Board
Department of Land and Natural Resources

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Waimea Canyon Mule Tours,
Waimea Canyon State Park, Kauai

Thank you for allowing us to review and comment on the subject EIS.

The Department of Health is strongly opposed to the proposed commercial mule tours in Waimea Canyon.

Specifically, these areas of concern were addressed by the subject EIS in the following manner:

1. Need and availability of Potable Water: This concern was completely ignored by the EIS.
2. Erosion Control: Although the EIS addressed surveillance of the proposed trail, only limited information regarding the responsibility for erosion control is given. Who would be responsible for the maintenance of the trail? What control measures are proposed to control surface runoff during the rainy season?
3. Sewage Disposal: The EIS stated that a soil study will be conducted to determine the feasibility of sewage disposal systems for both man and animal. The study should be included in the EIS.

The EIS addressed percolation. "The dense lava layers inhibit the percolation of water so that, for example, percolation of wastes from the barn and staging areas to the river through the ground is not likely." If percolation through the ground is not likely, what method of sewage disposal is proposed (for example, cesspools and septic tank drain fields require good percolation)? If the soils are composed of dense lava layers, how would cesspools be constructed?

July 19, 1979

4. Pollution of Waimea River: As mentioned earlier, surface runoff and the materials it might carry is not adequately addressed. For example, how will human and animal wastes and litter at the base of the trail be controlled?
5. Solid Waste Disposal and Litter: This concern is not adequately addressed by the EIS. According to our Regulations, solid waste shall be transported to the nearest approved sanitary landfill.

In general, the subject EIS does not adequately address the Department of Health's concerns.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

John H. Gray
for JAMES S. KUMAGAI, Ph.D.

cc: Mr. Abel Medeiros ✓
OEQC
DHO, Kauai



Casalina Associates, Inc.

ENVIRONMENTAL HAZARDS EVALUATION & CONTROL SPECIALISTS • SINCE 1960

July 23, 1979

Dr. James S. Kumagai,
Deputy Director of Environmental Health
State Health Department
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Kumagai:

The following is in response to the July 19, 1979 comments prepared for you by Mr. Brian Choy to our Mule Tours EIS.

1. The first, and presumably the greatest concern raised by Mr. Choy, was that of the availability of potable water. He stated: "This concern was completely ignored by the EIS." He apparently failed to read page 8, line 2 which states that water (both potable and general use) is available from the Kekaha Sugar Company. Mr. Medeiros has indicated that carboys of drinking water and soft drinks will be available for customers. It does not appear to be a valid concern that Mr. Medeiros would not provide potable water to the tour customers.
2. On erosion control, see page 11, (1) and (3). Little or no erosion control is provided for the Kukui Trail and we do not foresee any insurmountable problems for the K'ae Trail.
3. A soil study cannot be conducted until the state decides precisely where they want the facilities. Mr. Choy's assumption that adequate percolation of wastes cannot take place because of our geologist's statement that deep lava layers would prevent migration of contaminants down and laterally to the river is specious. The statement could have been expanded to indicate the great distance that contaminants would have to travel from the upper staging area to get to the river, but it was thought self evident. We appreciate Mr. Choy's indication that soils with good percolation characteristics are advisable for septic systems.

4. Pollution (Potential?) of Waimea River. Other horse and mule ride concessions do not report serious problems with reststop-produced wastes. Waimea Mule Tours will take whatever steps necessary to see that human and mule wastes are contained, collected and disposed of by any of several standard sanitary engineering methods. It should also be realized that we must keep the areas clean and aesthetically pleasing to win and maintain customer acceptance. Mr. Choy's concern for the pollution of the Waimea River should extend to examining the past and current effects of several hundred hunters, riders and others who water their mounts in the river while the animals urinate and defecate. Hikers who camp and bathe in the stream, and the wildlife which lives there, are all sources of pollution. If the DOH has gathered water quality data, we would appreciate access to it so that baselines may be established for the contamination parameters.

5. Again, it appears that Mr. Choy did not read the EIS properly. Page iii of the Summary states: "No litter will be allowed and plastic sacks will be carried by the guides to retrieve lunch and other refuse back to the staging area for disposal by sanitary landfill."

Mr. Choy's final comment is the most realistic and rational. The statements in the EIS must be "...general in nature due to preliminary plans...". We are, first, attempting to ascertain if it is in Hawaii's best interest to allow a guided mule tour into the canyon as is done in other federal and state parks, and secondly what constraint details would be imposed on such an enterprise. And of course, when final plans are decided upon, the review by DOH will be most welcome.

Sincerely,

Sam L. Casalino

Sam L. Casalino, Ph.D.
Industrial Hygienist

SLC:ba

cc: Abel Medeiros

GEORGE R. ARIYOSHI
GOVERNOR



RICHARD L. O'CONNELL
DIRECTOR

TELEPHONE NO.
548-6915

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
OFFICE OF THE GOVERNOR
550 MALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

Rec 7/20/79

July 19, 1979

MEMORANDUM

TO: Susumu Ono, Chairman
Board of Land and Natural Resources

FROM: *for* Richard L. O'Connell, Director *[Signature]*
Office of Environmental Quality Control

SUBJECT: Environmental Impact Statement for Waimea Canyon
Mule Tours, (Kukui Alternate Equestrian Trail),
Waimea Canyon State Park, Kauai

We have reviewed the subject EIS and offer the following comments for your consideration:

1) We note that the applicant is proposing the use of State owned conservation district lands on Kauai. Because this proposal falls under the two categories, use of conservation district and use of state lands, the proposed project will fall under the Environmental Quality Commission's Declaratory Ruling #77-01: Concerning Agency/Applicant Actions. This will require the filing of an EIS by the applicant with your agency for the proposed use in the conservation district. After acceptance of the document by the Board, the DLNR may satisfy the second EIS requirement by incorporating the accepted EIS and submitting it to this Office for acceptance by the Governor.

2) P. i. Which mule and horse ride concessions in Hawaii occur in National or State Parks?

3) P. iii. Will all four groups of riders descend at the same time?

4) P. 1. There is no discussion on the soils in the proposed staging area and trail. Are the soils susceptible to erosion, compaction, and suitable for the proposed use?

5) P. 2. The listing of flora in the area appears incomplete. What species might be considered rare or endangered?

6) P. 3. Which native birds are found within the project area? Which of these are identified as threatened or endangered?

7) P. 4. The map provided in the EIS does not adequately show the location of the proposed trail, nor details of the trail construction. The results of the trail survey should be presented. How wide will the trail be?

8) P. 5. The second trail is stated as being much needed. Please identify who recognized this need and how this need was determined. We note there is no reference to this need in the State Comprehensive Outdoor Recreation Plan of 1975.

Who will service the portable toilets at the trail's termination point? We note that the Wiliwili camp is downstream of the proposed trail termination point. How will the manure be disposed of?

An archaeological survey appears to have been made of the Kukui Trail and not the proposed route. Also the cited reference should be exhibit B, not A.

9) P. 6. A parking area of just 300 square feet for concession customers appears quite small. How many cars can be expected if all four groups of 12 persons are present to use the trail? How much employee parking will be provided?

10) P. 7. Exotic birds which eat seeds from livestock feed may be attracted to the staging area. An increased population of exotic birds may have an impact upon the native birds in the area. How might this impact be mitigated?

The State Department of Health should be consulted regarding the potential runoff and/or effluent.

11) P. 10. How will hikers and vehicles, especially motorcycles be kept off the proposed Ka'e trail? Who will enforce this rule? Will the trail have a gate that could be designed to keep out dirt bikes? How will the rules be enforced after business hours?

The assessment of trail deterioration and possible mitigation measures should be discussed in the statement. How will runoff be controlled along the trail? Will trail clearing possibly cause landsliding?

There is no discussion on the possibility of starting forest fires during trail clearing activities or during useage of the trail.

Alternatives to the proposed action needs more discussion. Were different numbers of mules considered, such as using only 25 to lessen potential environmental impacts? The "no action" alternative should also be discussed.

Which state agencies objected to the use of Kukui trail? What were the reasons for opposition to the previously proposal?

12) P. 12. Please explain how unrestricted horse use in the Saguaro National Monument desert of Arizona relates to the use of a restricted trail on a steep ridge on a tropical Hawaiian island.

Grazing pressure was mentioned as an impact in the cited study. How will this affect the proposed trail side flora? The new trail may provide an access route for wild pigs and other feral animals that would also increase grazing pressure in the area. These topics need further discussion in the statement. Such a trail may also provide a route for exotic species of plants such as banana poka to spread further.

13) P. 13. What "carefully evaluated experience" indicates no discernable introduction of weed species? Were botancial studies conducted? A baseline survey along the trail route should be conducted before trail construction with results provided in the EIS for use in assessing potential impacts.

The proposed trail is described as being narrow, yet on page 10 the width is set at 6 to 8 feet, easily allowing for the use of dirt bikes which could disrupt the hikers and hunters wilderness experience. If the impact on wilderness experience is the primary criticism, then this topic should receive considerable discussion in the statement.

The last paragraph on this page should be deleted. The statement, "individual enterprises should not be judged heavily by the degree of personal clout or public outcry," losses sight of the fact that public lands are involved and the public has every right to voice their concerns on its use.

As can be summarized from our above comments, this statement requires substantial revision in order for it to be considered an adequate document. We strongly recommend that this be done.

We also wish to take exception to the response made to a Ms. Tanigawa during the consultation process. Chapter 343, HRS allows, and in fact encourages, anyone (regardless of training or background) to comment during the EIS process. By addressing a wide variety of questions posed by persons of varying backgrounds, the EIS document can become a more valuable tool.

Thank you for the opportunity to provide our comments. We hope that they will be useful in your preparation of a revised statement.

Attachment

cc: Mr. Abel Medeiros
Vice President
Waimea Canyon Mule Tours
(w/attachment)

Waimea Canyon Mule Tours
Abel Medeiros, Vice Pres.
P.O. Box 8
Eleele, Kauai, HI 96705

August 1, 1979

Mr. Richard L. O'Connell, Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila St., Rm. 301
Honolulu, Hawaii 96813

Dear Mr. O'Connell:

Thank you for your letter of July 19, 1979 to Chairman Susumu Ono, Board of Land and Natural Resources. I hereby submit answers to your comments:

1. There is a ride concession going into Haleakala Crater in Haleakala National Park on Maui.
2. Each group of 12 riders will leave the staging area approximately five (5) minutes apart, and descend accordingly.
3. The soils (Mahana (MAD) and the Mahana Badlands complex (BM)) in the upper staging area and on part of the trail have a moderate to severe erosion susceptibility because of the steep terrain and the soils characteristics. Much of the trail, however, will be over surfaces which are bare rock outcrop (rRO) and relatively erosion resistant. Discussion will be included in the final EIS.
4. If secondary trails, stemming from the main trails, witness an increased usage, certain plants would then be vulnerable to destruction. Some of the species which may be affected are the Hau kuawihī (Hibiscadelphus distans), Uhiuhi (Mezoneuron kavaiense), 'Akoko (Euphorbia haelealeana), Koki'o (Koki'o kauaiensis), and Mahoe (Alectryon macrococcum).
5. The native Hawaiian duck (koloa) occasionally is found in Waimea River; the A'o (Newell's Manx Shearwater) is believed to nest in the cliff areas adjacent to Kukui Trail, but not confirmed. Neither of these is identified as endangered or threatened.
6. The trail will be not more than four (4) feet wide, including shoulders. An improved map will be presented with the final EIS.
7. The determination of the need for a second trail^{was made} by the then Chairman, Mr. Williams Thompson, DL&NR, and the Kauai member, Mr. Take Yamamoto, when it was noted that hikers complained about horses using Kukui Trail. We were asked if we could develop another trail. After a survey of the area, a meeting was held with the District Forester, Kauai and the Wildlife Biologist, Kauai, in addition to the Kauai member of DL&NR.

