EXECUTIVE CHAMBERS

HONOLULU

GEORGE R. ARIYOSHI
GOVERNOR

March 20, 1979

MEMORANDUM

To: Mr. Donald A. Bremner, Chairman
Environmental Quality Commission

Subject: Final Environmental Impact Statement - Hanamaulu-Ahukini Cutoff Road, Kauai

Based upon the recommendation of the Office of Environmental Quality Control, I am pleased to accept the subject document as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes, and the Executive Order of August 23, 1971. This environmental impact statement will be a useful tool in the process of deciding whether or not the action described therein should or should not be allowed to proceed. My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws, and does not constitute an endorsement of the proposed action.

When you make your decision regarding the proposed action itself, I hope you will weigh carefully whether the societal benefits justify the environmental impacts which will likely occur. These impacts are adequately described in the statement, and, together with the comments made by reviewers, will provide you with a useful analysis of alternatives to the proposed action.

George R. Ariyoshi

cc: Mr. Richard L. O'Connell
Hon. R. Higashionna

4/6/79

REPORT NUMBER: FHWA-HI-EIS-78-03F

Hanamaulu-Ahukini Cutoff Road

FAP ROUTE 51, KAUAI, HAWAII

PROJECT NUMBER F-051-1(4)

FINAL

Environmental Impact Statement

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

and

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION

FHWA-HI-EIS-78-03-F

NOT OFFICIAL

Subject to Approval
by the
Federal Highway Administration

HANAMAULU-AHUKINI CUTOFF ROAD

FAP ROUTE 51, KAUAI, HAWAII

Project Number F-051-1(4)

ADMINISTRATIVE ACTION

FINAL

ENVIRONMENTAL IMPACT STATEMENT

U. S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

and

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION
Land Transportation Facilities Division

Submitted Pursuant to
42 U.S.C. 4332(2)(c) and 23 U.S.C. 128(a)

Date

Director
Office of Environment and Design
Federal Highway Administration
Region Nine

APPROVED MARCH 1979

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SUMMARY

HANAMAULU-AHUKINI CUTOFF ROAD
Project No. 51C-01-76
Kauai, Hawaii

SUMMARY

A. Federal Highway Administration

Administrative Action Environmental Statement

( ) Draft (X) Final
( ) Section 4(f) Statement attached

B. The names, addresses, and telephone numbers of individuals at the Federal Highway Administration and State Land Transportation Facilities Division who can be contacted for additional information concerning this proposal and statement are:

Mr. Ralph Segawa
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
P.O. Box 50206
300 Ala Moana Boulevard
Honolulu, Hawaii 96850

(Telephone Number 546-5150)

Mr. Tetsuo Harano
Chief, Land Transportation Facilities Division
Hawaii Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

(Telephone Number 548-5711)

C. DESCRIPTION OF THE PROPOSED ACTION

The proposed project involves construction of a cutoff highway in the Lihue area on the Island of Kauai, Hawaii. The Hanamaulu-Ahukini Cutoff Road will extend Kapule Highway (FAP Route 51) northward from its present terminus at Ahukini Road, to Kuhio Highway just north of Hanamaulu. The cutoff road will be constructed in two stages, with a two-lane roadway and a single two-lane bridge constructed in the first stage. During the second stage the cutoff road will be expanded to four lanes and a second two-lane bridge added. There is no definite schedule for the second stage; it will be considered as the need arises.

D. SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

1. The highway will facilitate community growth and may influence the future form of the community. The proposed project is recommended by and in conformance with both the Lihue Development Plan and the Kauai General Plan.

2. Construction will cause increased rates of soil erosion, but this impact will be minimized through appropriate erosion control measures.

3. The proposed Hanamaulu Bridge will not create an additional flood hazard. If falsework is used during the construction of the bridge, protective embankments will create a small back-water effect which will be added to the backwater caused by the existing railroad embankment. Falsework protection will be removed upon completion of the bridge.

4. The project will temporarily remove or degrade a strip of endangered waterbird habitat roughly one hundred feet wide across Hanamaulu Stream at the proposed bridge site. This habitat will be restored when the falsework and temporary road are removed.

5. The project will have a beneficial impact by decreasing noise levels on Kuhio Highway. Impact of noise from the project on areas that are currently built up will be minimal.

6. Total air pollutant burdens will decrease due to Federal emission controls. However, with the construction of the cutoff road, the total vehicle-miles traveled in the Lihue area will increase by 0.6%. With more vehicle-miles, the total pollutant burden would be slightly higher with the cutoff road. Air quality on Kuhio Highway will be improved by reducing traffic volumes.

7. No businesses or residences will be displaced by the project.

8. The project will have both positive and negative effects on sales volumes for businesses in the affected area.

9. The project will reduce congestion on Kuhio Highway.

10. The project will take a maximum of 39.5 acres of agricultural land out of production. This will result in lost sugar yields valued at $59,500 annually, and lost tax revenues of approximately $690 annually.

11. The project will change the scenic quality of vistas from the Hanamaulu Beach Park and the Hanamaulu Valley upstream of the proposed highway crossing, but will afford the highway users vistas of high scenic quality overlooking the Hanamaulu Valley and Hanamaulu Bay.

E. MAJOR ALTERNATIVES CONSIDERED

1. Alternative Alignments of Proposed Project. Three alignments were considered in detail for the Hanamaulu-Ahukini Cutoff Road. All three alternative alignments follow the same route from Ahukini Road to Hanamaulu Stream. The alignment chosen (Alignment A, see Figure 1A, Page I-2), intersects Kuhio Highway south of the Kauai Hardwood Store. The two alignments which were rejected (B and C), intersect the highway north of the store. The choice of alignment was made after a public hearing was held at Lihue on July, 1978.

2. Widening Kuhio Highway Alternative. The expansion of Kuhio Highway to four lanes to handle higher traffic loads would result in the displacement of many businesses and private homes. In addition, even with the expansion of the highway to four lanes, the desired level of service cannot be attained in terms of operating speed criteria, due to the road's restrictive alignment. Because of the high social and economic costs relative to the proposed cutoff road, widening Kuhio Highway has been rejected as an alternative to constructing a cutoff road.

3. No Project Alternative. Not building the cutoff road would result in the presently congested traffic condition on Kuhio Highway continuing to grow worse. The adverse environmental impacts which would result from the ensuing congestion problems include a high accident rate, increased noise and air pollution, and accompanying social and economic impacts to residents, businesses and institutions serviced by the highway. Therefore, permitting existing trends to continue without altering the present road system is not a desirable alternative.

F. ORGANIZATIONS AND PERSONS CONSULTED

Appendix A contains comprehensive lists of organizations and persons consulted in the preparation of the Draft EIS and a list of agencies and persons responding to the EIS Preparation Notice. Appendix F contains the mailing list for the Draft EIS.

CHAPTER I

PROJECT DESCRIPTION

CHAPTER I

PROJECT DESCRIPTION

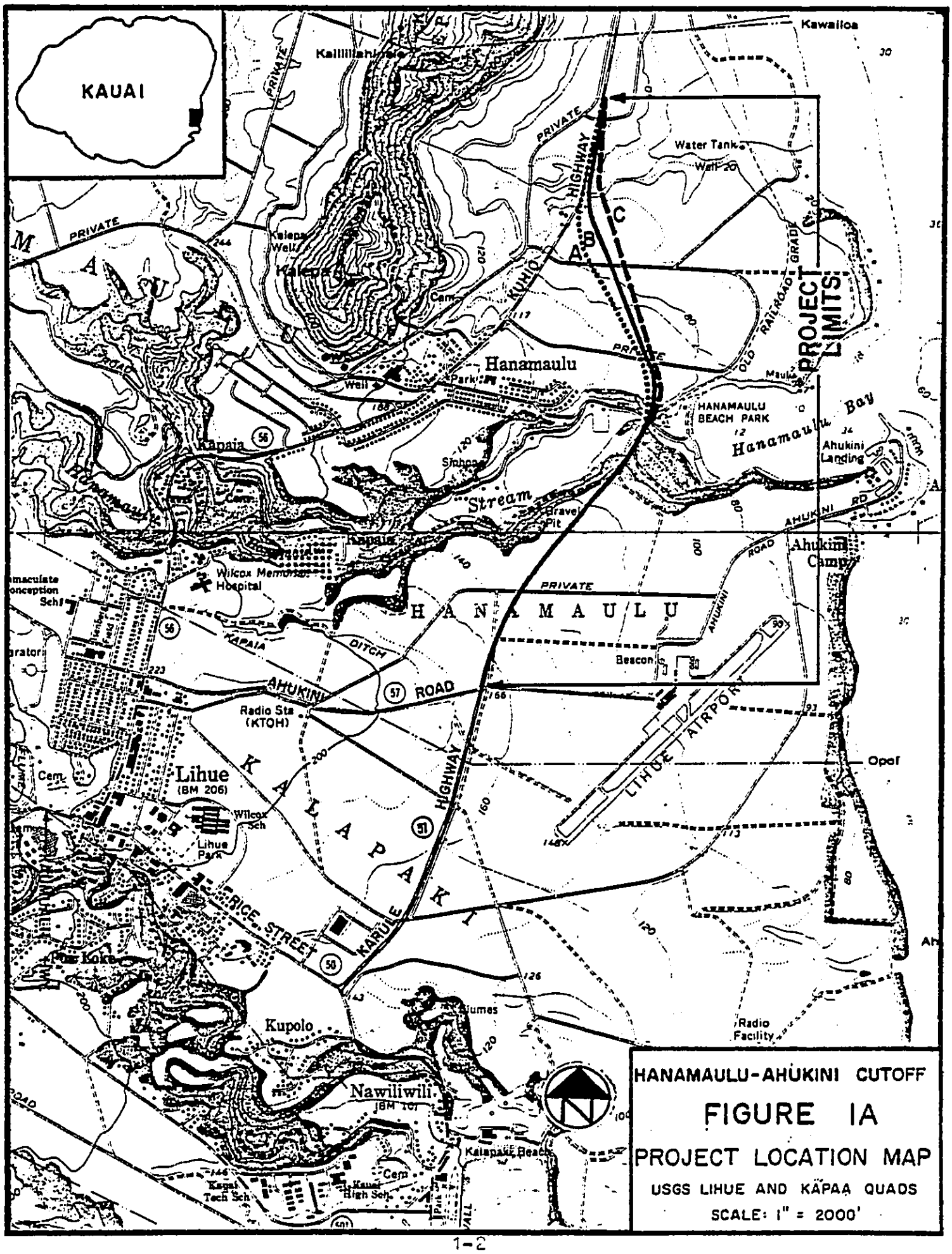
1.0 PROJECT LOCATION

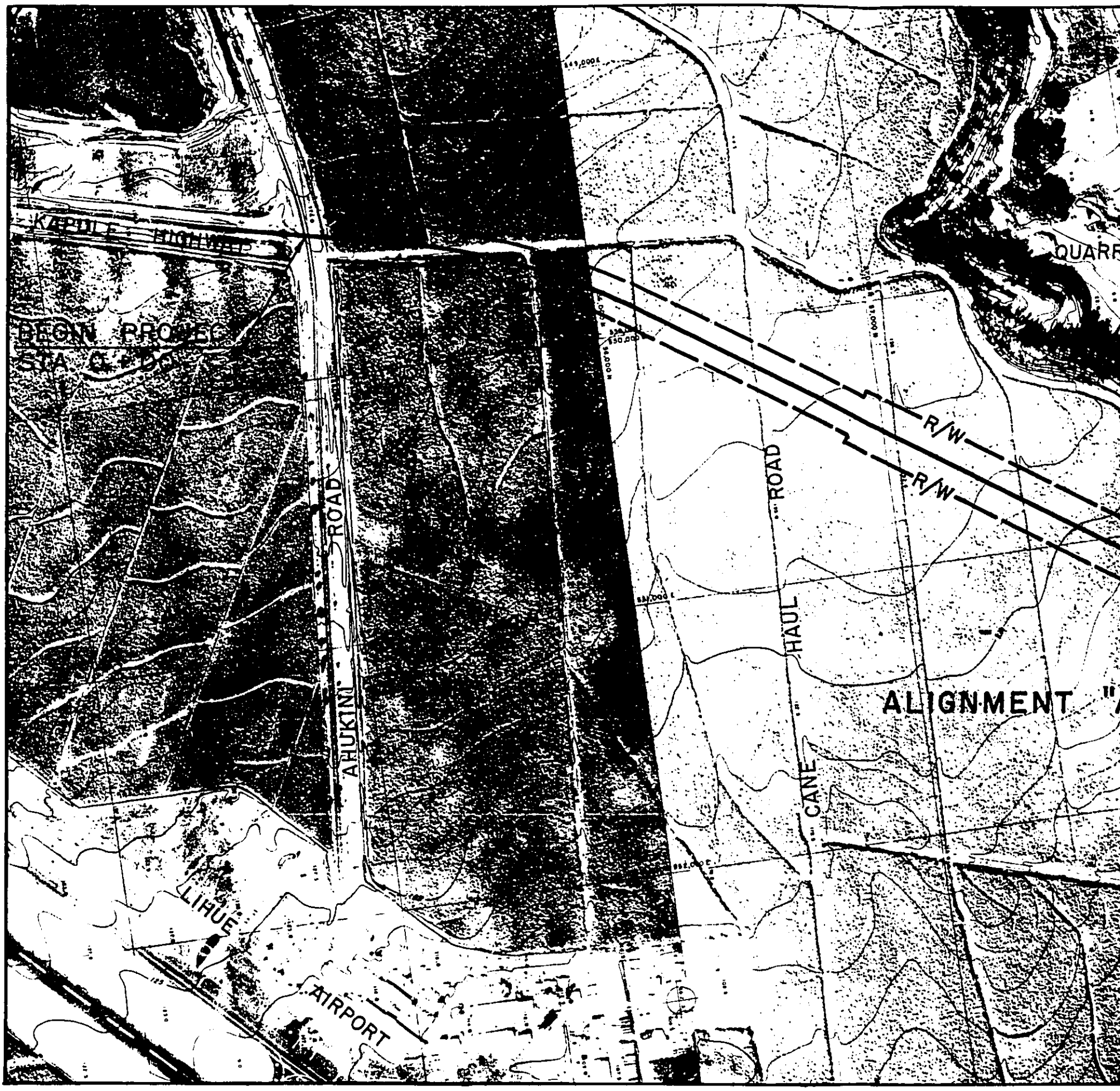
The proposed Hanamaulu-Ahukini Cutoff Road is located in eastern Kauai County, between the communities of Lihue and Hanamaulu (Figures 1A and 1B). The project consists of extending Kapule Highway (FAP Route 51) from Ahukini Road just west of the Lihue Airport, to Kuhio Highway approximately 0.7 miles north of Hanamaulu. The proposed highway will be approximately two miles in length.

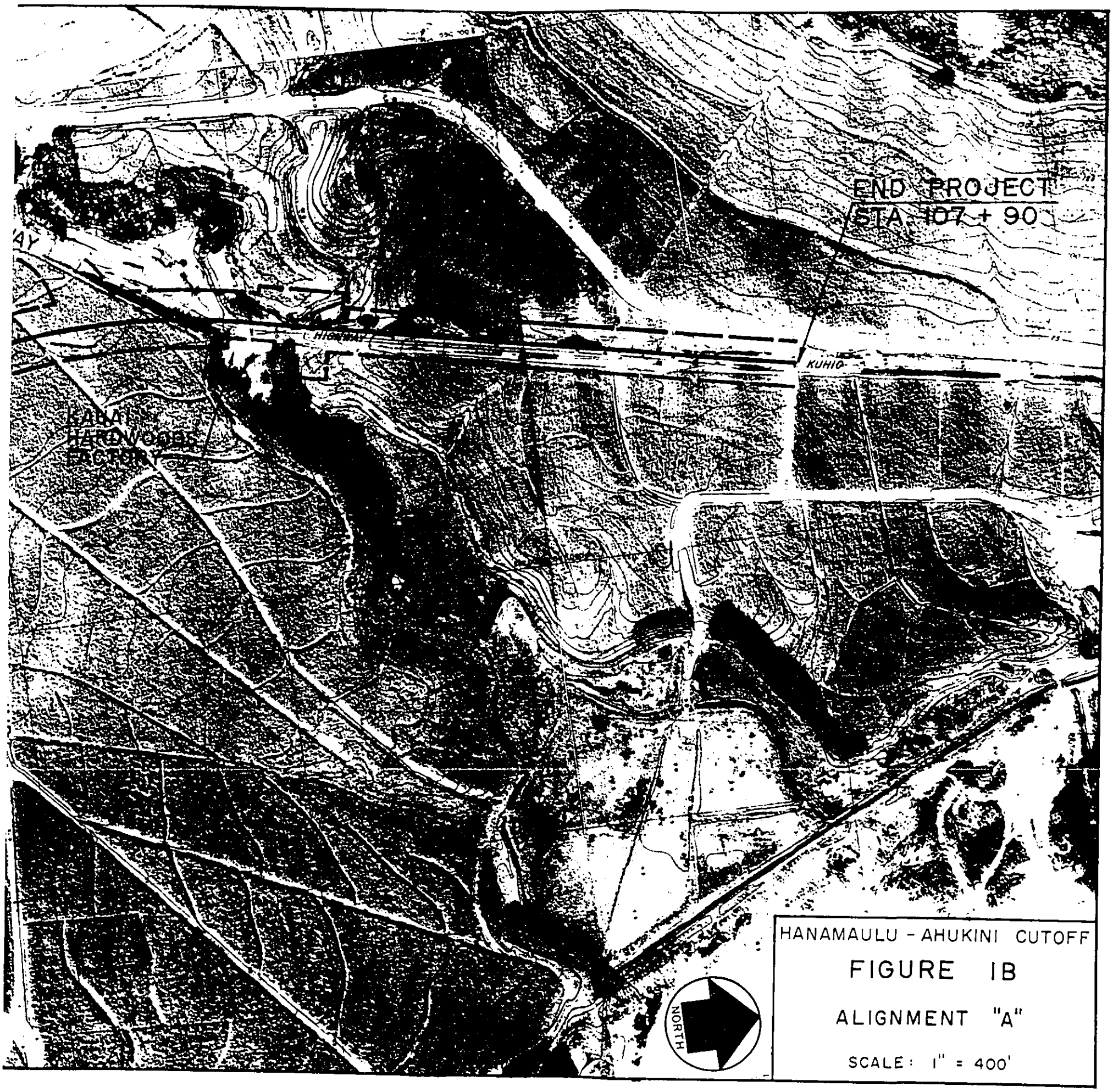
2.0 NEED FOR PROJECT

The town of Lihue is the business, government and shipping center of Kauai. Over half of Kauai's total retail and service revenue and employment is generated in Lihue (U.S. Bureau of the Census, 1974). State, Federal and County of Kauai government agencies are headquartered in Lihue. In addition, Nawiliwili Harbor handles over 80 percent of the general cargo and over 50 percent of the petroleum shipments for Kauai (University of Hawaii, 1974). Lihue Airport accomodates most of the air travelers to and from Kauai. Thus, the business and governmental activities in Lihue indicate the regional importance of this community to the Island of Kauai. The regional role of Lihue also makes it a primary source of surface traffic to and from the area.

The importance of Lihue as both an origin and destination for surface traffic is more apparent when viewed from the standpoint of vehicle registrations. Between 1965 and 1975, the resident population of Kauai increased by 13 percent, while the number of vehicles registered increased by 100 percent (County of Kauai, 1976). This represents a decrease in the ratio of residents to vehicles from 2.46 to 1.4. Although the increasing number of motor vehicles is probably due to a combination of increasing tourism


KAUAI
PROJECT LIMITS
HANAMAULU-AHUKINI CUTOFF
FIGURE 1A
PROJECT LOCATION MAP
USGS LIHUE AND KAPAA QUADS
SCALE: 1" = 2000'
Kawaiioa
Water Tank
Well 20
HIGHWAY
KUHIO
OLD RAILROAD GRADE
Hanamaulu
Park
Well
HANAMAULU BEACH PARK
Hanamaulu Bay
Ahukini Landing
AHUKINI RD
Kapaia
Stream
Gravel Pit
Ahukini Camp
Wilcox Memorial Hospital
PRIVATE
HANAMAULU
KAPAIA DITCH
AHUKINI ROAD
Bascon
Radio Sta (KTOH)
Lihue
(BM 206)
Wilcox Sch
Lihue Park
RICE STREET
KAREULE
Puu Kole
Kupolo
Nawiliwili
(BM 10)
Kalapaki Beach
Kauai Tech Sch
Kauai High Sch
Cem
Opaf
LIHUE AIRPORT
Radio Facility
KAPAA





HANAMAULU - AHUKINI CUTOFF

FIGURE 1B

ALIGNMENT "A"

SCALE: 1" = 400'

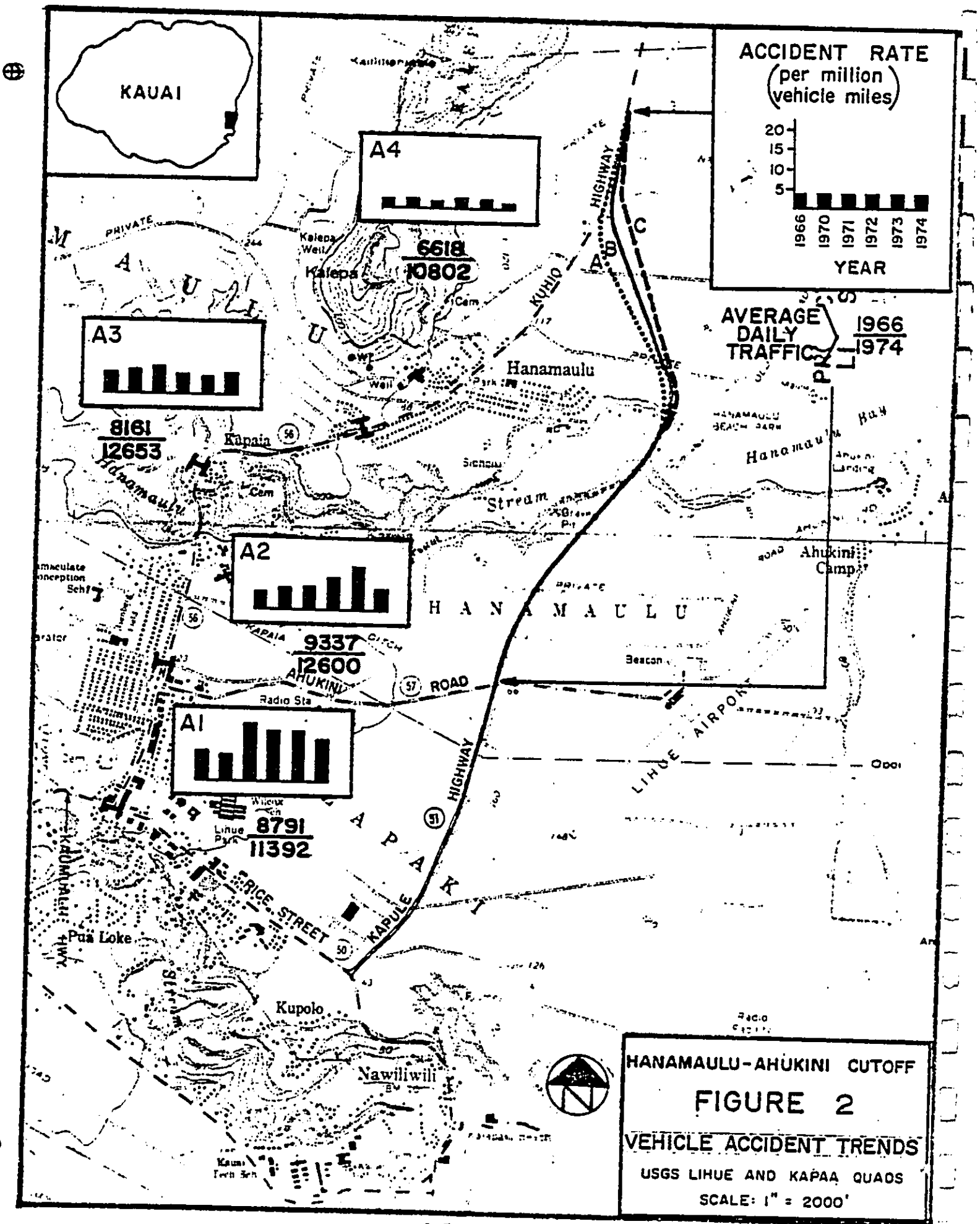
(more rental cars and tour vehicles) and more automobiles per resident family, it does indicate that there has been a substantial increase in automobiles on Kauai's roads over the last 10 years.

Presently, the existing road network offers a less than desirable system of moving residents and tourists between various points around the Lihue area. The system fails to separate through traffic in the area from local traffic. All traffic between north and south Kauai must travel through central Lihue. Traffic from the north, destined for the major employment area centered on Nawiliwili Harbor, must travel through Lihue. Therefore, most traffic - including airport, tourists, commuters, and local shoppers passes through Lihue, and contributes to the increasing congestion of this area even during off-peak hour periods (Plates 1, 2 and 3).

Between 1966 and 1974, average daily traffic on Kuhio Highway north of Lihue (segment A4 on Figure 2) increased 63.2%, compared with a growth of 29.6% in segment A1, within Lihue itself. The accident rate in the latter segment showed a significant uptrend over this time period, as can be seen by the bar graph in Figure 2.

Table 1 provides an analysis of traffic accidents that occurred during 1976 and 1977, broken down in one-mile segments of Kuhio Highway, stretching north from the intersection with Kaumualii Highway (the segments in Table 1 do not correspond to those in Figure 2). As indicated, accidents tend to occur more frequently during peak hours and near intersections, especially in the built-up area between Lihue and Hanamaulu (road segments 0-1 and 1-2). The proportion of accidents involving an injury or fatality was higher outside Lihue. (Only one fatality occurred during the two year period, however, and this was on the stretch of road north of Hanamaulu.) From Lihue to Hanamaulu, the majority of accidents involved two vehicles, while accidents involving fixed objects were much more frequent on the highway north of Hanamaulu. Most accidents involved improper driving, with failure to yield right-of-way, following too closely, and speeding being the most common causes. Drunk driving was not a major contributing factor to the overall accident rate. Also, weather and obscurements do not appear to have been a substantial cause of accidents. Night time accidents are much more common outside of Lihue.

It appears that the accident rate is related to increasingly heavy traffic flows in areas where there is a considerable amount of traffic turning on and off Kuhio Highway. The proposed road will provide traffic between northeast Kauai and either Lihue Airport or Nawiliwili Harbor with a shorter, and less time consuming route. Even if traffic between south and north Kauai continues to use the existing Kuhio Highway through Lihue, the bypass road will increase the efficiency of Kuhio Highway by lessening the overall volume, thereby benefiting local traffic in Lihue.



HANAMAULU-AHUKINI CUTOFF

FIGURE 2

VEHICLE ACCIDENT TRENDS

USGS LIHUE AND KAPAA QUADS

SCALE: 1" = 2000'

TABLE I

HANAMAULU-AHUKINI CUTOFF ROAD
ACCIDENT STATISTICS 1976-77

	Road Segment [1] 0-1	1-2	2-3
Total number of accidents	40	60	12
Percent Intersection-related accidents	28%	40%	17%
Percent Peak hour [2]	50%	18%	8%
Percent Fatal or Injury	28%	57%	50%
Type of Accident			
Two moving vehicles	80%	78%	50%
Vehicle with fixed object	13%	20%	33%
Vehicle with parked vehicle	5%	2%	-
Contributing Factor % [3]	C-68% B-15% A-10%	C-40% A-27% B-12%	C-33% B-17% A-17%
Percent Bad Weather	12%	20%	8%
Percent during daylight	78%	40%	42%
Percent no obscurement	83%	92%	100%

1 In miles from intersection of Kuhio Highway (56) and Kaumualii Highway.

2 Peak period defined as between 7 and 9 o'clock in the morning and 4 and 6 o'clock in the evening.

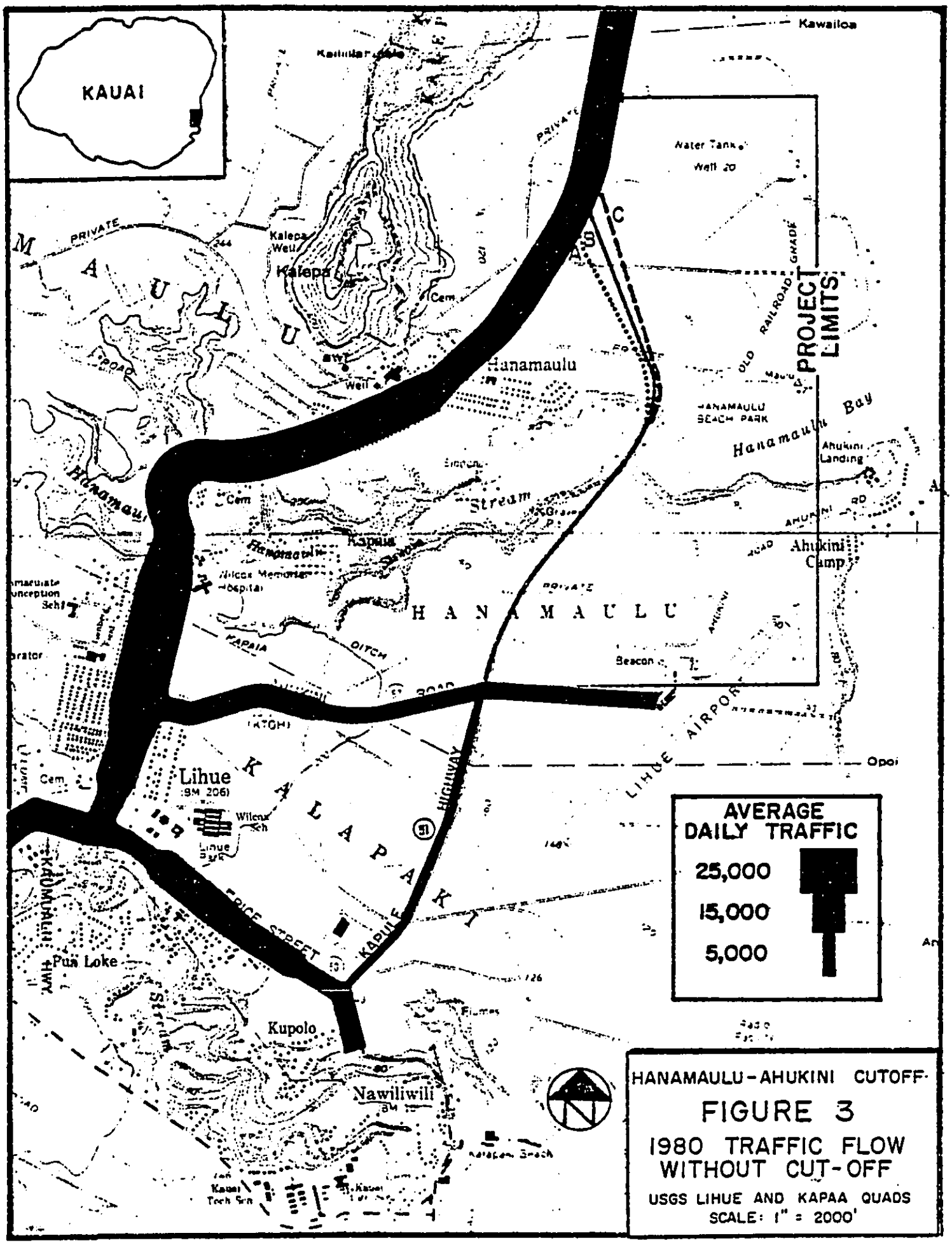
3. A - Failed to yield right-of-way.
B - Followed too closely.
C - Other improper driving (includes speeding, improper passing, disregarding stop signs among others).

Source: State of Hawaii, Department of Transportation

As noted above, the segment of Kuhio Highway from Lihue to Hanamaulu is the busiest road on Kauai. In 1976, traffic counts recorded 24-hour flows on Kuhio Highway of 15,420 vehicles between the Kaumualii Highway and Kapaia Bridge, 16,675 vehicles between the bridge and Hanamaulu, and 13,966 vehicles between Hanamaulu and the proposed intersection of the existing highway with the bypass road. It is these heavy traffic volumes which contribute to the present congestion and delays in moving traffic through the community. During the peak periods of travel, traffic frequently backs up from Lihue all the way to Hanamaulu.

Future traffic flows on the existing road network for 1980 are shown in Figure 3. Although the major highways are similar in design characteristics, without the cutoff road the Kuhio Highway will continue to carry a disproportionate amount of traffic within the Lihue area. The segment between Ahukini Road and Hanamaulu will continue to have the highest traffic loads on the highway. Traffic volumes for 1990 and 2000 on the existing road network are provided in Appendix D. The traffic flow characteristics are proportionately equivalent to those for 1980, shown in Figure 3. The traffic volume by the year 2000 will increase 88% above the 1980 levels. As a result of this heavy use, the annual maintenance costs for Kuhio Highway within the project area is $4,285/lane/mile, compared to and island-wide average of $2,333/lane/mile.

The social, economic and environmental effects of allowing such high volumes of traffic to continue to use Kuhio Highway include air pollution, noise pollution, and potential loss of business. The Clean Air Act will result in a reduction in automobile exhaust emissions, but without a cutoff road, Carbon Monoxide concentrations along Kuhio Highway will continue to be high through 1980 (see Chapter III and Appendix B). Noise levels on Kuhio Highway are periodically in excess of the Federal Design Standard, and will worsen if traffic volumes are not reduced. As traffic increases on Kuhio Highway, it will become more difficult to make turns off and onto the road; as a result, some businesses may be adversely affected.



HANAMAULU - AHUKINI CUTOFF

FIGURE 3

1980 TRAFFIC FLOW WITHOUT CUT-OFF

USGS LIHUE AND KAPAA QUADS
SCALE: 1" = 2000'

2.1 EXISTING HIGHWAY ALIGNMENT

The primary access route between Lihue and the other communities on the Island of Kauai is the Kauai Belt Highway. In Lihue, the belt highway system is represented by Kuhio Highway (56) and Kaumualii Highway (50). Kuhio Highway extends northward from its intersection with Kaumualii Highway in central Lihue, and follows the coast to Haena on the North Shore (refer to Figure 1A). Kuhio Highway, from Lihue north to Hanamaulu, carries the heaviest traffic flow on Kauai (University of Hawaii, 1973).

Secondary access roads in the project vicinity are Ahukini Road (570), Kapule Highway (51), and Rice Street-Waapa Road. Ahukini Road connects Lihue Airport with Kuhio Highway, and is the primary route for airport-related traffic. Rice Street and Kapule Highways serve as alternate routes to the airport. Kapule Highway is a completed segment of the proposed cutoff road, and extends from Rice Street-Waapa Road on the south, to Ahukini Road. Kapule Highway and Ahukini Road are presently used as an alternate route for traffic moving between the Nawiliwili Harbor area and the region north of Lihue.

2.2 DESIGN CHARACTERISTICS

For the short distance between Kaumualii Highway and Hardy Street in downtown Lihue, Kuhio Highway has four lanes. North of Lihue, it is reduced to two 12-foot lanes with 4-6 foot dirt or grass shoulders. A third lane for trucks is provided at Kapaia, where the highway has two steep grades on either side of Hanamaulu Valley.

Kapule Highway, at the southern end of the proposed cutoff road, was completed in 1975 to provide two 12-foot lanes and 10-foot paved shoulders Ahukini Road is also a two-lane highway with 12-foot lanes and 6-foot gravel shoulders.

2.3 OPERATIONAL CHARACTERISTICS

Existing speed limits on the Kuhio Highway vary from 25 to 35 miles per hour between central Lihue and Hanamaulu, to 50 miles per hour north of Hanamaulu. Within Lihue, the large number of side streets and business driveways generate a high frequency of vehicle turns off the main highway. This contributes to traffic congestion problems on the highway and adjacent streets. The central area of Lihue has roadside parking which forces cars to back into the main highway when pulling out, creating a potentially hazardous situation for drivers. The mix of through and local traffic, and the ensuing congestion, contributing to the higher accident rate of this area. Both Ahukini Road and Kapule Highway are high speed highways (50 mph), except at the approaches to major intersections. The smaller number of uncontrolled access points and wider shoulders make these roadways less hazardous than Kuhio Highway.

2.4 PROJECT HISTORY

In 1975, Kapule Highway was completed between Rice Street and Ahukini Highway. In recognition of the need to extend the Kapule Highway from Ahukini to Hanamaulu, the State Legistature through Act 218, Session Laws of Hawaii 1974, Section 7, Item III-B-6, and Act 226, Session Laws of Hawaii 1976, Section 6, Item C-47, authorized and appropriated funds for plans and construction of the Hanamaulu-Ahukini Cutoff Road, Island of Kauai.

Engineering consultants were retained to develop the alternative corridors in April, 1977. In order to evaluate the environmental impacts of the alternative corridors, the Department of Transportation's Social, Economic and Environmental consultant was authorized to proceed in May, 1977. The environmental documents prepared include a study on air quality (Appendix B), a noise study (Appendix C), a socioeconomic impact evaluation, and a survey of waterfowl habitat in Hanamaulu Valley. These studies included field surveys and analysis of probable impacts in their respective areas of concern.

In general, the State of Hawaii (Chapter 343, Hawaii Revised Statutes) requires an evaluation of environmental impacts for each project utilizing public lands, monies, or requiring governmental action. Chapter 343, HRS, and its related regulations, Environmental Impact Statement Regulations, requires that the proposing agency (for an agency action) evaluate the environmental consequences of a proposed action as early as possible. This early review process is called an Environmental Assessment (EA). The agency then determines the significance of the environmental impacts; if an action is deemed significant, an EIS Preparation Notice is then acknowledged in the Commission's EQC Bulletin. During the 30-day period after the publication of the project in the EQC Bulletin, the EIS Preparation Notice is sent to various governmental and private agencies which may have an interest in the project.

An Environmental Assessment and EIS Preparation Notice was prepared for this project in July, 1977. The description of the project appeared in the EQC Bulletin of July 23, 1977 (Volume III, Number 14). During this period (July-August, 1977), the EIS Preparation Notice was sent to 28 agencies for consultation and preliminary review. The comments were answered (see Appendix A), and wherever possible, recommendations were incorporated into this EIS. Three informational meetings were held for this project on August 1 and December 15, 1977 at the Wilcox Elementary School in Lihue, and January 24, 1978 at the Hanamaulu Community Center. The Draft EIS was circulated from May 22 to June 23, 1978, and the combined highway corridor and design public hearing was held in Lihue on June 21, 1978. At this hearing, a concerted public opinion favoring alignment A was expressed, since this alignment would not divert traffic away from the Kauai Hardwood Factory, and would remove the least amount of cane land (see Appendix G for a summary of this hearing).

Since funding will be provided by both Federal and State Sources, the proposed Hanamaulu-Ahukini Cutoff Road must be designed in accordance with the minimum standards for this type of highway. Also, the road will be a part of State Highway 51 after its completion, which will make the State Land Transportation Facilities Division responsible for its upkeep. The County of Kauai Planning Department maintains special restrictions, such as grading and signing ordinances, which are relevant to the proposed cutoff road.

3.0 DESCRIPTION OF THE PROPOSED IMPROVEMENTS

3.1 PROPOSED ALIGNMENT

The extension of the existing Kapule Highway will entail a new highway corridor, which traverses Hanamaulu Valley. Early in the planning process, a study corridor was established running from the intersection of Kapule Highway and Ahukini Road north to Kuhio Highway. The study corridor proceeds north through the valley, swinging east to avoid the Hanamaulu house lots. The corridor intersects Kuhio Highway in the vicinity of the Kauai Hardwood Store.

Within this study corridor three alternative alignments were chosen for further consideration (see Figures 1A and 1B). Following a careful analysis of the three alternatives and testimony received at a public hearing held at Lihue on June 21,1978, alternative A was chosen as the proposed alignment.

The proposed alignment proceeds from Ahukini Road to Hanamaulu Stream as shown in Figure 1B. The Hanamaulu Stream crossing will be located approximately 400 feet west (upstream) of the old railroad bridge. This alignment was chosen to avoid impacting the Hanamaulu Subdivision, the Hanamaulu Beach Park and the waterfowl habitat in the upper valley. The alignment then swings north from Hanamaulu Stream and intersects Kuhio Highway on the Lihue side of the Kauai Hardwood Store. This would maintain the store's frontage on the primary route connecting Lihue with the communities to the north.

3.2 ROAD DESIGN CHARACTERISTICS

The proposed Hanamaulu-Ahukini Cutoff Road is being designed to accomodate the projected year 2000 traffic. The proposed road will also be designed for partial control of access, unlike the existing Kuhio Highway which has no access control. Because of the varying topography, the standards specified are based on criteria lower than those for an expressway. Following are the general criteria which are being used in the design of the cutoff road:

The design criteria being used for the roadway drainage systems, including irrigation ditches and culverts, are: for minor drainage areas (less than 100 acres), recurrence interval 10 years; for culverts handling drainage from less than 100 acres, 50 years recurrence interval; and for culverts (and bridges) handling drainage from more than 100 acres, a 100-year recurrence interval will be used.

Highway classification:	Federal Aid Primary
Designation·	Partial Control of Access
Design Speed	60 mph
Type of Highway:	Four Lanes (divided)
Pavement Width:	24 feet (each direction)
Shoulder Width:	Right 10 feet
	Left 4 feet
Medial Strip:	30 feet
Minimum Row:	150 feet
Geometric:	
Minimum Radius of Curvature:	2000 feet
Maximum Superelevation:	0.06 feet/feet
Minimum Cross Slope:	1.5%
Maximum Grade:	6.0%
Minimum Grade:	0.5%

Figure 4 shows a typical cross section of the ultimate design of the highway. The completed cutoff road will be a four-lane highway, but due to present demand and other consideration, will be constructed in two stages. The first stage will comprise land acquisition for all four lanes. Grading will be done in stages. The exact sequence of increments will be determined in the final design, based on, among others, the following criteria; 1) drainage requirements, 2) landscaping requirements, 3) cost and 4) optimum use of the right-of-way. Full development of the four-lane highway will be completed in the second stage. There is no definite schedule for this second stage; it is anticipated that four lanes will be needed by the early 1990's.

Landscaping will be an integral part of the highway construction. In addition to short-term erosion control measures, the right-of-way will be planted with ground cover and trees, and will be provided with a sprinkler system. This will make it a part of the State Department of Transportation's "Lihue Airport Gateway Beautification Project".

Highway classification:	Federal Aid Primary
Designation·	Partial Control of Access
Design Speed	60 mph
Type of Highway:	Four Lanes (divided)
Pavement Width:	24 feet (each direction)
Shoulder Width:	Right 10 feet
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Minimum Cross Slope:	1.5%
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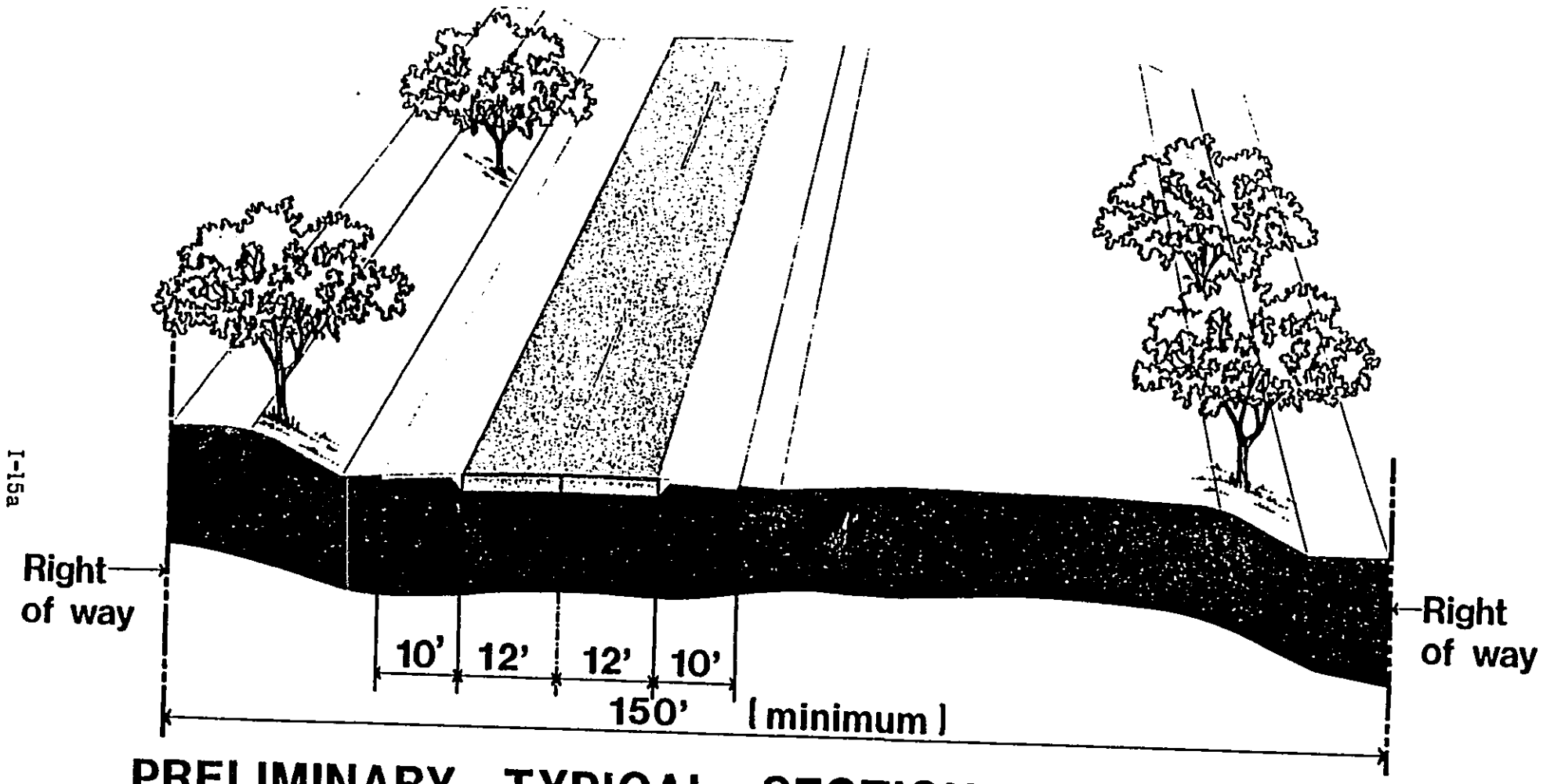


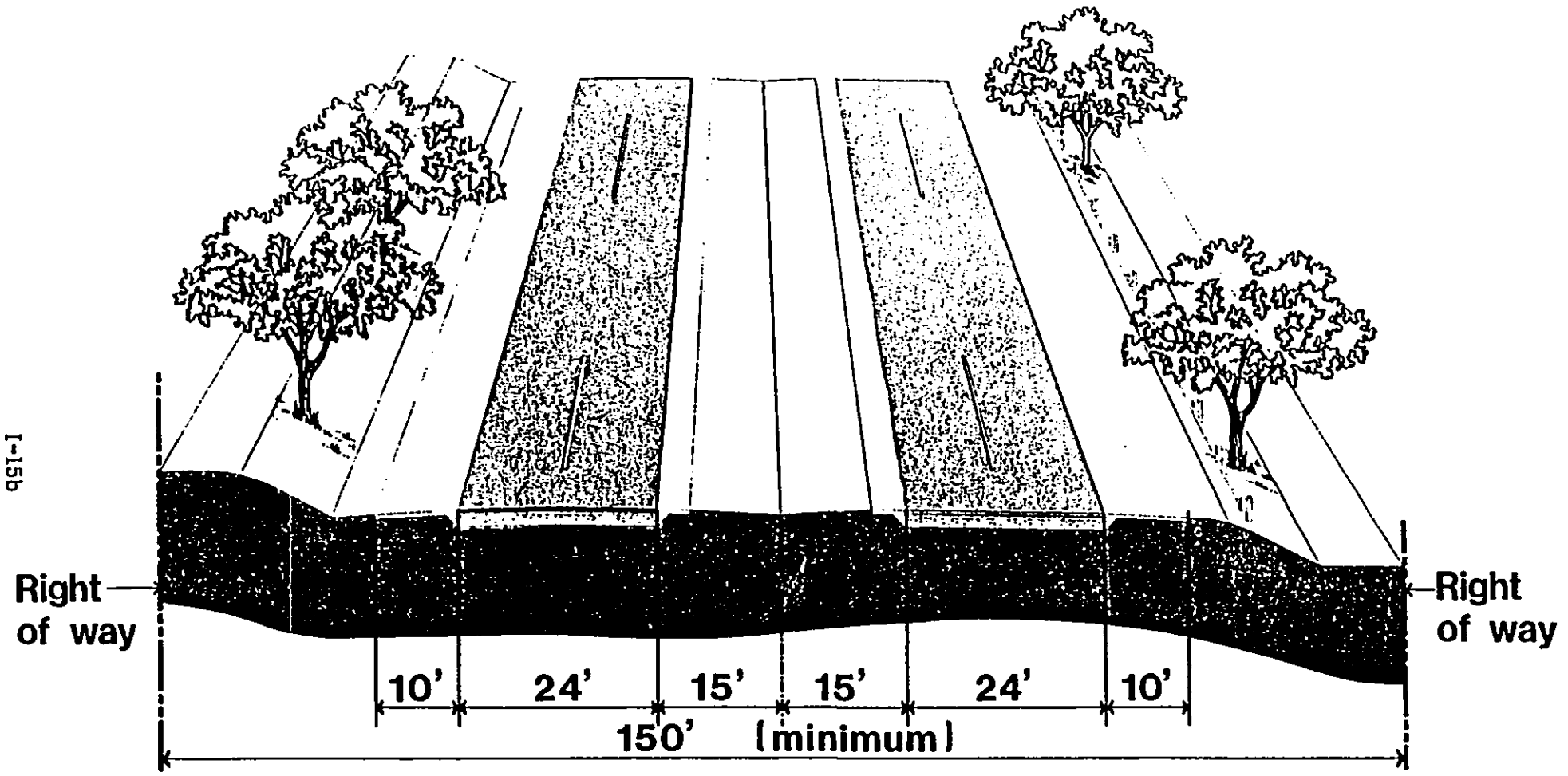
PRELIMINARY TYPICAL SECTION - CUTOFF ROAD

INITIAL PHASE

HANAMAULU - AHUKINI
CUTOFF ROAD
Project No. 51C - 01 - 76

Wilson Okamoto & Associates, Inc.
Engineers, Architects, Planners

Figure 4a



PRELIMINARY TYPICAL SECTION - CUTOFF ROAD

ULTIMATE PHASE

HANAMAULU - AHUKINI CUTOFF ROAD
Project No. 51C - 01 - 76

Wilson Okamoto & Associates, Inc.
Engineers, Architects, Planners

Figure 4b

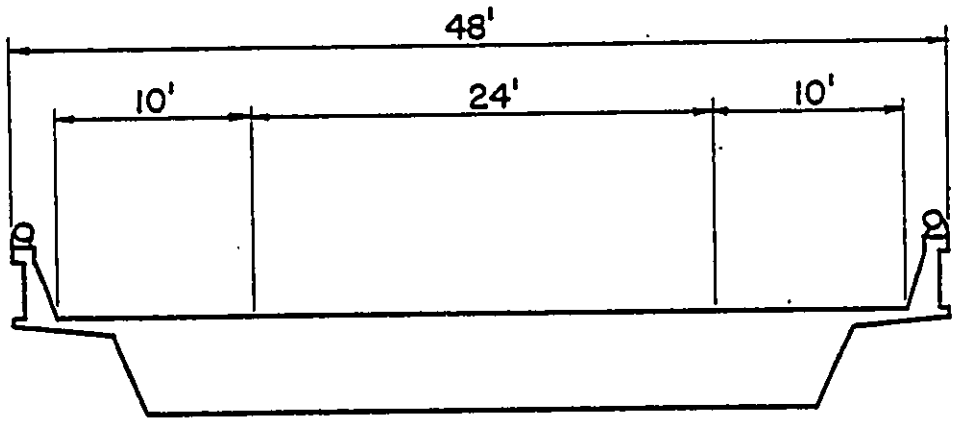
3.3 BRIDGE DESIGN CHARACTERISTICS

The exact construction method for the bridge across Hanamaulu Valley has not yet been determined. In order to retain flexibility at this early point in the design process, a set of general bridge characteristics has been established. Various bridge construction methods which could provide these characteristics have been considered, and a post-tensioned concrete box girder type appears to be the most favorable in this situation.

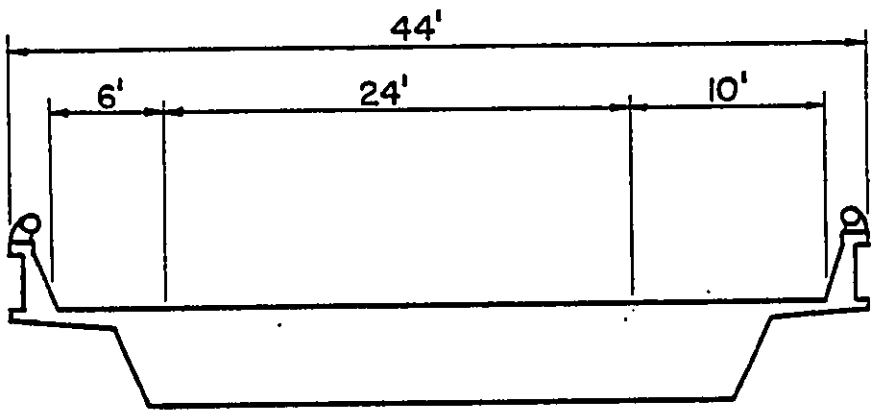
The length, alignment and height of the bridge is a function of its location and its relationship to the overall highway alignment. The proposed site at the narrow end of the valley will require a bridge approximately 1,200 feet long. Since the highway alignment curves at this point (Figure 13), the bridge will be curved with a radius of roughly 2,000 feet. Considering the depth of the valley, and the desire to minimize earthwork, the optimum bridge height would be approximately 65 feet. In order to avoid increasing the potential for flooding in Hanamaulu Valley, no embankments will be used; the bridge will rest on piers for the full extent of the crossing. The proposed bridge site has the aesthetic advantage of not splitting the valley in two, as would occur if the bridge were placed further upstream. This site also has the advantage of favorable soil conditions.

A major bridge design consideration is its visual impact. The best way to minimize this impact is to design a structure that is aesthetically pleasing, as well as structurally sound. The bridge should be a "functional sculpture", with clean, flowing lines. The bridge should have a good span-to-height proportion, in terms of mass and space (as illustrated in Figure 11). The span length should be maximized, since a large number of piers would create the effect of a wall. In order to minimize the number of support piers, span lengths would be approximately 165 to 200 feet.

Bridge cross sections may vary, as shown in Figure 5. The first bridge will be 48 feet wide, with a 24-foot two-lane roadway and 10-foot shoulders. Cyclists will be able to use the shoulder of the bridge for crossing the valley.



INITIAL STRUCTURE



SECOND STRUCTURE

HANAMAULU-AHUKINI CUTOFF

FIGURE 5

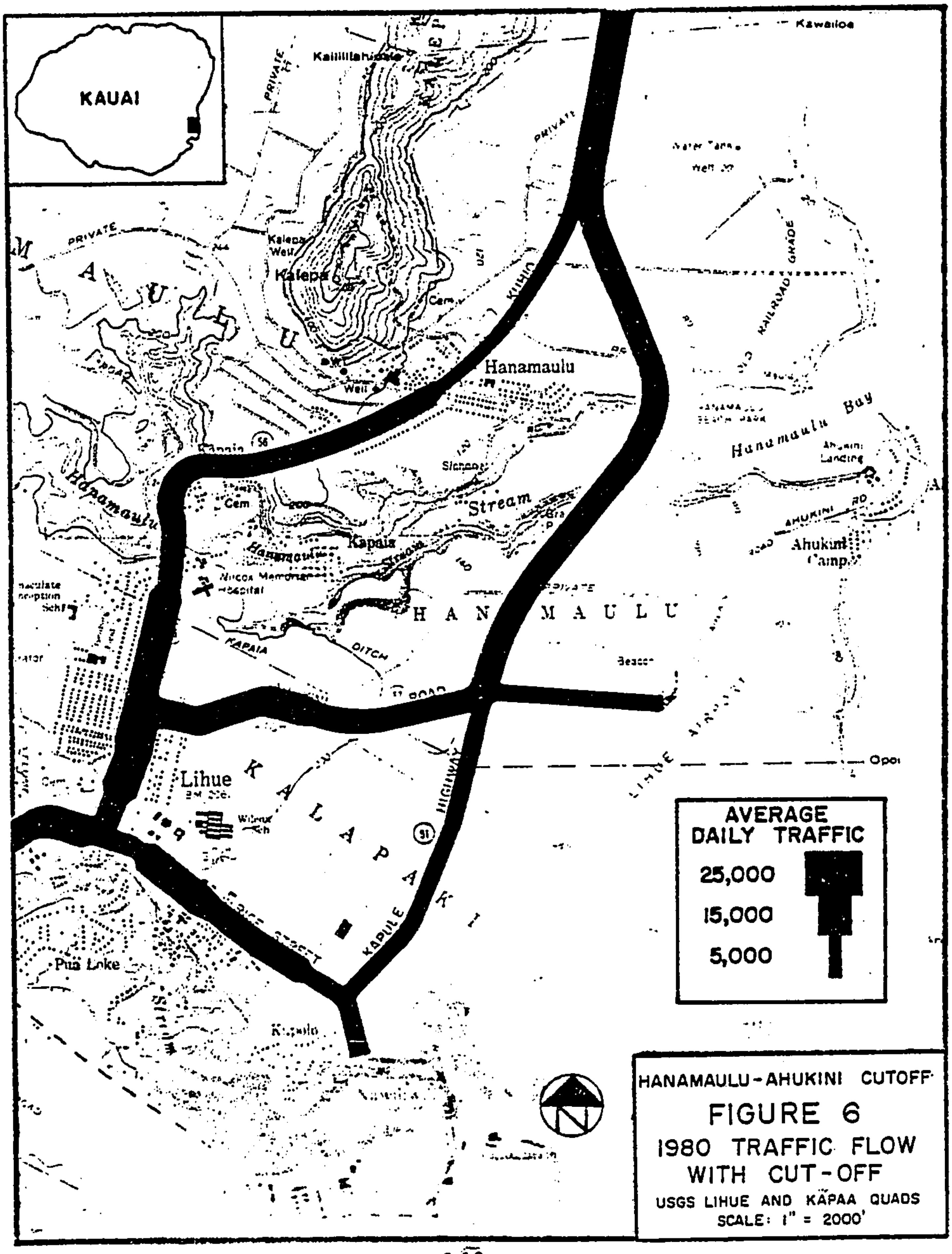
TYPICAL
BRIDGE DESIGNS

SCALE: 1" = 10'

3.4 IMPLEMENTATION OF THE PROPOSED PROJECT

Projected traffic flows for the road network around Lihue with the proposed cutoff road are shown in Figure 6 and in Appendix D. The effect of the proposed highway on the overall road system will be a more balanced traffic flow than is provided under the existing system. However, the degree of impact of the proposed highway on the existing road network will vary depending on the road segment. The segment of Kuhio Highway between Ahukini Road and the Kauai Hardwood Store will benefit most from the proposed road. Traffic projections for this segment of the Kuhio Highway for the year 2000 range from 47% to 65% less than those without the cutoff road. In downtown Lihue, the impact of the cutoff road is less significant, resulting in traffic reductions of 8% to 12%. The existing segment of Kapule Highway and Ahukini Road will experience net increases in traffic loads, between 13% and 72% greater than would occur without the bypass road.

Right-of-way requirements for the proposed Hanamaulu-Ahukini Cutoff Road are 39.5 acres. Acquisition of the property will be obtained from Lihue Plantation.



HANAMAULU-AHUKINI CUTOFF

FIGURE 6

1980 TRAFFIC FLOW WITH CUT-OFF

USGS LIHUE AND KĀPAA QUADS
SCALE: 1" = 2000'

3.5 PROJECT COSTS

The following; details the various cost and benefit elements of the proposed cutoff road:

Project Cost (Approx.)	
Engineering	$ 900,000
Right-of-Way	$ 208,000
4-Lane Highway	$14,670,000
Total Cost	$15,778,000
Benefit/Cost Ratio	
Construction (annual)	$ 951,900
User Benefits	$ 1,772,000
Benefit/Cost	1.86

These costs are for the ultimate 4-lane roadway and bridge; the cost for the initial 2-lane phase would be approximately 8 to 9 million dollars. It is anticipated that the cost of this project will be shared between the Federal Government (70%) and the State of Hawaii (30%).

CHAPTER II
DESCRIPTION OF ENVIRONMENTAL SETTING

CHAPTER II

DESCRIPTION OF THE ENVIRONMENTAL SETTING

1.0 TOPOGRAPHY

The topography of the proposed Hanamaulu-Ahukini Cutoff Road corridor is characterized by a relatively flat upland area, bisected by the steep-sided Hanamaulu Stream Valley. The upland area is part of the Lihue Plain which gradually slopes towards the ocean, terminating in small seacliffs along the coast. The elevation of the upland ranges from 80 to 160 feet within the proposed corridor. The broad floor of the Hanamaulu Valley is the result of sedimentation during submergence of the valley during a period of relatively higher sea level.

2.0 GEOLOGICAL RESOURCES

2.1 GEOLOGY

The underlying geologic structure of the project site is lava of the Koloa Volcanic series. The Koloa lavas were deposited during the Pleistocene Epoch, roughly 1.5 million years after the Waimea Canyon Volcanic Series formed the Island of Kauai (MacDonald, et.al., 1970). Koloa lavas cover half of the eastern portion of Kauai. Outcrops of Koloa lava by the erosional activities of the Hanamaulu Stream consist of very dense basaltic rocks.

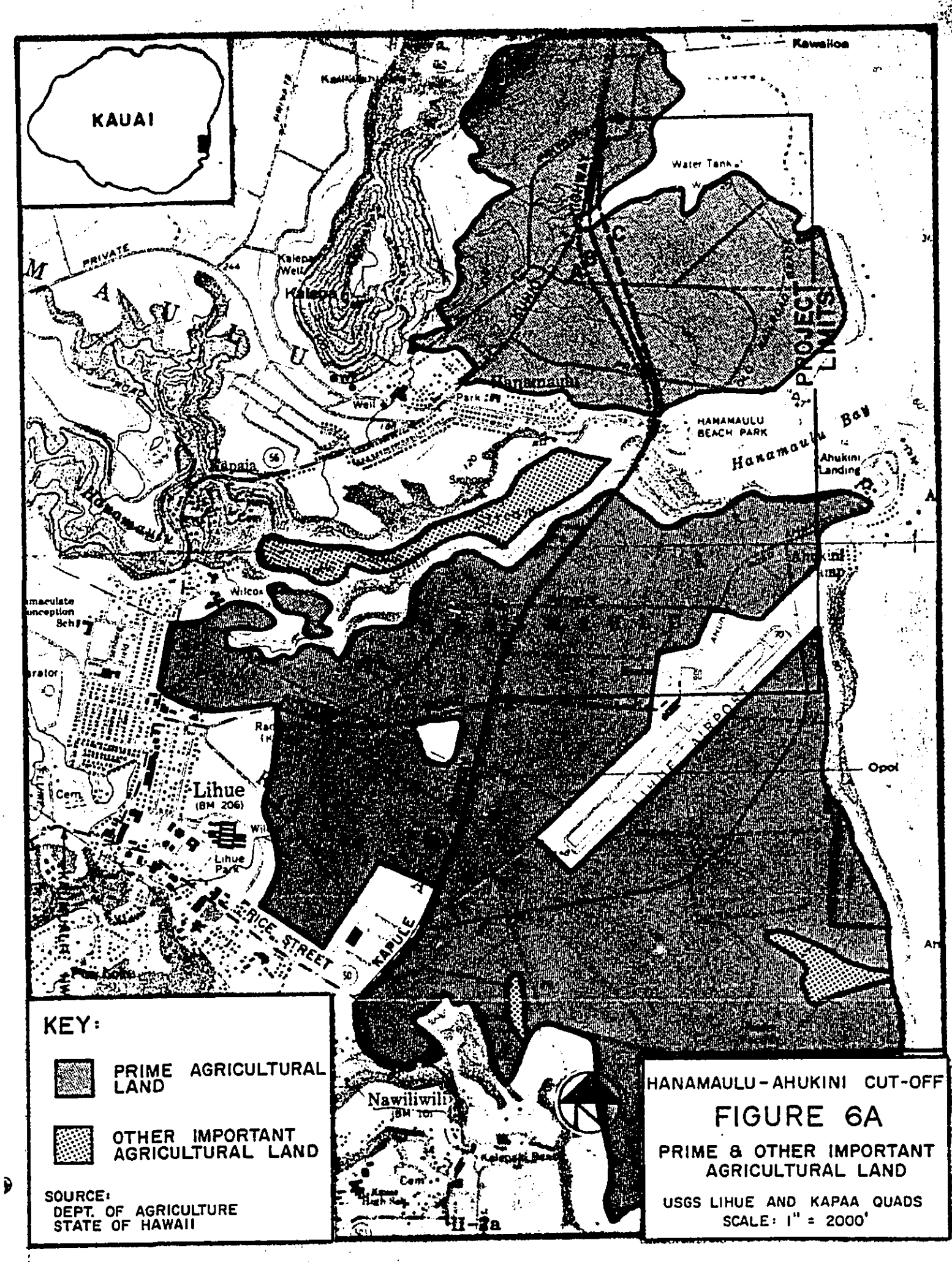
The alluvial sediments underlying Hanamaulu Stream are predominantly saturated, unconsolidated sand, clayey silt, and gravel. The depth of this sediment at the proposed highway crossing ranges from 40 feet near the valley walls to 100 feet in the valley center (Dames & Moore, 1977). Along the southern edge of the valley is a man-made embankment consisting of medium stiff to stiff clayey silt underlain by a sand layer and dense basalt gravel, and a dredged spoil site consisting of sandy and clayey silt and some boulders (Dames & Moore, 1977).

2.2 SOILS

The proposed alignment of the Hanamaulu-Ahukini Cutoff road crosses four soil types. Of these four, the Lihue silty clay, on 0-8% slopes, is the predominant soil type, occuping all of the upland areas. This soil is well-drained and is derived from weathered basic igneous rock. Lihue topsoil averages 12-inches in depth with an underlying subsoil extending to about 60 inches below the surface. This soil type is characterized by moderately rapid permeability , slow runoff, and slight erosion potential. For unprotected cultivated soil, though, the Lihue series has moderate erosion potential (Class IIe). Lihue soil has moderate shrink-swell potential and is rated favorably for road construction and good for road fill (Soil Conservation Service, 1972). However, this soil is also highly rated for topsoil and is excellent (Group I) for sugar cane production. At present, most of the affected area comprised of the Lihue soil type is used for sugar cane production.

The three remaining soil types are confined to the Hanamaulu Valley. The *Mokuleia Clay Loam*, poorly drained variant, occupies most of the valley floor under the proposed crossing. This soil has formed on recent alluvium, is shallow and nearly level, and is limited by a high water table for use as a highway location and cultivation. The Mokuleia Series is rated good for pasture, and is presently used for this purpose. Hanalei Silty Clay also comprises a small portion of the flood plain and is another poorly drained soil limited by a high water table. It has a moderate shrink-swell potential and is slightly erodable. The Hanalei soil is generally rated poor as a topsoil, roadfill, and for highway location. The valley slopes are characterized by rough broken land soils which have rapid runoff and active erosion. These soils range from shallow to deep, are severely limited by erosion (Class VIIe) and are unsuited for cultivation.

The Department of Agriculture of the State of Hawaii, in cooperation with the U.S. Soil Conservation Service and the College of Tropical Agriculture of the University of Hawaii has published a series of maps entitled "Agricultural Lands of Importance to the State of Hawaii". These maps identify areas of prime, unique and other important agricultural lands. The pertinent soil designations from this map series are shown in Figure 6A. Most of the preferred alignment for the Cutoff Road will pass through "prime agricultural land" defined as land which has the soil quality, growing season and moisture supply needed to produce sustained high yields of crops economically when treated and managed according to modern farming methods.



HANAMAULU - AHUKINI CUT-OFF

FIGURE 6A

PRIME & OTHER IMPORTANT AGRICULTURAL LAND

USGS LIHUE AND KAPAA QUADS
SCALE: 1" = 2000'

In addition, a strip of land adjacent to Hanamaulu Stream is classified as "other important agricultural land", which is land other than prime or unique agricultural land that is also of statewide or local importance to agricultural use.

2.3 MINERAL RESOURCES

Evidence of mineral resources in the vicinity of the project site is generally absent. Lihue Plantation, however, does maintain a small gravel pit within the Hanamaulu Stream Valley about .4 miles upstream (west) of the proposed highway crossing. This gravel pit is used by Lihue Plantation to supply material for use in construction of their cane haul roads.

3.0 HYDROLOGICAL RESOURCES

3.1 SURFACE WATER

Precipitation in the project area is approximately 50 inches per year with most rainfall coming during the months of November through April (MacDonald et al, 1960). The primary feature of surface drainage along the proposed road corridor, Hanamaulu Stream, has its headwaters near the Kilohana Crater where rainfall may reach 150 inches per year (Corps of Engineers, 1974). The stream has a drainage area of 8.9 sq. mi. The natural drainage of this area, including the area of the proposed highway, has been substantially modified by the Lihue Plantation irrigation system which crosses the region.

The 100-year frequency peak stream flow at the mouth of Hanamaulu Stream is 22,800 cfs (Wilson, Okamoto and Associates, 1977). The backwater characteristics of the existing stream valley during a 100-year storm is approximately 22 feet M.S.L. (mean sea level) at the site of the proposed highway crossing. The backwater effects during flood periods on the Hanamaulu Stream are primarily the result of the embankment of the old railroad crossing. Despite this, flooding resulting from overtopping of the stream banks within the Hanamaulu Valley has not resulted in major damage to the existing dwelling located there (Corps of Engineers, 1974). Much more significant damage has occurred as a result of sheetflow and rapidly flowing runoff during heavy rainstorms in the project area.

The proposed crossing of the Hanamaulu Valley by the cutoff road is not within the range of a tsunami of a 100-year frequency. This tsunami is calculated to be 12 feet M.S.L. at the shoreline, and would decay one foot for every 100 feet it travels inland (Corps of Engineers, 1978). Therefore, a small area just upstream of the existing railroad bridge (below the proposed bridge) is the farthest extent of the area affected by this tsunami.

3.2 GROUND WATER

Due to the relatively low permeability of the underlying Koloa basalts, ground water resources within the project area are not significant for

development purposes. Although little exploration of the basal groundwater resources within the Koloa basalts has been undertaken, they are estimated to extend about a mile inland (Sunn, Low, Tom & Hara, 1973). However, the water quality studies which have been done indicate that areas closer to the shoreline may contain brackish water (MacDonald, et.al., 1960). Areas further inland (one-half mile or more) may contain reserves of fresh water to depths well below sea level, but the low permeability of the Koloa basalts would limit the productivity of wells (Mac Donald, et.al., 1974). Most usable ground water resources impounded within the Koloa basalts are found in high-level reservoirs further west of the project area, primarily on the eastern slopes of Kilohana Crater (Peat Marwick Mitchell, 1976).

3.3 WATER QUALITY

The existing water quality characteristics of Hanamaulu Bay are presented in Table 2. The level of certain pollutants and nutrients in Hanamaulu Bay presently exceeds that of most other coastal areas of Kauai. The average coliform, phosphorus and nitrogen levels in Hanamaulu Bay all exceed the State Standards for Class A waters (Sunn, Low, Tom & Hara, 1973). Hanamaulu Stream is the major cause of the water quality problem in the bay. The watershed contains a number of point and non-point pollution sources, such as piggeries, cattle grazing, leaking cesspools, sugar cane fields and sugar mill wash water disposal. Although the Lihue Plantation Company has installed a number of desilting ponds, there are points where silt-laden water can enter the stream. The piggeries and other domestic livestock contribute high levels of coliform bacteria and nutrients to the stream. The above-cited study (Sunn, Low, Tom & Hara, 1973) reported mean nitrate-nitrogen concentrations to be higher in Hanamaulu Stream than in any of the other major streams on Kauai (590 ug/L as opposed to 21 ug/L for the Hanalei River). Other parameters, such as suspended solids, are highly variable, depending on runoff and agricultural activities.

TABLE 2
HANAMAULU CUTOFF ROAD
HANAMAULU BAY WATER QUALITY CHARACTERISTICS

Parameter	Unit	Mean	Maximum	Minimum	State Standard
Water Temperature	C	25.08 [1]	28.00	22.00	Δ 1.5
Turbidity	JTU	8.74 [1]	19.00	4.10	Δ 10%
Dissolved Oxygen	mg/l	8.07 [1]	8.90	7.00	5
pH		8.14 [1]	8.26	8.10	7-8.5
Salinity	RPTH	18.17 [1]	22.0	16.0	
Total N	mg/l	.338 [1]	.470	.230	0.15
Total Kjel. N.	mg/l	.202 [1]	.340	.010	
NO_2 & NO_3	mg/l	.133 [1]	.300	.100	
Phosphorus	mg/l	.045 [1]	.064	.031	0.025
Total Coliform	/100 ml	5508.91 [2]	240,000	2.000	1000
Fecal Coliform	/100 ml	137.75 [2]	1300.00	2.000	200

1 Sample period from January 30, 1973 to October 8, 1975.

2 Sample period from January 8, 1973 to September 19, 1977.

Source: State of Hawaii, Department of Health

4.0 BIOLOGICAL RESOURCES

4.1 FLORA

The long period of agricultural activity within the project area and the surrounding region has resulted in extensive modifications of the natural vegetation. The majority of the proposed corridor alignment (approximately 90 percent) is located on the upland area which is presently used for sugarcane production. The cultivation of sugarcane, accompanied by the introduction of exotic fauna and flora species, has resulted in the virtual elimination of natural vegetation of this area.