8. The portable toilets at the trail's termination point will be serviced by Waimea Canyon Mule Tours. The manure will be collected in a screened area away from eating or toilet facilities, dried, sacked, and packed out periodically as need be. It will be offered for sale to farmers first, and the general populace second, for use as fertilizer.

9. We have the assurance of the archeological consultant that their survey included the area in question, not only the Kukui Trail area. We acknowledge that the cited reference should be Exhibit B, not Exhibit A.

10. We plan to encourage use of "mass transit" by arranging to have a van bus offer pickup and return of customers from various hotels. We may be able to arrange a similar service for our employees. We anticipate no more than 25-30 cars, of which perhaps 15-20 would be customers'. A parking area of 300 sq. ft. may be a bit small.

11. The District Wildlife Biologist (Kauai) did not indicate that there might be an increased population of exotic birds, and therefore, made no comment on the possible impact of this increase on native birds. He did say that most of the birds in this area are widespread exotic species. Perhaps if these species increase so that native bird species in this area are very much threatened, game bird hunting will be permitted.

12. Please be assured that we will utilize the services of the State Department of Health regarding potential runoff and/or effluent; and also in any other health and sanitation matters with which we might be confronted.

13. Proper signs shall be posted to keep hikers and all vehicles off the Ka'e trail. With permission from the proper State agency (Forestry or Parks) a locked gate may be installed to allow only those authorized to use the trail. Close coordination and cooperation with mounted visitors and hunters will be our prime tactic to keep dirt bikes and unauthorized persons off the trail. Keep in mind that this will be a public access trail, and as such, we cannot bear complete responsibility.

14. Trail deterioration assessment and possible mitigation measure will be discussed in the EIS. Wherever a need is determined, swales will be engineered and culverts installed to prevent erosive runoff. Grass suitable to the area could be planted immediately to help keep soil in place, if the Field Botanist and District Forester feel it is a viable solution to erosion. Railings will probably be installed to keep the animal on the trail, preventing indiscriminate turnoffs by hunters and/or visitors which may cause deterioration and erosion of the trail and surrounding ground. Waimea Canyon Mule Tours customers will be restricted to the trail at all times, during descension and ascension.

15. We have no conclusive answer to the question of forest fires during trail clearing and usage, except that everyone will be prewarned of this hazard. We will maintain strict scrutiny of trail constructors, and prohibit our customers from smoking along the trail. Water fire extinguishers may be carried by the work crew as a precautionary measure.

16. The Kauai District Forester, Mr. Ralph Daehler, of the State Parks Division of the Department of Land and Natural Resources, voiced an objection to the use of the Kukui Trail by animal travel. He felt that Kukui Trail is not capable of handling more than current hiking activities, and wanted to maintain the status quo. Presently, hunters and some other visitors travel the trail on animals.

17. From the experiences of horse use in Saguaro National Monument, Arizona, we know that it would be best to maintain control of access by animals to areas other than the trail. There will be no unrestricted animal use by our riders; we plan to install railings at potential turnoff points. There may be problems with other riders and equestrian hunters not keeping to the trail, however.

18. Everything will be done to insure the protection of native plants. The trail route will be selected so as to take advantage of being able to observe these plants on-route. We have contracted with Mr. Steve Perlman, Field Botanist at Pacific Botanical Gardens to do a survey of the area to locate such native plants. Should any of these plants be on or near the proposed trail and if there is the possibility of any native species being damaged or destroyed, we shall relocate them to secure spots, with the permission of the Forestry Division and the recommendation of the Botanist.

The area proposed is not considered good grazing lands due to low rainfall.

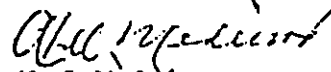
19. The trail will be only wide enough to provide a safe traveling trail; i.e., four (4) feet. The eight (8) feet width would only be at certain areas (e.g., switchbacks) to allow space for waiting for oncoming animals to pass by.

For dirt bike accessibility, please refer to pg. 2, 13. of this letter.

20. The undersigned has no objection to the removal of the last paragraph on page 13 of the EIS. The final EIS will be revised to provide a more thorough assessment of the impact of mule tours on Ka'e Trail.

Thank you for your comments and cooperation in this matter.

Very truly yours,



Abel Medeiros
Vice President

AM:mi

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF FORESTRY
1151 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

July 13, 1979

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

Received
7/23/79
8:30 AM

MEMORANDUM

TO: MR. RICK SCUDDER, Environmental Analyst.
Office of Environmental Quality Control

THRU: MR. LIBERT K. LANDGRAF, State Forester

FROM: EDWIN Q. P. PETTEYS, Devel. & Tech. Svcs.

SUBJECT: EIS - Waimea Canyon Mule Tours

As per your request, I have the following comments on the above EIS:

- 1) Flora - The list is quite incomplete. Missing are such common species as Kukui, Monkey-pod, Guava, Pride-of-India, and others.
- 2) P.4 - Trail Description - The stated intent "not to interfere with the nature hiking trail (Kukui) activities" appears to be contradicting with the position of the trail in the canyon bottom. Hikers on Kukui will be forced to cross the proposed mule trail near Wiliwili Camp.
- 3) P.4 & 5 - Topography - The EIS needs a better and more detailed map showing the trail routing, especially in light of the stated trail survey. The trail map is insufficiently detailed.
- 4) P.5 - "Needed Second Access" - This is subjective and mentioned several times. The statement needs supporting data.

- 5) P.5 - Termination Point - The EIS needs to describe an approved disposal method for both animal and human waste. How will the chemical toilets be emptied and serviced, especially in light of the position taken by Gay and Robinson?
- 6) P.7 - Manure disposal at the staging area - Again, a better statement is needed. The use of manure for fertilizer requires some controls, as it is easily abused.
- 7) P.10 - Trail Use - Who will enforce the policies of trail use? What authorities will they operate under? Will the escorts (guides) have the necessary authority to "exclude the use of dirt bikes"?
- 8) P.10 & 11 - Trail Use - What specific responsibilities will the tour company assume for the maintenance of the trail? How about liability? To what standards will the trail be constructed and maintained? Who or what agency will determine these things?

GENERAL COMMENTS:

The document, as received, evidences hasty and cursory assembly - numerous errors in typing and spelling attest to this.

The map provided is not adequate to evaluate the proposed trail. Further, the forestry symbol on the map used should have been blocked out for the purposes of this document. At the bare minimum, the map should have had a footnote disclaiming Forestry's involvement in anything but the issuance of the original trail map.

The Exhibit A provided is largely irrelevant to the proposed action.

In summary, there are several key issues requiring detailed coverage in the EIS: Waste collection and disposal, engineering, maintenance, enforcement, liability, and responsibility.

Mr. Rick Scudder
Page 3
July 13, 1979

Thank you for the opportunity to review this EIS.



EDWIN Q. P. PETTEYS

EQPP:ssk
cc: Planning
Kauai District

Waimea Canyon Mule Tours
c/o Abel Medeiros, V-P
P.O. Box 8
Eleele, Kauai, HI 96705
August 1, 1979

Mr. Edwin Q.P. Petteys
Dept. of Land & Natural Resources, Div. of Forestry
1151 Punchbowl St.
Honolulu, HI 96813

Dear Mr. Petteys:

A copy of your letter to Mr. Rick Scudder, of the Office of Environmental Quality Control is acknowledged, and I will try to answer your concerns. (Letter dated July 13, 1979.)

1. FLORA: The list of flora was from "Waimea Canyon and Kokee, A Nature Guide," by Thelma H. Hadley, for Hui O Laka, 1966. I would appreciate receiving an updated list from your division if it is available.

2. TRAIL DESCRIPTION: The Equestrian trail was proposed after a meeting with the then Chairman, Mr. William Thompson, and the Kauai member of DL & NR, since there were complaints from hikers at the public hearing that they did not wish to walk to Kukui Trail and step on animal manure. At the meeting, I was asked if there was another possible way of getting down into the canyon without using Kukui. After a study of the area, we held a meeting on Kauai with your District Forester, Ralph Daehler, and discussed possible alternate routes.

3. TOPOGRAPHY: There will be a better and more detailed map forthcoming with the final EIS.

4. SECOND ACCESS: Refer to answer 2. above.

5. The final EIS will address disposal methods for both animal and human wastes. The mule manure will be collected for drying in a screened area, and sacked when dry, packed out by mule and be offered for sale on a regular basis with farmers for fertilization purposes. Human wastes may also be packed out, if accumulation is extensive enough to warrant such an operation; they will be contained in sanitary, air-tight containers.

6. The manure will not be used as fertilizer in the trail area, as we realize that seeds in the manure could germinate and propagate undesirable species with the native flora. We agree that the use of manure for fertilizer requires controls for public health and biotic protection.

7. Waimea Canyon Mule Tours will do all they can to enforce the policies of trail use, including their authority to have guides exclude dirt bikers. A gate of some sort may be erected at the head of the proposed trail to discourage motorcycles, pending the recommendation of State Parks. Dirt bikes are not permitted on trails in State Parks or Conservation areas. Also, please remember that the Ka'e Trail will be a public trail.

8. Our tour company will assume liability for users of Ka'e Trail if they are registered riders with our operation. We will hire a Soils Engineer familiar with trail construction; the State does not appear to have any standards for trail construction. We will maintain Ka'e Trail by constantly observing water runoff patterns and actual animal paths, monitoring potential erosion activity. Since the trail will be open to public access, we would appreciate having the State Parks and/or Forestry Divisions aid us in maintenance monitoring and operations.

9. We agree that the DLNR, Forestry Division symbol on the map used in the initial EIS should have been blocked out, or their involvement disclaimed. A more precise, larger-scale map will be provided in the revised EIS.

10. The final EIS will address the key issues you mentioned, and will, in all probability, contain no errors in spelling, and very few, if any, typographical errors.

Thank you very much for reviewing the initial EIS submitted for Waimea Canyon Mule Tours; we appreciate your comments and criticisms, and will do our best to provide more detailed coverage on the issues you mentioned, as well as other concerns other people indicated to us.