The Hanamaulu Valley slopes are forested with Java plum (Eugenia cumini), Koa haole (Leucaena leucocephala), mango (Mangifera indica) and banana (Musa spp.) along the north side, and ironwood (Casuarina equisetifolia) and coconut (Cocos nucifera) along the southern slope. For the most part, this vegetation is confined to the sides of the valley, although the ironwood along the south bank extends out along the railroad embankment and spoil dump to the Hanamaulu Stream.

The valley floor (in the vicinity of the proposed highway) consists of several sub-divided pastures predominantly composed of California grass (Brachiaria mutica), with various weedy species, depending on the degree of maintenance and grazing that the pasture has received. The small pasture at the site of the proposed bridge appears to be abandoned, as it is being invaded by shrubs and noxious weeds (e.g. Leucaena leucocephala, Mimosa pudica, Xanthium strumarium). From such evidence as old dikes, channels and a faint "paddy" pattern, it is apparent that portions of the valley floor were once cultivated in taro (or perhaps rice). These dike patterns are in the wide part of the valley above the proposed bridge site. Several of the pastures are poorly drained, and during wet periods, take on a marshy aspect. The banks of Hanamaulu Stream are vegetated with a heavy growth of California grass and a few scattered sedges (primarily Cyperus alternifolius). At the proposed bridge site, the northerly bank supports a very dense thicket of mature hau (Hibiscus tiliaceus) and Java plum. This same vegetation pattern is found at the proposed fill site across the unnamed stream near the Kauai Hardwoods Factory.

4.2 FAUNA

A field survey of the vicinity of the Lihue Airport (conducted for the Airport Master Plan EIS) identified seven mammalian species: black rat, Hawaiian rat, Norway rat , house mouse, feral cat, feral pig and feral goat (Peat, Marwick & Mitchell, 1976). The four rodents and the feral cat are most probable within the predominant sugarcane habitat of the proposed highway corridor.

Also included in the EIS for the Lihue Airport Master Plan is a list of bird species observed within a 5-mile radius of the airport. This list is reproduced here as Table 3, and amended to indicate bird species observed by VTN Pacific at the proposed bridge site in Hanamaulu Valley (indicated with an asterisk). All of these birds can be expected to nest in the project area, with the exception of the pintail duck, the shorebirds (turnstone, sanderling, tattler and plover) and the marine species (tropicbird, shearwater and booby). It should be noted that three of the four endangered Hawaiian waterbirds (Koloa, coot and gallinule) have been sighted at or near the proposed bridge location where the stream is most visible, and the Hawaiian stilt has been reported by residents of the valley (Kridler, 1977). Nesting activity has been reported for all but the stilt. Although the nest locations are not known, the sightings of juveniles have all been made in the vicinity of the gravel quarry where there is less road traffic and disturbance than at the proposed bridge site. The hau thickets along the stream (such as occurs at the proposed bridge location) provide feeding and resting habitat for the Koloa, and the dense streamside grasses are used by coots and gallinules. It may be that the wet pastures above the bridge location are used by nesting stilts, but this has not been confirmed. Hanamaulu Valley has not been included in the bi-annual waterbird count, so there is no data on the number of waterbirds that may be resident. The maximum number observed by VTN at one time were six Koloa and three coots (2/21/78). Formal consultation with the Fish and Wildlife Service has been concluded with regard to these endangered species (Appendix E).

A survey of Hanamaulu Stream was conducted to identify the resident fish, crustaceans, and other aquatic macrofauna. The detailed results of this investigation are reported in Appendix H. There are at least fifteen species of aquatic anumals in Hanamaulu Stream, the majority of which inhabit the brackish lower reaches of the stream. However, seven native species typically found in the freshwater portions of Kauai streams are absent, suggesting serious stream degradation.

The unnamed stream near the Kauai Hardwoods Factory appears to carry only cane field runoff, and is highly turbid; it is highly doubtful that this stream supports any native aquatic macrofauna.

Table 3

BIRD SPECIES FOUND IN THE LIHUE AIRPORT VICINITY

ENDEMIC SPECIES

	Scientific Name	Common Name
	Anas acuta	Pintail
	Anas clypeata	Shoveler
**	Anas platyrhynchos wyv.	** Koloa Duck (e)
	Arenaria interpres	Ruddy Trunstone
	Asio flammeus	Pueo
	Crocethia alba	Sanderling
**	Fulica americana haw.	** Hawaiian Coot (e)
	Gallinula chloropus haw.	Hawaiian Gallinule (e)
	Heterosceulus incanum	Wandering Tattler
	Himantopus mexicanus haw.	Hawaiian Stilt (e)
**	Nycticorax nycticorax	** Black Crowned Heron
	Phaethon lepturus	White Tail Tropicbird
**	Pluvialis dominica	** American Golden Plover
	Puffinus pacificus	Wedge-tailed Shearwater
	Sula sula	Red-footed Booby

(e) Denotes endangered status.

EXOTIC SPECIES

	Scientific Name	Common Name
**	Acridotheres tristis	** Mynah
	Alectoris graeca	Chukar Partridge
**	Bubulcus ibis	** Cattle Egret
**	Carpodacus mexicanus fron.	** House Finch
	Copsychus malabaricus	Shama Thrush

BIRD SPECIES FOUND IN THE LIHUE AIRPORT VICINITY

EXOTIC SPECIES (cont.)

	Scientific Name	Common Name
	Coturnix coturnix	Japanese Quail
	Garrulax canorus	Chinese Thrush
**	Geopelia striata striata	Barred Dove
**	Lonchura punctulata	Ricebird
	Meleagris gallopavo int.	Turkey
	Mimus polyglottos	Mockingbird
	Paroaria coronata	Brazilian Cardinal
	Passer domesticus	House Sparrow
**	Phasianus colchicus	Ring-neck Pheasant
	Cardinalis cardinalis	Cardinal
	Sturnella neglecta	Western Meadowlark
	Tyto alba	Barn Owl

Source: Environmental Communications, Inc., Inventory and Initial Analysis of Environmental Conditions and Concerns--Lihue Airport Master Plan Study (Honolulu, Hawaii: April 1975).

Reproduced from:
Peat, Marwick, Mitchell & Co.,
Environmental Impact Statement
Lihue Airport Master Plan Study.
(Honolulu, Hawaii - July, 1976)

** Species confirmed in Project area by VTN

5.0 NOISE ENVIRONMENT

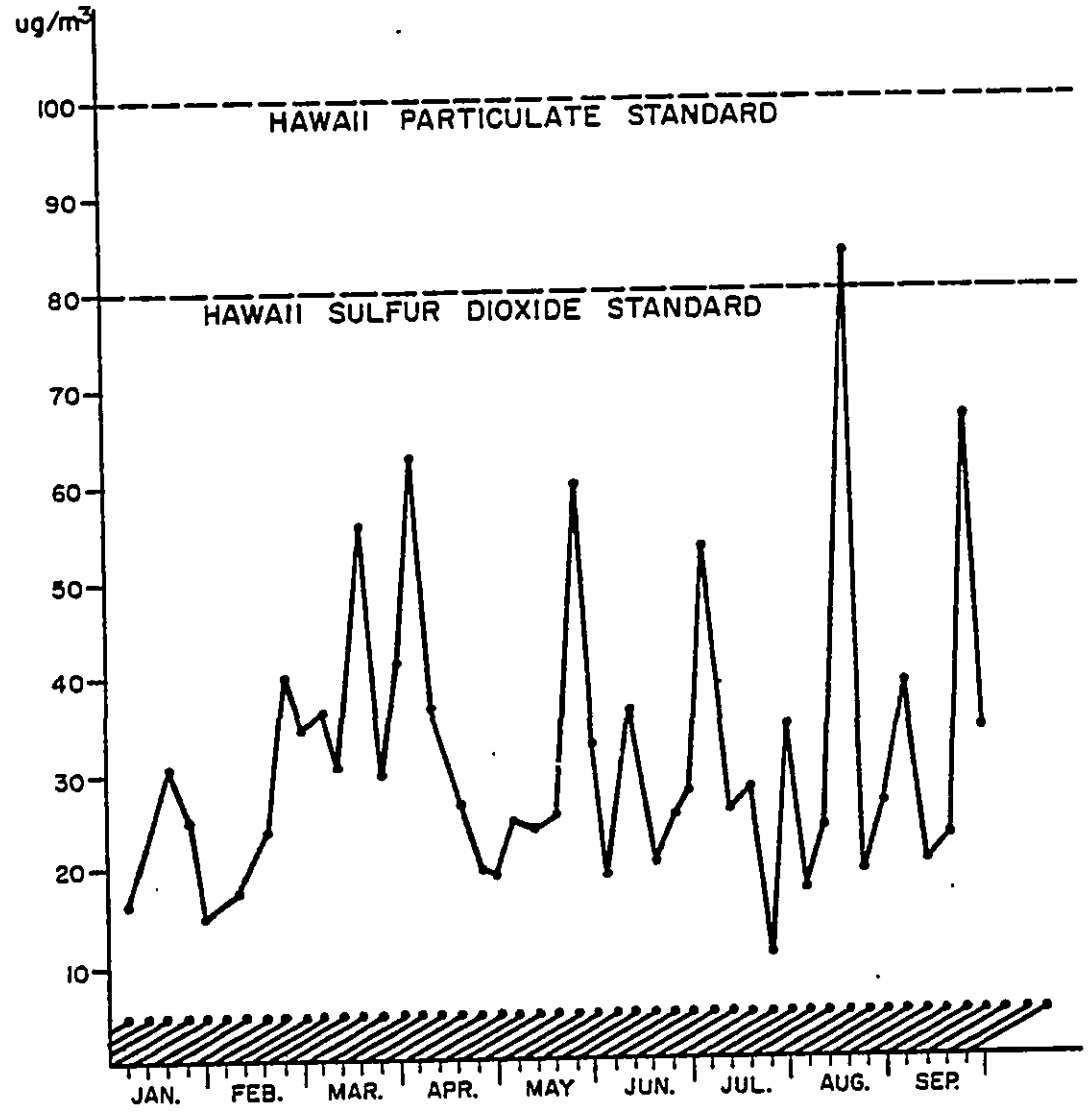
Six sound level measurements were made at five locations in the project area in order to characterize the existing noise environment. These locations were; Kuhio Highway at Wilcox Hospital (late morning and early afternoon), Kuhio Highway at Laukona Road (Hanamaulu), Hanamaulu residential area (two locations on Amo Street) and in Hanamaulu Valley near the proposed bridge site. Each measurement consisted of approximately 180 readings of a sound level meter (General Radio Model 1565 B), taken at 5-second intervals over a 15-minute period. This data is plotted and analysed in Appendix C, which also contains a map showing the noise study locations.

At the present time, the major sources of noise in the project area are traffic on Kuhio Highway and aircraft operations at Lihue Airport. Along Kuhio Highway, vehicular traffic produced peak noise levels (L_{10}, the sound level exceeded by 10% of the readings) of 69 dBA and 72 dBA, at 11 A.M. and 3 P.M. respectively at Wilcox Hospital. A computation of noise level on the basis of peak (5P.M.) traffic volume yielded an L_{10} of 80 dBA, due to a greater traffic volume than was present during the actual noise measurements (see Appendix C). Readings at Laukona Road produced an L_{10} of 75 dBA. Residual noise levels (L_{90}) along the highway were 58 dBA, 62 dBA and 65 dBA, respectively, for the three measurements.

Away from Kuhio Highway, local street traffic, neighborhood activity and aircraft operations are the significant noise sources. In the residential area closest to the proposed highway (approximately 1,000 feet), peak afternoon noise levels (L_{10}) were 64 dBA and 56 dBA at two locations. The difference is attributable to more traffic at the first site, since the residual noise levels (L_{90}) was almost identical at 46 dBA and 45 dBA, respectively. In Hanamaulu Valley, the major noise sources are wind, birds, autos and aircraft. The latter two are infrequent enough to have little effect on the noise environment. Too many of the readings were below the 40 dBA limit of the sound level meter, to allow a statistical analysis.

6.0 AIR QUALITY

Air quality within the Lihue area is generally good with pollutant concentrations remaining below State Standards. Figure 7 presents a graphic portrayal of the relationship between measured levels of pollutant concentrations in the Lihue area and State of Hawaii, Department of Health Standards. As indicated, of sampled pollutants, particulates are the most significant. For the most part, Lihue particulate counts range between 20 and 40 ug/m^3 (approximately $\pm$ 10 ug/m^3 around the annual average of 31.9 ug/m^3). Occasionally, the particulate counts would peak at much higher levels. These peaks are probably due to burning of the sugarcane fields at harvest time, adverse weather conditions, or a combination of the two. Therefore, the values between 20 and 40 ug/m^3 are reflective of the more typical conditions resulting from ground vehicle traffic and Lihue Airport operations. Lihue's concentrations of sulfur dioxide were too low (less than 5 ug/m^3) to be recorded. Although nitrogen dioxide levels were not sampled in 1977, these values had never exceeded the minimum measurable level of 10 ug/m^3 during previous periods (Bauckham, 1978). Carbon Monoxide has not been monitored in the Lihue area.



LIHUE PARTICULATE LEVELS ——————

LIHUE SULFUR DIOXIDE LEVELS
(all samples < 5 ug/m3)

SOURCE: STATE OF HAWAII
DEPARTMENT OF HEALTH

HANAMAULU-AHUKINI CUTOFF

FIGURE 7

EXISTING AMBIENT
AIR QUALITY
CHARACTERISTICS

JANUARY THRU SEPTEMBER 1977
(24 HOUR AVERAGE CONCENTRATIONS)

7.0 SOCIOECONOMIC RESOURCES

7.1 POPULATION

Since 1960, the population of the island of Kauai has been increasing, reversing a downward trend which characterized the island since the 1930's. The increase, gradual at first (annual average of 0.6% between 1960 and 1970), has accelerated to an average annual rate of 1.5% for the period between 1970 and 1976 (DPED, 1977). Accompanying the increase in the number of residents on Kauai has been a gradual redistribution of population within the island. In 1960, 50% of the population of Kauai lived in the southern and western parts of the island (Waimea and Koloa), 22.3% lived around Lihue, and 27.8% lived in the northern districts of Hanalei and Kawuihau (Table 4). By 1976, the proportionate breakdown for these three major areas was 46.6%, 20.7%, and 32.7% respectively. In other words, the North Shore area of Kauai has been gaining population at a rate much faster than the other areas of the island. Between 1970 and 1975 the two districts of northern Kauai accounted for 90% of the island's population growth.

An updated survey of the characteristics of the population of Kauai was provided by the special 1974 census. These characteristics varied considerably between sub-areas in the project area (Table 5). The area around Lihue has a median family income level 33% higher than that for Kauai as a whole. Also, the Lihue area has an above-average proportion of residents native to Kauai. The median age of Lihue residents (28.5) and the ratio of males to females (1.11:1.0) is above average for Kauai. The median household size in Lihue is below that for Kauai.

TABLE 4
POPULATION AND DISTRIBUTION
KAUAI AND DISTRICTS
1960, 1970, 1975

	April 1, 1960	April 1, 1970	July 1, 1975 [1]
Kauai	28,176	29,761	31,800
Waimea	7,057	7,569	7,400
Koloa	7,012	6,851	7,400
Lihue	6,297	6,766	6,600
Kawaihau	6,498	7,393	8,500
Hanalei	1,312	1,182	1,900
Kauai	100.0	100.0	100.0
Waimea	25.0	25.4	23.3
Koloa	24.9	23.1	23.3
Lihue	22.3	22.7	20.7
Kawaihau	23.1	24.8	26.7
Hanalei	4.7	4.0	6.0

[1] Preliminary estimates, later revisions of the data estimated the population of Kauai at 32,700 for July 1, 1975

Source: State of Hawaii, Department of Planning and Economic Development, Data Book, 1977 .

TABLE 5
HANAMAULU CUTOFF ROAD

POPULATION CHARACTERISTICS FOR THE
LIHUE-HANAMAULU AREA 1974

Characteristic	Puhi-Hanamaulu Census Tract 404	Lihue Census Tract 405	County of Kauai
Number of Households	800	990	8,550
Percentage	9.4%	11.6%	100%
Median Household Size	3.75	2.85	3.02
Median Household Income	$10,330	$14,290	$10,750
Median Number of Years Adults in the Community	27.0	32.5	27.7
Percentage of Adults Born on Kauai	43.5	63.9	53.6
Sex:			
Male	55.7	52.8	51.8
Female	44.3	47.2	48.2
Median Age	23.9	28.5	27.1
Adults Living Whole Life on Kauai			
Yes	43.5	63.9	52.8
No	56.5	36.1	47.2

Source: University of Hawaii, Hawaii Agricultural Experiment Station
Kauai Socioeconomic Profile, 1975

The data for the Puhi-Hanamaulu census tract which surrounds the Lihue tract, differs considerable. The median family income for the Puhi-Hanamaulu tract is 30% less than that for Lihue. In addition, less than half of the adult population are native to Kauai, well below the average for both Lihue and Kauai. However, the Puhi-Hanamaulu region has a lower median age, and a larger median household size, indicative of a large number of households with children. The ratio of males to females is the highest for any sub-area of Kauai (1.26:1).

7.2 HOUSING CHARACTERISTICS.

Housing ownership patterns of the Lihue and Puhi-Hanamaulu regions are similar. Of the total number of dwelling units in 1974, 59.5% of the Puhi-Hanamaulu tract and 61.6% of the Lihue tract were owned (fee-simple) as compared to 46.3% for Kauai as a whole. Leasehold ownerships ranged from 6.3% for Puhi-Hanamaulu to 10.1% for Lihue. The Puhi-Hanamaula tract had a much higher proportion of plantation rented housing than the Lihue tract (17.7% to 2.0%) but other rented housing in Lihue exceeded that of the Puhi-Hanamaulu region (26.2% to 16.5%) . Median monthly housing costs, excluding plantation housing, was $68.00 in Puhi-Hanamaulu compared to $118.00 in Lihue (1973 dollars). Postal vacancy surveys in Kapaa and Lihue between February 1967 and February 1976 declined from 3.4% to 0.6% , indicating the tight housing market which exists on the island at present.

7.3 COMMUNITY ATTITUDES

An attitudinal survey of Kauai residents in the summer of 1974 indicated that Lihue area residents were most concerned about the necessity of land for housing and lack of job opportunities as major community problems (University of Hawaii, 1975). Lihue residents listed education, job opportunities, health, law and order and economic growth as the areas in which public policy should be concentrated. In recent public meetings, the need for a cutoff road between Hanamaulu and Lihue as a means of relieving congestion on the existing Kuhio Highway has received much support from the public (Honolulu Advertiser, December 16, 1977; The Garden Island, December 16, 1977).

7.4 EMPLOYMENT

The changing employment characteristics of the County of Kauai reflect the changing economic structure of the area. In 1960, agriculture (31.8%), manufacturing (26.0%) and government (13.7%) industries were the three primary sources of employment in Kauai, together accounting for 71.5% of the non-military, non-self-employed work force. (University of Hawaii, 1975). Since manufacturing employment was predominantly the production of non-durable goods such as sugar and pineapple, these two products accounted for 38% and 14.5% respectively of the total workforce, in 1960. Services (8.5%, trade (12.1%), transportation and utilities (5.1%), construction (12.7%) and finance and real estate (1.1%) made up the remainder of the workforce. The retail and hotel industries accounted for 10.0% and 3.4% of the workforce, respectively.

Between 1960 and 1976, the non-military, non-self-employed workforce on Kauai increased by 30%. Services (19.6%), government (19.5%) and trade (18.8%) industries had become the three major sources of employment of Kauai (County of Kauai, Office of Employment Development, 1977). The hotel and retail industries alone employed 9.4% and 17.2% respectively of the total labor force in 1976. The construction (5.5%), transportation and utilities (9.4%) and finance/real estate (3.1%) industries all experienced substantial increases in relative importance within the neighborhood. Agricultural employment had dropped to 13.2% of the workforce and manufacturing employment to 10.2%. By 1976, employment related to pineapple production was virtually non-existent, while sugar production employment (both agriculture and manufacturing industries) had declined to 21.1% of the total workforce. Self-employed workers maintained a fairly stable proportion of the total civilian workforce 9.0% in 1960 and 9.3% in 1976.

In 1976, unemployment in Kauai averaged 9.8% of the total labor force, its highest level during the 1970's (County of Kauai, Department of Employment Development, 1977). The rate of unemployment fluctuated during the year as a result of the changing size of both the labor force and employment. In 1976, the size of the labor force was highest in June and July (16,900) and lowest in December (16,000). Employment was also highest in August (15,300) and lowest in March (14,500). The month of December had the lowest unemployment rate (8.6%). The seasonal characteristics of employment sources on the island (tourism and agriculture) and their secondary effects on other activities (i.e. retail, services), in part accounts for part of the annual differences. The increased demand for employment during the summer months generated by students, would also contribute to the annual changes in the labor force.

7.5 BUSINESS AND INDUSTRY

The Lihue-Nawiliwili region serves as the political, transportation and service center of the County of Kauai. Most federal, state and county government offices, which include social, planning, and regulatory agencies, are headquartered in Lihue. At the time of the last business census (1972), Lihue had only 30% of all the retail establishments on Kauai, but accounted for 50% of total annual sales and employment (Bureau of Census, 1974b). Both Lihue and Kapaa, a secondary service center 7 miles to the north, account for 55% of all retail and service establishments on Kauai, 18.4% of total revenue for these industries, and 66% of the employment in these industries.

7.6 COMMUNITY INFRASTRUCTURE

Presently most facilities in the project area are centered in the established communities. Lihue and the Nawiliwili Resort Area are the only areas served by a central sewage system. All communities are served by water facilities. Police, fire, health, and educational facilities are centered in Lihue. Hanamaulu has an elementary school. Within the corridor of the proposed Hanamaulu-Ahukini Cutoff Road are a 2-inch water line, telephone line, and several power lines. Portions of Lihue Plantation's private cane haul road network and irrigation system also cross the proposed corridor.

8.0 LAND USE RESOURCES AND PLANS

8.1 EXISTING LAND USES

Land use activities in the Lihue area are predominantly agricultural and undeveloped open space. Together, these two uses comprise 95% of the total land area encompassed by the Lihue Development Plan (Table 6). Urban land use activities comprise the remaining 5% of the area. Of urban activities, residential uses, public uses (including the Lihue Airport and the Lihue Stadium), and urban recreational activities (parks and golf courses), are the major uses of available urban land.

Residential, commercial, and industrial uses are concentrated in the three communities of Nawiliwili, Lihue, and Hanamaulu (Figure 8). Land uses

TABLE 6
HANAMAULU CUTOFF ROAD
EXISTING LAND USE

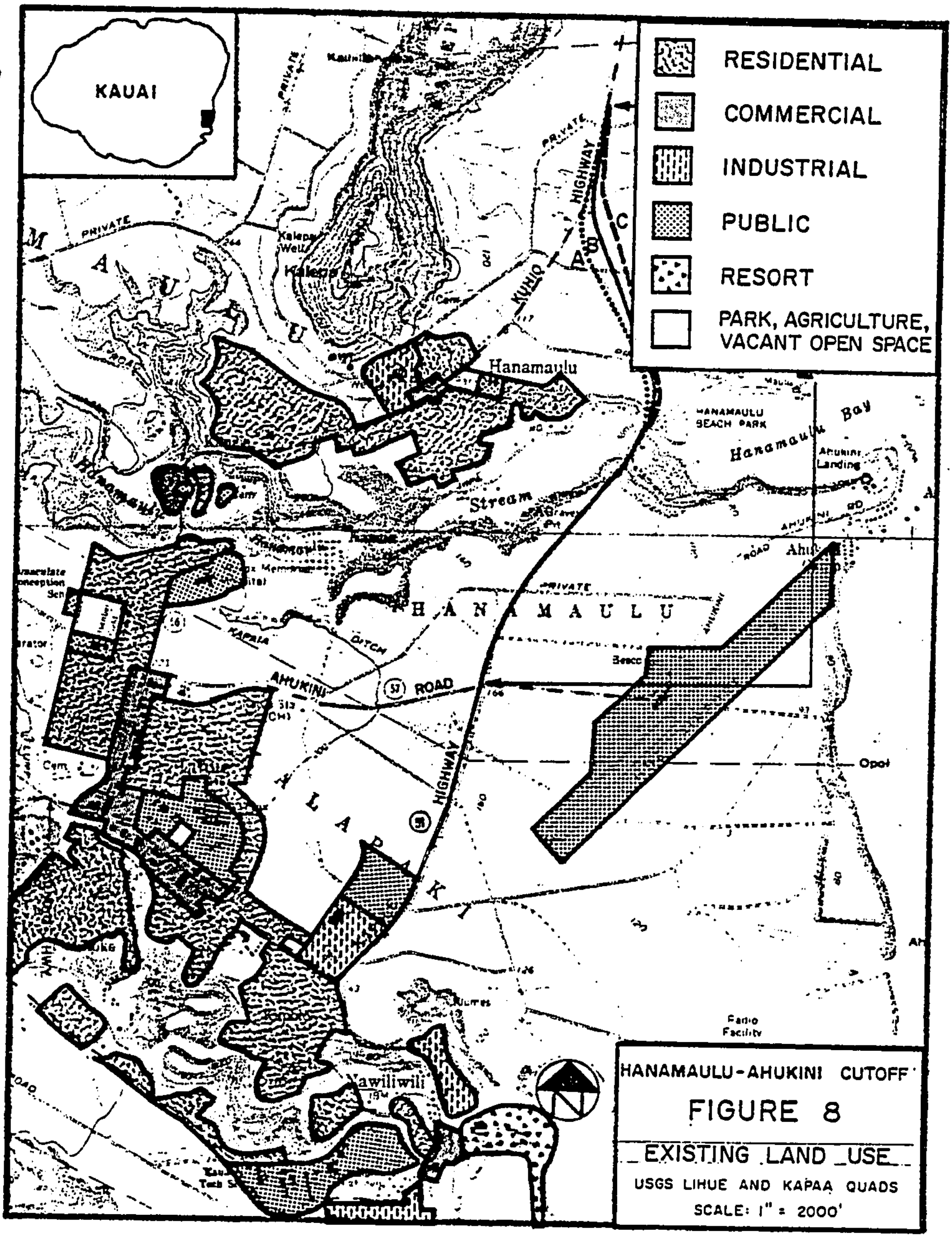
Land Use	Acres	Percent of Total Area	Percent [2] of Urban Area
URBAN:			
Residential	670	1.5%	29.2%
Commercial	90	0.2	3.9
Public [1]	450	1.0	19.6
Parks	450	1.0	19.6
Golf Course	385	0.9	16.8
Resort	46	0.1	2.0
Industrial	200	0.5	8.7
SUB-TOTAL	2,291	5.1%	100.0%
NON-URBAN:			
Agriculture	14,500	32.4%	n/a [3]
Undeveloped Open	28,000	62.5	n/a
SUB-TOTAL	42,500	94.9%	n/a
TOTAL	44,791	100.0%	n/a

[1] Public: includes Lihue Airport, Lihue Stadium, government offices, educational and medical facilities.

[2] Percent of total urban land divided among urban uses.

[3] n/a: Not applicable.

Source: Lihue Development Plan, 1976.



HANAMAULU-AHUKINI CUTOFF

FIGURE 8

EXISTING LAND USE

USGS LIHUE AND KAPAA QUADS

SCALE: 1" = 2000'

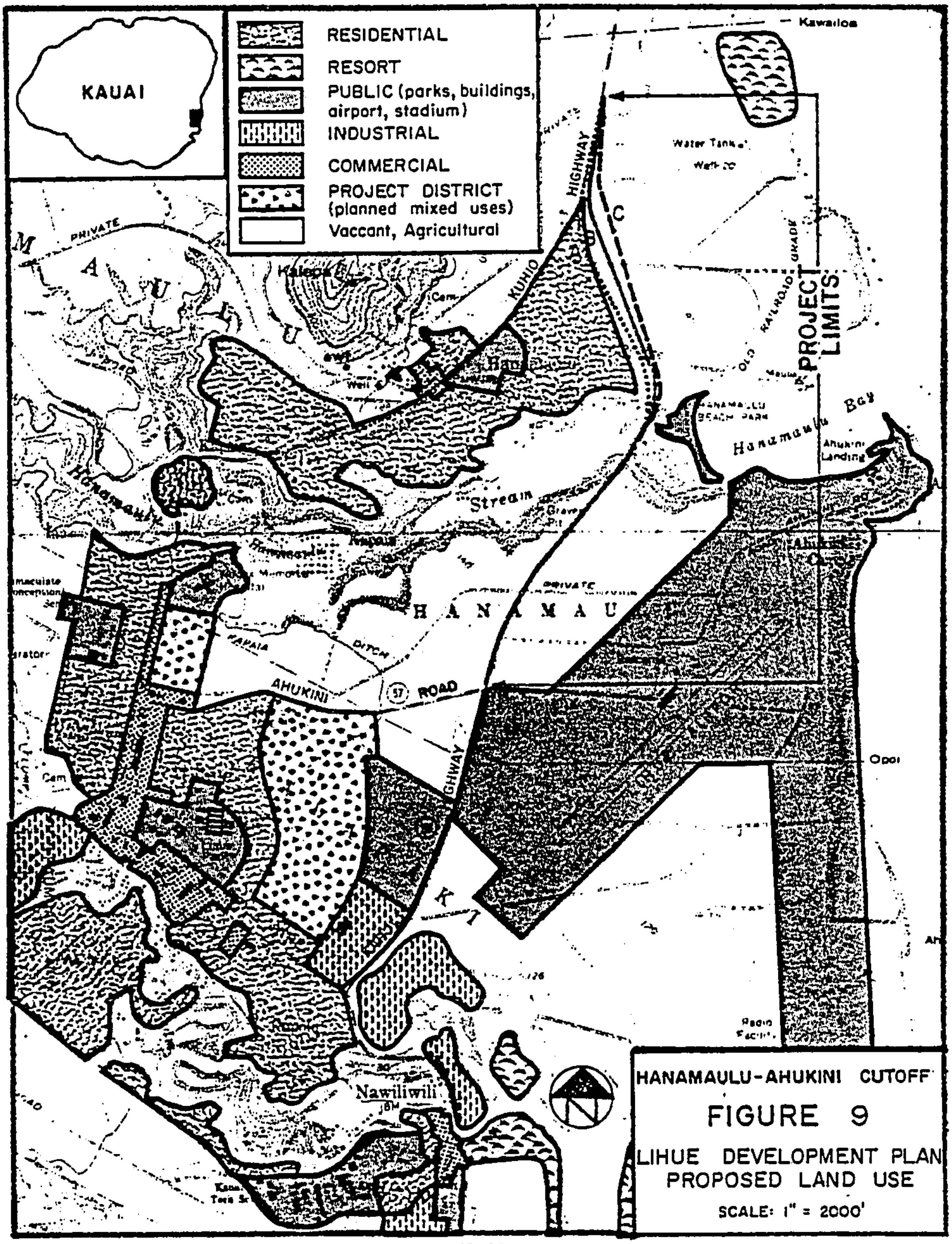
within the proposed corridor of the cutoff road are primarily agricultural or undeveloped open space. Agricultural uses, predominantly sugarcane cultivation, occupy the upland areas of the corridor (approximately 90% of the total), while the sides and floor of the Hanamaulu Valley are either undeveloped open space or pasture (10%). However, within the valley and east of the proposed road are a County beach park and an abandoned railroad bridge and embankment. The valley floor west of the proposed crossing contains scattered residences and wet pasture. Lihue Plantation also maintains a gravel pit in the valley. Two small family burial plots are situated adjacent to the proposed corridor on the north side of the Hanamaulu Valley, one on the uplands and the other within the valley.

The closest residential community to the proposed road corridor is Hanamaulu, which is located on the uplands north of the Hanamaulu Valley and north of the proposed highway. A commercial establishment (a hardwood factory and store) is located within the proposed corridor at its junction with the Kuhio Highway, north of Hanamaulu.

8.2 LAND USE PLANS

The County of Kauai has two planning documents that affect the project area; the Kauai General Plan (March, 1970), supplemented by the more specific Lihue Development Plan (1976). The Lihue Development Plan projected a doubling of the urbanized area of the Lihue area, from 5% to 10% of the total area. The increase in urban area would be compensated by a proportionately equal decline in agricultural and undeveloped land. Figure 9 shows the distribution of planned land use activities relative to the proposed cutoff road.

The Lihue Development Plan projects the largest proportionate increases for residential, public and resort activities. Residential uses were estimated to increase from 670 acres to over 1100 (more than 106%). Public uses, primarily as a result of the expansion of Lihue Airport, are expected to increase by 138%. Resort land uses are predicted to increase from 46 acres to 137 acres, an increase of almost 200%. The substantial increases in urban land use activities will be accompanied by a reduction of both agricultural lands and undeveloped open space. Although the proportionate reduction is small, actual acreage lost to agricultural uses and undeveloped open space may exceed 1000 acres.



KAUAI
RESIDENTIAL
RESORT
PUBLIC (parks, buildings, airport, stadium)
INDUSTRIAL
COMMERCIAL
PROJECT DISTRICT (planned mixed uses)
Vaccant, Agricultural
PROJECT LIMITS
KUHIO HIGHWAY
AHUKINI ROAD
Hanamaulu Bay
Stream
H A N A M A U
Kawailoa
Opoi
Nawiliwili
HANAMAULU-AHUKINI CUTOFF
FIGURE 9
LIHUE DEVELOPMENT PLAN
PROPOSED LAND USE
SCALE: 1" = 2000'

The Hanamaulu-Ahukini Cutoff Road is a basic component of both the Kauai General Plan and the Lihue Development Plan. In the County General Plan, it was stated:

> "In Lihue, the present road system within the urban center is inadequate. It is vital that a bypass road be constructed from Puhi to Hanamaulu to the east of the town.... It is essential that this cutoff road from Rice Street toward Puhi and from Ahukini Road to Hanamaulu be given a high construction priority."

the General Plan continues:

> "The cutoff road will allow all through traffic to bypass the urban center, thus greatly relieving congestion and the requirements for extensive widening and improvements of existing roads...."

The Lihue Development Plan also acknowledged the problem of increasing traffic congestion in and around Lihue, and proposed concentrating on completion of the Lihue Bypass Road to Hanamaulu. Although construction of the bypass was encouraged "as soon as practical", the plan added that it should avoid the existing residential areas of Hanamaulu. The alignment of the Hanamaulu cutoff road is also indicated for a future bike lane in the State's Bike Plan Hawaii Master Plan.

8.3 LAND USE CONTROLS

Land use controls within the project are imposed by both the County of Kauai and the State.. County Zoning for the proposed Hanamaulu-Ahukini Cutoff Road is Agricultural (A) on the uplands and Open (O) within the Hanamaulu Stream Valley. Permitted uses within the Agricultural District Range from crop production, grazing, and farm-related structures to open space recreational activities. The Open (O) District permits land uses similar to that of the Agricultural District, with the exception that manufacturing or warehouse activities associated with agricultural uses are prohibited.

The State of Hawaii exerts control over land use through the Land Use Commission. The Land Use Commission has classified all areas within the State as one of four categories;. Urban, Rural, Agricultural or Conservation. In 1972, the two census tracts comprising the project area had 2,307 acres (4.2%) classified Urban, 2,295 acres (4.1%) Rural, 43,596

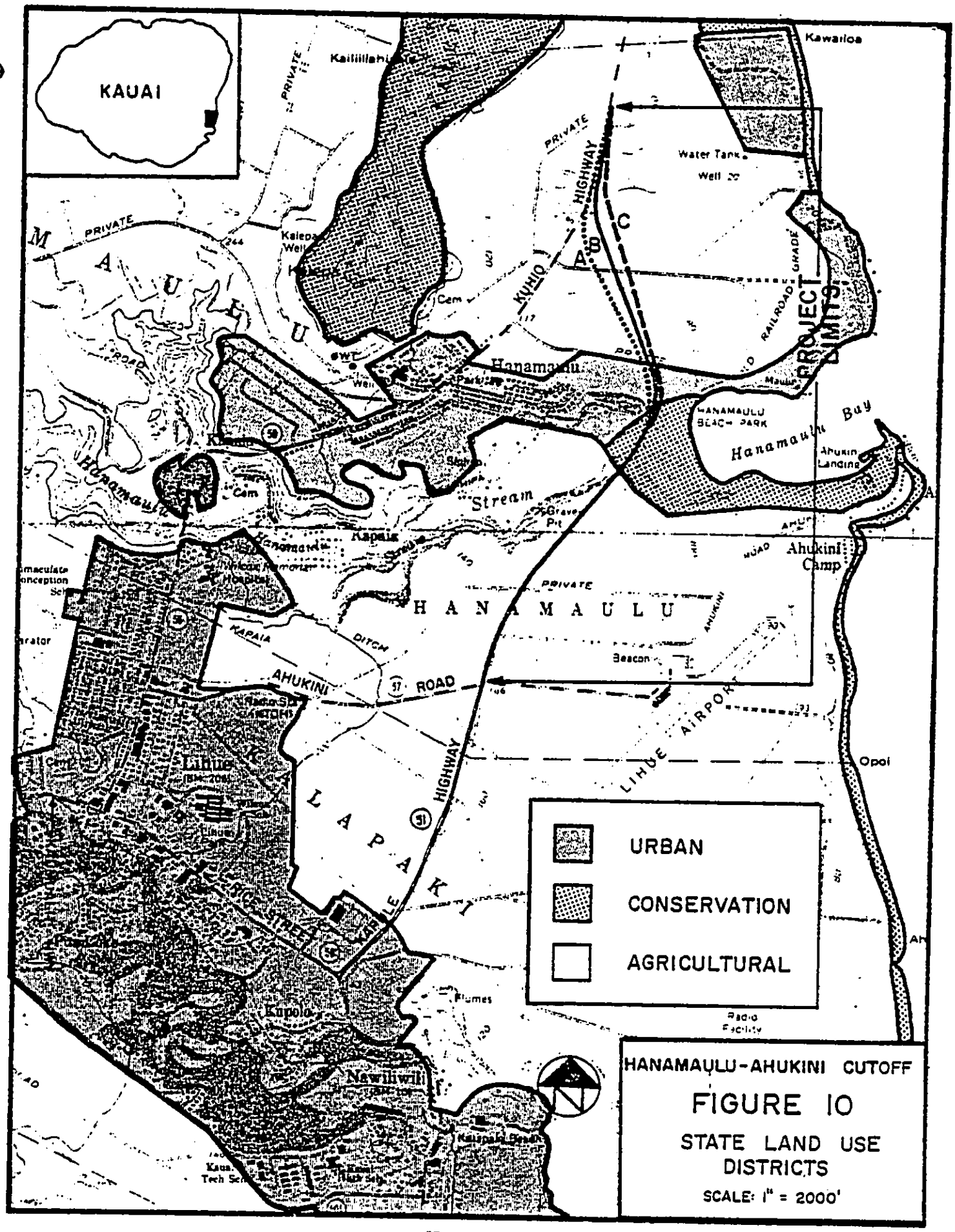
acres (78.6%)Agricultural and 7,240 acres (13.1%) classified Conservation. The distribution of these land use categories relative to the project site is shown on Figure 10. The majority of the proposed highway alignment is classified Agricultural. Portions of the corridor (primarily that within the Hanamaulu Valley and adjacent to the town of Hanamaulu) are either Conservation or Urban.