Very truly yours,

Abel Medeiros
Abel Medeiros
Vice-President

AM:mi



HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF FORESTRY
KAUAI DISTRICT
P. O. BOX 1671
LIHUE, KAUAI, HAWAII 96766

IN REPLY REFER TO

July 19, 1979

A-3-181

MEMORANDUM

To: MR. RICK SCUDDER, Environmental Analyst
Office of Environmental Quality Control

From: Ralph E. Daehler, District Forester, Kauai

Subject: EIS FOR WAIMEA CANYON MULE TOURS

Thank you for furnishing us with a copy of the subject EIS.

I have just reviewed a copy of Edwin Q.P. Petteys July 13, 1979 memorandum to you, and endorse his comments.

I would like to add that public hearings and Government and citizen comments have been voiced--pro and con--on this proposal in the CDUA process. I feel that the CDUA comments should be made available for the EIS process review. Many people feel that they've already made their points of view known. For example, the EIS states under "Benefits of the Project" on page 11 that ... "The Ka'e Trail will provide a much needed second access to the valley floor". This statement is a supposition by the applicants. To my knowledge, no division or agency with planning and management responsibilities over the lands involved have supported the proposal. For example, our Division of Forestry comments addressed to the CDUA proposal is included with this memo as Attachment 1, and the Kauai County Planning office response is included as Attachment 2.

The information on the Saguaro National Monument is at the most, very remotely applicable to the Waimea Canyon situation. The four Saguaro study plots were located on areas with slopes of 2%, 3-4%, 4-5%, and 16%. The proposed location of the subject Kauai trail in places run as high as 40-70% slopes. The Saguaro studies inferences that ... "Gullying is occurring" and ... "Compaction is occurring" and that ... "the conclusions are inescapable. Degradation does occur with horse use", would therefore become much more prominent concerns on our very steep slopes.

The statement concerning the trails beneficial values for rescue, fire-fighting and law enforcement is also questioned. For example, for serious injury helicopter use is our best means. The EIS states on page 5 the construction of a 400 square foot shelter with two portable chemical toilets. This shelter was not mentioned in the CDUA nor previous requests. It appears by the description that it is located on the site of our emergency helipad location, which is also planned

Mr. Rick Scudder, Environmental Analyst
July 19, 1979

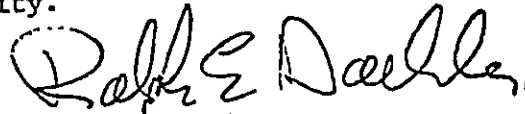
-2-

for maintenance helicopter landings. The shelter location delineated on the EIS map is on a steep slope below the knoll. The reference of "Chinaman's Hat" rather than the true Hawaiian name Poo Kaeha should not be promoted.

The erosive steep nature of the areas to traverse is not to be taken lightly. An exclusive use commercial trail would have to be of high standards. I have not been able to identify on the ground any preliminary line or route staking based on allowable trail path slopes. Attachment 3, trail construction information, is the type of trail route specifications we need to be included in order to make an appraisal of the mechanics of the project.

Economics of the entire proposal is something else we must consider. For example, in William M. Kukens letter, at the beginning of Exhibit A in the EIS, the question of economics is questioned even in the Saguaro National Monument area. There, it is of concern even where existing trails are to be used and the base operation is housed at a private guest ranch.

On the Waimea Canyon proposal, all facilities must be constructed, a new trail down a rugged canyon, and there are user transportation logistics from the other side of the island. When I comment on this proposal I feel that I am commenting on a dream rather than reality.



Ralph E. Daehler
District Forester, Kauai

attach.

cc: State Forester
Take Yamamoto
Planning DLNR

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF STATE PARKS
P. O. BOX 621
HONOLULU, HAWAII 96809

DIVISIONS:
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

May 15, 1979

Rec'd Plng. Ofc. MAY 17 1979
By _____
Gordon _____ Estelle _____
Aki _____ Post _____
Roger _____ Library _____
Lon _____
File in 4-112
Return to _____

MEMORANDUM

TO: Planning Office
FROM: State Parks Division
SUBJECT: Comments on the Revised Environmental Impact Statement for Waimea Canyon Mule Tours.

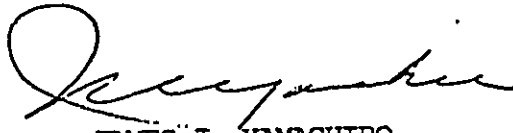
The subject EIS has only taken a cursory look at many aspects of the proposed project and its environmental impacts. We offer the following examples to support this overall comment.

- 1) The appended map is of poor quality and on too small a scale. The map of the staging area and facilities within Waimea Canyon State Park is completely inadequate.
- 2) Native plants are listed but there is no indication how these plants are to be protected - or how they could be incorporated into the customers experience. The trail route should be selected in part with this in mind, with the aid of a qualified botanist.
- 3) The termination point on the canyon floor generates several comments. The combination of 50+ animals, their manure and lunch at the shelter does not sound too inviting. We are glad to learn that archeological values are to be an educational part of the tour but no indication is given regarding their fragility and capability to withstand the 17,000+ visitors per year. Swimming is a popular recreation activity in the river pools after a hot trip down the canyon. Will swimming be allowed? How will 50+ animals be watered? What is the hazard of stream pollution? We note there are to be two (2) "portable chemical toilets". How are these to be maintained?
- 4) State Parks' main concern is the staging area and trail within Waimea Canyon State Park to the canyon rim. The site may or may not be suitable but we have no way of knowing this based on the information supplied. The question of aesthetics has not been addressed. The question of vehicular access and parking is completely inadequate. Three-hundred square feet of parking would supply parking for approximately one (1) or two (2) cars. No indication is given of the number of

May 15, 1979

cars expected for 48 customers or the 10+ full time employees. Ingress and egress, sight distances, and traffic hazards all need to be addressed. More details are also needed on the manure collection and processing, utility lines/location, sanitary land-fill and the general design and location of the facilities.

- 5) The environmental impact of 50+ animals on the staging area and the trail is still a concern to us. What is the impact of 100+ animals per day on a steep canyon trail, particularly in certain conditions such as when the trail is wet? We are unable to relate the Saguaro study from Arizona to Waimea Canyon but it does indicate the type of detailed research needed to answer some of the environmental impact statements. The subject EIS does not indicate such research will be undertaken.
- 6) Finally we believe there are other alternatives than the proposals offered by the applicant. Two other alternatives to the project for Waimea Canyon are (1) no action and (2) use the valley floor trail from Waimea. Why does the proposed trail provide a ".... much needed second access to the valley floor."? Another alternative might be to conduct the tours at another location such as Olokele Canyon.



JAMES J. YAMASHIRO
Administrator

WG:aka

WAIMEA CANYON MULE TOURS
C/O Abel Medeiros
P. O. Box 8
Eleele, Hawaii 96705

Division of State Parks
Department of Land & Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

ATTENTION: Mr. James J. Yamashiro, Administrator

This is in answer to your letter of May 15, 1979 regarding the Waimea Canyon Mule Tours project.

1. A larger scaled map with the trail and staging area shown will be submitted with the final draft of the EIS.
2. We appreciate your comments, everything will be done to incorporate the protection of native plants and the trail route will be selected so to take advantage of observing these plants enroute. We have contacted Mr. Steve Perlman, Field Botanist of the Pacific Botanical Gardens to do a survey of the area to locate these native plants. Should any of these plants be on or near the trail which we propose and should there be the possibility of their being damaged or destroyed, with permission of the Forestry Division, and with recommendation of our Botanist, we will relocate them to secured spots.
3. For the manure at the canyon floor we propose to construct a screened off area away from the eating area to dry and store the manure. The dried manure will then be sacked and hauled as necessary for disposal by sale or to the sanitary fill nearest the project.

The archeological site may be visited by those who wish to walk approximately 200 yds back to Wiliwili camp.

There will be no swimming allowed for our customers as time will not permit this, and furthermore; they will not be prepared for swimming. Swimming will not be advertised or encouraged.

Watering of animals at the rest area (bottom of Canyon) is not necessary, since the animals would have only been out of the staging area for an hour and a half. Should experience indicate that it would be advantageous to water the animals, we could provide a watering system with PVC pipe tapped into the river at a higher level so as not to cause pollution of the stream.

Portable (chemical) toilets to be installed and serviced on the same basis as those in the numerous State, County and City parks as required based upon their use. The collection of the decomposed wastes, or their disposal will be predicted upon the final determination of the State Department of Health standards and/or regulation.

4. We think the aesthetics of the staging area buildings, bridges, fences, etc., as indicated by the sketch in the back of the EIS are quite pleasing. We plan to retain and maintain as many of the large Koa trees as possible. The building will be set back away from the Kokee Road with a buffer of trees and shrubs so as not to be an eye sore from the Kokee Road.

We have gone over question of the site with your predecessor, Mr. Joe Souza and also with your Kauai representative Mr. George Niitani and found this to be the most suitable area for our operation.

There will be no vehicular parking along the Kokee road. A customer parking area will be provided within the staging area. Arrangements with a tour company may be made for pick up of customers from the hotels to the staging area if it becomes necessary.

Utility lines (Electricity and Telephone) are provided on the Kokee Road. Water for the animals are available from the Kekaha ditch. Drinking water could be brought to the site from the canyon lookout facility which is approximately 1.0 mile up the Kokee Road. Should this not be practicable arrangements can be made to haul drinking water from Waimea or Kekaha.

5. Molokai information indicates that with care a wet trail poses no particular problem. A review of the Molokai operation was made, and because there has been no adverse environmental impact there, this prompted the Waimea proposal. The point appears to be missed, perhaps inadvertently, that the significance of the Saguaro Study is that so long as the riders are confined to a trail, instead of riding all over the place, the impacts are minimal.

The Saguaro Study was undertaken to show general deterioration of overused horse trails. If meaningful, we would conduct this type of research.

6. The primary objection to the original proposal (using Kukui Trail) was that there would be an intolerable mix of hikers and riders, plus the manure and general crowding. To meet this objection and provide a stated need for a safer, faster reserved for horsemen trail, we discussed the matter with chairman Thompson and the Kauai member of the board Mr. Yamamoto; we then withdrew the first application, submitted the second application, and now the revised EIS.

Thank you for your interest in the matter.

Very truly yours,

Abel Medeiros
Abel Medeiros
Vice President

STATE OF HAWAII
DEPARTMENT OF PLANNING AND
ECONOMIC DEVELOPMENT
P. O. Box 2359
Honolulu, Hawaii 96804

June 13, 1979

Ref. No. 9259

The Honorable Susumu Ono
Chairman
Department of Land and Natural
Resources
State of Hawaii
Honolulu, Hawaii 96809

Dear Mr. Ono:

Subject: Environmental Impact Statement - Waimea Canyon Mule
Tours (Kukui Alternate Equestrian Trail), Kauai

We have reviewed the subject EIS and find that it has adequately
assessed the major environmental impacts which can be anticipated.