8.4 LAND TENURE

Land area in Kauai, as in all of Hawaii, is concentrated in relatively few hands. Three land owners control approximately 90% of the land area in the two census tracts comprising the Lihue -Hanamaulu Area. These three land owners are Amfac, Inc. (38% of total), Grove Farm Company (26% of total), and the State of Hawaii (24% of total). The proposed corridor is entirely within land owned by Amfac, Inc.

9.0 AESTHETIC RESOURCES

The aesthetic environment of the project area is dominated by the Lihue-Nawiliwili urban setting and its surrounding rural/agricultural hinterland. The relatively flat upland topography of the project site affords vistas of a generally rural nature against a rugged background of volcanic ridges (Plate 5). Scenic vistas from the existing Kuhio Highway, however, are obstructed by urban structures and ornamental vegetation (Plates 1, 2 and 3), depressed roadways (Plate 4) and sugarcane (Plate 6). Sugar cane obstructs the view of the proposed highway corridor from existing road and residences. Although views into the Hanamaulu Valley are very restricted, the view from Hanamaulu Beach Park upstream towards the site of the proposed highway stream crossing is high in terms of aesthetic quality (Plate 9). The view down stream toward the park has a high aesthetic quality as well.



HANAMAULU-AHUKINI CUTOFF

FIGURE 10

STATE LAND USE DISTRICTS

SCALE: 1" = 2000'

10.0 HISTORICAL / ARCHAEOLOGICAL RESOURCES

In the Lihue region, two places are listed on the National Registry of Historic Places. These sites are the Menehune Fish Pond and Grove Farm Homestead. Both of these sites are well-removed from the project site. The first one being located within the Huleia Valley west of Nawiliwili, and the second south of central Lihue (Lihue Development Plan, 1976). There is one recorded site of archaeological significance within one mile of the proposed corridor. This is site 102, Kalauokamanu Heiau, which was in Hanamaulu, but is now destroyed. There is no indication that the traces of taro paddies in Hanamaulu are of archaeological significance. The abandoned narrow gauge cane haul railroad bridge may potentially be eligible for nomination to the National Registry of Historic Places, since it is believed to be roughly 50 years old, is an example of early concrete construction methods and is linked to the development of the sugar industry on Kauai. However, the State Historic Preservation Officer has verified that the proposed cutoff road will not affect this or any other known historic or archaeological sites (see Appendix E).

CHAPTER III
ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

CHAPTER III

ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT AND MITIGATION MEASURES

1.0 GROWTH INDUCING CHARACTERISTICS OF THE PROPOSED PROJECT

Transportation facilities, by their very nature, are major factors in inducing growth (used here to mean urban development) in a particular area. Improving a major transportation arterial reduces the amount of time it takes to travel from one point to another, thus increasing their accessibility. This also means that a greater distance can be covered by travelers within the same span of time, which expands the overall area that is accessible to a certain node or point of auto-trip attraction (Zimmer 1975; Sinclair 1965; Mayer 1967, Boyce 1963). Transportation improvements both respond to growth by relieving congestion on existing roadways and influence it by making areas more accessible (Clawson, 1971). In the case of the Hanamaulu Cutoff Road, the growth inducing characteristics of the project will occur in the town of Hanamaulu and the communities to the north.

The Hanamaulu Cutoff Road will increase the accessibility of the industrial area around Nawiliwili Harbor and the Lihue Airport to the communities north of the proposed road. This may help to increase the marketability and rate of absorption of existing vacant industrial land within the harbor area as well as encouraging the residential subdivision of land tracts to the north. Since the employment and shopping centers in Nawiliwili, and to a lesser extent Lihue, will become more accessible to a larger area north of Hanamaulu, increased pressures by residents to relocate in this area can be expected. Also, the improved accessibility of the northeastern region of Kauai can increase its potential as a point of destination for tourists. The extent of the growth-inducing characteristics of the proposed highway bypass cannot be quantified, however, because of the effect of other factors which also play a role in the potential for growth on Kauai.

The cutoff road by itself does not guarantee that growth or development will occur in the communities north of Lihue. Government regulations such as the County of Kauai Zoning and General Plan classifications, and the State of Hawaii land use law also are important in determining the specific location of new development. Therefore, the Hanamaulu Cutoff Road is only one of several growth inducing factors that will ultimately determine the location of new development in the northeastern region of Kauai.

As a final note, the potential growth inducing characteristics of the Hanamaulu-Ahukini Cutoff Road can be considered a beneficial secondary impact of the project. It has been pointed out that both the Lihue Development Plan and the County of Kauai General Plan include the cutoff road as a necessary component of their plans for accommodating future development in these areas. Since the pressures for urban development will not change one way or another, failure to construct the bypass road may cause potential development to occur in localities where it is neither planned for nor where services or other facilities are adequate to meet demand. Therefore, since the cutoff road is a tool being used to accomodate the planned growth of the northeastern region of Kauai, its secondary growth-inducing impacts present a beneficial impact.

2.0 SOIL EROSION

2.1 IMPACTS

An analysis of soil erosion potential was conducted for a proposed highway on the North Shore of Kauai ("Draft EIS for the Kauai Belt Road, Kalihiwai to Haena Section" FHWA/Hawaii DOT/VTN Pacific, February 23, 1977), which yielded soil loss data applicable to the proposed project. Using a soil loss rate of approximately 360 tons/acre/year on unprotected cuts and 230 tons/acre/year on unprotected fills, the proposed cutoff road could result in up to 1,015 tons of soil loss per year. By comparison, the existing cane field, with a soil loss rate estimated at 7 tons/acre/year, is losing roughly 300 tons of soil per year on the 44 acres of the proposed alignment.

2.2 MITIGATION MEASURES

Appropriate erosion control measures, planned and contracted as a part of the total job and applied immediately following grading, would significantly reduce soil loss. The State Department of Transportation is obligated to implement erosion control measures as specified in Section 639 of the 1976 State of Hawaii "Standard Specification for Road and Bridge Construction, Temporary Project Water Pollution Control (Soil Erosion)".

During grading and other construction activities, the temporary measures that will be applied include: mulching with bagasse, hay, netting, etc.; installation of temporary berms and slope drains; sediment traps and siltation ponds; seeding with fast growing grasses; and other measures appropriate to the situation. At the end of each working day, the Contractor will shape and berm exposed earthwork in such a manner as to control and direct runoff. Failure to conform to these and other requirements spelled out in the Specifications will be cause for suspension of all operations.

Permanent erosion control will primarily rely on slope plantings. Species that have been recommended by the Soil Conservation Service are dwarf pangola grass (Digitaria decumbens), bermuda grass (Cynodon dactylon), St. Augustine grass (Stenotaphrum secundatum), centipede grass (Eremochloa ophiuroides), metallic plant (Hemigraphis colorata), money wort (Lysimachia nummularia), and lypia (Lippia canescens). Most of the

grasses are presently common in the project area. The area receives approximately 50 inches of rainfall per year, which is adequate for many landscaping plants. However, to insure good establishment, some watering will be necessary, so a permanent sprinkler system will be installed. To provide additional erosion control, long cuts and fills will have slope serrations, drains and terraces where possible.

Special erosion control consideration will be given to the stream crossings. Where possible, berms and sediment traps will be employed. All locations exposed to flowing water will be protected with netting or rock and will be planted with fast-growing stream-bank species (eg. California grass, Brachiaria mutica). Cuts and fills in the vicinity of Hanamaulu Stream and the un-named stream near the Kauai Hardwoods Factory will be given extra protection with mulching or netting and immediate planting. Maintenance, including fertilizing and replanting, will be carried out as needed to insure the efficacy of the erosion control treatments.

Since grading will be done for two lanes (except near the bridge and intersections), the initial area to be graded will be kept to a minimum. Grading for the additional two lanes is not contemplated until the 1990's, when the expected growth of traffic volume on the cutoff road can justify its full development.

If grading is carried out during the period of least intensive rainfall, potential erosion would be further reduced. Only 29% of the erosive rainfall falls between April 1 and November 1. If the majority of the grading is completed and slopes are stabilized during this period, much of the erosion hazard would be avoided. It is planned that the grading will be done in relatively short segments, with construction following close behind. This will keep the area of soil exposed to erosion to a minimum.

Implementation of these erosion control measures would reduce soil loss from exposed cuts and fill by a factor of 100. ("Erosion and Sediment Control Guide for Urbanizing Areas in Hawaii. USDA Soil Conservation Service. January, 1976") Immediate application of straw mulch would reduce total potential soil loss by a factor of 50, or from 230 to 360 tons per acre per year to 4.6 to 7.2 tons per acre per year. (1.3 to 2.1 tons per acre if slopes are stabilized before November 1.) Once grass is well established, soil loss from cuts and fills would be roughly 2.3 to 3.6 tons per acre per year. The estimated average natural soil loss from the present cane field is at least 7 tons per acre (ranging from 5 to 10 tons per acre). Given the relatively small area to be exposed by cuts and fills (approximately 3 acres at the most), it can be concluded that with the proposed erosion control measures, overall soil loss from the project area would not be significant.

3.0 HYDROLOGICAL RESOURCES

The hundred-year flood for Hanamaulu Stream has a discharge of 22,800 cfs. At this discharge the railroad embankment which now exists in the Hanamaulu Stream bed would create a backwater height of 22 feet M.S.L. In consideration of this existing condition, the bridge used for the stream crossing will be designed so as to create negligible additional backwater effect. No bridge piers will be constructed within the normal bed of Hanamaulu Stream.

However, at least one of the construction methods being considered would require the construction of false work (see Table 2). To avoid possible aggravation of the backwater effect during construction, the contractor will be required to provide an ample minimum flow width opening in the falsework. Preliminary evaluations indicate that such provisions are feasible. The criteria to be used will be established during the design of the bridge. The bridge construction will undoubtably require a Department of the Army Permit ("Section 404" permit).

4.0 BIOLOGICAL RESOURCES

4.1 IMPACTS

The only loss of wildlife habitat will occur at the two stream crossings. At Hanamaulu Stream, it is extimated that bridge construction activities will directly impact a 100-foot wide strip across the valley. However, the majority of this area will only be temporarily disturbed during construction of an access road and movement of equipment. Within this strip, the area immediately adjacent to the stream (10 feet on the north side and roughly 200 feet on the south side) is utilized by endangered waterbirds (Plates 7 and 8). The hau thicket on the south side of the stream is a feeding and resting habitat for the Koloa duck, but it is doubtful that any nests would be located in this area. If water birds do nest at this site, it is expected that the bridge construction would interrupt at least one breeding season. After completion of the bridge, it is probable that the birds would return to the general area, since the wetland habitat will not be permanently filled, and the hau thicket will quickly grow back. The more extensive seasonally-wet areas farther up the valley (Plates 11 and 12) would not be disturbed.

At the crossing of the unnamed stream near the Kauai Hardwoods Factory (Alignments B or C), the highway would pass through a thicket of Java plum and hau growing on the slope of the valley and extending down to the stream. However, due to the steep topography of the stream gully, there are no "wetlands". Furthermore, it is highly unlikely that this site is utilized by waterbirds. The only impact, therefore, would be removal of a portion of this forested strip.

4.2 MITIGATION MEASURES

Disturbing the habitat and nesting activity of an endangered species is a significant adverse impact. However, in this case, the bridge alignment and design (piers rather than fill) have been selected to create the least possible disturbance to wetland areas. It is therefore felt that this impact has been reduced to an acceptable level. The different types of bridge construction will differ in the degree of ground disturbance; if falsework and a protective embankment are constructed, the disturbance will be greater than for methods using precast or steel girders. However, the amount of vegetation removal within the construction zone will be essentially the same, and will be mitigated after the bridge is completed by removing all fills (e.g. temporary road and embankment) and creating potholes at least 4 feet deep where water can collect and provide waterbird habitat. Native wetland plants will be planted around the potholes to provide food and cover. The construction procedures will follow the recommendations of the U.S. Fish and Wildlife Service (See below).

This project has followed both the letter and spirit of the Endangered Species Act of 1973 and Executive Order 11990, "Protection of Wetlands" (May 24, 1977). Throughout the planning process, primary consideration has been given to selecting an alignment that would minimize impact on the wetlands in Hanamaulu Valley which provide habitat for several endangered waterbirds. It has been established that there is no practicable alternative to crossing Hanamaulu Valley with the proposed cutoff road. However, the proposed bridge site presents the least possible impact to wetlands. Furthermore, the decision to use no permanent embankments, and the application of mitigating measures such as removing all temporary fills and creating potholes, will minimize harm to wetland areas within the construction corridor. In accordance with section 7 of the Endangered Species Act, formal consultation with the Fish and Wildlife Service has been completed. In a letter dated January 22, 1979 to the Division Administrator of the Federal Highway Administration, the Acting Regional Director of the Fish and Wildlife Service concluded (also see Appendix E):

> It is our biological opinion that the proposed bridge and highway will likely promote the conservation of the Hawaiian coot, duck and gallinule provided the following conditions are met:
>
> 1. Construct Alignment "A";
>
> 2. Construct the bridge on piers as described on Page I-16 of the DEIS. The height should be that stated as the preferred one--about 65 feet above the valley floor;
>
> 3. Remove immediately after construction all temporary fills and embankments needed for construction and create potholes at least 4 feet deep in their stead;
>
> 4. Plant native wetland grasses around these potholes for cover;
>
> 5. Place and construct fills and embankments only where necessary and only during periods of seasonally low stream flow to prevent backwater which might flood nests elsewhere in the valley. Such fills and embankments are to be removed prior to the next nesting season;
>
> 6. Insure that no debris, chemicals (including petrochemicals) and other deleterious materials enter the water; and
>
> 7. Limit construction activities in the valley to the immediate project site.

5.0 NOISE

Noise levels will increase in the project area with or without the proposed cutoff highway, as a result of increasing development and associated traffic. Without the proposed highway, the street noise in front of Wilcox Hospital can be expected to increase from the present peak hour L_{10} of 76.5 dBA to 83 dBA by the year 2000 (Table 7). The same can be expected along the present highway through Hanamaulu Town. These noise levels were calculated for a receptor 75 feet from the edge of the highway. Although the hospital is set back much farther than this, many homes are as close as 30-50 feet from the highway and would be adversely affected by increasing traffic noise.

With the proposed cutoff road diverting traffic from Kuhio Highway, L_{10} noise levels would be reduced to 74.5 dBA at the hospital and 73.5 dBA in Hanamaulu. Traffic noise would eventually increase again, but it would not reach its present level until 1990 or 2000 (Table 7). Peak noise level along the proposed highway is expected to remain around 75 dBA until 2000, when it would drop to 73.5 dBA if two more lanes were added. (The decrease is due to the source being spread out over the divided highway.)

It can be seen on Table 7 that none of the existing or predicted noise levels (with the exception of the proposed alignment at present) fall within the Federal Design Standard of 70 dBA for a highway corridor through a residential area. However, the proposed cutoff road would improve the present undesirable noise environment along Kuhio Highway. If future development is planned along either Kuhio Highway or the cutoff road (assuming it is built), any homes or other sensitive receptors should be placed at least 160 to 200 feet away from the edge of the highway, or be provided with some type of noise barrier.

The only receptors of concern along the cutoff alignment are the Hanamaulu Beach Park and several residences in the valley. The sound environment of the beach park is dominated by surf and wind; the proposed highway is too far away to have any impact above these sources. Depending on the alignment selected, one house in Hanamaulu Valley would be within 50-100 feet from the bridge. The elevation of the highway will preclude any significant vehicular noises from reaching this house; however, bridge noises (primarily from vehicles hitting expansion joints) may be disturbing. The magnitude of these noises cannot be predicted at this stage.

TABLE 7

PREDICTED PEAK TRAFFIC NOISE LEVELS (L_{10} dBA)
WITH AND WITHOUT PROPOSED CUTOFF ROAD

		LOCATION [1]		
		Kuhio Highway		
		Wilcox Hospital [3]	Hanamaulu	Proposed Highway
1977	Without	76.5	77.5	<55 [2]
	With	----	----	---
1980	Without	79.3	78.3	---
	With	74.5	73.5	75.4
1990	Without	81.0	82	---
	With	76.5	75.5	75.3
2000	Without	82.7	83.2	---
	With	78.3	77.5	73.5
FHWA Standard		70	70	70

1. Noise level 75 feet from the edge of roadway, for comparison with Federal Standard.

2. Estimate based on noise readings in Hanamaulu Valley.

3. Noise levels at the nearest opening would be 5 dBA less.

Source: VTN Pacific based on; FHWA/DOT, 1974 Fundamentals and Abatement of Highway Traffic Noise.

6.0 AIR QUALITY

During construction of the proposed cutoff road, dust and exhaust from equipment would be emitted. This would last approximately two years. Dust will be controlled with watering or other appropriate methods.

An analysis of automobile emissions was performed to determine the effect of the cutoff road on ambient air quality; this analysis is presented in Appendix B. Three variables interact to produce the projected air quality impacts; increasing traffic, decreasing vehicular emissions due to Federal controls and a redistribution of traffic in the Lihue area if the cutoff road is constructed. These variables are incorporated in the computation of carbon monoxide concentrations to the year 2000, presented in Table 8.

It can be seen from Table 8 that present traffic congestion on Kuhio Highway in front of the Wilcox Hospital may be resulting in CO concentrations that exceed the State 1-hour and 8-hour Standards. (The values obtained from the EPA screening process described in Appendix B are only order-of-magnitude approximations for "worst case" conditions at a point of congestion and minimum air movement; under normal traffic and trade wind conditions, CO concentrations would be much less.) As a result of emission controls, the CO concentrations will decrease in 1980 and 1990, but by 2000 they will level off due to high traffic volumes on Kuhio Highway without the cutoff road.

With construction of the cutoff, air quality on Kuhio Highway would be significantly improved, bringing the CO concentration below the stringent State Standards in 1990. However, increasing traffic would offset emission controls in 2000. The CO concentration along the cutoff road would be minimal due to free-flowing traffic, as opposed to the congestion of Kuhio Highway. If, as now foreseen, the cutoff road is expanded to four lanes during the 1990's, CO concentrations along the road will drop even further by the year 2000.

Total pollutant burdens (Table 5 in Appendix D) will decrease due to Federal emission controls. However, with the construction of the cutoff road, the total vehicle-miles traveled in the Lihue area will increase by approximately 0.6%. (This is due simply to a redistribution of traffic over a longer total road system, rather than an increase in traffic volume.) With more vehicle-miles, the total pollutant burden would be slightly higher with the cutoff road.

TABLE 8

ESTIMATED MAXIMUM CO CONCENTRATIONS

WITH AND WITHOUT THE PROPOSED CUTOFF ROAD [1]
(Expressed as mg/m^3)

		1977		1980		1990		2000-2		2000-4 [2]	
		1hr.	8hr.	1hr.	8hr.	1hr.	8hr.	1hr.	8hr.	1hr.	8hr.
Wilcox Hospital	Without	17.1	10.3	15.8	9.5	7.9	4.7	8.9	5.3	---	---
	With	--	--	9.2	5.5	5.1	3.1	5.1	3.1	---	---
On Cutoff Road		--	--	5.8	3.5	3.5	2.1	4.2	2.5	3.9	2.3
Federal Standard		40	10								
State Standard		10	5								

Notes:

1 Values include background CO level which is assumed to be no more than lppm ($1.14\ mg/m^3$).

2 Two lanes and four lanes, respectively.

7.0 SOCIOECONOMIC IMPACTS

7.1 IMPACTS

Socioeconomic impacts will occur both during construction of the project and afterwards. Construction related impacts will, for the most part, be short-term. However, after completion of the cutoff road, long-term social and economic impacts will accrue to the community.

The income entering the County of Kauai as a result of road construction will generate short-term beneficial economic impacts. Sources of income to County residents that will occur as a result of the project include local expenditures for materials for use in construction, expenditures by non-resident workers during their stay in Kauai, and income for resident workers. These impacts will take place in the initial construction of the cutoff road and when the expansion to four lanes is undertaken in the 1990's. At this time, details of project expenditures are not known, so these benefits cannot be quantified.

The principal long-term impact on the community is a beneficial one. Motorists using both the cutoff and Kuhio Highway will save time and generally find driving more pleasant due to the reduction of traffic congestion provided by the cutoff road. This benefit will be enjoyed by both residents and visitors to Kauai. The Benefit/Cost ratio of 1.9 indicates that substantial savings will accrue to the users of the highway. Institutions and commercial establishments close to the highway will enjoy greater accessibility as a lower level of traffic will facilitate turns on and off Kuhio Highway.

The amount of productive sugarcane land which will be lost, should the proposed project be implemented, is 35.4 acres. Since 35.4 acres is only 0.2% of the 17,000 acres of Lihue Plantation caneland, the relative importance of the land used for the cutoff road is not great. Labor averages for the Lihue Plantation are 90 man hours/acre/year. The loss of 35.4 acres for the cutoff road represents a reduction of 398/man days/year or approximately 2 workers. The acreage in question produces an average of 193 tons of sugar per year, which is a relatively high yield. At current prices of $260 a ton for sugar and $30 a ton for molasses, the displaced caneland would gross $51,970 per year for the two year growth cycle.

The proposed road will intersect three cane haul roads. This will be mitigated by constructing a workable system coordinated with the Lihue Plantation Company. Also, access to the gravel pit in Hanamaulu Valley will be affected; provisions to mitigate this impact are being studied.

Another permanent monetary loss is the tax revenue generated for the County of Kauai from the assessed value of land in its present use. The acquisition of this property by the State will remove it from the County's tax rolls with an accompanying loss of property tax income. At present tax rates this would result in a tax loss of $616 annually.

Project construction may necessitate the relocation of overhead utilities along the alignment, but this would be a relatively minor impact. Provisions will be incorporated in the design of the road to maintain the flow of irrigation water within Lihue Plantation's system.

In the past, the Lihue Plantation discharged wash water from its sugar mill into the ocean, but this practice has been stopped in compliance with water quality laws. The Plantation now disposes of its mill wash water by over-irrigating the cane fields below Lihue and Hanamaulu. Approximately 600 acres of this caneland will be taken for the proposed expansion of the Lihue Airport, and approximately 35 acres will be used for the proposed cutoff road. The Plantation has contended that the State should take the responsibility for disposing of the wash water displaced by these projects. Solutions that have been suggested include deep well injection, treatment or pumping to other fields; each has problems of cost, technical feasibility and effectiveness. The situation is presently being negotiated between the State and the Plantation; whatever solution is reached will be applied to both the airport and the proposed cutoff road.

The construction of the Hanamaulu-Ahukini Cutoff Road will affect local commercial establishments in both positive and negative ways. In the short-term, expenditures on construction will increase the sales volume of local merchants through sources previously mentioned. However, this beneficial impact is short-term and limited to the construction period.

As the purpose of the project is to reduce the volume of traffic on Kuhio Highway , businesses fronting the highway will be affected. Re-routing through traffic will have a negative effect on the amount of "impulse" purchases by motorists passing on the road. However, the effect may not be very great. An informal windshield survey of businesses along this stretch of highway was conducted in January, 1978 to determine how many businesses may potentially be affected by the cutoff road. The survey identified 10 establishments, most of them concentrated in either Kapaia or Hanamaulu. The shops were classified as to their dependence on the highway for business by type of activity (Table 9). The survey identified two stores, a leather craft shop and a hardwood store, which are closely oriented to a highway-tourist trade. Additionally, two gasoline stations and four restaurants probably depend to a certain extent on the high-

TABLE 9

HANAMAULU-AHUKINI CUTOFF ROAD
BUSINESS TYPES ALONG KUHIO HIGHWAY [1]

Number	Type Of Business	Type Of Market
2	Specialty Shops [2]	Highway, Tourist
2	Gasoline Stations	Highway
4	Restaurants [3]	Highway, Local
3	Automobile Service	Local
3	Foodstuffs [4]	Local
3	Business Services	Local
1	Automobile Sales	Local
1	Real Estate	Local
1	Bowling	Local

1 From the intersection of Kuhio Highway and Ahukini Road to the proposed intersection of the cutoff road and the highway.

2 Kauai Hardwoods, Leather Craft

3 Three sit-down restaurants, one fast-food.

4 Grocery, bakery, and natural foods shop.

way for their sale, although these shops may also attract much of their business from local residents. The remainder of the businesses are oriented to a local resident market rather than to passing motorists on the road. Conversely, a reduction in traffic volume may have a very positive effect on sales to local residents as a lower level of traffic may make it more convenient to turn off the road.

Though the Hanamaulu-Ahukini Cutoff will reduce traffic volume on the affected section of Kuhio Highway, traffic will again begin to increase if present trends in automobile travel continue. Thus over time, the magnitude of the impacts to business that occur as a result of reducing traffic volumes will lessen.

The project will affect different aspects of sales in both positive and negative ways. How it will affect agregate sales cannot be determined at this time. Of special concern regarding the potential adverse effects of the cutoff road is the Kauai Hardwoods Store. Although this shop conducts both wholesale and retail activity, the shop owners have stated that most (99%) of their business comes from sales to tourists off the highway and that, should the originally considered alignments B and C be implemented, most of their business would be lost (Smith, 1978).

The possible economic impact of the highway alignment on the Kauai Hardwood Store weighed heavily in the decision to choose alignment A for the cutoff road. The chosen alignment intersects the existing highway on the Lihue side of the Hardwood Store. thus maintaining traffic flow past the store.

The proposed cutoff road has been designed to bypass existing residential areas to avoid the social and economic problems of relocation. Therefore, for the most part, the highway does not affect residential structures. Along the alignment, the closest structure to the proposed cutoff road is west of the bridge site in the Hanamaulu Valley. The horizontal distance from the highway centerline to the house is 50 feet. A second house is 180 feet from the centerline.

7.2 MITIGATIONS

Many mitigation measures for potential socioeconomic impacts have been incorporated into the design of the alignment. Avoidance of existing residential structures, and the alignment proposed to avoid the impact of by-passing the Hardwood Store are examples.

8.0 LAND USE PLANS AND CONTROLS

8.1 IMPACTS

8.1.1 EXISTING LAND USE

The construction of the proposed project will eliminate 35.4 acres of sugar-cane land. As shown in Figure 7, this acreage is classified as "prime agricultural land" in the map series "Agricultural Lands of Importance to the State of Hawaii", prepared by the State Agriculture Department. In addition, the project will remove approximately one acre of grazing land in the Hanamaulu Valley and 3.1 acres of undeveloped vacant land along the valley's slopes. These uses will be replaced by 39.5 acres, of public facilities (street and highway) use.

A small cemetery adjacent to the proposed corridor may be affected by grading operations during the bridge construction. The cemetery is 50 feet makai of the right-of-way. Should the cemetery be impacted by construction actions, the Land Transportation Facilities Division of the State Department of Transportation will initiate disinter ment procedures with the Department of Health

8.1.2 LAND USE PLANS

Construction of the proposed project will have a beneficial impact on the County of Kauai General Plan and Development Plan for the Lihue area. As noted in the previous chapter, the proposed Hanamaulu-Ahukini Cutoff Road . is an integral part of both of these plans. Therefore, the project can be viewed as in conformance with the County's future development plan. The construction of the road is one step in implementing these plans and providing a tool by which the area's planned growth can be accommodated.

Preservation of prime agricultural land is an important goal of both the Kauai General Plan and the Lihue Development Plan. The benefits stemming from construction of the cutoff road were examined in both plans, and deemed to outweigh the disadvantages of taking this land out of agricultural production for the highway right-of-way.

8.1.3 LAND USE CONTROLS

County of Kauai land use controls which are affected by the proposed project are the constraint districts. The districts of concern are the Slope District (S-SL); the Flood District (S-FL) and Drainage District (S-DR). All three of these districts apply to the Hanamaulu Stream and Valley. The Slope District applies to all slopes exceeding 20% (Hanamaulu Valley walls). Likewise, the Flood District applies to all areas of the Hanamaulu Valley which are affected by the 100-year floodplain. The Drainage District applies to the entire watershed of Hanamaulu where construction activities involving cut and fill grading on slopes greater than 20% must comply with the Department of Public Works regulations for slope design, erosion and siltation control, and revegetation (County of Kauai, 1972). The Flood District has similar restrictions for grading activities within the 100-year flood-plain. The Drainage District is principally concerned with regulating the discharge of pollutants, silt and other materials into the stream channel by construction activities. In implementing the construction of the proposed cutoff road, County approval of contractor grading and erosion controls will be necessary.

8.2 MITIGATIONS

The loss of agricultural land is, in essence, unmitigatible, since it represents a permanent loss of land resources. The problem is even more severe on Kauai where there is a very apparent limit to land resources, especially productive agricultural soils. No mitigations are necessary for the impact of the project on land use plans. However, just as the cutoff road is one part of the overall Development Plan for Lihue, the County should take measures to plan more specifically for future development that may be influenced in this respect. For instance, after completion of the project, the County may consider rezoning for urban use areas that are designated for the purpose in the Lihue Development Plan. Since the project may increase development pressures, removing development restrictions on parcels planned for future urban uses will relieve prime agricultural lands of these pressures.

9.0 AESTHETIC RESOURCES

9.1 IMPACTS

The aesthetic impacts of the proposed project will occur principally in the Hanamaulu Valley and in areas of extensive cut and fill grading. The construction of the proposed bridge across the Hanamaulu Valley will reduce the visual quality of this area both from vantage points within Hanamaulu County Beach Park and from upstream of the crossing, especially from the residential area of Hanamaulu.

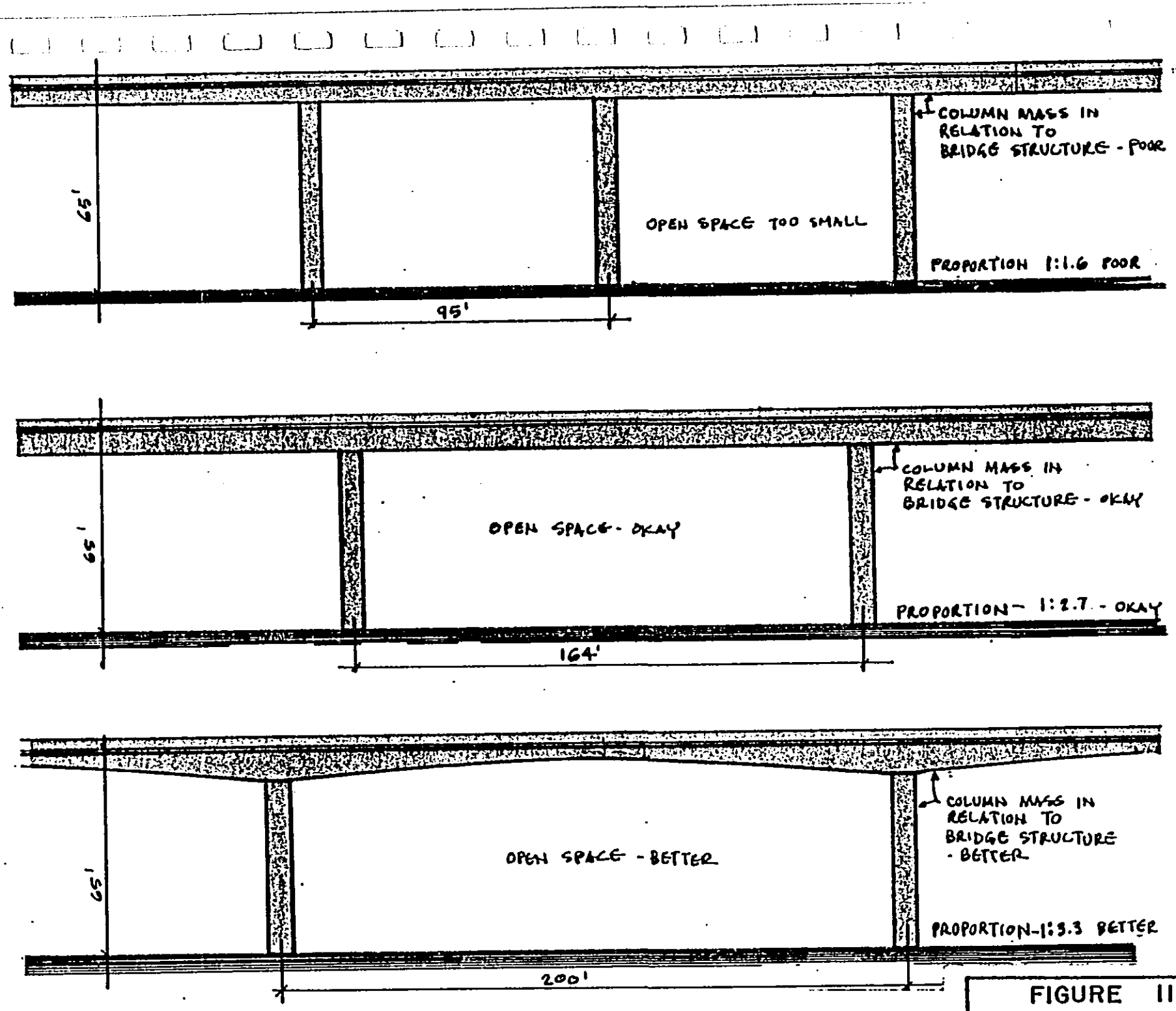
Although the abandoned railroad trestle will remain, the 65 foot height of the proposed bridge will make it visible to people using the County Park (refer to Plate 9). Also, the removal of vegetative cover during construction at the crossing will further reduce the "rustic" scenic character of the site. The extensive cut and fill grading activities will further decrease the visual character of various localities along the proposed alignments by removing the existing vegetative cover and altering the existing physical structure of these areas.

On the positive side, construction of the proposed cutoff road will afford the highway users vistas of high scenic quality overlooking the Hanamaulu Valley and Hanamaulu Bay (Plates 11 and 12). Those vistas do not presently exist for any other road of the existing highway network. Also, the cutoff road on the highland portions of the proposed alignments will not be readily visible from the existing Kuhio Highway since sugarcane along the road acts to obstruct views.

9.2 MITIGATIONS.

The impact of cut and fill activities will be mitigated through revegetating and landscaping cut and fill slopes , which will lessen their visual impact on potential viewers.

No matter what is done, a manmade structure such as a bridge will be an intrusion in the rural valley setting. The visual impact of the bridge can be partially mitigated by selecting a structural system that presents a more appealing appearance to the viewer. An aesthetically designed bridge will reduce its spatial and visual intrusion in the valley. Though the exact construction method for the Hanamaulu Stream Bridge characteristics has not been established, the goal is an aesthetically pleasing and structurally sound bridge. The important characteristics for high aesthetic quality as outlined in Chapter One are: good height to span proportion in terms of mass and space (as illustrated in Figure 11), maximized span length in order to reduce the number of piers and clean structural lines so as to appear smooth and flowing from above and below. For the most part, the design methods being considered can produce the aesthetic characteristics desired. However, a few of these methods would not fully attain the bridge design characteristics in all respects. If spans shorter than 150 feet are constructed, the increased number of piers and reduced space between them would give the effect of a forest of piers or a wall across the valley, with precast concrete girders, it may be difficult to attain the smooth flowing appearance possible with other methods, as the required pier caps tend to disrupt the horizontal lines of the superstructure. Cross bracing, as required in some types of steel bridges, would give the structure a cluttered appearance. In order to retain flexibility, the exact construction method will not be determined until later in the design process. Aesthetics will be of primary consideration when the final construction plans are drawn up.



SOURCE: WILSON OKAMOTO AND ASSOCIATES

FIGURE II
BRIDGE AESTHETIC ANALYSIS
HEIGHT: SPAN RATIO

10.0 HISTORICAL/ARCHAEOLOGICAL RESOURCES

Although a small part of the railroad embankment may be affected by construction of the proposed highway bridge, the remaining embankment and trestle will not be impacted by the cutoff road. This would not limit potential recreational uses of the railroad grade. There are no known historical or archaeological sites along any of the alternate alignments, but, as in any construction project, the possibility exists that buried archaeological artifacts untouched by past activities may be disturbed. It is part of the State's Standard Specifications that in such a case, the contractor must immediately notify appropriate authorities so that the value of the find can be determined and, if necessary, salvage work be carried out. (See letter from the State Historic Preservation Officer, Page E-2.)

CHAPTER IV
ALTERNATIVES TO THE PROPOSED PROJECT

CHAPTER IV

ALTERNATIVES TO THE PROPOSED PROJECT

Several alternatives were viewed to determine their ability to satisfy the existing and projected transportation needs of the Lihue region. These alternatives have been evaluated according to their relationship to existing plans for the region, economic constraints, and human and physical environment limitations. This information is based on preliminary engineering design studies and public input obtained through hearings and other sources. The alternatives considered included alternatives to a cutoff road (no project or widening Kuhio Highway), rejected alignments of the cutoff road and the proposed alternative alignment .

1.0 NO PROJECT

If the No Project alternative (not building the cutoff road) is chosen, Hanamaulu Valley will remain undisturbed, and no agricultural land will be taken out of production. The waterbird habitat will not be impacted and business conditions will not be affected. However, existing congested traffic conditions and poor circulation system will remain, with traffic continuing to back up from Lihue all the way to Hanamaulu during peak periods. Congestion will worsen as traffic loads on the existing highway network increase an average of 88% from 1980 to the year 2000. The presently high accident rate will probably rise with the increasing volume and congestion. The preliminary engineering studies for the proposed cutoff road indicate that peak hour traffic on the Kuhio Highway between Lihue and Hanamaulu varies from 2,265 to 3,610 vehicles in the year 2000 without the project. However, the lane capacity near Kapaia Bridge is only 1,475 vehicles per hour. Allowing the capacity of Kuhio Highway to be thus exceeded will result in adverse impacts such as high accident rates, noise and air pollution, with accompanying social and economic impacts on residents, businesses and institutions along the highway and dependent upon it for access. Permitting existing trends to continue without altering the present road system is not a desirable alternative.

2.0 WIDENING KUHIO HIGHWAY (Alternate Corridor)

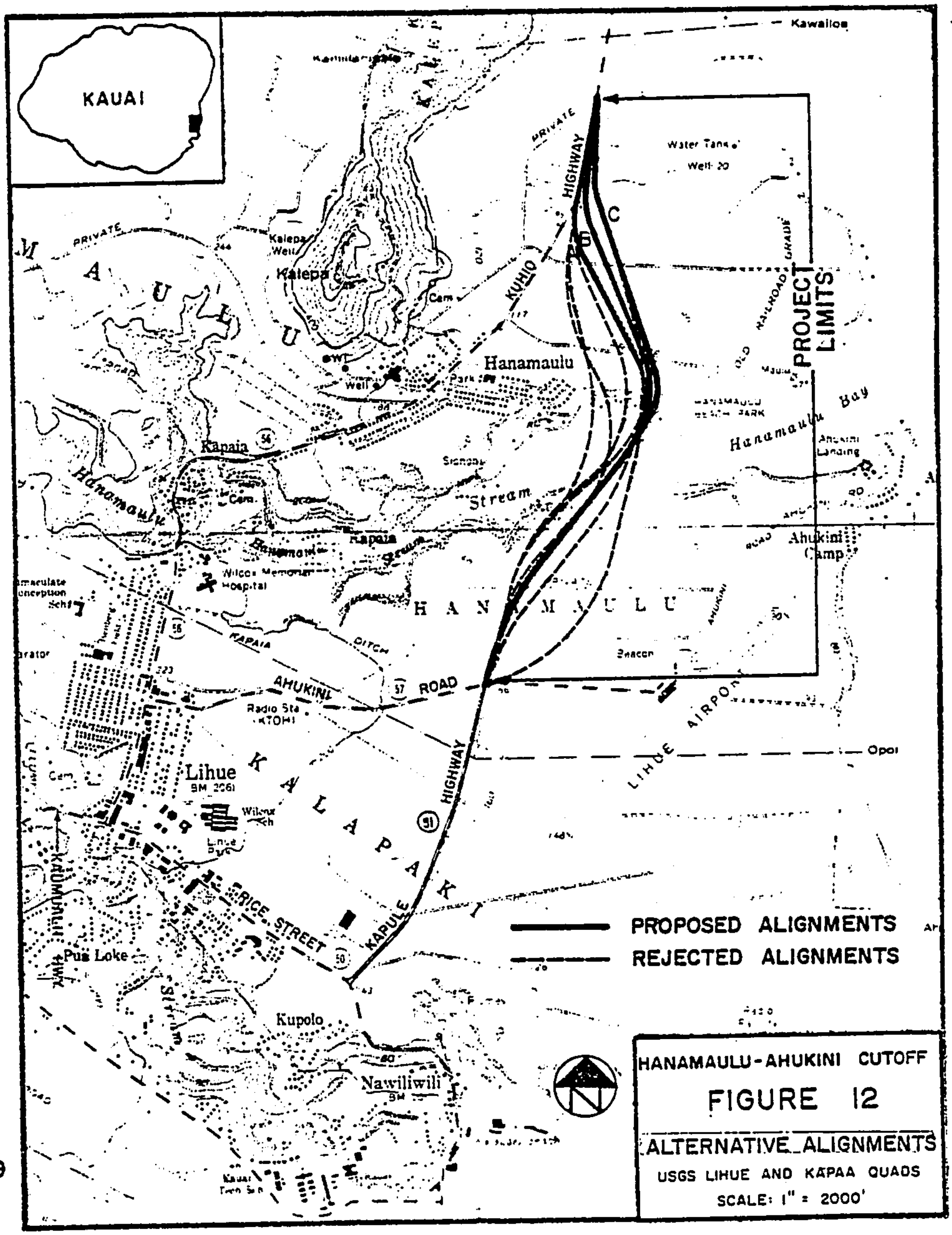
As noted in Chapter I, the capacity of the existing Kuhio Highway will probably be exceeded by 1980. The existing road could conceivably be upgraded to accommodate these flows. However, because of the constrained right-of-way of the existing road, adjacent properties would have to be acquired. The anticipated social costs of widening the road are as follows (Wilson, Okamoto & Associates, 1977):

- Number of private parcels affected	58
- Area of private parcels (acres)	8.8
- Number of business establishments affected.	3
- Number of business establishments anticipated to be displaced.	3
- Number of residences affected	42
- Number of residences anticipated to be displaced.	8
- Other establishments affected	
Lihue Hongwanji	
G. N. Wilcox Memorial	
Hanamaulu Park	
Electric Sub-station	

Cost for construction of the expanded highway would be 12.712 million dollars. This is broken down to $1.1 million for preliminary engineering, $1.136 million for right-of-way acquisition, and $10.476 million for construction. Even with the expansion of the highway to four lanes, the desired level of service D cannot be attained (in terms of operating speed criteria) because of the restrictive alignment. Therefore, considering the high social and economic cost relative to the proposed cutoff road, the expansion of Kuhio Highway is not a feasible alternative to the proposed cutoff road.

3.0 ALIGNMENTS REJECTED EARLY IN THE PLANNING PROCESS

In the first stages of planning, a study corridor was established between Ahukini Road and the approximate Kuhio Highway terminus. The boundaries of the corridor were selected so as to avoid the Hanamaulu Subdivision and Hanamaulu Beach Park. Within this study corridor, six alternate highway alignments were developed (Figure 12), then evaluated with respect to the following major considerations: minimizing bridge and/or embankment length; bridge height limitations; soil conditions in Hanamaulu Valley; endangered waterbird habitat; minimizing noise impacts on the Hanamaulu Subdivision and Beach park; visual impact on the valley; conflicts with cane haul roads, cane irrigation systems and access to the quarry; grade height limitations at the Ahukini Road and Kuhio Highway intersections; and access to the Kauai Hardwood Store. The width of the upper valley, and the poor soil conditions and waterbird habitat found there, led to selecting a crossing site in the lower part of the valley near the existing railroad bridge. This alignment was then refined into three alternatives, which differ primarily in their relationship to the Kauai Hardwood Store.



HANAMAULU-AHUKINI CUTOFF

FIGURE 12

ALTERNATIVE ALIGNMENTS

USGS LIHUE AND KAPAA QUADS

SCALE: 1" = 2000'

4.0 THE ALIGNMENTS CONSIDERED IN DETAIL AND THEIR IMPACTS

The proposed alignment (Alignment A) runs west of the other routes considered and intersect Kuhio Highway on the Hanamaulu (south) side of the Kauai Hardwoods Factory. Alignment B lies between the other two routes and intersects the existing highway just north of the Hardwoods Factory. The third route, Alignment C lies east of the other routes and intersects the existing Kuhio Highway approximately 1,800 feet north of the Hardwoods Factory. Following is a comparison of the major impacts of these alternate alignments:

Alignment: The three alignments differ only because of consideration for access to the Kauai Hardwoods Factory. Alignment A would maintain traffic flow past the Hardwoods Factory. Alignment B would bypass the Factory, but it would remain visible from the main highway. Alignment C would bypass the Hardwoods Factory by the greatest distance, and it would not be visible from the highway. It has been made clear that the economic viability of this business is of great importance to the community, partly because it is one of the few businesses with a policy of hiring the handicapped.

Land Use. The proposed alignment will take 35.4 acres of agricultural land, Alignment B would use 36.7 acres and Alignment C would use 39.5 acres. The Lihue Development Plan indicates that the Cutoff Road will be the Eastern boundary of residential expansion from Hanamaulu (Figure 9). The alignment of the highway will therefore affect the amount of caneland that is ultimately converted. Alignment A would allow approximately 70 acres for future residential development, while Alignments B and C would allow 90 and 101 acres, respectively.

Excavation. The Kauai Hardwoods Factory is situated in a small valley with a bluff between the store and the proposed cutoff road. This topography results in significant differences in the amount of excavation required for the three alternates. Alignments A and B, which are closest to the store, require relatively deep cuts in order to meet the existing grade of Kuhio Highway. These alignments would require total excavations of 335,700 cubic yards (cy) and 354,800 cy, respectively. However, Alignment C avoids the steep part of the bluff behind the Hardwoods Factory, and can meet the grade of Kuhio Highway with only 240,000 cy of excavation, all of which can be balanced with fills.

Engineering Considerations. All three alignments will provide for a safe and efficient highway. However, because Alignments B and C are straighter and have longer sight distances that Alignment A, they would allow for higher design speeds.

Wetlands and Endangered Species. Hanamaulu Valley has permanent and seasonal wet areas that are utilized by several species of endangered waterbirds. This factor has been taken into consideration in locating the valley crossing at the narrowest point, rather than farther upstream, where more wetland would be affected. Alignments A, B and C have the same effect of disturbing approximately 1/2 acre of wetland during construction. This is the least possible acreage of disturbance. The second stream in the project area is a minor (though probably perennial) unnamed stream that carries canefield runoff near the Kauai Hardwoods Factory. Alignments B and C would require new crossings on fill, while Alignment A would utilize the existing culvert locations (with some improvement) under Kuhio Highway.

Floodplains. Crossing Hanamaulu Valley will unavoidably involve construction in a flood plain. All three alignments cross at essentially the same point. The bridge will be designed so as to cause no increase in the level of floodwaters. As noted above, Alignments B and C would involve new crossings of the unnamed stream near the Kauai Hardwoods Factory, while Alignment A would not.

Cost. The preferred alignment will have a total cost of $15,778,000, which compares with a cost of $15,915,000 for Alignment B and $15,373,000 for Alignment C.

CHAPTER V
UNAVOIDABLE ADVERSE IMPACTS

CHAPTER V

UNAVOIDABLE ADVERSE IMPACTS

The following is a list of adverse impacts resulting from the proposed project which cannot be mitigated:

1. The project will involve an irretrievable loss of 35.4 acres of prime agricultural land

2. The project will result in permanent alteration of the physical structure of the land due to cut and fill grading activities.

3. The project will decrease the scenic quality of vistas from the Hanamaulu Beach Park and the Hanamaulu Valley upstream of the proposed highway crossing.

4. The project will temporarily remove or degrade a strip of endangered waterbird habitat across Hanamaulu Stream at the proposed bridge site. Although this area is presently used by waterbirds, there is better nesting habitat further upstream, where vehicular activity is less.

CHAPTER VI
SHORT TERM USES VS LONG-TERM PRODUCTIVITY

CHAPTER VI

RELATIONSHIP BETWEEN SHORT-TERM USES OF MANS ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY

The "productivity" of the Lihue region is a combination of two principal activities: urban and agricultural. Measures of the urban productivity of Lihue include the role of the area as the transportation and governmental hub of Kauai County, the development of manufacturing, commercial and service industries, and the provision of housing and public facilities to accommodate the people who work there. In addition, the continuing importance of the sugarcane industry is a second measure of productivity. The location of highly productive agricultural soils in the Lihue region make it well suited for agricultural activities. Therefore, the maintenance and growth of urban and agricultural activities in this region is of primary importance in evaluating the areas productivity. However, these two activities also conflict with one another in terms of needs and objectives.

The adverse environmental effects of project construction, such as noise, dust, and air pollution from construction activities, represent short-term uses of man's environment. However, the project will also result in a permanent loss of productive agricultural soils. Offsetting this impact are the long-term benefits that will accrue from the efficient movement of goods and people through the Lihue region. This will promote the growth and development of urban activities in and around Lihue. Although the construction of the cutoff road is,in essence, a conflict between urban and agricultural activities, its "productivity" is the fact that it is part of the goals of the Lihue Development Plan. Since this plan outlines the desired course of development for Lihue, including the accomodation of both urban and agricultural uses and activities, the cutoff road is a tool for implementing the long-term planned growth of the region.

CHAPTER VII
COMMITMENTS OF RESOURCES

CHAPTER VII

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project represents an irreversible and irretrievable commitment of materials, labor, energy and land. A total of 35.4 acres of sugarcane land will be used. This represents an irretrievable loss of productive agricultural land in general, and for sugarcane production in particular. The loss of this land for agricultural uses would also result in a loss of income from sugarcane production and the possible loss of employment opportunities due to decreased production.

The commitment of construction materials to build the proposed project represents an irretrievable loss of this material for similar uses elsewhere. Also, the use of labor and fossil fuel energy (for operating) during project construction is an irretrievable loss of these resources.

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Consultants to the State of Hawaii, Department of Transportation:
Engineering - Wilson, Okamoto and Associates
Social, Economic and Environmental - VTN Pacific (Authors of this EIS)

PLATES

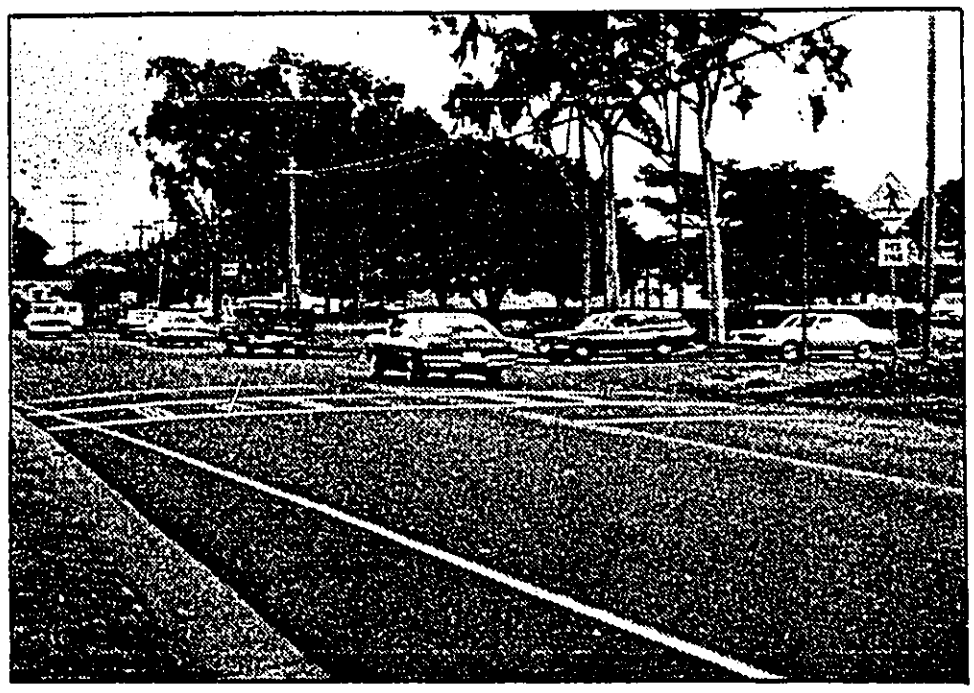

Plate 1 View Northbound along Kuhio Highway at Wilcox Memorial Hospital at approximately 10:30 A.M. Note heavy highway traffic and vehicles attempting to exit from hospital.

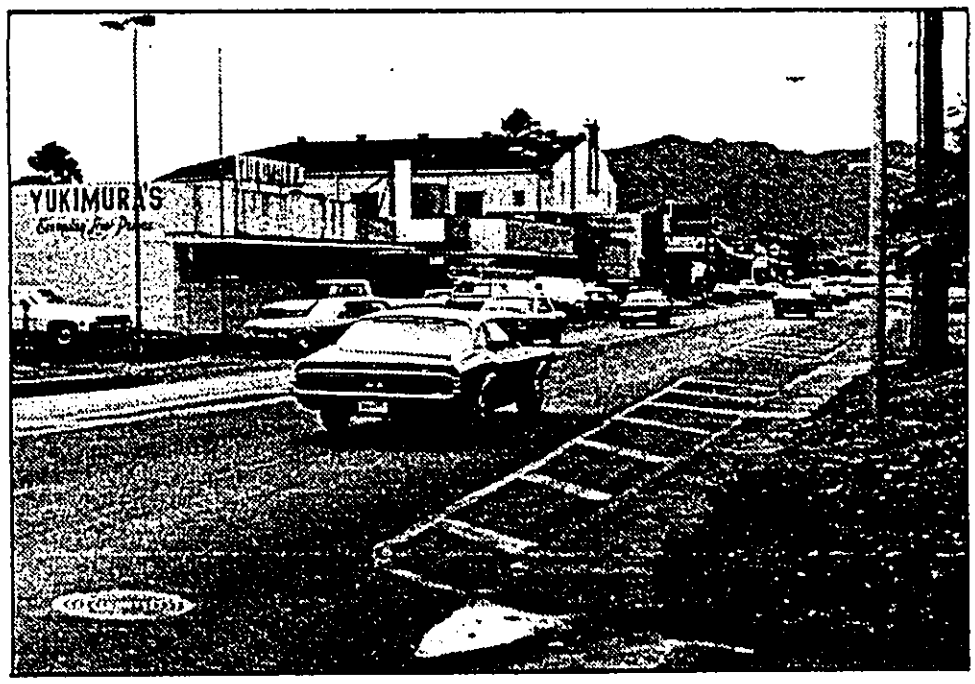

Plate 2 View Southbound along Kuhio Highway from the Ahukini Road intersection towards the central business area of Lihue. Note heavy off-peak hour traffic (approx. 10:30 A.M.) on highway and also the parking situation which forces vehicles to back up onto the main highway.

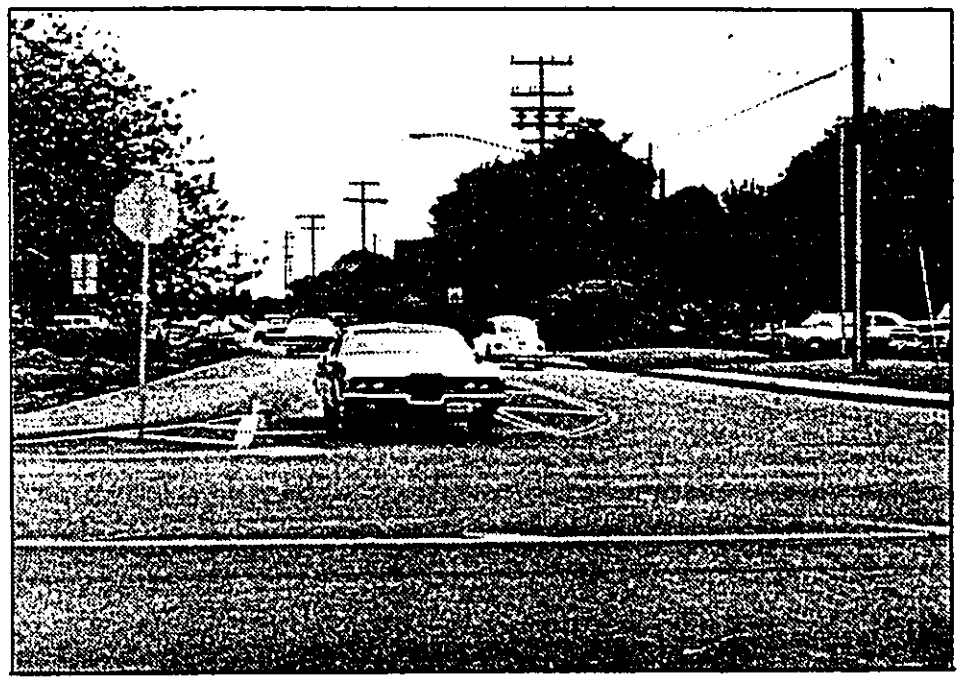

Plate 3 View from Ahukini Road and Kuhio Highway intersection west towards the airport. Traffic beginning to back up on the Ahukini Road to turn left onto Kuhio Highway towards central Lihue.

Plate 4 View of Kuhio Highway from Kauai Hardwood Store looking towards Lihue. Note that the road at the proposed intersection with alignment A is depressed.

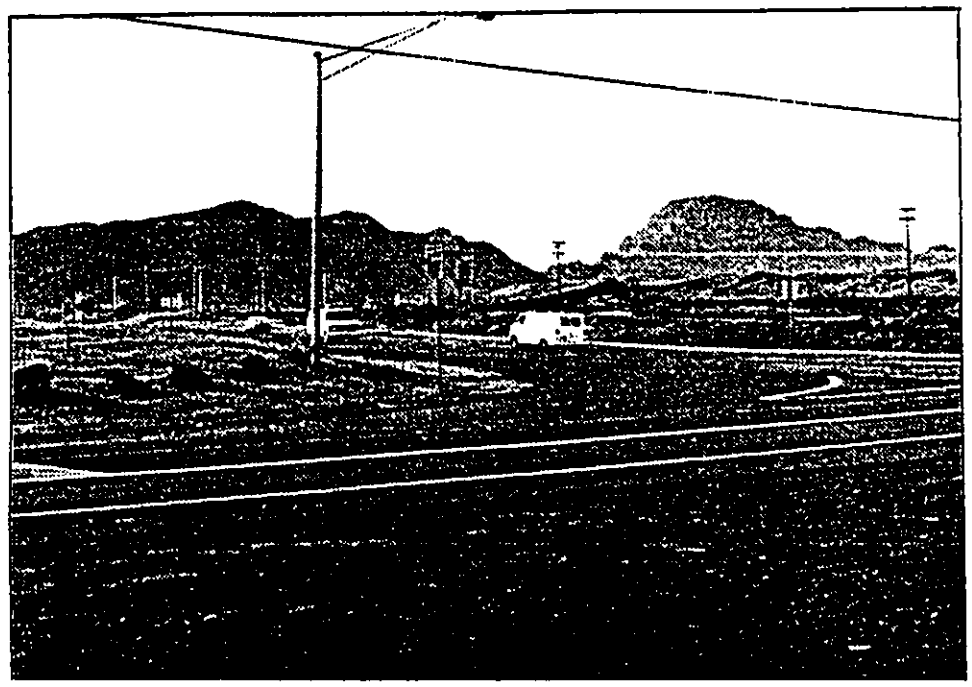

Plate 5 View of the intersection of Ahukini Road and Kapule Highway, looking towards Nawiliwili. The Southern end of the proposed cutoff road will begin here.

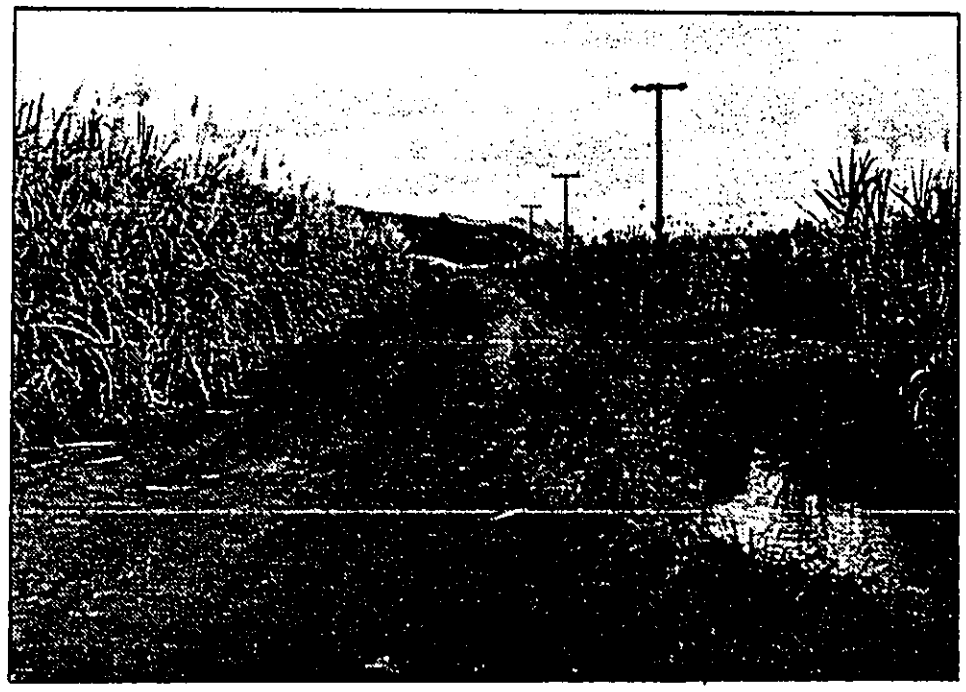

Plate 6 View of canefield access road along the proposed cutoff road alignment. Note the overhead utilities and irrigation ditch adjacent to the road.

Plate 7 View upstream of the Hanamaulu Valley from the railroad bridge. The proposed highway bridge will cross on the foreground.

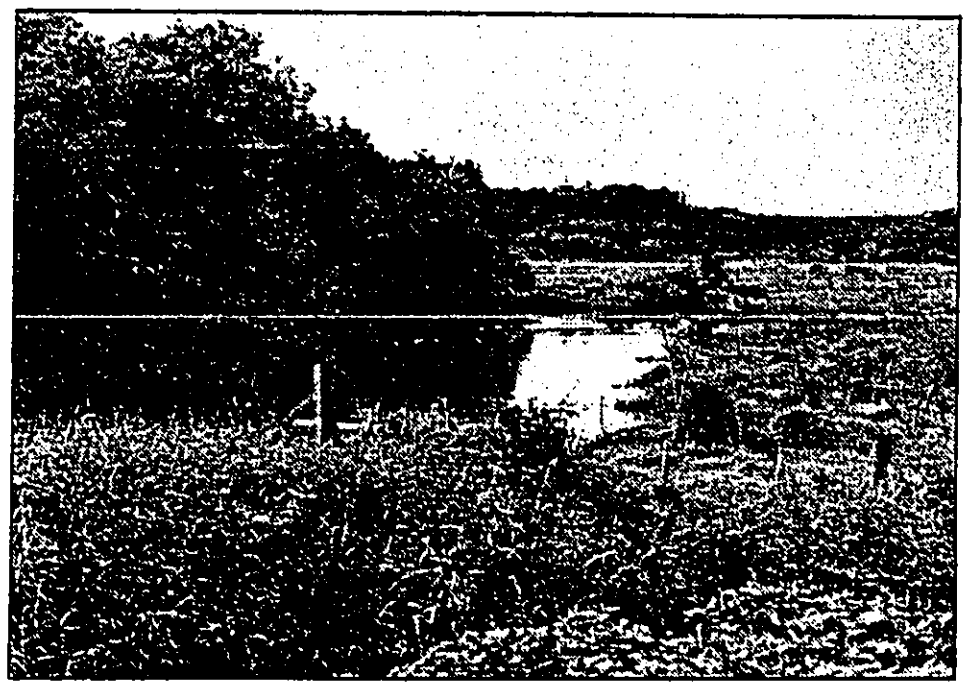

Plate 8 View of the proposed highway bridge site and the existing vegetation cover.

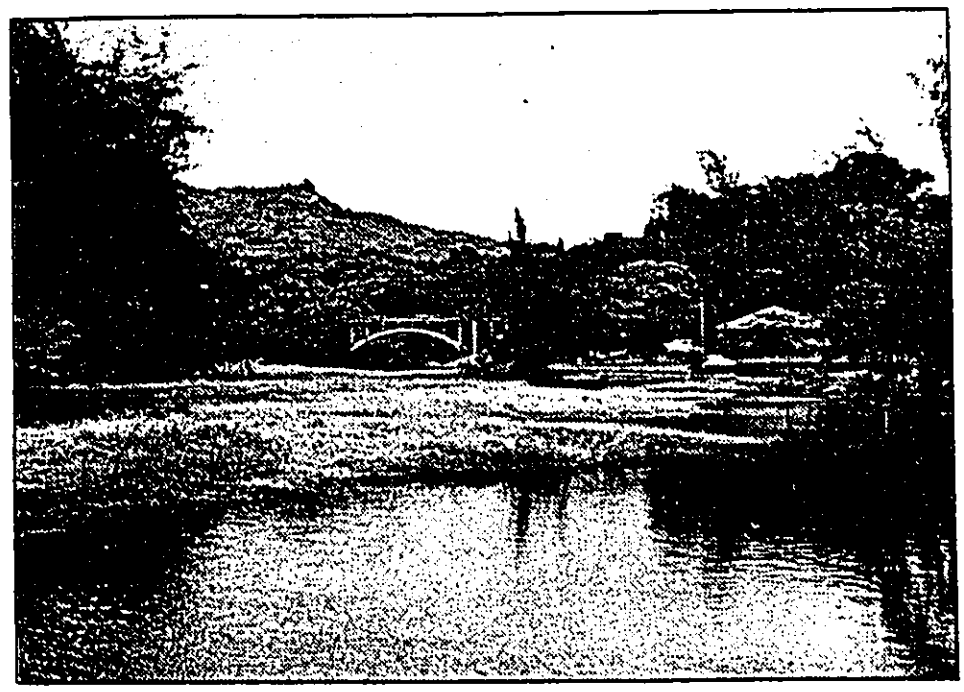

Plate 9 View from Hanamaulu County Park of the Valley crossing of the proposed highway

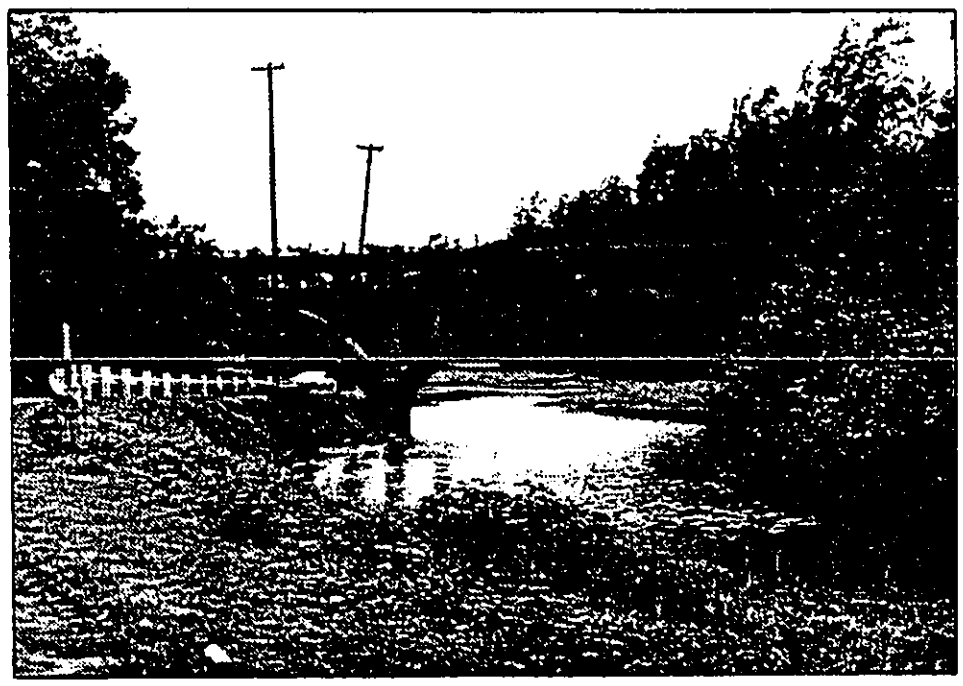

Plate 10 View of the existing railroad bridge and Hanamaulu County Park from the bridge site.

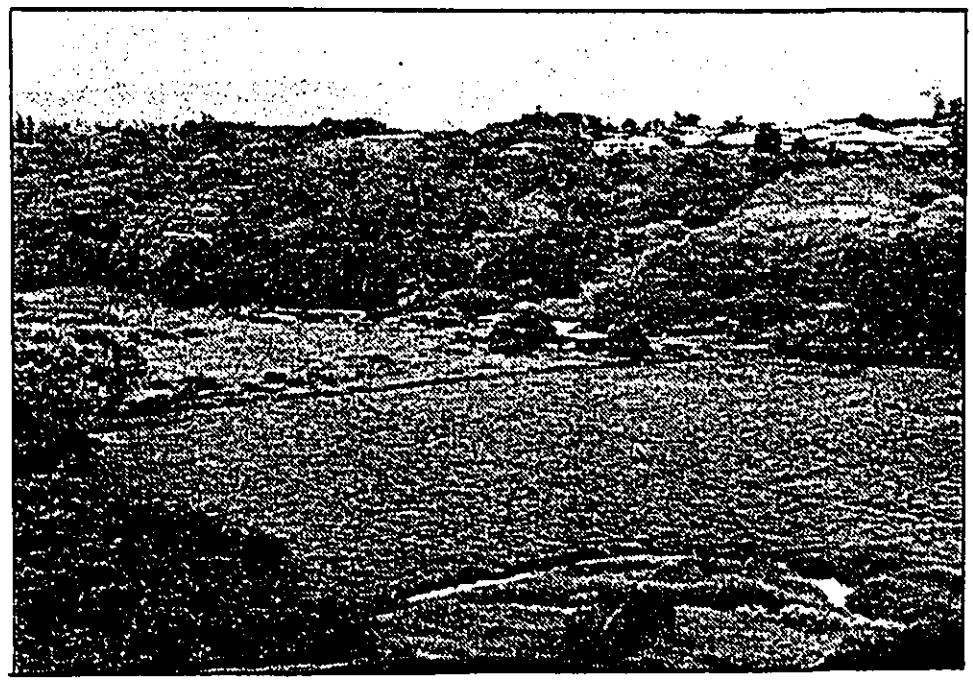

Plate 11 View of the Hanamaulu Valley and Hanamaulu Town from the proposed cutoff alignment. Vistas overlooking the valley will be enhanced by the road.

Plate 12 Another view of the Hanamaulu Valley and the proposed bridge site.

APPENDIX A
ORGANIZATIONS AND PERSONS CONSULTED

Appendix A Organizations and Persons Consulted For the Draft EIS

Comments and Responses to the EIS Preparation Notice

	Comment Date
US Government	
Advisory Council on Historic Preservation	8/29/77
Dept. of Agriculture, Soil Conservation Service	8/2/77
Dept. of the Army, Corps of Engineers	8/5/77
Dept. of the Interior, Bureau of Outdoor Recreation	8/19/77
Dept. of the Interior, Fish and Wildlife Service	9/27/77 *
Dept. of Transportation, Federal Aviation Administration	7/19/77 *
State of Hawaii	
Dept. of Agriculture	7/28/77
Dept. of Education	7/26/77
Dept. of Hawaiian Home Lands	7/13/77 *
Dept. of Health	8/11/77
Dept. of Land and Natural Resources	
Chairman of the Board	8/17/77
Dept. of Planning and Economic Development	8/5/77
Dept. of Social Services and Housing	7/29/77
Transportation Commission	7/19/77
County of Kauai	
Dept. of Public Works	7/20/77
Dept. of Water	8/8/77 *
Office of the County Clerk	8/15/77 *
Office of Economic Development	8/10/77
Planning Department	8/2/77
The Hon. Eduardo E. Malapit, Mayor	8/2/77
The Hon. Eddie Sarita, Councilman	8/5/77 *
Organizations and Individuals	
Citizens Utilities Company	7/18/77
Helen C. Hopkins for Life of the Land	8/21/77 *
The Kauai Outdoor Circle	8/1/77
Shiraishi & Yamada	8/19/77
National Trust for Historic Preservation	8/5/77
G. N. Wilcox Memorial Hospital	8/5/77

* Denotes "no comment"

7548

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

August 29, 1977

Mr. E. Alvey Wright
Director, Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright:

This is in response to your notice of intent dated July 11, 1977, to prepare an environmental impact statement for the proposed Hanamaulu-Ahukini Cut-Off Road, Project No. 51C-01-76, Island of Kauai, Hawaii.

Pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f, as amended, 90 Stat. 1320) the Council is charged with the responsibility of providing Federal agencies with comments on their undertakings which affect cultural resources. Until the Council has been notified by a Federal agency that it has determined an undertaking will affect a property included in or eligible for inclusion in the National Register of Historic Places, the Council is unable to comment.

The Council on Environmental Quality's guidelines for compliance with the National Environmental Policy Act of 1969 direct Federal agencies to forward copies of environmental statements prepared for undertakings which will have an impact on cultural resources to the Council for review and comment. Therefore, because the Council has no legislative or administrative authority to comment to state or private agencies, the following remarks are directed to the Federal Highway Administration who will be assisting in the construction of the undertaking.

As part of its planning process the FHWA should arrange to have the areas to be impacted by the undertaking surveyed to identify cultural properties eligible for inclusion in the National Register of Historic Places. After the survey is complete, if FHWA determines, in consultation with the Hawaii State Historic Preservation Officer, that the undertaking will result in an effect on any property included in or eligible for inclusion in the National Register it is required to afford the Council an opportunity to comment on the undertaking pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C.

470f, as amended, 90 Stat. 1320) in accordance with the "Procedures for the Protection of Historic and Cultural Properties" (36 C.F.R. Part 800).

Subsequently, the environmental statement prepared for the undertaking should assess its impact on historic and cultural resources. If any of these properties are included in or eligible for inclusion in the National Register the environmental documentation should demonstrate contact with the Council and include a copy of its comments. Should you have questions or require assistance in this matter, please contact Michael H. Bureman of the Council's staff at P. O. Box 25085, Denver, Colorado 80225, telephone number (303) 234-4946, an FTS number.

Sincerely yours,

Michael H. Bureman

for Louis S. Wall
Assistant Director, Office
of Review and Compliance

GEORGE R. ARIYOSHI
GOVERNOR

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

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

IN REPLY REFER TO:

LT-PA
2.40231

October 13, 1977

Mr. Louis S. Wall
Advisory Council on
Historic Preservation
1522 K Street NW
Washington, D. C. 20005

Dear Mr. Wall:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 29, 1977. The Environmental Impact Statement will address the cultural and historic resources of the proposed corridor. For your information, our State Historic Preservation Officer has indicated that there are no known historic or archaeological sites within the project area likely to be eligible for inclusion to the Hawaii and/or National Register of Historic Places.

Sincerely,

E. ALVEY WRIGHT
Director

7241

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. Box 50004, Honolulu, HI 96850

DIRECTOR'S OFFICE
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DEPT. OF TRANSPORTATION
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TRANSPORTATION

August 2, 1977

Mr. E. Alvey Wright
Director, State Department
of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright:

Subject: EIS Preparation Notice - Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Island of Kauai

We reviewed the subject preparation notice and offer the following comments for your consideration when preparing the environmental impact statement:

The EIS should mention the amount of agricultural land that will be taken out of production and the acres of prime agricultural land that will be affected. Also, the impact on the loss of jobs, if any, and loss of sugar yields should be discussed.

The following soils located in the project area are classified as prime:

LhB - Lihue silty clay, 0 to 8 percent slopes
LhC - Lihue silty clay, 8 to 15 percent slopes
LlB - Lihue gravelly silty clay, 0 to 8 percent slopes
LlC - Lihue gravelly silty clay, 8 to 15 percent slopes
LuA - Lualualei clay, 0 to 8 percent slopes
Mr - Mokuleia fine sandy loam

If you have any questions on prime agricultural classification, please contact Mr. Bill Forrest, District Conservationist, Lihue Field Office, phone: 245-3914.

We appreciate the opportunity to review this preparation notice.

Sincerely,

Jack P. Kanalz
State Conservationist

cc: Bill Forest, Lihue

GEORGE R. ARIYOSHI
GOVERNOR

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

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

IN REPLY REFER TO:

LT-PA
2.40248

October 14, 1977

Mr. Jack P. Kanalz
State Conservationist
U.S. Department of Agriculture
Soil Conservation Service
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Kanalz:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 2, 1977. We appreciate the information on the soils in the project area, and will incorporate it into the Environmental Impact Statement. We will also assess the impact of the proposed highway on agricultural activities.

Sincerely,

E. ALVEY WRIGHT
Director

7296

DEPARTMENT OF THE ARMY
HONOLULU DISTRICT, CORPS OF ENGINEERS
BLDG. 230, FT. SHAFTER
APO SAN FRANCISCO 96558

PODED-PV

5 August 1977

Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Gentlemen:

We received the Environmental Impact Statement Preparation Notice for the Hanamaulu-Ahukini Cut-off Road, Project No. 51C-01-76, Island of Kauai, on 14 July 1977. At this time we offer the following comments:

a. If filling portions of the lower Hanamaulu Stream wetland is necessary, a Department of the Army Permit under Section 404, Federal Water Pollution Control Act Amendments of 1972, may be required.

b. For your information and assistance in planning, we have inclosed a map (FP-23) of the Hanamaulu Flood Hazard Area prepared by the State of Hawaii, Department of Land and Natural Resources (DOWALD) in cooperation with the Department of the Army.

We appreciate the opportunity to review this notice.

Sincerely yours,

for KISUK CHEUNG
Chief, Engineering Division

1 Incl
Hanamaulu Flood Hazard
Area Map

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40238

October 14, 1977

Mr. Kisuk Cheung, Chief
Engineering Division
Department of the Army
Building 230, Fort Shafter
APO San Francisco 96558

Dear Mr. Cheung:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 5, 1977. We are aware of the Department of the Army Permit requirements and will submit an application at the appropriate time. We appreciate the Hanamaulu flood hazard map you provided. The map will render valuable assistance in our hydrologic studies.

Sincerely,

E. ALVEY WRIGHT
Director

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF OUTDOOR RECREATION
PACIFIC SOUTHWEST REGIONAL OFFICE
BOX 36062
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102

IN REPLY REFER TO:

4230

AUG 19 1977

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Mr. Ralph T. Segawa
Division Administrator
Federal Highway Administration
300 Ala Moana Blvd., Suite 4119
Post Office Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

This responds to your request for comments on the Environmental Impact Statement Preparation Notice for the Hanamaulu-Ahukini Cut-off Road, Island of Kauai.

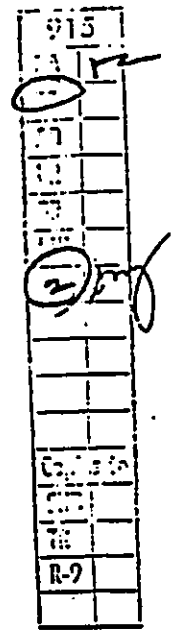
The Notice mentions that the Hanamaulu Beach Park is located in the vicinity of the proposed project. From the map provided with the Notice, it appears that this park is outside of the study corridor. However, if it appears that this park could be impacted, please be advised that development of the park has been funded with a Land and Water Conservation Fund (L&WCF) grant. If the park is impacted, the provisions of Section 6(f) of the L&WCF Act may be applicable in that the taking of land from funded parks would require the approval of the Secretary of the Interior and replacement land of equal value and utility. If the Hanamaulu Beach Park is to be affected by the project, we recommend you notify us of this fact and that you also consult with Mr. Hideto Kono, Director, Department of Planning and Economic Development, who is the liaison officer in Hawaii for L&WCF matters.

We appreciate the opportunity to comment on your preparation notice.

Sincerely yours,

Frank E. Sylvester
Regional Director

SEP 28 1977



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
300 Ala Moana Blvd., Rm. 5302
P. O. Box 50167
Honolulu, Hawaii 96850

Reference: ES

September 27, 1977

Mr. Ralph Segawa
Division Administrator
U. S. Department of Transportation
P. . Box 50206
Honolulu, Hawaii 96850

Re: Hanamaulu-Ahukini Cutoff Road, Proj. No. 51C-01-76, Island of Kauai Environmental Impact Statement Preparation Notice

Dear Mr. Segawa:

We have reviewed the referenced notice, dated 8 August 1977, concerning construction of a cut-off road which could impact endangered waterbird and stream habitat. We noted that field studies will be conducted to assess the quality of existing endangered waterbird habitat in the project vicinity. In addition, research is proposed to evaluate the potential increase in turbidity in Hanamaula Stream because of bridge and road construction and the possible redirection of sugar mill wash water.

Because this project could adversely affect endangered species, we recommend you contact Mr. Eugene Kridler, the Service's Hawaii Endangered Species Coordinator, to determine if formal coordination is required as mandated by Section 7 of the Endangered Species Act of 1973. Mr. Kridler will also be able to assist in establishing adequate criteria to evaluate the quality of the existing endangered

aterbird habitat within the sphere of project influence. He can be contacted at 300 Ala Moana Blvd., Room 5302, P. O. Box 50167, Honolulu, Hawaii 96850, Telephone Number 546-5615.

Since the terrestrial biota largely consists of introduced species, its loss is not expected to be significant. However, road construction could result in adverse impacts to both stream and marine biota. These impacts would generally be caused by increased turbidity resulting from erosion, associated with road construction and claring, redirection of sugar mill wash water, and instream work. In addition, aquatic habitat disruption will occur during construction of the stream crossing. Little data is available to assess the magnitude of these impacts. Therefore, we recommend a biological survey of Hanamaulu Stream be conducted to determine its species composition. The potential impacts on the species should be included in the Environmental Impact Statement.

Please keep us informed of any action taken on this project.

Sincerely yours,

Maurice H. Taylor
Field Supervisor

cc: HA
ARD(AE)
NMFS
HDF&G
Hawaii Endangered Species Coordinator

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

PACIFIC-ASIA REGION
P. O. BOX 4009
HONOLULU, HAWAII 96813

JUL 21 12 47 PM '77

DEPT. OF TRANSPORTATION

JUL 19 1977

Rear Admiral E. Alvey Wright, USN (Ret.)
Director, Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Admiral Wright:

We have reviewed the Hanamaulu-Ahukini Cut-off Road Environmental Impact Statement Preparation Notice.

The Federal Aviation Administration does not have any facilities within or adjacent to the highway corridor being studied. We foresee no impact to FAA operational activities.

We would like to point out, however, that the State of Hawaii, Air Transportation Facilities Division will be proceeding on a project to construct a new runway at Lihue Airport in the near future, with FAA participation under the Airport Development Aid Program (ADAP). This project requires the acquisition of 600 acres of cane land and will result in surplus sugar mill wash water which cannot be utilized for irrigating the cane land. This problem is now being studied by the State of Hawaii and Lihue Plantation. Acquisition of cane land for the Hanamaulu-Ahukini Cut-off Road will further add to the surplus sugar mill wash water, as indicated in par. VI H Water Resources. A coordinated study will be required to resolve this problem.

We thank you for the opportunity to review and comment on the Environmental Impact Statement Notice of Preparation for the Hanamaulu-Ahukini Cut-off Road.

Sincerely,

James M. Cox

JAMES M. COX
Chief, Airports Division, APC-600

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DEPT. OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40233

October 14, 1977

Mr. James M. Cox
Chief, Airports Division
U.S. Department of Transportation
Federal Aviation Administration
Pacific - Asia Region
P.O. Box 4009
Honolulu, Hawaii 96813

Dear Mr. Cox:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your comments of July 19, 1977. The problem of surplus sugar mill wash water will be addressed in the EIS.

Sincerely,

E. ALVEY WRIGHT
Director

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

July 28, 1977

MEMORANDUM

To: Mr. E. Alvey Wright, Director
State Department of Transportation

Subject: Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Island of Kauai
EIS Preparation Notice

The Department of Agriculture has reviewed the subject EIS Preparation Notice, and comments as follows:

The area is currently in agricultural use and designated as State Land Use Agricultural District. The Kauai General Plan has identified the area as having medium to high agricultural potential. The Land Study Bureau land classification system rates most of the affected lands as "B" (overall productivity rating).

Because of these considerations, we ask that the assessment process adequately address the agricultural impacts and mitigation measures, including alternative actions.

Thank you for the opportunity to comment.

JOHN FARIAS, JR.
Chairman, Board of Agriculture

JF:m:h

GEORGE R. ARIYOSHI
GOVERNOR

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

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

IN REPLY REFER TO:

LT-PA
2.40247

October 14, 1977

MEMORANDUM

TO: THE HONORABLE JOHN FARIAS, JR., CHAIRMAN
BOARD OF AGRICULTURE

FROM: E. ALVEY WRIGHT, DIRECTOR
DEPARTMENT OF TRANSPORTATION

SUBJECT: EIS PREPARATION NOTICE FOR THE HANAMAULU-AHUKINI CUTOFF ROAD
Reference: Your memorandum dated July 28, 1977

Your comments on the impact to agricultural lands and activities will be considered and addressed in our Environmental Impact Statement. Thank you for your continued cooperation.

E. ALVEY WRIGHT

DIRECTOR'S OFFICE
12 36 PM '77
DEPT. OF TRANSPORTATION

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DEPT. OF TRANSPORTATION
PLANNING
HIGHWAYS DIVISION

STATE OF HAWAII
DEPARTMENT OF EDUCATION
OFFICE OF THE DISTRICT SUPERINTENDENT
KAUAI SCHOOLS
P. O. BOX 1307
LIHUE, HAWAII 96766

July 26, 1977

TO: Admiral E. Alvey Wright
Director, Department of Transportation

THROUGH: Koichi H. Tokushige
Assistant Superintendent
Office of Business Services, DOE

FROM: Barton H. Nagata
District Superintendent

SUBJECT: Environmental Assessment
Hanamaulu-Ahukini Cut-off Road

We feel that the proposed Hanamaulu-Ahukini Cut-off Road is desirable because it would lessen the amount of traffic on Kuhio Highway between Hanamaulu and Lihue.

The school buses will have less traffic to contend with in the morning when they transport school children from Hanamaulu to Wilcox Elementary School in Lihue and to Kauai High & Intermediate School in Nawiliwili. The same beneficial effect will be felt when the school buses return the children from the two schools to Hanamaulu in the afternoon. The parents who drive their children to and from school will also have less traffic to deal with. (There is no school in Hanamaulu; therefore, all of the school age children must be transported to public or private schools in Lihue or Nawiliwili.)

BHN:fc

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40245

October 14, 1977

Mr. Barton H. Nagata
District Superintendent
Department of Education
Kauai Schools
P.O. Box 1307
Lihue, Hawaii 96766

Dear Mr. Nagata:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your expression of support for this project. Providing a safer highway with less congestion is our primary objective.

Sincerely,

E. ALVEY WRIGHT
Director

7106

PROJECT OFFICES

WAIMEA OFFICE
P. O. BOX 125
KAMUELA, HAWAII 96743

KEAUKAHA OFFICE
P. O. BOX 833
HILO, HAWAII 96720

STATE OF HAWAII
DEPARTMENT OF HAWAIIAN HOME LANDS
P. O. BOX 1879
HONOLULU, HAWAII 96805

PROJECT OFFICES

MAUI OFFICE
P. O. BOX 22
KAHULUI, MAUI 96732

MOLOKAI OFFICE
P. O. BOX 198
HOOLEHUA, MOLOKAI 96729

KAUAI OFFICE
P. O. BOX 332
LIHUE, KAUAI 96766

July 13, 1977

MEMORANDUM

TO: E. Alvey Wright, Director
Department of Transportation

FROM: (Mrs.) Billie Beamer, Chairman

SUBJECT: Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Island of Kauai
Environmental Impact Statement
Preparation Notice

Since the subject project does not affect our lands, we have no comments to offer.

Thank you for the opportunity to review.

(MRS.) BILLIE BEAMER, CHAIRMAN

WB:kt

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801

August 11, 1977

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

Audrey W. Mertz, M.D., M.P.H.
Deputy Director of Health

Henry N. Thompson, M.A.
Deputy Director of Health

James S. Kumagai, Ph.D., P.E.
Deputy Director of Health

In reply, please refer to:
File: EPHS -- SS

MEMORANDUM

To: Admiral E. Alvey Wright, Director
Department of Transportation

From: Chief, Environmental Protection & Health Services Division

Subject: Hanamaulu-Ahukini Cut-Off Road Environmental Impact Statement, Project No. 51C-01-76, Island of Kauai

Thank you for notifying us of the proposed cut-off road.

Our concerns were noted in our June 6, 1977 letter. The following comments are offered again for your consideration.

Vehicular noise would be a problem to the residential or recreational areas, depending on where the road is built.

Dust, soil erosion and pollution of Hanamaulu Stream would be a problem during construction and from activities resulting from the proposed cut-off road unless proper control measures are taken.

We will appreciate coordinating with your staff in reviewing the schematic detailed plans as they are made available.

SHINJI SONEDA

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40236

October 14, 1977

Mr. Shinji Soneda, Chief
Environmental Protection and
Health Services Division
Department of Health
1250 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Soneda:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your comments on the subject EIS Preparation Notice. We are weighing a number of constraints in our selection of the optimum alignment for the proposed highway, and noise impact is one of these.

Mitigating measures for the impacts of dust, soil erosion and pollution of Hanamaulu Stream will be addressed in the Environmental Impact Statement.

You can be assured that you will be given an opportunity to review our plans at the appropriate time.

Sincerely,

E. ALVEY WRIGHT
Director

3335

DIRECTOR'S OFFICE
AUG 22 11 31 AM '77
DEPT. OF TRANSPORTATION

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

W. Y. THOMPSON, Chairman
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

August 17, 1977

Your: LT-PA
2.38424

DEPT. OF TRANS.
STATEWIDE TRANS.
PLANNING OFFICE
AUG 23 9 31 AM '77

Honorable E. Alvey Wright
Director
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Dear Sir:

Subject: Hanamaulu-Ahukini Cut-Off Road

The EIS preparation notice for this project states intent to address impact on wildlife. During construction of the bridge over Hanamaulu Stream, fisheries resources may be affected. With proper precaution, adverse effects can be minimized.

Also, please refer to our August 1974 Map FP-23 prepared by our Division of Water and Land Development.

Very truly yours,

W. Y. THOMPSON
Chairman of the Board

cc: Fish & Game
DOWALD

RECEIVED
STATE DEPARTMENT
OF TRANSPORTATION
AUG 25 1 54 PM '77
LAND TRANSPORTATION
FACILITIES DIVISION
PLANNING BRANCH

GEORGE R. ARIYOSHI
GOVERNOR

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

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

IN REPLY REFER TO:

LT-PA
2.40234

October 14, 1977

The Honorable William Thompson
Chairman and Member
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Thompson:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 17, 1977. The Environmental Impact Statement will evaluate mitigating measures for the potential impact to aquatic life. Your flood hazard map and other hydraulic data are presently being used in our corridor selection studies.

Sincerely,

E. ALVEY WRIGHT
Director

7270

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

August 5, 1977

Ref. No. 4221

The Honorable E. Alvey Wright
Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright:

Subject: Environmental Impact Statement Preparation Notice
Hanamaulu-Ahukini Cut-off Road, Project No. 51C-01-76
Island of Kauai

We have reviewed the subject E.I.S. Preparation Notice and wish to offer the following comments for your consideration:

1) In general, major environmental impacts which should receive thorough assessment in the E.I.S. document have been adequately identified in the preparation notice.

2) As visual impact will be an important consideration in a project of this size, may we suggest that the E.I.S. document provide an adequate graphic description of the proposed facility as it relates to surrounding areas, landscapes, and vistas.

3) A determination should be made as to whether the proposed bikeway facility will be constructed along the roadway or railroad rights-of-way. In this regard, may we suggest that you contact the Mayor's Bikeway Advisory Committee and the Kauai Outdoor Circle, Parks and Bikeway Committee to solicit public input.

4) An effort should be made to determine the impact of the proposed facility on motor vehicle and bicycle movement along Kapule Highway (Hanamaulu Road), Kuhio Highway, Rice Street and Ahukini Road.

Thank you for the opportunity to review and comment upon the subject E.I.S. preparation notice. We look forward to reviewing the final E.I.S. document upon its completion.

Sincerely,

HIDETO KONO

cc: Governor George R. Ariyoshi

A22

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40243

October 14, 1977

The Honorable Hideto Kono
Director
Department of Planning
and Economic Development
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Kono:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your comments and suggestions expressed in your letter of August 3, 1977. They will be helpful in our efforts to design this highway.

We fully agree that the visual impact is an important consideration of this project. The Environmental Impact Statement will address this issue in detail.

We are currently studying the alternative bikeway locations, although our preference is to include it in the highway right-of-way.

We will address the traffic circulation impacts of the proposed highway in the EIS.

Sincerely,

E. ALVEY WRIGHT
Director

1207

GEORGE R. ARIYOSHI
GOVERNOR

ANDREW I. T. CHANG
DIRECTOR OF SOCIAL SERVICES & HOUSING

GOVERNOR'S OFFICE
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DEPT OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

STATE OF HAWAII DEPT. OF
DEPARTMENT OF SOCIAL SERVICES AND HOUSING
P. O. Box 339
Honolulu, Hawaii 96809

July 29, 1977

MEMORANDUM

TO: Honorable E. Alvey Wright, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

FROM: Andrew I. T. Chang, Director
Department of Social Services and Housing

SUBJECT: Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Island of Kauai
Environmental Impact Statement
Preparation Notice

Subject EIS preparation notice has been reviewed for effect on departmental programs. We are of the opinion that relief offered by the proposed bypass route will benefit our Kauai operation by reducing the present and predicted traffic flow in Lihue in the vicinity of the State building.

Thank you for the opportunity to review and comment.

Andrew I. T. Chang
DIRECTOR

cc: Governor, State of Hawaii

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40246

October 14, 1977

MEMORANDUM

TO: THE HONORABLE ANDREW I. T. CHANG, DIRECTOR
DEPARTMENT OF SOCIAL SERVICES AND HOUSING

FROM: E. ALVEY WRIGHT, DIRECTOR
DEPARTMENT OF TRANSPORTATION

SUBJECT: EIS PREPARATION NOTICE FOR THE HANAMAULU-AHUKINI CUTOFF ROAD
Reference: Your memorandum dated July 29, 1977

Thank you for your review of the subject EIS Preparation Notice, and for the expression of support of this project.

for E. ALVEY WRIGHT

DIRECTOR'S OFFICE

JUL 28 11 08 AM '77

DEPT. OF
TRANSPORTATION

RECEIVED
JUL 28 12 57 PM '77
DEPT. OF TRANSPORTATION
PLANNING DIVISION
FACILITIES DIVISION

July 19, 1977

Mr. E. Alvey Wright
State of Hawaii
Department of Transportation
869 Punchbowl St.
Honolulu, HI 96813

Dear Mr. Wright:

Subject: Hanamaulu-Ahukini Cut-off Road

In my opinion, the majority of the people on Kauai will definitely profit by the Hanamaulu-Ahukini cut-off road.

In addition to alleviating 25% to 30% of the flow of traffic, the major benefit is the safety factor. The combination of students going to school and the people who are going to work from the Kawaihau and Hanamaulu area causes so much congestion between the vicinity of Kapaia and the Lihue proper that traffic has become hazardous. Since January 1, 1977 to July 5, 1977, we have had 13 reported automobile accidents in these vicinity (Kapaia & Lihue proper). These accidents occured between the hours of 7 to 11 A.M. and 3 to 7 P.M.

The Hanamaulu-Ahukini cut-off road will definitely cut down these accidents; this alone should be a strong justification for it.

Sincerely,

Mr. Noboru Yamane
Transportation Commissioner
Department of Transportation

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40230

October 13, 1977

Mr. Noboru Yamane
Transportation Commissioner
311 Hookipa Road
Kapaa, Hawaii 96746

Dear Mr. Yamane:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of July 19, 1977 expressing support for this project. We also appreciate the traffic accident statistics, and will include this information in the Environmental Impact Statement.

Sincerely,

E. ALVEY WRIGHT
Director

7149

EDUARDO E. MALAPIT
MAYOR

DIRECTORS : Henry Morita
COUNTY ENGINEER
TELEPHONE 245-3318
Clay Kagawa
DEP. COUNTY ENGINEER
TELEPHONE 245-3602

JUL 22 11 23

DEPT OF TRANSPORTATION

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

July 20, 1977

Mr. E. Alvey Wright, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright:

SUBJECT: HANAMAULU-AHUKINI CUT-OFF ROAD
PROJECT NO. 51C-01-76
ENVIRONMENTAL IMPACT STATEMENT
PREPARATION NOTICE

Reference is made to your letter dated July 11, 1977 with the Environmental Impact Statement, Notice of Preparation for the subject project.

We feel that the subject project will be beneficial from the standpoint of relieving the congested Kuhio Highway which goes through Hanamaulu, Kapaia, and Lihue business and residential areas. The improvement will provide an alternate route to Lihue-Nawiliwili and the airport and thereby ease the present traffic congestion along Kuhio Highway.

Thank you for the opportunity to comment on the environmental Notice of Preparation.

Very truly yours,

Clay Kagawa
for HENRY MORITA
County Engineer

KK:nm

RECEIVED
JUL 26 9 16 AM '77
DEPT. OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

GEORGE R. ARIYOSHI
GOVERNOR

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

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

IN REPLY REFER TO:
LT-PA
2.40244

October 14, 1977

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

Dear Mr. Morita:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of July 20, 1977 expressing support of this project. We will continue to coordinate our planning with you. We appreciate your continued cooperation and assistance.

Sincerely,

E. ALVEY WRIGHT
Director

7275

DEPARTMENT OF WATER

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

August 8, 1977

Mr. E. Alvey Wright
State of Hawaii
Department of Transportation
869 Punchbowl St.
Honolulu, HI 96813

Ref: LT-PA, 2.38424

Re: Hanamaulu-Ahukini Cut-off Road Project No. 51C-01-75, Island of Kauai, Environmental Impact Statement Preparation Notice

I have reviewed the subject preparation notice and have no comments.

Walter L. Briant, Jr.
Manager & Chief Engineer

RS/et

7350

TAD T. MIURA
COUNTY CLERK

TATSUO KATO
DEPUTY CLERK

OFFICE OF THE COUNTY CLERK
4396 RICE STREET
LIHUE, KAUAI, HAWAII 96766
TELEPHONE 245-4785

August 15, 1977

Mr. E. Alvey Wright
Director
Dept. of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Sir:

Subject: Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Kauai
Environmental Impact Statement
Preparation Notice

The Council of the County of Kauai acknowledges receipt of your letter of July 11, 1977, relative to the above subject.

Very sincerely,

Tad T. Miura
County Clerk
County of Kauai

ms

R506

EDUARDO E. MALAPIT
MAYOR

DIRECTOR'S OFFICE
AUG 11 1 15 PM '77
DEPT. OF TRANSPORTATION

JAMES N. KURITA
DIRECTOR

RECEIVED
AUG 15 2 30 PM '77
DEPT. OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

COUNTY OF KAUAI
OFFICE OF ECONOMIC DEVELOPMENT
4396 RICE STREET
LIHUE, KAUAI, HAWAII 96766
TELEPHONE 245-4556

August 10, 1977

Mr. E. Alvey Wright, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Wright:

SUBJECT: Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Island of Kauai
Environmental Impact Statement
Preparation Notice

The proposed Hanamaulu-Ahukini Cut-off Road will create a major economic impact for Kauai County, especially those communities east of Lihue.

While serving as the hub of the island's government and business activities, Lihue is also the main transportation network for incoming goods and services. The principal roadway between Lihue and Wailua is currently congested with heavy industrial and tourist related traffic.

The Kauai General Plan indicates that the Kapaa-Wailua area is designated as one of the primary resort destination areas on the island. Currently, there are about 1,711 visitor units in this area. Within five years, we can anticipate an additional 700 visitor units for Wailua-Kapaa, a 40% rise in visitor units for this area. As visitor facilities expand, the volume of visitor traffic will also increase significantly and cause further traffic congestion within the existing traffic route. Support services and related activities can be expected to expand in proportion to the increase in visitor units, thereby further increasing traffic congestion. We can reasonably expect also that communities beyond Wailua-Kapaa, especially Kilauea-Hanalei to generate significant growth in the years ahead and will also influence and add to the congestion existing.

The north bound through traffic coming from the Lihue Airport and Nawiliwili Harbor would bypass the Lihue business district thus relieving congestion and improve driving conditions for local traffic. Greater efficiency of time and lower costs would probably be realized by commercial and other users of the proposed cut-off.

While greater consideration must be given to the merits of the proposal in comparison with alternative recommendations, we support the concept of the Hanamaulu-Ahukini cut-off and request that you begin as soon as possible in the preparation of the Environmental Impact Statement.

Sincerely,

James N Kurita

JAMES N. KURITA
Director

/bu

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40237

October 14, 1977

Mr. James N. Kurita, Director
Office of Economic Development
County of Kauai
4396 Rice Street
Lihue, Hawaii 96766

Dear Mr. Kurita:

Subject: EIS Preparation Notice for the
Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 10, 1977. The information on visitor units will be incorporated in the Environmental Impact Statement. We appreciate your support of this project.

Sincerely,

E. ALVEY WRIGHT
Director

EDUARDO E. MALAPIT
MAYOR

BRIAN K. NISHIMOTO
PLANNING DIRECTOR

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

August 2, 1977

Mr. E. Alvey Wright
Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Hanamaulu-Ahukini Cut-Off Road
Project No. 51C-01-76, Island of Kauai
Environmental Impact Statement
Preparation Notice

The subject proposal has been reviewed. Please be informed that we concur and highly support the concept of the cut-off highway. The study corridor is consistent with the recommendation of the Lihue Development Plan relative to the circulation system in and around Lihue.

The present highway system forces all traffic through the Lihue and Hanamaulu urban corridors causing greater traffic congestions each year and adding to the traffic problems and inconveniences experienced by users of the highway.

We feel that the proposed cut-off highway should definitely relieve much of the peak period congestion on Kuhio Highway from Lihue to Hanamaulu and would also aid in directing industrial traffic passing through Lihue around the town core.

Thank you for affording us the opportunity to comment on the subject matter.

Brian Nishimoto
Planning Director

cc: Mayor
Commission
Ed Nakano

7647

EDUARDO E. MALAPIT
MAYOR

CAYETANO GERARDO
ADMINISTRATIVE ASST.

OFFICE OF THE MAYOR
4396 RICE STREET
LIHUE, KAUAI, HAWAII 96766

August 2, 1977

Mr. E. Alvey Wright
Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Hanamaulu-Ahukini Cut-Off Road
Project No. 51C-01-76, Island of Kauai
Environmental Impact Statement
Preparation Notice

Please find attached a copy of the Planning Department's comments on the subject project.

I concur with the Planning Director's statements and fully support the proposed Cut-Off Highway.

Eduardo E. Malapit
Eduardo E. Malapit
Mayor

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40232

October 13, 1977

The Honorable Eduardo E. Malapit
Mayor, County of Kauai
4396 Rice Street
Lihue, Hawaii 96766

Dear Mayor Malapit:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 2, 1977 forwarding the Planning Department's comments. We especially appreciate your support of this project.

Sincerely,

E. ALVEY WRIGHT
Director

7240

EDDIE SARITA
COUNCILMAN
RR 1, BOX 286
LIHUE, HAWAII 96766

August 5, 1977

Honorable E. Alvey Wright, Director
State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright:

Subject: Hanamaulu-Ahukini Cut-off Road
Project No. 51C-01-76, Island of Kauai
And Traffic Lights - Kuhio Highway

I transmit herewith copies of a petition bearing 322 signatures requesting that measures be taken aimed at relieving traffic congestion on State Highway 50 (Kuhio Highway) from the town of Hanamaulu to Lihue.

The recent announcement that $150,000 has been released by the Governor to conduct a study on the Hanamaulu-Ahukini Cut-off Road, Project No. 51C-01-76, is a welcome step. The August 1, 1977 meeting by your Kauai District office proved to be very informing.

For many years, the problem of traffic congestion in Lihue-Hanamaulu section of Kuhio Highway has been a growing one. Kauai County's Vehicle Registration records reveal that around 1958, 11,000 vehicles were on the county's rolls. In 1977, more than 25,000 vehicles are registered.

The existing traffic counts displayed by Wilson, Okamoto & Associates support the fact that the traffic flow in the subject route corridor between Lihue and Hanamaulu is badly congested and will continue to worsen.

To help relieve the traffic congestion, the Hanamaulu-Ahukini Cut-off Road is urgently needed. However, I recognize that even if the processing, funding and construction were to proceed smoothly, a minimum of 5 years would be required before the cut-off would be ready to carry traffic. With this in mind, on behalf of the many petitioners, I respectfully request that your Department consider the installation of traffic lights at the intersections described as follows:

1. Hanamaulu Beach Road & Kuhio Highway - Hanamaulu
2. Laukona & Kuhio Highway - Hanamaulu
3. Eono Street, Wilcox Hospital & Kuhio Highway - Lihue
4. Ehiku Street & Kuhio Highway - Lihue
5. Ahukini Road & Kuhio Highway - Lihue
6. Hardy Street & Kuhio Highway - Lihue

Although traffic lights will not relieve the congestion problem, I firmly believe that they will help to better regulate traffic flow. This can serve hopefully until the construction of the Cut-off Road is completed.

Your kind consideration and cooperation is requested. I am sure that your efforts will be recognized.

Thank you.

Sincerely yours,

Eddie Sarita
Councilman - Kauai

cc: Mr. Ed Nakano
Mr. Kenneth O. Nagai
Miss Betty Bell

7126

CITIZENS UTILITIES COMPANY

P. O. BOX 278 • ELEELE, KAUAI, HAWAII 96705 (808) 335-3131

July 18, 1977

File #77-6-102

State of Hawaii
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813

ATTENTION: Mr. E. Alvey Wright, Director

SUBJECT: HANAMAULU-AHUKINI CUT-OFF ROAD
LT-PA 2.38424 - YOUR PROJECT NO. 51C-01-76

Dear Mr. Wright:

We have reviewed your Environmental Impact Statement Preparation Notice and have the following comments:

1. Kauai Electric presently has a 12,470 Volt distribution circuit located within the study corridor.

2. The distribution circuit may have to be relocated depending upon your final alignment.

3. The total cost of such relocation will have to be borne by the State.

We appreciate having the opportunity to review the Environmental Impact Statement Preparation Notice and ask that we be kept informed of the status of this project so that we may properly schedule our work load.

Very truly yours,

BOYD T. TOWNSLEY
Manager

BTT:kk

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40241

October 14, 1977

Mr. Boyd T. Townsley
Manager, Kauai Electric
Citizens Utilities Company
P.O. Box 278
Eleele, Hawaii 96705

Dear Mr. Townsley:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for the information on your distribution circuit provided in your letter of July 18, 1977. Please be assured that we will coordinate our plans with you.

Sincerely,

E. ALVEY WRIGHT
Director

8336

DIRECTOR'S OFFICE

AUG 23 11 38 AM '77

DEPT. OF TRANSPORTATION

August 21, 1977

RECEIVED
STATE DEPARTMENT
OF TRANSPORTATION
AUG 25 1 54 PM '77
LAND TRANSPORTATION
FACILITIES DIVISION
PLANNING BRANCH

State of Hawaii
Dept. of Transportation
869 Punchbowl St.
Honolulu, Hawaii 96813

Atten: E. Alvey Wright, Director

Subj: Hanamaulu-Ahukini Cut-off Road, Project No. 51C-01-76, Island of Kaua'i, Environmental Impact Statement Preparation Notice.

Gentlemen:

In reply to your letter of July 11, 1977 on the above subject, I would like to reserve comments at this time due to the fact that I have just returned to Hawaii after two months on the mainland.

I note that the cut-off date for replies to the E. I. S. Notice of Preparation on the project in the E. Q. C. Bulletin is August 22, 1977, therefore I am sending a copy of this letter to that office.

Thank you for your letter and I would appreciate any further information that will become available on the proposed project.

Sincerely,

Helen C. Hopkins

For: LIFE OF THE LAND
HAWAII CHAPTER,
SIERRA CLUB

CC. E.Q.C.

Hellen C. Hopkins
P. O. Box 266
Hanalei, Hawaii 96714

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AUG 24 8 22 AM '77
DEPT. OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

RECEIVED
Aug 12 8 49 AM '77
DEPT. OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

DIRECTOR'S P. O. BOX 921
LIHUE, HAWAII 96766

THE KAUAI OUTDOOR CIRCLE

Aug 9 11 15 AM '77
DEPT. OF
TRANSPORTATION

August 1, 1977

Mr. E. Alvey Wright, Director
State of Hawaii, Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright,

The Environmental Impact Statement Notice of Preparation for the Kapaa-Waipouli Cut-off Road (Kapule Extension) was indeed of interest to us. Thank you for informing us of it.

We were notified by Mr. Edwin Nakano of a public discussion to be held August 1, in Lihue, concerning this matter. We plan to submit our views at that time.

Attached is the statement which The Kauai Outdoor Circle has prepared outlining our concerns. We trust that the state will thoughtfully consider the requests and opinions which it has solicited.