Thank you for the opportunity to review this statement.

Sincerely,

HIDETO KONO

cc: Mr. Abel Medeiros, Vice President ✓
Waimea Canyon Mule Tours

3452



HIDEO MURAKAMI
COMPTROLLER
MIKE N. TOKUNAGA
DEPUTY COMPTROLLER

GEORGE R. ARIYOSHI
GOVERNOR

RECEIVED
JUN 25 8:26

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P. O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P) 1616.9

DEPT. OF LAND
& NATURAL RESOURCES
STATE OF HAWAII

JUN 22 1979 Rec'd Plng. Ofc JUN 27 1979
By egm
Gordon _____ Esteile _____
Aki _____ Post _____
Roger _____ Libraro _____
Len egm
File in KA-1139
Return to _____

Honorable Susumu Ono
Chairman
Department of Land and
Natural Resources
State of Hawaii
Honolulu, Hawaii

Dear Mr. Ono:

Subject: EIS for Waimea Canyon Mule Tours.

Thank you for this opportunity to review and comment on
the subject statement.

The project will not have any adverse environmental impact
on any existing or planned facilities serviced by our department.

Very truly yours,

Hideo Murakami
HIDEO MURAKAMI
State Comptroller

July 24, 1979

STP 8.5558

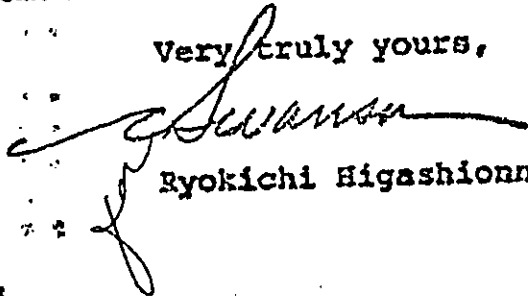
Department of Land and
Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Gentlemen:

Subject: Waimea Canyon Mule Tours
(Kukui Alternate Equestrian Trail)
Waimea Canyon State Park, Kauai

Thank you very much for giving us the opportunity to review the Environmental Impact Statement covering the above-captioned action. We have no comments to offer which could improve the Statement.

Very truly yours,



Ryokichi Higashionna

ALK:jk

cc: HWY-P
Mr. Abel Medeiros
Waimea Canyon Mule Tours

UNIVERSITY OF HAWAII

Water Resources Research Center

Office of the Director

17 July 1979

Department of Land and
Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Gentlemen:

Subject: Review of EIS: Waimea Canyon Mule Tours

We have reviewed the subject EIS and have the following comments:

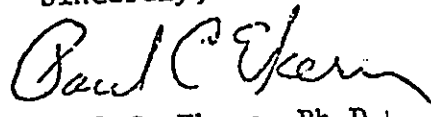
Among the points which the EIS does not adequately address are:

1. The annual average rainfall erosion hazard for the proposed site is moderate perhaps as great as 300 (see Nonpoint source pollution in Hawaii, Tech. Rept. No. 2, 1 May 1978, p. A-61). Moreover, flash floods and heavy rainfall make irregular, catastrophic erosion hazard very high as well. The steep inclines of the trail and the persistent animal traffic will ensure that the trail is liable to erosion. I understand the mule use of the Kalaupapa trail has added to the former horse traffic so that portions of the trail are now in very bad shape.
2. The Mahana (MAD) and the Mahana Badlands complex (BM) soils in the upper staging area and on part of the trail have a moderate to severe erosion susceptibility because of the soil and the steep terrain (Foote, 1972, p. 5, 86, 87). Moreover, the Mahana soil is reported to have severe limitations for septic tank use (Foote, 1972, Table 3, p. 186, 187). Much of the trail, however, must be over surfaces reported to be bare rock outcrop (rRO), and relatively erosion resistant. (For reference see D.E. Foote et al., 1972, Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, USDA SCS.)
3. Details of any erosion control or preventive measures on the trail are completely absent.
4. Since nonpoint source erosion and sediment production are a major source of stream pollution, this issue must be adequately addressed, in fact the trail will become a point rather than a nonpoint sediment source.

Page 2
17 July 1979

5. Feed lot or staging area accumulations of animal manures also form point sources of nutrient and organic pollution, the quantities are such that a remedial measure equivalent to the use of septic tanks should be included in the plans for both the upper and the lower staging areas.
6. Safety measures for the animals and their riders on the trail have been given no consideration.
7. On a positive side for the proposal, can any assessment be made of the amount of animal (horse and cattle) traffic which currently takes place as nonpoint sources of stream pollution in the valley--sources against which the contribution of the mule operation might be weighed for relative contribution?

Sincerely,



Paul C. Ekern, Ph.D.
WRRRC EIS Coordinator

PCE:jmn

cc: J.E.T. Moncur
H. Yamauchi
E. Murabayashi
OEQC



University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Deadline for Comments
7-23-79
→ July 25, 1979

Office of the Director

RE:0278

Department of Land
and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Dear Sir:

Draft Environmental Impact Statement
Waimea Canyon Mule Tours
Waimea Canyon State Park, Kauai

This Environmental Center review of the above cited DEIS has been prepared with the assistance of Sheila Conant, General Science; Cliff Smith, Botany; Charles Lamoureux, Botany; Jacquelin Miller, Barbara Vogt, and Doak C. Cox, Environmental Center.

Adequacy of the description of probably impacts

Page i: The comparison between the projected equestrian trail into Waimea Canyon and the Saguaro National Monument study is inappropriate. Topography, soil, climate, and biota are not compatible between the two sites, and the conclusions obtained at one site are not transferable to the other.

Furthermore, the validity of including the report of the study in the DEIS is questionable. As noted on the cover of the report and in the transmittal letter, the Saguaro National Monument was intended for review purposes only. Since the National Park Service has withdrawn the document for revision on the basis of comments regarding the soil techniques as submitted by the University of Arizona, inclusion of the report with respect to "management policies" as "significant data" becomes irrelevant. We suggest that other material from the islands be used such as the Natural History Bulletin No. 10 written by Gunnar O. Fagerlund, The Exotic Plants of Hawaii National Park, which explicitly details problems associated with the use of horses in Hawaii National Park. Similar material can probably be obtained from Haleakala National Park which has seen a considerable invasion of exotic plants, notably velvet grass, (Holcus lanatus), from the use of horses in the crater.

Page iii: The time period for the mule rides is confusing. Will the total trip take 5 1/2 hours or only 5 hours (9:30 to 2:30) as stated in the DEIS? Will the groups of riders leave at staggered times, as indicated on page 6? If so, that may necessitate additional delays for traffic while the crossings occur.

AN EQUAL OPPORTUNITY EMPLOYER

July 25, 1979

Page iii: "Ceptic tank" should read "Septic tank." When, during the project, will the soils be analysed? We regret the absence of pertinent data regarding the soils at the proposed shelter and rest area, as well as the absence of a site map showing relevant contour lines. This seriously limits the determination of the potential impacts at the site. A map of this nature should be included in the final EIS.

Pages 2 & 3: Flora and fauna lists

The flora and fauna lists are grossly inadequate and/or incorrect. Other documented studies from the Kukui Trail include a substantial number of plants not listed in the present statement. In addition, the U.S. Fish and Wildlife Service has proposed a critical habitat for Hibiscadelphus distans, not far from the proposed Shelter and Rest area. This proposed endangered species with ten known individuals lives only in the proposed critical habitat area. We are also missing the "appended flora list" (page 7) from our copies of the DEIS.

Page 5: Our reviewers consider the effects of manure disposal at the proposed shelter areas and on the trail to be of much greater significance than alluded to in the DEIS. What methods of disposal are being considered at the lower shelter site? Disposing of manure from 48 mules by dispersal on shrubs as fertilizer could create havoc with the natural ecosystems that have evolved in the area. Methods of disposal should be discussed and approved by the appropriate agencies before the mules are allowed into the area.

Page 6: The parking area of 300 square feet does not appear adequate for the number of projected visitors and concessionaire personnel. Three hundred square feet provides space for approximately two cars or one bus. Where will the additional off-road parking be made available? We would like to point out that indiscriminate "off-road" parking can be both an environmental as well as potential traffic safety hazard.

Page 7: The elepaio is an "endemic" bird, not a "common" bird. The statement that other concessions have found that birds thrive on livestock feeds is irrelevant to the present proposal unless those native Hawaiian birds that are seed eaters are identified in the DEIS. Exotic birds that would benefit from such a diet could be attracted to the area in the future and cause undue competition to the present native species

Page 10: The statement that hikers and vehicles will be excluded from the trail needs expansion. What measures will be used to restrict the trail to mule riders? Surveillance alone will not keep trailbikes out of the area. We agree that mitigative measures will be needed to prevent deterioration of the trail. Who will assess the damage to the trail and be responsible for major maintenance? Will the State Park personnel be utilized for surveillance of possible damage?

There is a very real fire hazard associated with the proposal that has not been addressed in the DEIS. Section 1:42e of Sub-Part E of the EIS regulations states:

"Consideration of all phases of the action and consideration of all the consequences on the environment; secondary or indirect, as well as primary of direct shall be included."

Since the area is quite arid, the casual discarding of a lighted cigarette could start a major fire that might endanger the riders themselves. The impact of such a fire in the Canyon wilderness area would be disastrous. Will smoking be prohibited on the trail rides and/or confined to specific areas to eliminate this possibility?

Page 13: The statement "the most important measurements and those applicable to Hawaii's environment and climate will be made during the construction of the Ka'e Trail" is inappropriate. Clearly those measurements must be made prior to the construction to prevent possible damages to the environment. That is the intent and purpose of the EIS.

Page 13: What is meant by "an impact of exceedingly weak illumination?"

Responses to consultation comments

The EIS lists (page 14) eight persons or organizations who were consulted in its preparation (counting four divisions of the State Department of Land and Natural Resources and four offices of the U.S. Department of the Interior as one organization each). Appended to the report are communications with five of those organizations. (No comments from Councilwoman JoAnn Yukimura, the Garden Island News, or the State Department of Land and Natural Resources are appended). Also appended are communications with three other organizations or individuals.

Of the appended comments, those from three organizations or individuals (Dana Peterson, Sierra Club, and Kauai Planning Department) merely express interest or concern in the project and hence required no response in modification or explication of the EIS, although responses to two of these comments were appended. Another of the comments (Gay and Robinson) expressed opposition to certain potential aspects of the proposed action. No response is appended to indicate whether these aspects would or would not be included in the action. Another commentary (Kauai Museum Association) provided information on the lack of archaeological sites in a specific part of the site of the action. No response to it perhaps needed, and none was appended. We wish to focus on the two remaining sets of communications.

One is a letter from National Park Service, USDI, transmitting the draft report on the Saguaro study to which we refer in our comment on page i of the EIS. We note: i) the letter and draft report bulk greater than the EIS itself plus all of the other appendices; ii) the pertinence of the Saguaro draft report to the proposed action is questionable; iii) the draft report has been withdrawn by the National Park Service; and iv) although the letter is identified as exhibit A, it is apparently not the exhibit A to which reference is made in the EIS (page 5).

The remaining communication set is comprised by a five-page letter from Ms. Naomi Taniguchi and a one-page response. Most of the response is a reaction to a statement by Ms. Taniguchi that a "Hawaii State Forestry patch" on a map in the EIS is a misrepresentation of the project." It seems clear to us that what Ms. Taniguchi meant was that the "patch"

July 25, 1979

seemed here to be a misrepresentation. It does not seem such to us. However, to characterize her statement as "malicious," as to threaten legal action, and to claim that the statement is an "unfounded allegation [that] destroys the basis for the exchange of views intended in the EIS consultation process," seems to us a gross over-reaction.

The response characterizes the remainder of Ms. Taniguchi's letter as "a series of opinionated statements that might be considered only upon submission of [her] credentials for expertise in [a large number of fields]." There is no requirement that those commenting on an EIS need submit credentials. The comments should be considered on the basis of their own merit. In the opinion of our reviewers virtually all of Ms. Taniguchi's comments are well based and merit careful response.

Summary

The entire concept of equestrian trails in prime wilderness areas must be viewed with skepticism from the environmental standpoint. Waimea Canyon is a unique wilderness area that requires special consideration to maintain its integrity and native ecosystems. If the area in question was already disturbed (as, apparently the Molokai trail is), such an enterprise could be considered if adequate measures to alleviate soil damage and overfertilization from manure are a mandatory part of the project.

In summary, this DEIS as presented provides virtually no data on the potential impacts of the project on the environment, particularly in regards to the native ecosystems. The discussion of the mitigative measures is insufficient. Use of the report on the Saguaro National Monument as a tool for decision making is inappropriate in view of its withdrawal from circulation by the National Park Service. The response to Ms. Tanigawa's comments is inadequate and unjustified.

We appreciate the opportunity to have commented on the draft EIS and we trust that the concerns and questions raised by our reviewers will be fully addressed in the final EIS.

Sincerely,

Doak C. Cox
Director

dec/ck

cc: Sheila Conant
Cliff Smith
Charles Lamoureux
Jacquelin Miller
Barbara Vogt
Abel Medeiros
OEQC

EDUARDO E. MALAPIT
MAYOR



HENRY MORITA
COUNTY ENGINEER
TELEPHONE 245-3318

CLAY KAGAWA
DEP. COUNTY ENGINEER
TELEPHONE 245-3602

COUNTY OF KAUAI
DEPARTMENT OF PUBLIC WORKS
4396 RICE STREET
LIHUE, KAUAI, HAWAII 96766

June 13, 1979

Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Gentlemen:

RE: WAIMEA CANYON MULE TOURS (KUKUI ALTERNATE EQUESTRIAN TRAIL) EIS

We have reviewed the subject EIS and offer the following comments:

1. Page 4, Paragraph 2:

The attached map shows the location of the shelter and rest area adjacent to the Waimea River. The shelter and rest area may be within 100 year flood limits of the Waimea River. If that is the case, approval for the shelter and rest area, the finished floor of the shelter and rest area must be elevated above the 100 year flood or a variance obtained from the Planning Department or be relocated away from the 100 year flood limits of Waimea River to obtain building permit.

2. Page 4, Paragraph 4:

We are concerned as to the amount of grading that will be needed to prepare the staging and rest sites. A grading permit will be required for any fill or excavation that exceeds over 100 cubic yards or where the grading exceeds one acre or where the land slopes greater than 20% or more.

3. Page 6, Paragraph 4:

The parking area such as parking stall length, stall width and wall to wall bay width shall comply with County of Kauai Standards. We believe there should be no additional off road side parking along Waimea Canyon Road. Additional parking should be contained within the parking lot site.

4. Page 6, Paragraph 4:

We are concerned as to the location of the water flume or ditch in relation to the office building. We believe the office may be flooded from the flows of the water flume or ditch. As such, adequate precautions shall be taken so that drainage problems will not be encountered by any overflows from the flume or ditch.

Thank you for allowing me to comment on your EIS. I look forward to your reply.

Very truly yours,

Henry Morita
HENRY MORITA
County Engineer

/c
cc: Planning Department
Mr. Abel Medeiros

Waimea Canyon Mule Tours
% Abel Medeiros
P. O. Box 8
Eleele, Hawaii 96705

July 23, 1979

Mr. Henry Morita, County Engineer
Department of Public Works
4396 Rice Street
Lihue, Kauai, Hawaii 96766

Dear Mr. Morita:

Page 4 par 2; - The proposed shelter at the bottom of the trail will be located on a much higher elevation from that of the present Wiliwili camp site. The rest area will be on a plateau which will only need minimum clearing. Removal or shifting of soil in this area would not be necessary, as we would like to keep this area in its nearest natural form. We will comply with all requirements of the County and State regulations.

Page 4 par 4; - There will be some grading to prepare the staging area for placement of the office, feed storage area and guest rider receiving area. This levelled off area will be approximately 2,000 square feet as indicated in our summary on page iii of the EIS. There will also be some grading for parking of vehicles within the staging area site. A permit for the above will be requested from your office.

Page 6 par 4; - We agree that there should be no additional off road side parking along Waimea Canyon Road and thereby will provide parking within the staging area. Your office will be contacted for the necessary permit and consultation.

Page 6 par 4; - The water flume or ditch is located at a much lower elevation than the area in which the office building is to be constructed. The Kekaha ditch is provided with

an overflow gate approximately 500 yards above the proposed staging area site. Please be assured that this matter would not be a major concern.

Thank you for your comments, they are well taken and we look forward to working with you and your department upon the approval of this project.

Very truly yours,

Abel Medeiros
Abel Medeiros
Vice President

EDUARDO E. MALAPIT
MAYOR



BRIAN K. NISHIMOTO
PLANNING DIRECTOR
AVERY H. YOUNG
DEPUTY PLANNING DIRECTOR
TELEPHONE 245-3919

COUNTY OF KAUAI
PLANNING DEPARTMENT
4280 RICE STREET
LIHUE, KAUAI, HAWAII 96766

June 26, 1979

Mr. Susumu Ono
Chairman of the Board
State Dept. of Land & Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Subject: CDUA KA-4/2/79-1129 for Private Recreational
Use at Waimea, Kauai, Hawaii - EIS Comments

After reviewing this first draft of the EIS, we find that the questions which we previously raised on the first application in August, 1978, and on the current revised application have yet to be adequately addressed.

1. The impacts of the extent of the operation (50 people per day on 4 mule trains of 12 mules each) on other park uses should be specifically addressed. Can that portion of Waimea Canyon State Park accommodate a commercial use of that capacity without conflicting with the range of other existing uses of the area which include sight-seeing, hunting and hiking?
2. Because the trail will be utilized on a year-round basis, how often will the trail be maintained and who will maintain the trail?
3. Should any accidents occur, who will become liable, or who must bear the costs of rescue operations?

Mr. Susumu Ono
Page 2
June 26, 1979

4. The objective of the Resource Sub-zone of the Conservation District is to "develop, with proper management, areas to ensure sustained use of the natural resources of those areas." Since the current use of the area is limited to sight-seeing, hunting and hiking, will a commercial operation comply with the objectives of the sub-zone?

Our concerns are based on the premise that Waimea Canyon is a unique resource to the State of Hawaii as well as the island of Kauai. Furthermore, because of its scenic and natural resource value, it is susceptible to commercial exploitation which may have irreversible consequences to the environment, as well as Kauai and the State of Hawaii. We feel that before a decision can be made on an operation of such capacity within a world-renowned site that is unique to our State, all pertinent information covering all significant aspects of the proposal should be disclosed.



BRIAN NISHIMOTO
Planning Director

cc: ✓ Abel Medeiros
Takeo Yamamoto
Sam Lee
James Yamashiro
Libert Landgraff

Waimea Canyon Mule Tours
% Abel Medeiros
P. O. Box 8
Eleele, Hawaii 96705

July 23, 1979

County of Kauai
Planning Department
4280 Rice Street
Lihue, Kauai, Hawaii 96766

Attention: Brian K. Nishimoto
Planning Director

Dear Mr. Nishimoto:

This is in answer to your letter of June 26, 1979. The answers are as follows:

1. Please see page 10 of EIS "Unavoidable Adverse Impacts, Trail and Staging Area" and subsequent passes. No conflict is anticipated if a separate equestrian trail is provided and as the Saguaro study indicated, the riders kept to the trail for minimal environmental degradation.
2. The trail will be maintained when its daily assessment indicates mitigative action. The trail will be maintained by Waimea Mule Tours as its assessment indicates.
3. Accidents involving customers will be covered by our insurance policies. As with any other rescue operations, and as taxpayers, we will be free to ask for assistance if the effort is beyond our capabilities.
4. Yes, it will comply with both the letter and spirit of the objective. We not only agree with your concern, but are prepared to prevent any substantial irreversible consequences to that environment.

Very truly,

Abel Medeiros
Abel Medeiros
Vice President

AM/lc

DEPARTMENT OF WATER

COUNTY OF KAUAI
P. O. BOX 1706
LIHUE, HAWAII 96766

RECEIVED

JUL 2 9:52

DEPT. OF LAND
NATURAL RESOURCES
STATE OF HAWAII

June 29, 1979

Department of Land
and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Rec'd Ping. Ofc	_____
By	<u>eng</u>
Gordon	_____ Estelle _____
Aki	_____ Post _____
Roger	<u>JK</u> _____ Library _____
Len	_____
File in	<u>KA-1129</u>
Return to	_____

Re: E.I.S. for Waimea Canyon Mule Tours (Kukui
Alternate Equestrian Trail); Waimea Canyon
State Park, Kauai, Hawaii

Thank you for allowing us to review this E.I.S.
We have no comments to offer as the proposed pro-
ject will not affect our water system.

for Walter L. Briant Jr.
Walter L. Briant Jr.
Manager and Chief Engineer

RM:at
cc: Mr. Abel Medeiros

The SIERRA CLUB, Hawaii Chapter

Post Office Box 22897, Honolulu, HI 96822
Telephone: (808) 946-8494

May 31, 1979

Waimea Canyon Mule Tours
c/o Abel Medeiros, Vice-President
P.O. Box 8
Eleele, HI 96705



Nuuanu Pali, by Fisquet, 1837

SUBJECT: E.I.S. for Waimea Canyon Mule Tours

Dear Mr. Medeiros;

We have reviewed the subject E.I.S. and have the following comments:

1. Endangered species are mentioned only in passing (pg. 3). Are any rare or endangered plants found in the vicinity of the proposed trail? Is the habitat of any rare or endangered fauna located in the area of the proposed trail, in particular the Waioleka? Was any field survey conducted, and if so, by whom?
2. No reference is given for the list of flora on page 2.
3. The volume of cut and fill required for trail construction is not given. How will excess soil be disposed of and what erosion control measures will be utilized during trail construction?
4. What State agencies will be consulted concerning trail construction and why were not the agencies consulted during preparation of the proposal?
5. If the proposed trail will follow a route parallel to the existing Kukui trail it will not provide any access which is not currently available. We fail to see how such duplication of access is needed or desirable. What are the visual impacts on hikers on the Kukui trail if proposed is on a parallel route? The area of the trail is open country for the most part and the route is on a ridge.
6. The E.I.S. contains no discussion of the impact of mule waste on the trail or shelter area. The statement on page 5 that, "an approved disposal method will be instituted" is not a sufficient discussion of possible mitigation measures. Due to the high rainfall some contaminated run-off from the trail and shelter areas will result. Will this impact water quality in the area? In addition, the E.I.S. contains no discussion of nearby water resources or existing water quality.
7. How will portable toilets in the shelter area be serviced? If service of these toilets requires the use of a motor vehicle this should be mentioned.