Sincerely,

Nina M. Magoun
Mrs. Thatcher Magoun
Landscaping Chairman

Hale C. Williams
Mrs. Juan Williams
President

Duplicate letter to Mr. Edwin Nakano

Statement attached

P. O. BOX 921
LIHUE, HAWAII 96766

THE KAUAI OUTDOOR CIRCLE

August 1, 1977

The Kauai Outdoor Circle has several objectives, three of which are:

1. To assist in planning the planting of streets, highways and other areas dedicated to public use.

2. To stimulate a love of nature and a sense of ordered beauty.

3. To conserve and develop the natural beauties of the landscape by encouraging the growth of native trees and shrubs, and the introduction of such new ones as belong to tropical life.

Accordingly we support the following goals in respect to the proposed improvement of Kuhio Highway or the extension of Kapule Road.

1. For assistance in planning: we strongly urge you to have landscaping included in the master plan. This is the stage in which it should be done, and it should be done by experts, just as surely as every other aspect of the project will properly be in the hands of those most qualified.

2. To stimulate a love of nature: the many benefits proper landscaping provides, including shade and erosion control as the most obvious ones, will bring that about, If this area is not relegated to the bottom of the priority list and funded with a depleted budget.

3. For conservation and development: we hope the engineers will attempt the least possible disturbance of the valley floor, in consideration of rare and endangered species of plant and animal life.

Finally, we call your attention to the February 3, 1972, document of the Highways Division of the Department of Transportation, detailing its "Policy on Landscaping of State Highways." We request that the proposed by-pass be a Class A Road as defined in the section on classification of planted areas.

Under policy and purposes for planting, fourteen items are listed. They are important and clearly stated. If these are carried out by the state these guidelines they are, we feel that outstanding results will be achieved.

Thank you for considering the viewpoint of The Kauai Outdoor Circle. We would be pleased to help in any way we can.

Mrs. Thatcher Magoun
Landscaping Chairman
The Kauai Outdoor Circle

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40240

October 14, 1977

Mrs. Thatcher Magoun
The Kauai Outdoor Circle
P.O. Box 921
Lihue, Hawaii 96766

Dear Mrs. Magoun:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road.

Thank you for your letter of August 1, 1977 regarding landscaping for the proposed highway. Our typical section includes a landscaped strip along both sides of the highway. Any further suggestions you might have will be appreciated.

Sincerely,

E. ALVEY WRIGHT
Director

CLINTON I. SHIRAISHI
DENNIS R. YAMADA
TED A. CHIHARA

SHIRAISHI & YAMADA
ATTORNEYS AT LAW
A LAW CORPORATION
LIHUE, KAUAI, HAWAII 96766

SUITE 208
LIHUE SHOPPING CENTER
P. O. BOX 1246
TEL. 245-3361
AREA CODE 808

August 19, 1977

Planning Branch
Land Transportation Facilities Division
600 Kapiolani Blvd., Room 301
Honolulu, Hawaii 96813

Attention: Mr. Douglas Orimoto

Please be informed that we represent Mr. Malcolm S. Smith, who operates The Hardwood Factory on Kauai, within an area designated as a study corridor in the proposed Hanamaulu-Ahukini Cutoff project. We were informed that August 22, 1977 is the deadline for comments on the Environmental Impact Statement Preparation Notice. In view of that, we would like to make some comments on the Socioeconomic impact of the anticipated reduction of vehicles on Kuhio Highway.

Mr. Smith's business is located on the Northern tip of the study corridor. His business manufactures and retails wood products. His customers are mostly tourists who are driving through Hanamaulu and tourists who are on tours in tour busses. His shop is a regular stop for many of the tour companies. It is his feeling that if the proposed cutoff road was to pass makai of his business, that he would be denied the easy accessibility of his shop to the visitors who comprise the bulk of his customers at the present time.

Mr. Smith's hardwood factory is one of the few on this island using natural materials found on this island. However, the economic loss he anticipates if the cutoff road is constructed makai of his business location, can be alleviated if the proposed road was to join Kuhio Highway mauka of his business so the flow of traffic would continue to pass his place as it presently does.

Thank you for your consideration. If you require more information please do not hesitate to call on me.

DENNIS R. YAMADA

ac

cc: Mr. Malcolm Smith

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
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RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40235

October 14, 1977

Mr. Dennis R. Yamada
Shiraishi & Yamada
Attorneys at Law
P.O. Box 1246
Lihue, Hawaii 96766

Dear Mr. Yamada:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 19, 1977 expressing Mr. Smith's concerns.

You can be assured that the socio-economic impact to Kauai Hardwoods will be considered in determining the location of the Cutoff Road.

Sincerely,

E. ALVEY WRIGHT
Director

7254

DIRECTOR'S OFFICE

Guarding America's Heritage

National Trust for Historic Preservation

WEST COAST OFFICE 582 MONTGOMERY STREET — SAN FRANCISCO, CALIFORNIA 94133 — (415) 989-6138

RECEIVED
AUG 12 8 52 AM '77
DEPT. OF TRANSPORTATION
LAND TRANSPORTATION
FACILITIES DIVISION

RECEIVED
AUG 8 12 51 PM '77
DEPT. OF
TRANSPORTATION

August 5, 1977

Mr. E. Alvey Wright, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Wright:

Thank you for the opportunity to comment on the Environmental Impact Statement Preparation Notice for the Hanamaulu-Ahukini Cut-Off Road Project No. 51C-01-76, Island of Kauai (LT PA, 2.38424).

Although we do not have specific knowledge of the project area, our general familiarity leads us to make the following observations:

1. As the cut-off will become a major traffic carrier its effect on adjacent land use should be carefully considered. Development of this road will create attractive new access to hitherto agriculturally developed lands whose potential for conversion to other uses should be studied.

2. The cut-off should take into consideration the established general plan for the study area and compliment its future goals and directions for development.

3. Consideration should be given to the impact of traffic on those roads at either end of the cut-off. The traffic volume and its related impacts on the Kuhio Highway may be substantially the same with or without the proposed road. However, the effects of increased traffic on Ahukini Road and Kapule Highway and adjacent land uses should be made a part of the EIS's consideration.

4. We assume that due consideration will be given to identifying any historical or archaeological resources within the project study area and appropriate mechanisms developed for their preservation or treatment.

We hope these comments will be useful in the preparation of your EIS. If further contact is necessary please do not hesitate to call upon me.

Sincerely,

Hisashi Bill Sugaya
Assistant Director

cc: Kauai Historical Soc.
Historic Hawaii Foundation
National Trust Advisors
Charles Black; S.H.P.O.

Headquarters Office: 740-748 Jackson Place, N.W., Washington, D. C. 20006 (202) 382-3304
Midwest Office: 1500 South Prairie Avenue, Chicago, Illinois 60616 (312) 842-0170

GEORGE R. ARIYOSHI
GOVERNOR

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

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

IN REPLY REFER TO:

LT-PA
2.40239

October 14, 1977

Mr. Hisashi Bill Sugaya
Assistant Director
National Trust for Historic
Preservation
740-748 Jackson Place, N.W.
Washington, D. C. 20006

Dear Mr. Sugaya:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your comments and suggestions in your letter of August 5, 1977. They will be helpful in our planning efforts.

The Environmental Impact Statement will evaluate the impacts of the proposed highway on land use. The planned facility is consistent with the General Plan for the area.

We are currently evaluating traffic circulation in the area and will include this data in the EIS. The proposed project will alleviate the present congestion on Kuhio Highway.

The EIS will also address the archaeological and historical resources of the study corridor.

Sincerely,

E. ALVEY WRIGHT
Director

7284

G. N. WILCOX MEMORIAL HOSPITAL & HEALTH CENTER

- ESTABLISHED 1938 -

A NON-PROFIT SERVICE TO THE COMMUNITY
3420 KUHIO HIGHWAY • LIHUE, KAUAI, HAWAII 96766

BETTY J. BELL
ADMINISTRATOR

August 5, 1977

Mr. E. Alvey Wright, Director
State Department of Transporation
869 Punchbowl Street
Honolulu, Hawaii 96813

LT-PA
2.38424

Dear Mr. Wright:

I would like to thank you for the privilege of commenting on the Environmental Impact Statement Preparation Notice for the Hanamaulu-Ahukini Cut-off Road.

The notice is well researched and composed. I would only like to comment that the general economic and social welfare of the Kauai community is being continually and devastatingly eroded by the daily increasing traffic congestion and noise along Kuhio Highway. The prompt construction of the proposed Ahukini-Hanamaulu by-pass is the only reasonable solution to insuring access by the members and visitors of the community to the lifesaving emergency facilities available at our hospital.

Any projected population growth requiring access to the numerous public facilities and businesses along Kuhio Highway in Lihue would gain those services only under very hazardous conditions. Kauai already has more accidents per road mile than any island in the Hawaiian chain.

We presently have some 2500 signatures from Kauai citizens utilizing our facilities requesting congestion relief through the by-pass model.

The application of your considerable knowledge to expedite the construction of this Hanamaulu-Ahukini Cut-off Road will be gratefully appreciated by all the people of Kauai.

Very truly yours,

Betty J. Bell
Chief Executive Officer

GEORGE R. ARIYOSHI
GOVERNOR

E. ALVEY WRIGHT
DIRECTOR

DEPUTY DIRECTORS
WALLACE AOKI
RYOKICHI HIGASHIONNA
DOUGLAS S. SAKAMOTO
CHARLES O. SWANSON

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

IN REPLY REFER TO:

LT-PA
2.40242

October 14, 1977

Ms. Betty J. Bell
Chief Executive Officer
G.N. Wilcox Memorial Hospital
3420 Kuhio Highway
Lihue, Hawaii 96766

Dear Ms. Bell:

Subject: EIS Preparation Notice for the Hanamaulu-Ahukini Cutoff Road

Thank you for your letter of August 5, 1977. We especially appreciate your expression of support for this project.

Sincerely,

E. ALVEY WRIGHT
Director

SUMMARY OF PUBLIC MEETINGS
MAJOR CONCERNS EXPRESSED

August 1, 1977: Wilcox Elementary School

The Hanamaulu-Ahukini Cutoff Road is very much needed; however, the alignment should not go through the Hanamaulu house lots.

Landscape provisions should be made in the plans for the extension of Kapule Road (cutoff road).

Kuhio Highway is presently very congested.

Hanamaulu-Ahukini Cutoff Road is in accord with the Lihue Development Plan.

December 15, 1977: Wilcox Elementary School, Lihue

The 5 year span to completing the project is too long. Something needs to be done to alleviate the present problem.

Kauai Hardwood Store employs approximately 20 persons, many of them handicapped. Since most of their business comes from the highway, the cutoff road should intersect Kuhio Highway mauka of the store.

The traffic situation on the existing Kuhio Highway is heavily congested especially at Wilcox Hospital.

The existing highway between Lihue and Hanamaulu has one of the highest accident rates in the State.

January 24, 1978: Hanamaulu Community Center

Four-lane highway may have trouble getting public acceptence. It would make sense to go with two lanes now and two lanes later if needed.

The proposed bridge across Hanamaulu Valley may may contribute to additional pollution in the Bay.

Drivers cannot at present turn onto Kuhio Highway from the Hanamaulu subdivision. Project time frame should be pushed up.

Will a connection between the subdivision and the cutoff road be provided.

January 24, 1978: Meeting with the Smiths, Owners of Kauai Hardwood Store.

We have just started to make progress in this business, and here we have a captive market. If the makai alignment is selected, we would no longer have a captive market.

Tour buses may not stop if they have to turn back, as the makai alignment would require.

We want the connection to take place on the Lihue side of the store, with left turns allowed for cars heading toward Lihue.

Mr. Smith stated that besides handicapped people, they also employ ex-convicts who are normally regarded as unemployables.

To the question, "are there other outlets for sale of your goods", Mr. Smith replied that they retail to Sears and Penny's. It seems that in reality, approximately 50% (unconfirmed although not contested) of their sales occur at the store rather than the 99% figure given earlier.

The Smiths' were made aware that design considerations may not allow left turn movements in front of their store. They replied that they must have the movement.

PERSONS AND ORGANIZATIONS CONSULTED
DURING
PREPARATION OF THE DRAFT EIS

E. Akazawa	Department of Health
Arthur Bauckham	Department of Health
Greg Kamm	Kauai Planning Department
Eugene Kridler	U.S. Fish and Wildlife Service
Bob Schleck	Kauai Historical Society
Jane Smith	Kauai Hardwoods Store
Tom Telfer	Department of Fish and Game, Kauai
Ron Walker	Department of Fish and Game, Honolulu
Mr. Wilson	Controller, Lihue Plantation
Fred Zeillemaker	U.S. Fish and Wildlife Service

APPENDIX B

AIR QUALITY REPORT

APPENDIX B AIR QUALITY REPORT

A. INTRODUCTION

In this Appendix are presented the various elements of the air quality study conducted by VTN Pacific for the proposed Hanamaulu Cut-off Road from Lihue to Hanamaulu, Kauai.

To determine the air quality impact of the proposed improvements, all available background air quality and meteorological data were examined and air quality levels were estimated for the base year 1977 and projected for the years 1980, 1990 and 2000. The air quality effects were then related to the applicable Federal and State standards to determine whether the proposed highway improvements will meet these criteria.

Two alternative actions were considered:

1. Construction of a highway from Ahukini Road to the vicinity of the Kauai Hardwoods Factory. A detailed discussion of the proposed project is included in Chapter 1.

2. No Project alternative, in which the existing Kuhio Highway through Hanamaulu would continue to carry all traffic north of Lihue.

The microscale carbon monoxide effect associated with each alternative was determined, using the HIWAY Model developed by EPA for motor vehicle pollutant emissions along highways. In addition to CO impacts, a regional pollutant burden analysis was performed for motor vehicle-generated hydrocarbons (HC) and nitrogen oxides (NO_x).

The various objectives of the air resources study are as follows:

1. Estimate background CO concentrations at the proposed site using the existing data base.

2. Convert motor vehicle traffic data to CO emissions and ambient air impact concentrations for the years 1977, 1980, 1990 and 2000 through highway diffusion modeling techniques.

3. Calculate pollutant (CO, HC, NO_x, SO_x, Particulates and Lead) emission burdens expressed in tons/day, on a regional basis.

These objectives were designed to meet the requirements of the National Environmental Policy Act of 1969. The air pollution effects for each alternative were assessed in terms of the National Ambient Air Quality Standards (NAAQS).

B. ASSUMPTIONS

1. Background Meteorology and Air Quality

The project area is located on the east coast of the island of Kauai, 1,000-6,000 feet from the shoreline. The wind is from the northeast quadrant at least 2/3 of the time, reflecting the persistent trade wind circulation of sub-tropical latitudes. Wind speeds in the project area average from 8 to 13 mph with 18.4% calm, as measured at the nearby Lihue Airport (Table 1).

The transport and dispersion of pollutants are influenced by both wind speed and atmospheric stability. The methodology applied in this study assumes a stability Class E which represents adverse dispersion conditions. The application of this stability category and the selection of maximum traffic flow volumes represent worst-case conditions which yield maximum estimated air quality impact concentrations.

A steady wind speed of 1 m/s (2.2 mi./hr.) is assumed in the dispersion model. Wind speed and direction data at the Lihue Airport indicate that this wind speed represents a moderate worst-case condition.

There has been only sporadic air quality monitoring in the Lihue area, and no data on carbon monoxide concentrations. A large portion of the area is used for sugarcane cultivation, and the only pollutant-generating industry in the area is the sugar mill, which emits mostly particulates. Therefore, a natural CO background level of 1 ppm has been assumed.

TABLE 1

LIHUE AIRPORT 24-HOUR WIND DATA

Direction	Wind Sped (Knots) 0-7	8-11	12-17	18-22	Total %
N	1.5	0.8	0.1	0.0	2.4
NNE	3.5	4.2	0.5	0.0	8.2
NE	13.0	20.4	1.8	0.1	35.3
ENE	8.7	11.6	0.9	0.0	21.2
E	2.1	1.7	0.1	0.0	3.9
ESE	0.6	0.2	0.0	0.0	0.8
SE	0.4	0.1	0.0	0.0	0.5
SSE	0.6	0.3	0.0	0.0	0.9
S	0.8	0.6	0.1	0.0	1.5
SSW	0.5	0.3	0.0	0.0	0.8
SW	0.7	0.4	0.1	0.0	1.2
WSW	0.7	0.2	0.0	0.0	0.9
W	2.0	0.0	0.0	0.0	2.0
WNW	0.7	0.0	0.0	0.0	0.7
NW	0.2	0.0	0.0	0.0	0.2
NNW	0.7	0.2	0.0	0.0	0.9
Calm					18.4
TOTAL %	36.7	41.0	3.6	0.1	99.8

Source: National Weather Records Center, Lihue Airport - 1950-1967

To estimate the total CO levels caused by the 1977, 1980, 1990 and 2000 year traffic flows, it is necessary to estimate the background CO one-hour and eight-hour concentrations in ambient air for these years. Although increasing vehicle miles traveled (VMT) values tend to increase the total exhaust emissions, more stringent emission standards will cause the CO pollutant burden to be reduced.

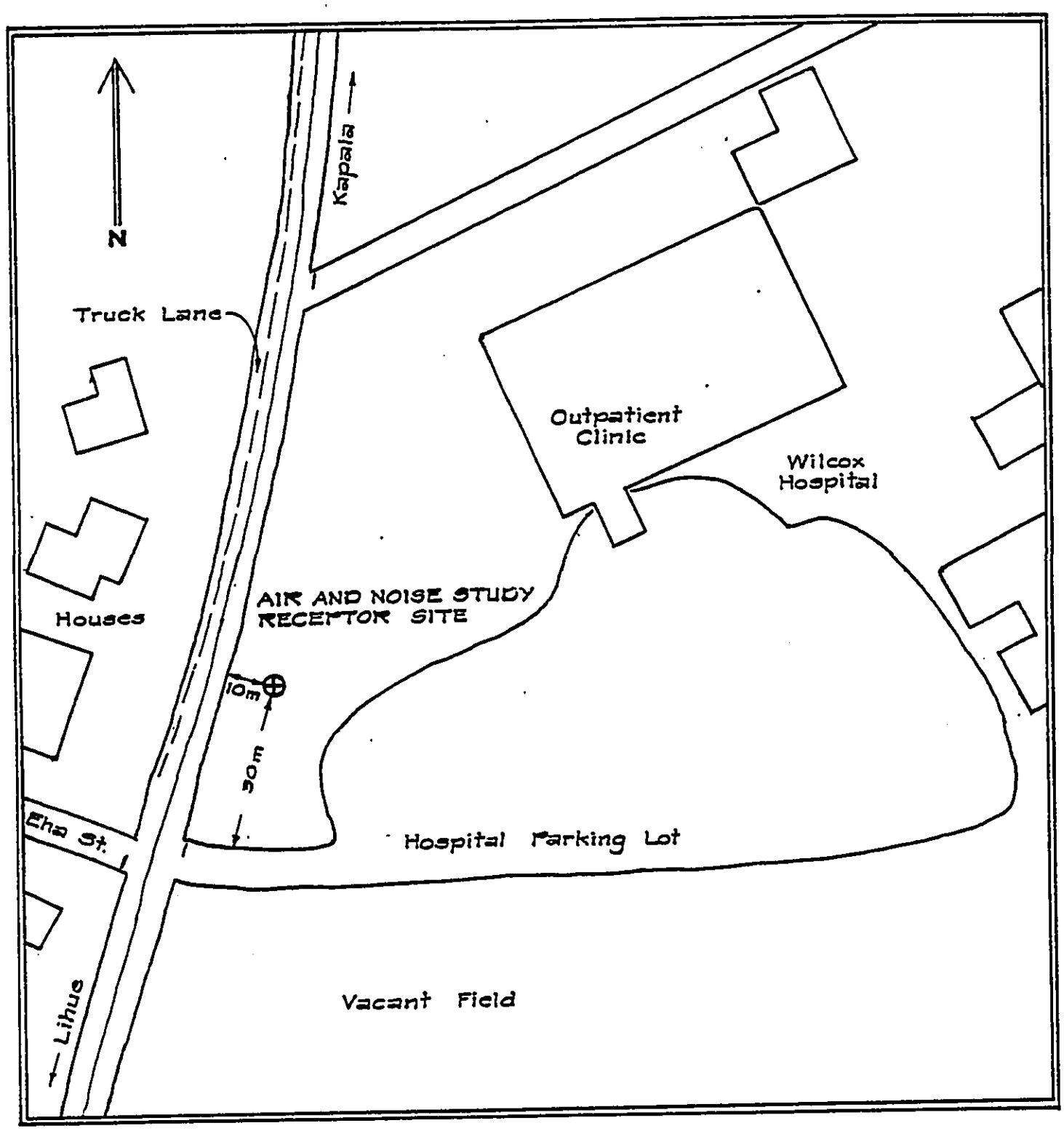
Based on the influence of both the VMT and emission standard variations, a pollutant burden analysis for all four years has been prepared and is summarized in Table 5. These values indicate that the effect of increasingly stringent motor vehicle exhaust controls generally outweighs the projected VMT yielding decreasing emissions from 1980 to 1990. Because the background CO concentration of 1 ppm is assumed to be the level naturally occuring in the free atmosphere, the background level of 1ppm was also used for these years.

2. Air Quality Variables and Corresponding Receptors

The four major factors affecting air quality in this study are highway location and configuration, vehicle emissions, background meteorology and ambient air quality.

The highway location influences the air pollution effects of those sites located in proximity to the road. Such sensitive receptors as schools, public facilities or residences, where persons might be subjected to one-hour or eight-hour exposures to motor vehicle exhaust emissions, must be considered, and CO concentrations in ambient air computed at these locations. The proposed project consists of constructing a bypass highway that would reduce traffic on Kuhio Highway from Lihue to Hanamaulu. Other adjustments in current traffic patterns would also occur, but would be of lesser magnitude (see Appendix D).

Two receptor locations were chosen to represent air pollution conditions on the present highway and on the proposed highway. For present conditions, and future conditions under the No Project alternative, the highway segment in front of Wilcox Hospital was selected (Figure 1). The volume demand (760 vehicles/hour/lane) on this segment presently approaches the roadway capacity (838 vph/lane). As a result, queing can be observed in response to turning movements at the hospital,and as Lihue-bound vehicles merge



HANAMAULU-AHUKINI CUTOFF ROAD
AIR QUALITY REPORT

FIGURE 1

RECEPTOR SITE

Scale: 1" = 80'

from two lanes to one lane. The second receptor will be a hypothetical point on the proposed cut-off road north of Hana-maulu Valley, where there is a potential for future residential land use. The distance from the edge of the roadway to the receptor was taken as 10 meters, since the majority of the homes along Kuhio Highway are 30-50 feet away from the road-way.

3. Pollutant Emissions

Emission factors (Table 4) were taken as an average from the typical national mix of vehicle model years. These factors include the effects of the most recent ammendments to the Clean Air Act as included in the latest update on motor vehicle emission factors (U.S. Environmental Protection Agency, Mobile Source Emission Factors for Low Attitude Areas Only (Final Document), March, 1978. EPA-400/9-78-006). However, this Act may be amended again in the future, in which case the emission factors used here will be obsolete. The most likely change will be a slight increase in the projected pollutant burden for each year, as the auto manufacturers are given additional time to comply with the Act. Due to these and other uncertainties, the pollutant burdens and concentrations calculated here are, at best, order-of-magnitude approximations. CO emission factors for the year 1975 (on which the dispersion model is based), were for a national average mix of 88% automobiles and 12% light duty trucks. The emission factor for this mix is 55 grams/mile.

By the year 2,000, the effects of the Clean Air Act will level off, so that no further improvement in emissions will occur unless the standards are revised; the adjustment factor for 2000 is therefore the same as for 1993.

The National average emission factors assume an average route speed of approximately 20 mph. Although the speeds on the existing and proposed road are generally higher, the emission factors used were not adjusted for these increased speeds. Since this factor was not applied, the estimates represent the "worst case" conditions of heavy traffic congestion. This is a very conservative assumption since CO emissions tend to decrease with increased vehicle speed.

TABLE 2

SUMMARY OF
STATE OF HAWAII AND FEDERAL
AMBIENT AIR QUALITY STANDARDS

Pollutant	Sampling Period	Federal Standards		State Standards
		Primary[a]	Secondary[b]	
1. Suspended Particulate Matter (micrograms per cubic meter)	Annual Geometric Mean	75	60	---
	Annual Arithmetic Mean	--	--	55
	Maximum Average in Any 24 Hours	260	150	100
2. Sulfur Dioxide (micrograms per cubic meter)	Annual Arithmetic Mean	80	60	20
	Maximum Average in Any 24 Hours	365	260	80
	Maximum Average in Any 3 Hours	1300		400
3. Carbon Monoxide (milligrams per cubic meter)	Maximum Average in Any 8 Hours	10		5
	Maximum Average in Any 1 Hour	40		10
4. Hydrocarbons: Non-methane (micrograms per cubic meter)	Maximum Average in Any 3 Hours	160		100
5. Photochemical Oxidants (micrograms per cubic meter)	Maximum Average in Any 1 Hour	160		100.
6. Nitrogen Dioxide (micrograms per cubic meter)	Annual Arithmetic Mean	100		70
	Maximum Average in Any 24 Hours			150

[a] Designed to prevent against adverse effects on public health.
[b] Designed to prevent against adverse effects on public welfare including effects on comfort, visibility, vegetation, animals, aesthetic values, and soiling and deterioration of materials.

C. METHODOLOGY

1. Pollutant Burden Analysis

Given the average daily traffic on the various highway segments in the Lihue-Hanamaulu area (Appendix D), and the length of these segments, the total daily vehicle-miles traveled (V MT) in the area is a matter of simple multiplication (Table 3). This value is then multiplied by the rate of pollutant emission from the vehicles (Table 4) to yield a total weight of each pollutant dispersed into the atmosphere (Table 5). However, this information can not be compared with air quality standards expressed as a concentration, so some form of dispersion modeling must be employed, as described below.

2. Carbon Monoxide Dispersion Modeling

The HIWAY model, which was adapted for estimating traffic-generated CO effects, is a steady state Gaussian computation method. It is based on considering each lane of traffic for an at-grade highway as though it were a finite, uniformly emitting line source of pollution. Once at-grade (or cut-section) line sources have been specified, the air pollution concentration, representing hourly averaging times at a downwind receptor location, can determined by trapezoidal integration of the values of air pollution concentration produced by a number of point sources placed at equal intervals along the line source. This model is applicable for any highway directional orientation, any wind direction and any receptor location at ground level or at some specified elevation.

The step-wise methodology applied for the microscale air pollution assessment is as follows:

a. Traffic flows were obtained for the year 1977 and projected for 1980, 1990 and 2000. (The year 1977, rather than 1978, was chosen as the baseline period due to the availability of traffic data.)

TABLE 3

EXISTING AND PREDICTED
VEHICLE-MILES OF TRAVEL (VMT) per Day [1]
IN THE LIHUE-HANAMAULU AREA

Segment	Length	1977	1980		1990		2000	
		Without	Without	With	Without	With	Without	With
Ahukini-Hanamaulu on 56	2.4	37896	47849	21748	68772	31258	89736	40786
Ahukini-Hanamaulu on Cutoff	2.0	-----	-----	23016	-----	33084	-----	43168
Rice-Ahukini on 56	0.4	5232	6606	5947	9494	8552	12388	11153
Rice	1.0	9035	11408	10725	16400	15416	21400	20116
Rice-Ahukini on 51	1.1	2432	3071	4882	4415	7018	5760	9156
Ahukini	1.1	7172	9056	12178	13016	17505	16984	22849
TOTAL [2]		61767	77990	78497	112097	112833	146268	147228

Notes:

1 Average Daily Traffic from Schematics in Appendix D.

2 The Total VMT is 0.6% greater each year with the proposed cut-off road than without it. This is due simply to a redistribution of traffic over a longer total road surface, rather than an increase in traffic volume.

TABLE 4

AVERAGE EMISSION FACTORS (grams/mile)

Pollutant [1]		Calendar Year 1977	1980	1990	2000 [2]
Carbon Monoxide		60.0	48.4	16.2	16.2
Hydrocarbons		5.0	3.9	1.6	1.5
Nitrogen Oxides		3.3	2.7	1.6	1.6
Sulfur Oxides		0.22	0.20	0.19	0.19
Particulates		0.54	0.47	0.40	0.40
Lead [3]	Stop & Go	9.868×10^{-3}	4.183×10^{-3}	2.506×10^{-4}	2.345×10^{-4}
	Free Flow	6.954×10^{-3}	2.944×10^{-3}	1.765×10^{-4}	1.651×10^{-4}
	Average	8.411×10^{-3}	3.564×10^{-3}	2.136×10^{-4}	1.988×10^{-4}

Notes:

1 Pollutant EF's were obtained from the latest update to "compilation of Air Pollution Emission Factors", EPA Publication AP 42, Second Edition, Supplement 5, December, 1975.

2. Unless the standards are lowered, emission reductions under the Clean Air Act will level off between 1990 and 2000 due to attrition of older vehicles.

3 Lead EF's were calculated using the methodology proposed by the EPA's "Draft Supplementary Guidelines for Lead Implementation Plans". Average speed used was 16 mph, which results in higher EF's than would occur in the project area.

TABLE 5

POLLUTANT EMISSION BURDENS (Tons/Day)
WITH AND WITHOUT THE PROPOSED CUT-OFF ROAD

	Calendar Year						
	1977	1980		1990		2000	
Pollutant	Without	Without	With	Without	With	Without	With
CO	4.08	4.16	4.18	2.00	2.01	2.61	2.63
HC	0.34	0.34	0.34	0.20	0.20	0.24	0.24
NO_x	0.22	0.23	0.23	0.20	0.20	0.26	0.26
SO_x	0.015	0.017	0.017	0.023	0.024	0.03	0.03
Part.	0.037	0.040	0.041	0.049	0.050	0.06	0.06
Lead	6.7×10^{-4}	3.6×10^{-4}	2.5×10^{-4}	3.1×10^{-4}	2.7×10^{-4}	3.8×10^{-5}	3.2×10^{-5}

Notes:

For lead burdens, traffic flow was assumed to be "stop and go" for all years without the proposed cutoff road. With the cutoff, 1980 was taken as "free flow" and 1990 and 2000 were taken as a 50-50 mix of "free flow" and "stop and go" traffic. This assumption is justified by the increasing V/C ratio in the Lihue area in 1990 and 2000 (Tables 6 and 7).

b. EPA-based motor vehicle pollutant emission factors were determined for the years 1977, 1980, 1990 and 2000 (See Assumptions, above).

c. CO concentrations were estimated in ambient air at the project site, for both alternatives for 1977, 1980, 1990 and 2000.

d. Based on traffic flow data for the morning peak hour and the roadway configurations, and assuming adverse meteorological conditions, CO concentrations were estimated for both alternatives at two critical receptors using the HIWAY model.

e. The CO concentrations determined in the previous tasks were added to the background concentrations to obtain total CO levels.

f. The total CO impact values were compared with the ambient air quality standards for this pollutant (See Table 2).

3. Carbon Monoxide Concentration Calculations.

At the present time, congestion occurs in both traffic directions in front of Wilcox Hospital as a result of turning movements into the hospital parking lot onto Eha Street, and from Lihue-bound traffic merging from two lanes into one lane. During peak periods a traffic policeman is assigned to direct traffic at this intersection. Therefore, the HIWAY is used for estimating CO concentrations at a signalized intersection, and a green cycle ratio of 0.7 is be assumed for Kuhio Highway.

Input to the HIWAY model requires an estimate of the line source emission rates resulting from free-flowing traffic as well as from traffic queuing up at intersections. Morning peak hour traffic figures were available for 1977 for both directions of Kuhio Highway, and were projected for the other three years (assuming the same percentage of ADT holds). These figures are shown in Table 6.

The morning peak hour figures in Figure 6 were used to calculate the average length of traffic queues building up at the Wilcox Hospital entrance. Line source emission factors for both the free-flowing traffic and the queues were then calculated and used as input for the HIWAY model. Meteorological conditions assumed were; stability Class E, SW wind at 1 meter/second (making an angle of 22° with the roads), and height of the dispersion layer of 500 meters. In estimating emissions from the proposed cutoff road, it was assumed that traffic would be free-flowing, as on an expressway.

TABLE 6

MORNING PEAK HOUR TRAFFIC VOLUMES

		WILCOX HOSPITAL		CUTOFF ROAD	
		Hanamaulu Bound	Lihue Bound	Hanamaulu Bound	Lihue Bound
1977	Without	522	1,121	----	----
1980*	Without	601	1,291	----	----
	With	328	700	288	619
1990*	Without	863	1,856	----	----
	With	471	1,007	414	889
2000*	Without	1,127	2,421	----	----
	With	615	1,313	540	1,160

* Estimated morning peak hour traffic distribution for these years, is the same percentage of the average daily traffic recorded for 1977: 5% of ADT in Hanamaulu-bound direction and 10.75% in Lihue-bound direction

After the peak traffic 1-hour concentrations were calculated using the HIWAY model, 8-hour concentrations were conservatively estimated by multiplying by a factor of 0.6, as outlined in page 32 of EPA's Guidelines for Air Quality Maintenance Planning and Analysis, Volume 9.

D. SUMMARY OF RESULTS

1. Pollutant Burdens

As a result of the emission standards, and the attrition of older vehicles which do not meet the standards, pollutant burdens will decrease through 1990 Table 5). However, between 1990 and 2000, the older cars will have ceased to offset the effect of the standards, and the average emission factor will level off (Table 4). Increasing traffic will then cause a rise in the total pollutant burden by 2000.

2. Carbon Monoxide Dispersion Modeling

The CO concentrations reported in Table 7 must be understood as estimates of worst-case conditions. Different values might have been obtained by using actual speeds rather than the 19.6 mph built into the EF calculations. At Wilcox this might have increased the concentrations, but would have decreased them on the cutoff road where speeds would be much higher. With these limitations in mind, the results of the dispersion modeling can be discussed.

The effect on air quality from decreasing emission factors and increasing traffic is demonstrated in Table 7, which presents estimated Carbon Monoxide concentrations along Kuhio Highway and the proposed cutoff road. On the basis of the HIWAY model

TABLE 7

ESTIMATED MAXIMUM CO CONCENTRATIONS

WITH AND WITHOUT THE PROPOSED CUTOFF ROAD [1]
(Expressed as mg/m^3)

		1977		1980		1990		2000-2		2000-4 [2]	
		1hr.	8hr.	1hr.	8hr.	1hr.	8hr.	1hr.	8hr.	1hr.	8hr.
Wilcox Hospital	Without	17.1	10.3	15.8	9.5	7.9	4.7	8.9	5.3	---	---
	With	--	--	9.2	5.5	5.1	3.1	5.1	3.1	---	---
On Cutoff Road		--	--	5.8	3.5	3.5	2.1	4.2	2.5	3.9	2.3
Federal Standard		40	10								
State Standard		10	5								

Notes:

1 Values include background CO level which is assumed to be no more than lppm ($1.14\ mg/m^3$).

2 Two lanes and four lanes, respectively.

calculations described above, it is evident that the existing condition on Kuhio Highway is undesirable from an air quality viewpoint. The calculated values significantly exceed the stringent State Standards for CO through 1980 and slightly exceed the more lenient Federal Standards for 8-hour concentrations in 1977. However, this is only a temporary situation, since decreasing emission factors will bring the concentrations into line with the State Standards by 1990. With traffic diverted to the cutoff road, the air quality along Kuhio Highway is improved at a faster pace. Because of a more efficient operating mode, traffic along the cutoff road would not cause the standards to be exceeded.