8. Required permit approvals are not listed.
 9. Construction related impacts such as noise, dust, erosion, and sedimentation are not sufficiently discussed. Over how many days will noise impacts occur? How will construction related impacts affect flora, fauna, and the serenity of the Kukui trail?
 10. Will the parking area be paved or unpaved? Possible erosion and water quality impacts from runoff are not discussed. Impacts to air quality from dust and auto emissions are similarly ignored.
 11. Aesthetic impacts at the staging area, trail, and bridges are ignored. All of these facilities will be visual intrusions into the natural environment of the area. What type of bridge will be constructed and will design blend into the existing environment?
 12. Will manure from the staging area and barn be dried on site?
 13. Stating that control of run-off from the staging area will be the responsibility of the concession is not a sufficient statement of mitigation measures (pg. 7). The impact of run-off should be discussed and mitigation measures proposed.
 14. The E.I.S. states (pg. 10) that "any deterioration of the trail and mitigative measures to stem adverse effects will be assessed, should they occur when the trail is in use". This is the type of statement which ignores the entire purpose of an E.I.S. Probable trail erosion and impacts resulting from such erosion should be discussed in detail in the E.I.S. Mitigation measures should be discussed, not hinted at.
 15. No discussion has been made of the environmental impacts of the Molokai mule tours. Such a discussion would be far more relevant than the description of the impacts to Saguaro National Monument.
 16. What is the basis of the statement the the use of the trail will not affect the fauna (pg. 3)? Wildlife are very sensitive to the presence of humans and foreign animals. Wildlife now inhabiting the site of the proposed trail will surely be disturbed and probably dislocated from their present habitat.
 17. The E.I.S. does not mention the cost of trail construction and maintenance. Will the mule tour operators be responsible for all of these costs? If public funds are involved, what is the justification for the expenditure of public funds for commercial purposes?
 18. No mention is made of the impact of mule tours on the wilderness qualities of the Waimea Canyon. The quality of wilderness experience is highly dependant on difficulty of access. The presence of mule tours cheapens the experience of those with motivation to hike into the canyon.
- In general, we find that this E.I.S. does not address impacts in the comprehensive manner which is necessary for an environment as sensitive as Waimea Canyon. Many impacts have either not been addressed or only

Page 3

mentioned briefly. We do not find the term "approved method", comforting enough to accept the absence of specific mitigation measures. The lack of references throughout the report is unprofessional. In summary, it appears that much information has been omitted.

We appreciate the opportunity to comment on this E.I.S.

Yours truly,



SIERRA CLUB, HAWAII CHAPTER
Anna C. Kaohelauii
Conservation Committee Chairman

Waimea Canyon Mule Tours
c/o Abel Medeiros
P. O. Box 8
Eleele, Hawaii 96705

Sierra Club, Hawaii Chapter
P. O. Box 22897
Honolulu, Hawaii 96822

SUBJECT: Response to letter dated May 31, 1979

1. The proposed Kukui Alternate Equestrian Trail has not been laid out in any precise location pending consultation with the appropriate state agencies. At this juncture, the DL&R will determine policy regarding this proposal. It should be pointed out that your question is in error when you ask about "...the habitat of any rare or endangered fauna located in the area of the proposed trail, in particular the Waioleka?" The Waioleka or white bush violet is a plant therefore flora, and not part of the animal kingdom or fauna. No Waioleka was seen on the preliminary walks down the general trail area, however, should DL&R believe this issue crucial to the application we will engage the services of a botanist for the survey.
2. The list of flora on page 2 was from "Waimea Canyon and Kokee, A Nature Guide" by Thelma H. Hadley for Hui O Laka, 1966. We find no errors in this list.
3. As indicated in (1) above, engineering details must await consultation with the decision making entities of state government. If it is the Governor's policy not to allow concessions on state lands, the most precise engineering study will be of little value.
4. Same as three (3) above. We would appreciate any advice you would care to share with us on trail construction, based on your experience.
5. The primary objection to the original proposal (using Kukui Trail) was that there would be an intolerable mix of hikers and riders, plus the manure and general crowding. To meet this objection and provide a stated need for a safer, faster reserved-for-horsemen trail, we discussed the matter with the chairman of DL&R and the Kauai member of the board and submitted a second application and the revised draft of the EIS. The "visual impact" on hikers is something beyond our conjecture.
6. Mule wastes have been gathered and controlled for many centuries. We feel that our mules will present no unique problems. We will monitor water quality if it can be shown that the concessions' mules, to the exclusion of hunter's horses and mules are responsible for the significant lowering of the stream's water quality.


7. The portable (chemical) toilets will be serviced on the same basis as those in numerous State, County and City parks---as required based upon their use. The collection of the decomposed wastes, or their disposal by septic tank-drain field or cesspool, will be predicted by the final determination of the State Dept. of Health.
8. Permit approvals will be available as stipulated by DL&R and upon granting.
9. Construction impacts will be minimal---probably much less than hunters charging through the brush shooting at the "game".
10. No decision has been reached concerning whether to pave or not pave the parking areas. Either technique has its drawbacks. Impact to air quality will be assessed when data is available concerning the effects of the numerous tour buses and local and tourist autos becomes available.
11. We think the aesthetics of the staging area buildings, bridges, fences, etc. as indicated by the sketch in the back of the EIS are quite pleasing.
Autos, buses, hunters, people-in-general are intrusions into the environment.
12. Manure from the staging area barn will be dried in a screened area off site, away from the eating area.
13. See three (3) above
14. An EIS can never be a complete document and contain sufficient information for those who oppose a project. In practice the EIS process allows for the evolution and shaping of a proposal to satisfy environmental concerns. It was not meant to be--and the courts have upheld this--a means of harassment for project proposers.
15. A review of the Molokai operation was made, and because there has been no adverse environmental impact there prompted the Waimea proposal. The point appears to be missed, perhaps inadvertently, that the significance of the Saguaro Study is that so long as riders are confined to a trail, instead of riding all over the place, the impacts are minimal.
16. It means that no lasting effect takes place when a bird flies away from an approaching human (or other animal). If there are those who feel otherwise, then we must close Kukui Trail as well.
17. No precise cost figures for the construction of the trail and staging areas have been developed at this time pending what requirements would be laid down by the State.

18. Your opinion on this is noted.

19. As to the sensitivity of Waimea Canyon, please see letter from the Fish and Wildlife Service dated July^x 13, 1979.

It is unprofessional to misspell "unprofessional".

Very truly yours,


Abel Medeiros
Vice President

May 21, 1979

Waimea Canyon Mule Tours
Abel Medeiros, Vice-President
P.O. Box 8
Eleele, Kauai 96705

Dear Mr. Medeiros,

I thank you for including me in this EIS process. The following are my comments directly concerning the EIS manuscript:

P.1 - "This project's technical, economic, social and environmental characteristics will have slight impact on the general nature of the Waimea Canyon area." This statement is pure conjecture at this point.

P.2-3 FLORA - Due to the localized nature of some native plants, there is a possibility that rare plants could exist in the trail construction area, notably in draws and gulches. A statistically defensible botanical survey should be undertaken as part of the EIS.

P.3 FAUNA 2nd paragraph - This statement is pure conjecture. Introduction of weed seeds or severe trail erosion could have a drastic effect on the native flora or fauna. As an example, Banana Poka, a severe forest pest in parts of the Na Pali Forest Reserve as well as the Kokee and Waimea Canyon State Parks, could be introduced in the canyon and spread to unaffected native forest by the moister stream bottoms.

P.4-5 KAE TRAIL - The attached map is insufficient to show trail detail. If the topography has been surveyed, why such a poor map as an attachment to the EIS? Why not the survey map? Why is the Hawaii State Forestry patch on the map? This is a misrepresentation of the project.

- "state agency consultation" - Consultation is not enough. State agencies should have the right to review and dictate standards. Otherwise state agency consultation is nothing more than a "sign-off".

What 20% of the trail will need light equipment to construct? What kind of light equipment will be used? What is the time frame for the project? Will the trail be a one-way trail? Can horses coming up the trail safely pass your mule train coming down on a 4 ft. trail? Will there be turnouts? Where? How many? How many switchbacks, culverts, and water bars are to be constructed?

What will be the maximum trail grade expected? What precautions will be taken for fire hazards during trail construction and use?

P.5 paragraph 1 - "much needed second access to the valley floor" This is a subjective comment. Much needed by whom? for what? Kukui trail is not suffering from overuse. Also, another right of way through Mokiha Ridge will provide more access in the future.

"surveillance" is misspelled.

- "manure accumulation" Manure will definitely accumulate at the shelter site. What sort of approved disposal method will be instituted? By whom? Fertilizer for surrounding shrubs seems like a doubtful method. $48 \text{ mules/day} \times 365 \text{ days} \times 2 \text{ lbs. of manure left at the bottom shelter (a conservative estimate) comes out to } 17\frac{1}{2} \text{ tons/yr. of manure. How will this waste be brought out?}$

P.7 Environmental Impact, Staging Area - It is doubtful that native birds will use livestock feed. The elepaio feeds on insects and at best, the livestock feed will increase food sources for exotic

birds such as the common mynah and the barred and spotted dove.
agencies:

P. 7 last paragraph - Wrong word is used - should be "effluent"
not "affluent" On site fertilization is not a viable alternative.
This could be misused, and be a license just to spread the manure
around. What assurances do we have that this won't happen?

P. 8 Historical - What does "speciman" mean?

P. 8-9 last/first paragraph - This is irrelevant to the project.

P. 10 "use of Ka'e Trail" Who will assess the adverse effects of the
trail? Who will dictate and approve mitigative measures? How will
use practices be enforced? By whom? Your statement indicates you
absolve responsibility unless deterioration occurs when you are
actually using the trail. How about an evening rainstorm that
causes severe erosion to the trail and surrounding lands? Will
you still be responsible?

P. 10 Unavoidable Adverse Impacts - What is your estimate of a
brief period of 70 to 85 dB(A) noise levels? What certain circum-
stances will cause run-off and erosion? How about rain?

P. 10-11 Measures to Minimize Adverse Impacts -

- Your livestock feed will not help any native birds.

- Erosion control measures should be done before erosion occurs
at critical portions of the trail. What erosion control measures
will be built into the trail? Where? How many? Once erosion has
started, it is extremely difficult and costly to check.

- Who will provide surveillance to prohibit dirt bikes? Will sur-
veillance and responsibility be conducted only when the mules are
on the trail? How will deterioration of the trail by dirt bikes

occur if they are to be excluded from trail use? Who will have responsibility for this?

P.12 - The study at Saguaro National Monument, Tucson, Arizona, which takes up 4/5 of your EIS, is not relevant to Waimea Canyon. The climate, vegetation, and land use problems are not the same. They were suffering from extensive unrestricted horse use. This is not the case on Kauai. Their report indicates that equestrian use is damaging to the resource and their main emphasis was to limit the damage to specific areas.

P.13 "other equestrian trail use in Hawaii" - What carefully evaluated experiences concerning weed seed damage on the Molokai Mule Tour are you referring to? Can you document it? What time frame are we referring to for damage? One year? The Molokai trail vegetation is basically guava and lantana - both aggressive weeds.

Equestrian use in our National Parks has been under increased scrutiny. Due to damage from equestrian use including soil erosion, trampling of vegetation, grazing, water quality problems, and hiker/rider conflicts, a Final EIS for Rocky Mt. National Park recommends that the two interior concession-operated stables be relocated outside the park at the termination of their contract in 1979.

P. 13 Summary of Unresolved Issues - "loss of wilderness experience"
The unique recreational qualities of wilderness are rapidly diminishing in Hawaii. The State Division of Forestry's emphasis is wilderness management in Waimea Canyon. The State has invested monies and manpower to build up a trail system with shelters throughout the canyon area. Introduction of 17,500 riders and mules

per year with accompanying piles of manure in the heart of the wilderness system is by no means an "impact of exceedingly weak illumination." All mauka feeder trails will have to pass directly through the river camp.

What about other alternate routes in the area that wouldn't present such conflicts? At Kokee State Park there are scenic rim trails that could be used at less expense, less environmental damage, and far fewer conflicts.

What commitments do you expect from the Dept. of Land & Natural Resources and the State Forest Reserve after you have invested a quarter of a million dollars building your mule operation? Will there be any recourse if the mule operation is found to be environmentally damaging?

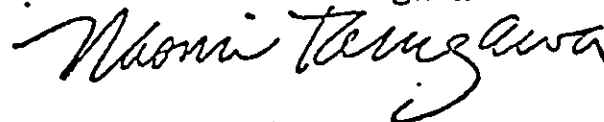
In summary, I feel your EIS is too general, vague, and lacking in relevant detail. Areas not properly addressed include:

- mule waste disposal along the trail and at the shelter
- human waste disposal in the canyon
- engineering of the construction of the trail
- responsibilities for trail maintenance and enforcement
- future plans for expansion-what concession service will be provided for your customers?

Thank you for allowing me to comment on your EIS. I look forward to your reply.

Sincerely,

Naomi Tanigawa



Waimca Canyon Mule Tours
c/o Abel Medeiros
P.O. Box 8
Eleele, Hawaii 96705
July 31, 1979

Ms. Naomi Tanigawa
41-945 C Laumilo St.
Waimanalo, HI 96795

Dear Ms. Tanigawa:

It was my pleasure meeting you recently in Waimanalo, and at this time would like to answer your comments point by point.

1. FLORA: We have retained a Field Botanist for the purpose of making a complete botanical survey of the area; findings will be included in our final draft of the EIS.

2. FAUNA: The statements about the significance of effects from trail use are not "pure conjecture." They may appear to be undocumented because they are not supported by the pertinent experts' ^{opinions} in the EIS, but that does not mean that such experts were not contacted and consulted. At present, this area is used by hunters and the adjacent trail (Kukui) is used by hunters on foot on a daily basis, and by equestrians on a weekly basis. This has been the case for many years without any known detrimental effect on the native flora and fauna. The proposed trail will have railings constructed to discourage turn-offs. The trail will be controlled and no riders will be allowed to go off the trail on a free-for-all basis. (Note: The Ka'e Trail will remain a public trail, and the concessionier will assure the control only of its riders, and not that of the hunters or other riders. This, we believe, must be the responsibility of the appropriate state agency, unless such authority is delegated to the concession operator by the proper agency.)

3. MAP: A map of larger scale will be submitted with the final EIS. Topographic surveying and map reproduction is not inexpensive; we felt that the submitted map was sufficient for preliminary review.

4. TRAIL CONSTRUCTION: We agree that consultation with State agency is not enough; they do have the right to review and dictate standards. At present, there are no specified standards.

We propose to utilize a D-4 crawler type tractor, with an angle blade to do some of the trail construction; the remainder will be manual labor. It is estimated that the trail construction should take about 90 - 120 days, depending on weather conditions. The trail will be a two-way trail only at certain intervals, where areas will be provided with sufficient width for animals to pass. We do not anticipate any turnouts by our riders, as mentioned before. The trail will be constructed so as to retain and/or maintain most of the trees and to keep the area as natural as possible. The grade of the trail will be between 15 - 20 percent, except at the switchbacks where it might be a greater percent. We are not able to give you the total number of switchbacks because we have not yet prepared a detailed trail engineering drawing. We anticipate keeping switchbacks to a minimum by extending the trail to 3.5 miles.

5. SECOND ACCESS: When we submitted our first application, the Chairman of the Board at that time - Mr. William Thompson, and the Kauai member, Take Yamamoto, indicated to us that we should look for another trail nearby, even suggesting we could cross Kukui Trail if the need arose. Our proposed trail will cross Kukui Trail only at the bottom, prior to arriving at the rest area, which will be located approximately 100-200 yards upstream from the present Wiliwili camp. The second trail is proposed so as not to mix riders with hikers predominating Kukui Trail. We acknowledge the correct spelling of "surveillance."

6. MANURE ACCUMULATION: Mule wastes have been gathered and controlled for many centuries; we feel that our mules will present no unique problems. We plan to construct a screened-off area away from the eating and toilet areas, to dry the manure which accumulates at the bottom of the trail. The dried manure will then be sacked and hauled out for disposal either by sale (to farmers, for example) or to the Sanitary Landfill nearest the project. At the staging area, a more extensive operation would be required. Here, wood shavings would be used (at times) on the ground of the barn for the purpose of keeping the ground dry to discourage bacterial and fly propagation. The manure-drying process would be like the system used at the trail bottom. The State Department of Health will be consulted to the fullest extent for these operations.

7. FERTILIZATION: Acknowledgment is made of the correct word "effluent" rather than "affluent," which may have been a typo. We agree that on-site fertilization is not a viable alternative; as mentioned above, we hope that local farmers will be interested in purchasing the manure on a regular basis for use as fertilizer on their agricultural land. The Board of Health and Water Pollution Control branch of Environmental Health Services will monitor our operation closely, I'm sure.

8. SPECIMAN: Of "speciman size" probably refers to a significant tree based on its immense size (indicating age) and therefore, possible historical significance, e.g., canoe-building suitability.

9. ELEPAIO: Because an EIS should include historic/social significance, we feel that the discussion of the elepaio's presence is relevant.

10. TRAIL RESPONSIBILITY: The DL&NR will dictate and approve mitigative measures, probably delegated to its State Parks Division. An agreement with DL&NR would have to be drawn up regarding use practices and enforcement. With authority goes responsibility; if we are given the authority, we will do everything in our power to enforce and control trail use.

11. NOISE: Noise levels of 70 - 85 dB(A) produced by a D-4 tractor will occur only during a few of the estimated construction time of 90 - 120 days. Rains will cause runoff more than any other circumstances.

12. EROSION: Erosion control measures will be taken as the trail is being constructed and will be a significant part of engineering specifications. Drainage will be directed, where deemed to be appropriate, to natural ravines, with necessary swails and culverts. Grass suitable to the area will be planted and controlled to help prevent erosion.

13. DIRT BIKES: Dirt bikes are not allowed on any trails in State Parks and/or Conservation areas; trails are not considered roadways. The Division of State Parks will have the responsibility to ensure that bikers are excluded. They may require a gate at the top of the trail to prevent its being used by dirt bikers. Please remember that we want the trail to remain a public trail to be used primarily for those traveling on animals, not machines.

14. SAGUARO: We agree that Saguaro is suffering from unrestricted horse use because it is not controlled. Our trail use (operation) will be strictly controlled as our riders will not be leaving the trail at any time on their animals. We would not be able to afford the risk of having a rider take his/her animal on an every-which-way tour of the Canyon.

15. OTHER EQUESTRIAN TRAIL USE: Your information on the concession in Rocky Mt. National Park is noted with interest.

16. WILDERNESS EXPERIENCE: We do not see any loss of wilderness experience in the area proposed for the operation. We have considered other alternate routes and found them less satisfactory for our operation.

17. MULE WASTE DISPOSAL: It would be difficult to determine the disposition of mule waste along the trail as only animals would be stepping on their droppings. If it should prove to be overwhelming, we will institute trail collection operations, or dropping prevention.

18. HUMAN WASTE: Portable (chemical) toilets will be installed and serviced similarly to those now existing in various state and county parks -- as required based upon their use. The collection of the decomposed wastes, or their disposal will be predicated upon the final determination by the State Department of Health.

19. ENGINEERING: Upon approval of the project by DL&NR, a qualified trail-building engineer will be hired for the trail construction. If private groups, such as Sierra Club, wish to provide information and advice on trail construction, they are welcome to do so.

20. MAINTENANCE: The trail will be maintained by Waimea Mule Tours as its assessment, on daily inspection, indicates.

21. EXPANSION: There are no plans for future expansion into the canyon.

22. CUSTOMER SERVICE: The only concession service will be a bag lunch packed in, to be eaten at the bottom of the canyon at the rest site, as part of the package tour. All garbage and refuse will be packed out.

Thank you very much for your many comments on the EIS; I hope the final form of the EIS will prove more satisfactory in terms of its specificity and relevant detail. Your criticisms should help us in providing a more complete assessment of environmental impacts; again, thank you.

Very truly yours,

Abel Medeiros
Abel Medeiros

AM:mi



KAJAI COMMERCIAL COMPANY

A Division of Kahului Trucking & Storage, Inc.

P. O. BOX 511
LIHUE, KAUAI, HAWAII 96766

PHONE NAWILIWILI 245-4046

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B178

DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII
June 5, 1979
JUN 14 1979
By _____
Gordon _____ Estelle _____
Aki _____ Post _____
Roger _____ Library _____
Len _____
File in KA-1129
Return to _____

Mr. Susumu Ono
Department of Land & Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96807

Re: KA-4/2/79-1129: Mule Tours, Waimea Canyon

Dear Mr. Ono:

On May 24, 1979, I attended the Public Hearing in Waimea, on the above reference application and spoke, as an individual, against this application.

During his testimony, Mr. Abel Medeiros stated that he expected that customers of his proposed company would be able to park along the shoulder area on either side of the Kokee Road. He further stated that each four mule train would have to cross this road, single file, twice a trip per day.

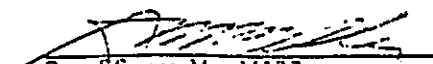
Because of these statements, I feel that I must now again speak against this application, representing my company and the transportation industry.

Our firm transports diesel and gas shipments to the Nasa and Dynalectron, Kokee facilities on a weekly basis. We also, on a more variable schedule, haul freight to various consignees in Kokee. We, therefore, feel that allowing parking along the shoulder and random crossing of the road would create a safety problem for our trucks and the trucks and buses of other Kauai trucking and tour companies. We are especially concerned since we carry hazardous materials such as gas and diesel.

It must also be pointed out that this unsafe condition could compound itself in the event this mule ride becomes popular in the future.

We recommend denial of this application.

Very truly yours,


Geoffrey M. Miller
Manager

GMM:rf
cc: Takeo Yamamoto
Ralph Daehler
Sam Lee

Waimea Canyon Mule Tours
c/o Abel Medeiros, VP
P.O. Box 8
Eleele, Hi. 96705

July 19, 1979

Mr. Geoffrey M. Miller, Manager
Kauai Commercial Company
P.O. Box 511
Lihue, Hi. 96766

Dear Mr. Miller:

The method you use to speak against the Waimea Canyon Mule Tours surprises me to no end. Your statement quoting me about parking vehicles on both sides of the Kokee Road is not true. I did say that there was some room along the Kokee Road near the entrance to the proposed staging area which could be made available for parking. If this is a problem, or an unsafe condition as you put it, we then could provide parking within the staging area and thereby keep off the county road. Really no big problem.

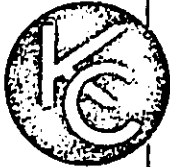
Your letter dated June 5, 1979 to Mr. Ono indicate that you are representing not only your company, but also other transportation organizations in the transportation industry, yet a check with others in your industry it was my impression that you were not authorized to speak in their behalf, this I believe is a misrepresentation of the facts.

May I invite you to look at the traffic on Oahu's highway leading from Kailua to Waimanalo, there you will see nearly constant traffic on a four (4) lane highway, you will also see an Equestrian Crossing Sign which allows animals to cross this very busy highway. I can assure that our animal crossing twice per day will not hamper traffic on the Kokee road as you so state.

Very truly yours,

Abel Medeiros
Abel Medeiros

cc - R. Gammie - KT&SCo.
H. Tavares-A&B



KAUAI COMMERCIAL COMPANY

A Division of Kahului Trucking & Storage, Inc.

P. O. BOX 511
LIHUE, KAUAI, HAWAII 96766

PHONE NAWILIWILI 245-4046

GENERAL TRUCK HAULING ♦ HOUSEHOLD GOODS PACKING AND MOVING

July 20, 1979

Mr. Abel Medeiros, Vice President
Waimea Canyon Mule Tours
P. O. Box 8
Eleele, Hawaii 96705

Dear Mr. Medeiros:


This is in response to your letter of July 19, 1979.

I would suggest that you review the testimony you gave to the Board of Land and Natural Resources on the evening of May 24, 1979. This would clarify whether or not you stated that parking would or would not be along the Kokee Road.

As an Island representative for the Hawaii Transportation Association and a member of its Board of Directors, it is my responsibility to speak up when a potentially unsafe condition arises that would effect our own company and the members of the association.

Your proposal to park along the Kokee Road and cross it several times a day is still considered potentially an unsafe practise. We therefore, will continue to oppose this proposal until we can be convinced that it is not unsafe.

Very truly yours,


Geoffrey M. Miller
Manager

GMM:rf
cc: Takeo Yamamoto
Ralph Daehler
Sam Lee

GRAYLINE HAWAII

Executive Office
9222 Kalakaua Avenue
Box 8539
Honolulu, Hawaii 96815
Phone (808) 922-1636

July 23, 1979

Mr. Susumu Ono
Dept. of Land & Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, HI 96807

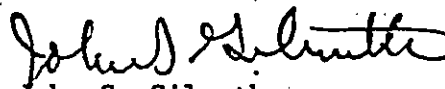
Mr. Geoffrey M. Miller sent you a letter, dated June 5th, expressing his viewpoints on the proposed Mule Tours at the Waimea Canyon.

I respect his right to express his views on the subject. I do wish to point out, however, that Mr. Miller is not a representative, as such, of the transportation industry on Kauai. He does represent his company, but cannot be considered a spokesman for the industry, especially the tour companies.

As Manager of the largest tour operation on Kauai, Grayline Kauai, I wish to go on record as recommending that the mule tours be allowed. I believe that our safety committee can work with Mr. Medeiros to insure that a safety program is instituted.

The mule tours would offer a wonderful opportunity for both the visitor to Kauai, and Hawaii residents alike, to see our marvelous beauty at a close, and personalized, viewpoint.

Aloha,


John S. Gilruth
General Manager
GRAYLINE KAUAI

JSG:ba

cc: Mr. Abel Medeiros ✓
Mike Layosa
Mike Chandler - KIT
Robert's
Hawaiian Discovery Tours

The All-Islands Sightseeing System

Honolulu
Grayline-Honolulu
Islander U-Drive

Molokai
Grayline-Molokai
Islander U-Drive

Kona
Grayline-Kona
Islander U-Drive

Kauai
Grayline-Kauai
Islander U-Drive

Lanai
Grayline-Lanai

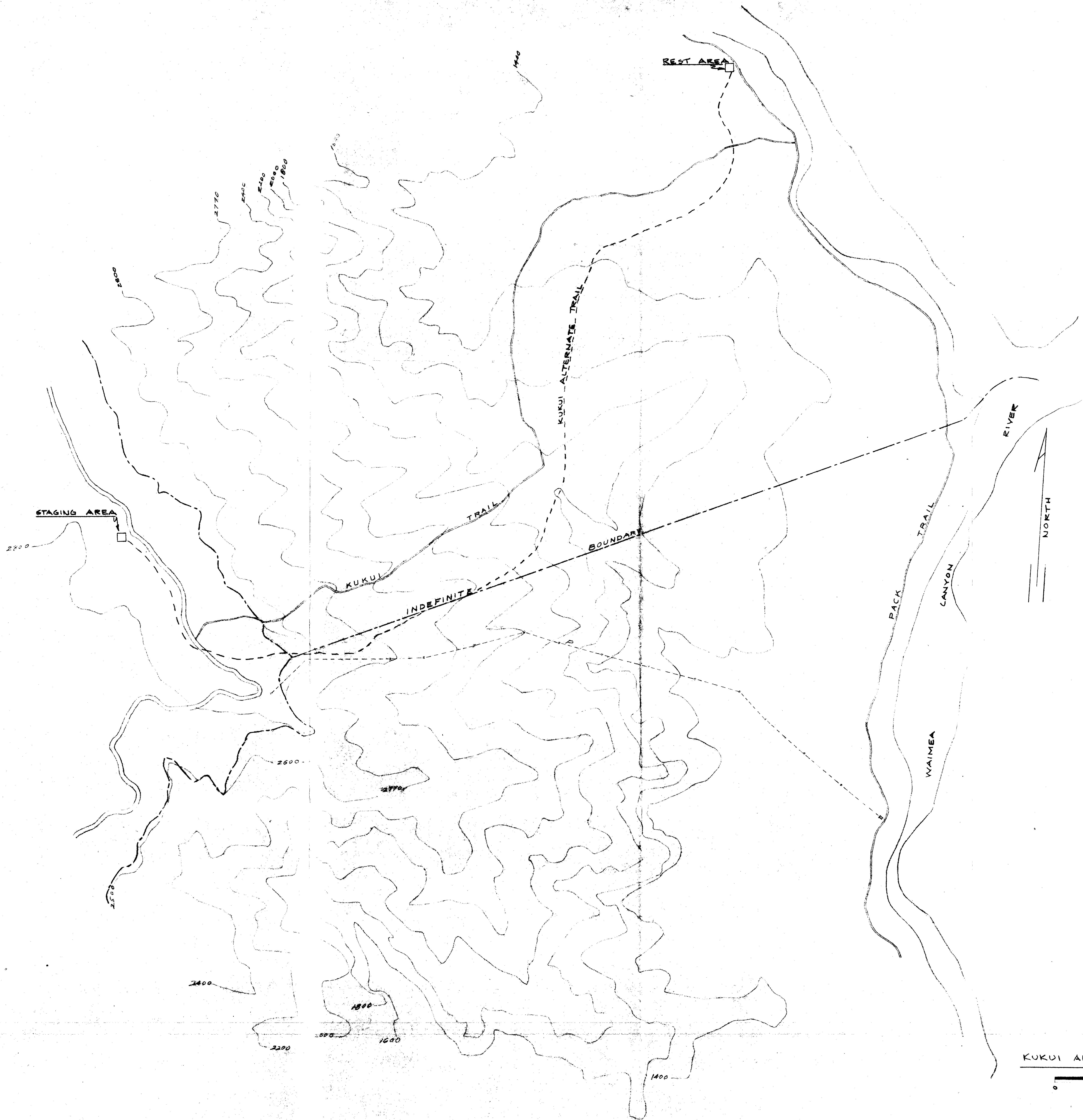
Mau
Grayline-Mau
Islander U-Drive

Hilo
Grayline-Hilo
Islander U-Drive

A Subsidiary of InterIsland Resorts

BIBLIOGRAPHY

- Bennett, W.C.,
1931 Archaeology of Kauai. Bernice P. Bishop Museum Bulletin #80. Honolulu. (Reprinted in 1971)
- Ching, Francis K.W.
1968 Preliminary Reconnaissance and Survey, Wailua State Park, Kauai Island. Division of State Parks. Honolulu.
- _____
(editor)
1973 The Archaeology of Puna, Kaua'i. Loko Kuapa O Alekoko. Archaeological Research Center Hawaii. Hawaiian Archaeological Journal 73-1, Lawai.
- Damon, E.M.
1931 Koamalu. Honolulu.
- Frear, M.D.
1929 Our Familiar Island Trees. The Gorham Press. Boston.
- Handy, E.S. and E.G. Handy
1972 Native Planters in Old Hawaii. Their Life, Lore and Environment. Bernice P. Bishop Museum Bulletin #233. Bishop Museum Press. Honolulu.
- Hinds, N.E.
1930 The Geology of Kauai and Niihau. Bernice P. Bishop Museum Bulletin #71. Honolulu. (Reprinted in 1971)
- Pukui, M.K. and S.H. Elbert
1965 Hawaiian-English Dictionary. University of Hawaii Press. Honolulu.
- Rice, W.H.
1923 Hawaiian Legends. Bernice P. Bishop Museum Bulletin #3. Honolulu.
- Rotar, P.P.
1968 Grasses of Hawaii. University of Hawaii Press. Honolulu.



90-003

KUKUI ALTERNATE (EQUESTRIAN) TRAIL