APPENDIX C

SOUND LEVEL DATA

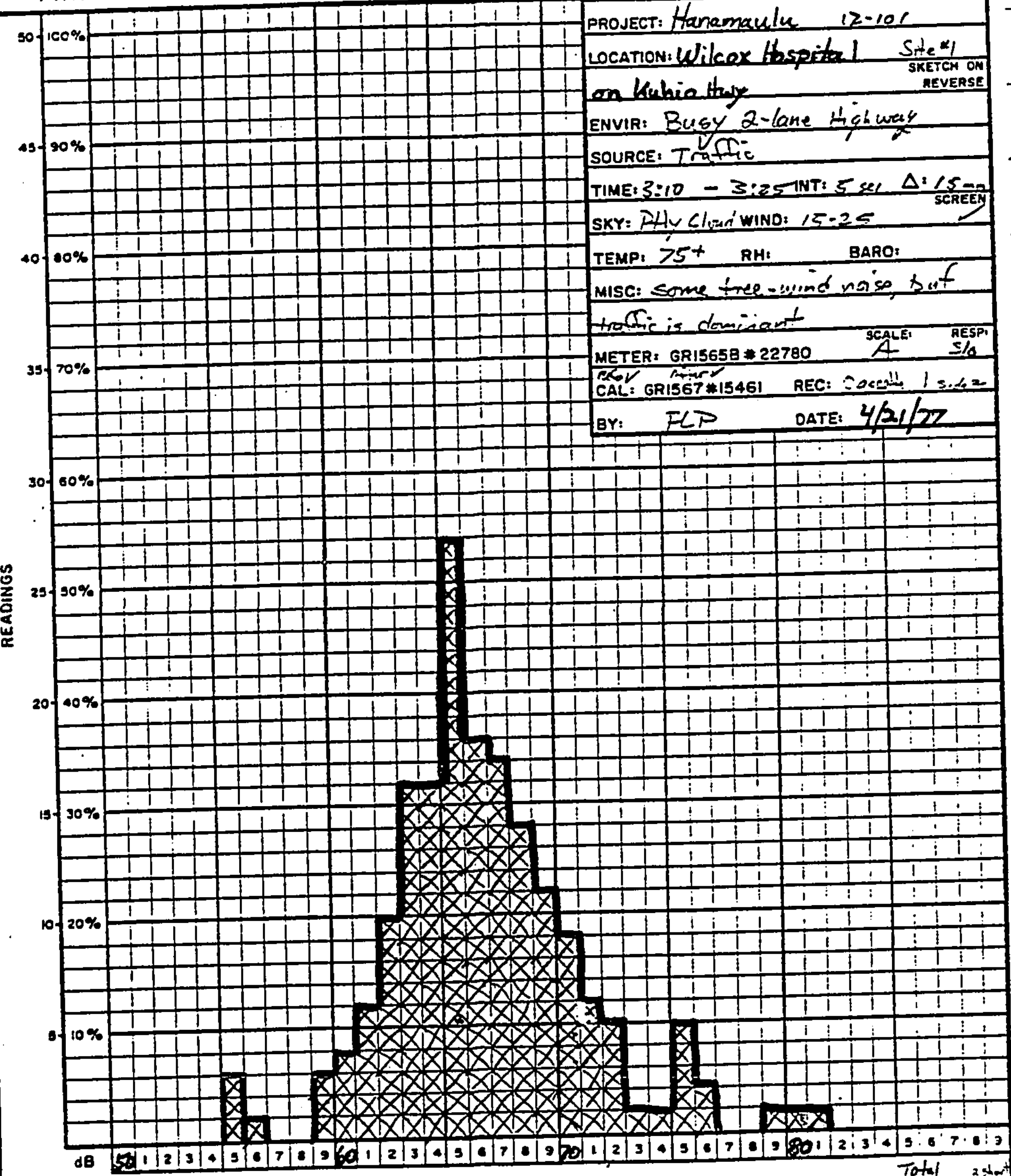
APPENDIX C NOISE LEVEL CALCULATIONS

This Appendix contains the basic data and calculations supporting the discussion in Chapters II and III of the noise environment of the project area. The "Ambient Noise Survey Data Steets" present the field records of the noise level monitoring, and basic statistical analysis. The "Traffic Noise Computation Tallys" present the basic assumptions and calculation methodology used to predict existing and future traffic noise at selected points in the project area. The source for this methodology is the Federal Highways Administration publication "Fundamentals and Abatement of Highway Traffic Noise" (3 volumes), June 1973.

AMBIENT NOISE SURVEY DATA SHEET

of

PROJECT: Hanamaulu 12-101
LOCATION: Wilcox Hospital Site #1 on Kuhio Hwy — SKETCH ON REVERSE
ENVIR: Busy 2-lane Highway
SOURCE: Traffic
TIME: 3:10 – 3:25 INT: 5 sec Δ: 15 min SCREEN ✓
SKY: Ptly Cloud WIND: 15-25
TEMP: 75+ RH: BARO:
MISC: some tree-wind noise, but traffic is dominant
METER: GR1565B #22780 SCALE: A RESP: S/o
CAL: GR1567 #15461 REC: Cassette 1 s.42
BY: FLP DATE: 4/21/77



dB	READINGS	% OF TOTAL	EXCEEDED %
55	3	1.7	99.7
56	1	.5	98.5
57	0	0	98
58	0	0	98
59	3	1.7	98
60	4	2.2	96.3
61	6	3.4	94.2
62	10	5.6	90.7
63	16	9.0	85.1
64	16	9.0	76.4
65	27	15.2	67.2
66	18	10.1	51.9
67	17	9.6	41.8
68	14	7.9	32.2
69	11	6.2	24.3
70	9	5.0	18.1
71	6	3.4	13.1
72	5	2.8	9.7
73	1	.6	6.9
74	1	.6	6.3
75	5	2.8	5.7
76	2	1.1	2.9
77	0	0	1.8
78	0	0	1.8
79	1	.6	1.8
80	1	.6	1.2
81	1	.6	.6

Total: 178 (2 short)

L_{99}=56 | L_{90}=62 | L_{50}=66 | L_{10}=72 | L_1=80

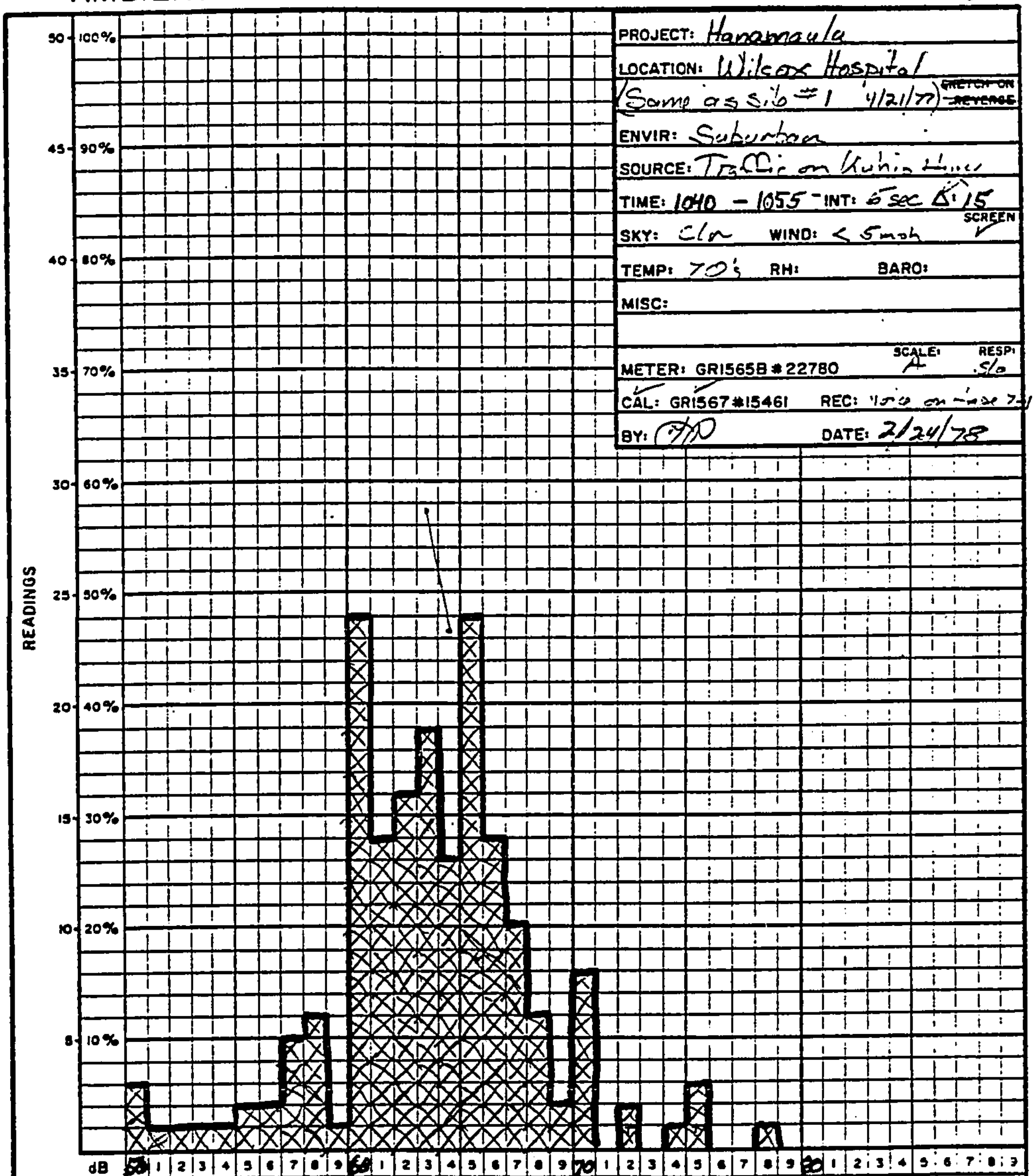
B=Bus D=Dump truck P=Jet landing TS = Slow Truck

AMBIENT NOISE SURVEY DATA SHEET

of

PROJECT: Hanamaulu
LOCATION: Wilcox Hospital
(Same as site #1 4/21/77) ~~SKETCH ON REVERSE~~
ENVIR: Suburban
SOURCE: Traffic on Kuhio Hwy
TIME: 1040 – 1055 INT: 5 sec Δ: 15
SKY: Clr WIND: < 5mph SCREEN ✓
TEMP: 70's RH: BARO:
MISC:

METER: GR1565B #22780 SCALE: A RESP: S/o
CAL: GR1567 #15461 REC: 1 on tape 7-1
BY: [signature] DATE: 2/24/78



dB	50	1	2	3	4	5	6	7	8	9	60	1	2	3	4	5	6	7	8	9
READINGS	3	1	1	1	1	2	2	5	6	1	24	14	16	19	13	24	14	10	6	2
% OF TOTAL	1.7	.5	.6	.5	.6	1.1	1.1	2.8	3.3	.5	13.3	7.8	8.9	10.6	7.2	13.3	7.8	5.6	3.3	1.1
EXCEEDED %	99.4	98.4	97.6	97.0	96.5	95.7	94.6	93.7	90.9	87.6	87.1	73.8	66.0	57.4	46.5	39.3	26.0	18.2	12.7	9.4

dB	70	1	2	3	4	5	6	7	8	9	80	1	2	3	4	5	6	7	8	9
READINGS	8	0	2	0	1	3	0	0	1		T=180									
% OF TOTAL	4.4	0	1.1	0	.6	1.7	0	0	.5											
EXCEEDED %	8.3	3.9	3.9	2.8	2.8	2.2	.5	.5	.5											

L_{99}=50.5 L_{90}=58 L_{50}=64 L_{10}=69 L_{1}=75.5

AMBIENT NOISE SURVEY DATA SHEET

of

PROJECT: Hanamaulu

LOCATION: #2 Hanamaulu - Laukona Rd & Kuhio Hwy (SKETCH ON REVERSE)

ENVIR: Residential / Highway

SOURCE: Heavy Uchmann traffic

TIME: 3:41 – 3:56 INT: 5 sec Δ: 15 m

SKY: Ptly Cldy WIND: 5-10 mph SCREEN ✓

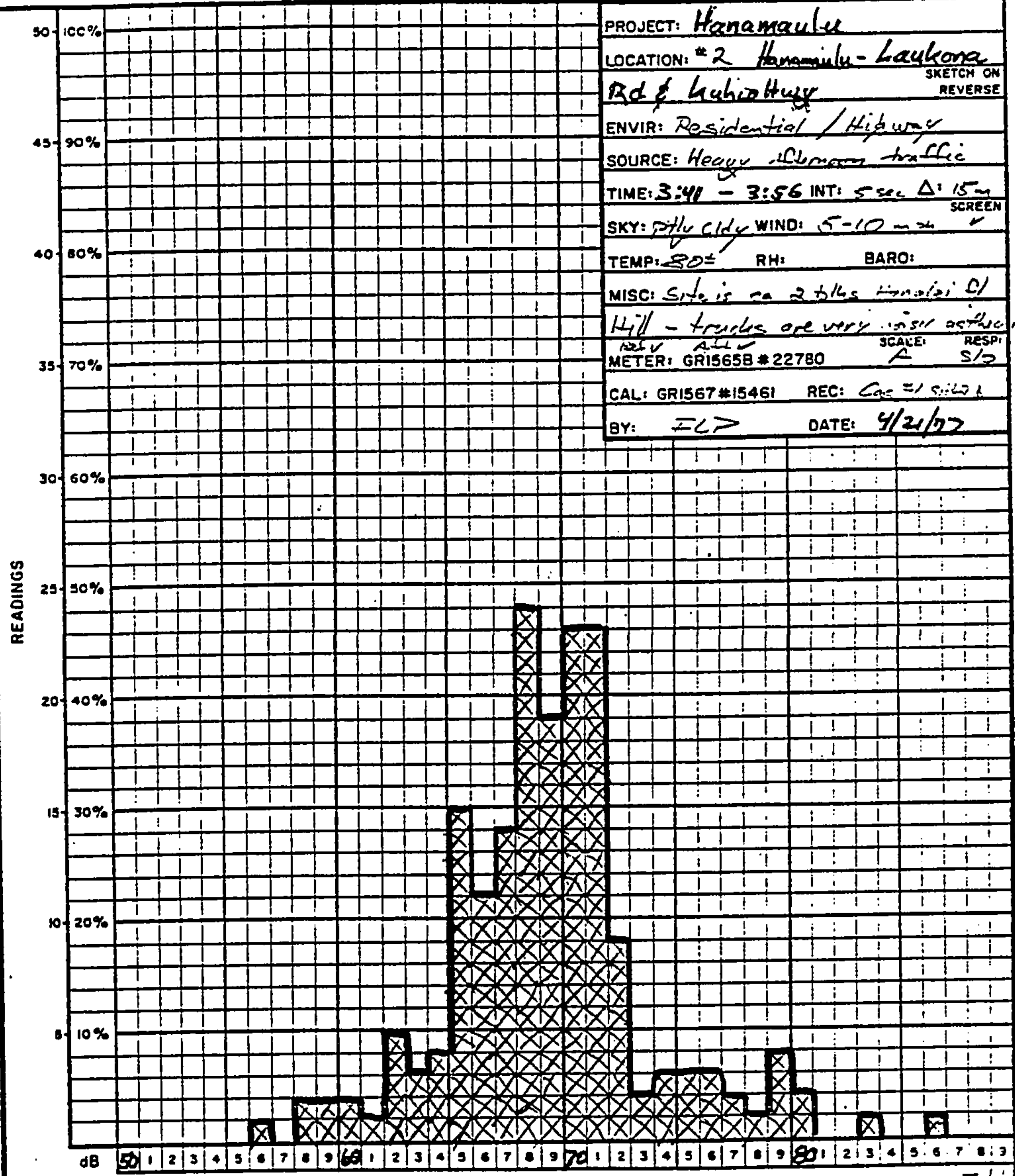
TEMP: 80± RH: BARO:

MISC: Site is ca 2 blks Hanalei Ol Hill – trucks are very noisy on this

METER: GR1565B #22780 (ARV ✓ ALL ✓) SCALE: A RESP: S/D

CAL: GR1567 #15461 REC: Cas w/ sild

BY: FLD DATE: 4/21/77



dB	READINGS	% OF TOTAL	EXCEEDED %
50			
51			
52			
53			
54			
55			
56	1	.5	100
57	0	0	99.5
58	2	1.1	99.5
59	2	1.1	98.4
60	2	1.1	97.3
61	1	.5	96.2
62	5	2.8	95.7
63	3	1.7	92.9
64	4	2.2	91.2
65	15	8.3	89
66	11	6.1	80.7
67	14	7.8	74.6
68	24	13.3	66.8
69	19	10.6	53.5
70	23	12.8	42.9
71	23	12.8	30.1
72	9	5	17.3
73	2	1.1	12.3
74	3	1.7	11.2
75	3	1.7	9.5
76	3	1.7	7.8
77	2	1.1	6.1
78	1	.6	5
79	4	2.2	4.4
80	2	1.1	2.2
81	0	0	1.1
82	0	0	1.1
83	1	.5	1.1
84	0	0	.6
85	0	0	.6
86	1	.6	.6
87	1		
88			
89			
Total	180		

L99=58 L90=65 L50=69 L10=75 L1=83

AMBIENT NOISE SURVEY DATA SHEET

of

PROJECT: Hanamaulu 17-107

LOCATION: Site #3 Hanamaulu Town
Amo St & Hanamaulu Rd — SKETCH ON REVERSE

ENVIR: Quiet neighborhood

SOURCE: Autos, birds, res. local traffic

TIME: 4:20 – 4:35 INT: 5 sec Δ: 15 min

SKY: Ptly Cld WIND: 5–20 mph SCREEN ✓

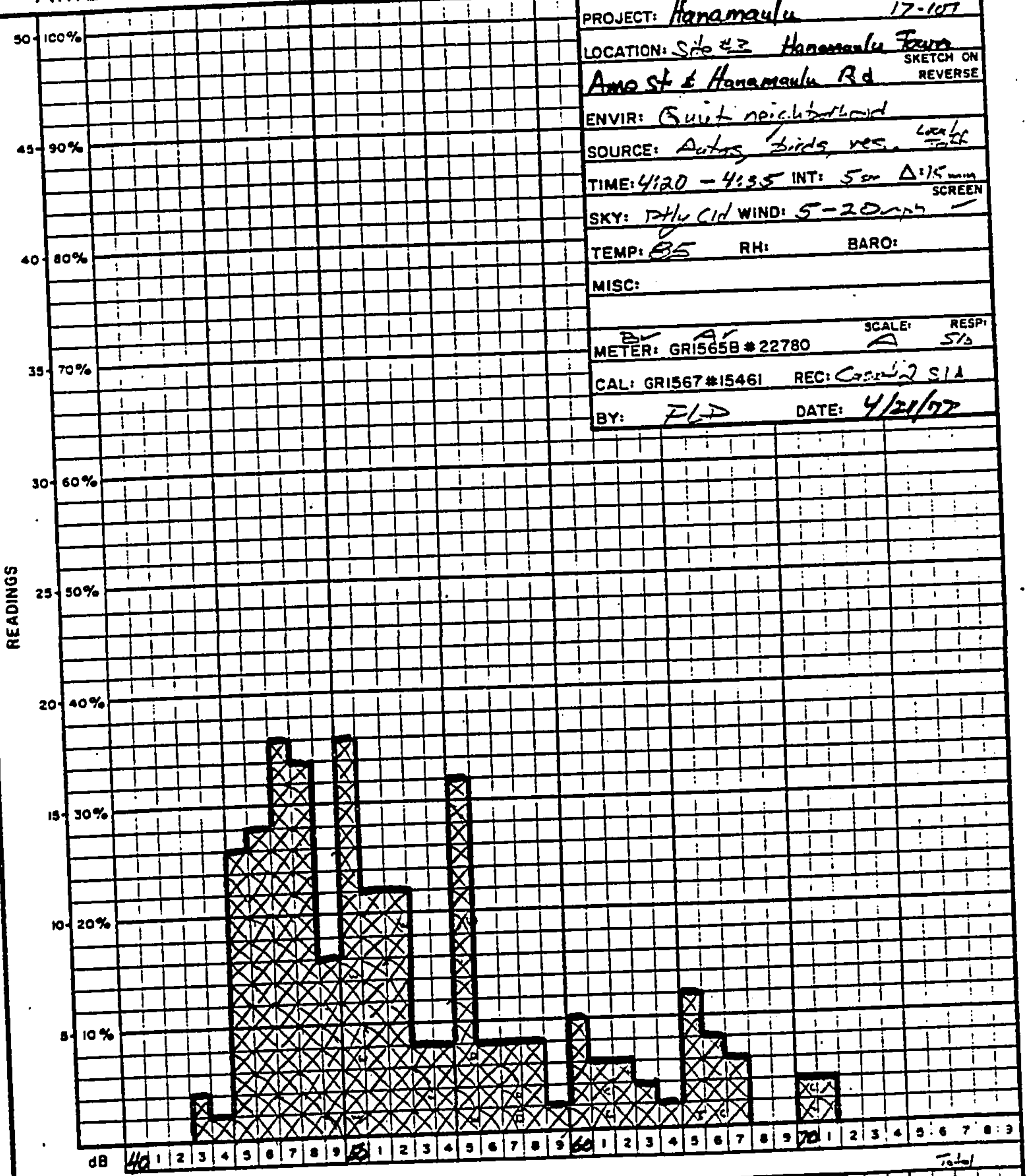
TEMP: 85 RH: BARO:

MISC:

METER: GR1565B #22780 SCALE: A RESP: S/a

CAL: GR1567 #15461 REC: Cassette 2 S/A

BY: PLD DATE: 4/21/77



dB	40	1	2	3	4	5	6	7	8	9	50	1	2	3	4	5	6	7	8	9
READINGS				2	1	13	14	18	17	8	18	11	11	4	4	16	4	4	4	1
% OF TOTAL				1.1	.6	7.2	7.7	9.9	9.4	4.4	9.7	6.1	6.1	2.2	2.2	8.8	2.2	2.2	2.2	.6
EXCEEDED %				99.8	98.3	91.1	90.9	83.2	73.8	63.5	59.3	49.6	43.4	37.4	35.2	33	24.2	22	19.8	17.6

dB	60	1	2	3	4	5	6	7	8	9	70	1	2	3	4	5	6	7	8	9
READINGS	5	3	3	2	1	6	4	3	0	0	2	2								
% OF TOTAL	2.8	1.6	1.6	1.1	.6	3.3	2.2	1.6	0	0	1.1	1.1								
EXCEEDED %	17	14.2	12.6	11	9.9	9.3	6	3.8	2.2	2.2	2.2	1.1								

Total 181

L99 = 44 | L90 = 46 | L50 = 51 | L10 = 64 | L1 = 71

W = wind noise T = Truck D = Barking Dog
C = Car V = VW

AMBIENT NOISE SURVEY DATA SHEET

of

PROJECT: Hanamaulu 17-401

LOCATION: Site #4 Hanamaulu Town
Ano St & Aheka St — SKETCH ON REVERSE

ENVIR: Quiet neighborhood

SOURCE: Bos., wind, local cars, Jet Take-off

TIME: 4:46 – 5:01 INT: 5 sec Δ: 15 min

SKY: Pt. Cldy WIND: 5-20 SCREEN ✓

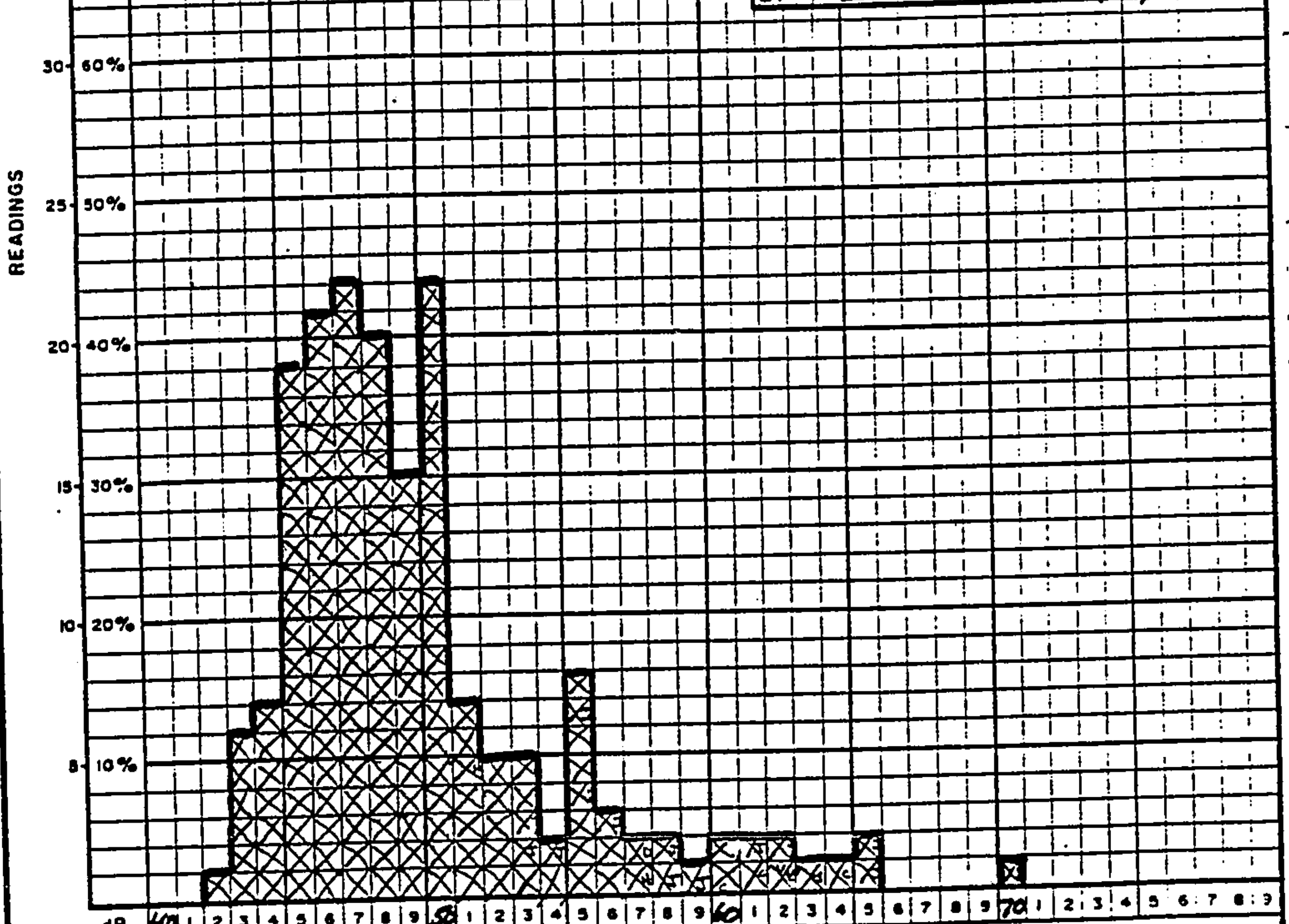
TEMP: 80+ RH: BARO:

MISC:

METER: GR1565B #22780 (Bef ✓ Aft ✓) SCALE: A RESP: S/D

CAL: GR1567 #15461 REC: Tape 2 Side 1 B

BY: ELP DATE: 4/21/77



dB	READINGS	% OF TOTAL	EXCEEDED %
40			
41			
42	1	.6	100
43	6	3.4	99.4
44	7	3.9	96.0
45	19	10.6	92.1
46	21	11.7	81.5
47	22	12.3	69.8
48	20	11.2	57.5
49	15	8.4	46.3
50	22	12.3	37.9
51	7	3.9	25.6
52	5	2.8	21.7
53	5	2.8	18.9
54	2	1.1	16.1
55	8	4.5	15.0
56	3	1.7	10.5
57	2	1.1	8.8
58	2	1.1	7.7
59	1	.5	6.6
60	2	1.1	6.1
61	2	1.1	5.0
62	2	1.1	3.9
63	1	.6	2.8
64	1	.5	2.2
65	2	1.1	1.7
66	0	0	.6
67	0	0	.6
68	0	0	.6
69	0	0	.6
70	1	.6	.6
71			
72			
73			
74			
75			
76			
77			
78			
79			

Total: 179

L_{90} = 43 (40/43) / L_{50} = 49 / L_{10} = 56 / L_1 = 66

C = car H = hammering ca 150' away
D = Dog J = Jet take-off

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

Segment Lihue, Kuhio Highway @ Wilcox Hospital Date

Autos/hr. 1350 Trucks/hr. 34 Miles/hr. 30

Highway Width 50 feet. Observer 30' from edge

Comments Calculated existing noise level from 3 P.M. traffic corresponding to time of measurement (2 hours before peak).

			1977									
Item			A	T	A	T	A	T	A	T	A	T
I_{50} reference at 100 feet			59	57								
Distance, width adjustment 35'			7	7								
$L_{10} - L_{50}$ adjustment			5.7	13								
L_{10} reference at observer			71.7	77								
Segment adjustment			-1	-1								
Barrier adjustment												
Miscellaneous Adjustments	Gradient			2								
	Road surface											
	Foliage											
	Rows of houses											
	Acceleration											
L_{10} at observer, by veh. type			70.7	78								
L_{10} at observer, summed			79									
Measured L_{10}			72									

Sheet _ of _

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

Segment Lihue, Kuhio Highway @ Wilcox Hospital Date

Peak Autos/hr. 8% of ADT Trucks/hr. 2.5% of Miles/hr. 30

Highway Width 50 feet. Observer 75' from edge

Comments Predicted peak noise levels - present, 1980, 1990, 2000 - WITHOUT CUT-OFF ROAD (see Appendix D for ADT's.)

			YEAR									
			1977		1980		1990		2000			
Item			A	T	A	T	A	T	A	T	A	T
I_{50} reference at 100 feet			61	58	64	61	65	63	67	65		
Distance, width adjustment			4	4	4	4	4	4	4	4		
$L_{10} - L_{50}$ adjustment			3.8	13	3.4	12.8	3.0	12.5	2.7	12.2		
L_{10} reference at observer			68.8	75	71.4	77.8	72	79.5	73.7	81.2		
Segment adjustment			-1	-1	-1	-1	-1	-1	-1	-1		
Barrier adjustment												
Miscellaneous Adjustments	Gradient			2		2		2		2		
	Road surface											
	Foliage											
	Rows of houses											
	Acceleration											
L_{10} at observer, by veh. type			67.8	76	70.4	78.8	71	80.5	72.7	82.2		
L_{10} at observer, summed			76.5		79.3		81.0		82.7			

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

Segment Kuhio Highway at Wixcox Hospital Date

Autos/hr. 8% of ADT Trucks/hr. 2.5% of Peak Miles/hr. 30

Highway Width 50 feet. Observer 75' from edge

Comments Predicted peak noise levels - 1980, 1990 and 2000 WITH CUT-OFF ROAD. (see Appendix D for ADT;)

	YEAR									
	1980		1990		2000					
Item	A	T	A	T	A	T	A	T	A	T
L_{50} reference at 100 feet	58	56	60	58	62	60				
Distance, width adjustment	4	4	4	4	4	4				
$L_{10} - L_{50}$ adjustment	4.5	13	3.9	13	3.4	12.8				
L_{10} reference at observer	66.5	73	67.9	75	69.4	76.8				
Segment adjustment	-1	-1	-1	-1	-1	-1				
Barrier adjustment										
Miscellaneous Adjustments: Gradient		2		2		2				
Road surface										
Foliage										
Rows of houses										
Acceleration										
L_{10} at observer, by veh. type	65.5	74	66.9	76	68.4	77.8				
L_{10} at observer, summed	74.5		76.5		78.3					

Sheet _ of _

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

Segment Hanamaulu, Kihio Highway @ Laukona Rd. Date

Autos/hr. 1162 Trucks/hr. 29 Miles/hr. 30

Highway Width 50 feet. Observer 30' from edge

Comments Calculated existing moise level from 3 P.M. traffic corresponding to time of measurement (2 hours before peak).

Item		1977 A	1977 T	A	T	A	T	A	T	A	T
I_{50} reference at 100 feet		57	56								
Distance, width adjustment 35'		7	7								
$L_{10} - L_{50}$ adjustment		5.9	13								
L_{10} reference at observer		69.9	76								
Segment adjustment											
Barrier adjustment											
Miscellaneous Adjustments	Gradient		3								
	Road surface										
	Foliage										
	Rows of houses										
	Acceleration										
L_{10} at observer, by veh. type		69.9	79								
L_{10} at observer, summed		79.5									
Measured L_{10}		75									

Sheet _ of _

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

Segment Hanamaulu, Kuhio Highway @ Laukona Rd. Date

Peak
Autos/hr. 8% of ADT Trucks/hr. 2.5% of Peak Miles/hr. 30

Highway Width 50 feet. Observer 75' from edge

Comments Predicted peak noise levels - Present, 1980, 1990 and 2000
WITHOUT CUT-OFF ROAD (See Appendix D for ADT's).

		YEAR									
		1977		1980		1990		2000			
Item		A	T	A	T	A	T	A	T	A	T
I_{50} reference at 100 feet		59	57	60	58	62	63	64			
Distance, width adjustment		4	4	4	4	4	4	4			
$L_{10} - L_{50}$ adjustment		3.8	13	3.4	12.8	3.0	12.5	2.7	12.2		
L_{10} reference at observer		66.8	74	67.4	74.8	69	78.5	69.7	80.2		
Segment adjustment											
Barrier adjustment											
Miscellaneous Adjustments	Gradient		3		3		3		3		
	Road surface										
	Foliage										
	Rows of houses										
	Acceleration										
L_{10} at observer, by veh. type		66.8	77	67.4	77.8	69	81.5	69.7	83.2		
L_{10} at observer, summed		77.5		78.3		82		83.2			

Sheet _ of _

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

Segment Hanamaulu, Kuhio Highway @ Laukona Rd. Date

Peak Autos/hr. 8% of ADT Trucks/hr. 2.5% of Peak Miles/hr. 30

Highway Width 50 feet. Observer 75' from edge

Comments Predicted peak noise levels - 1980, 1990 and 2000
WITH CUT-OFF ROAD (See Appendix D for ADT's).

	YEAR									
	1980		1990		2000					
Item	A	T	A	T	A	T	A	T	A	T
I_{50} reference at 100 feet	56.5	53	58	55	60	57				
Distance, width adjustment	4	4	4	4	4	4				
$L_{10} - L_{50}$ adjustment	5.0	13	4.2	13	3.8	13				
L_{10} reference at observer	65.5	70	66.2	72	67.8	74				
Segment adjustment										
Barrier adjustment										
Miscellaneous Adjustments: Gradient		3		3		3				
Road surface										
Foliage										
Rows of houses										
Acceleration										
L_{10} at observer, by veh. type	65.5	73	66.2	75	67.8	77				
L_{10} at observer, summed	73.5		75.5		77.5					

TRAFFIC NOISE COMPUTATION TALLY
NOISE LEVEL, dBA

Project Hanamaulu Cutoff Road Engineer FLP

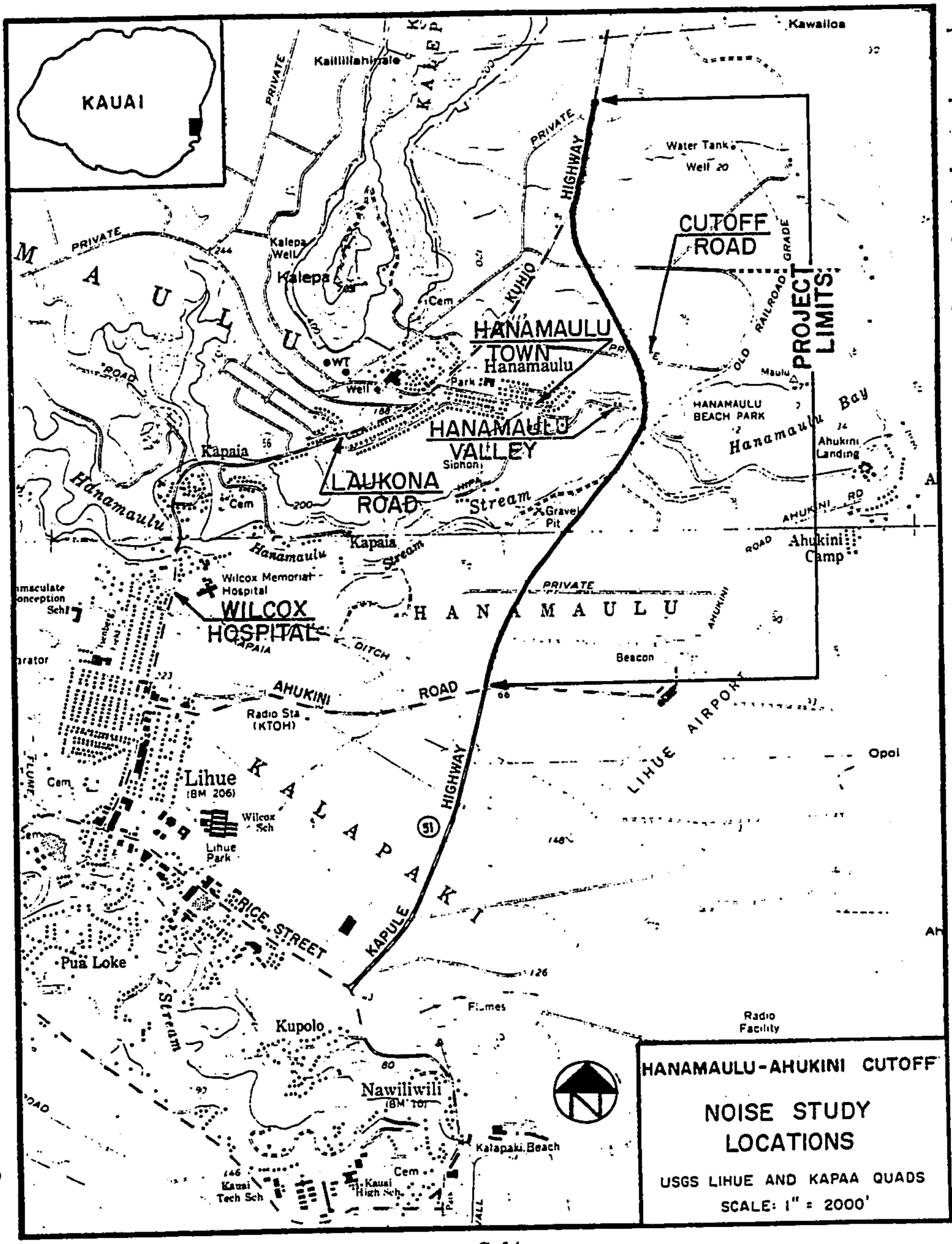
Segment Cutoff Road North of Hanamaulu Valley Date

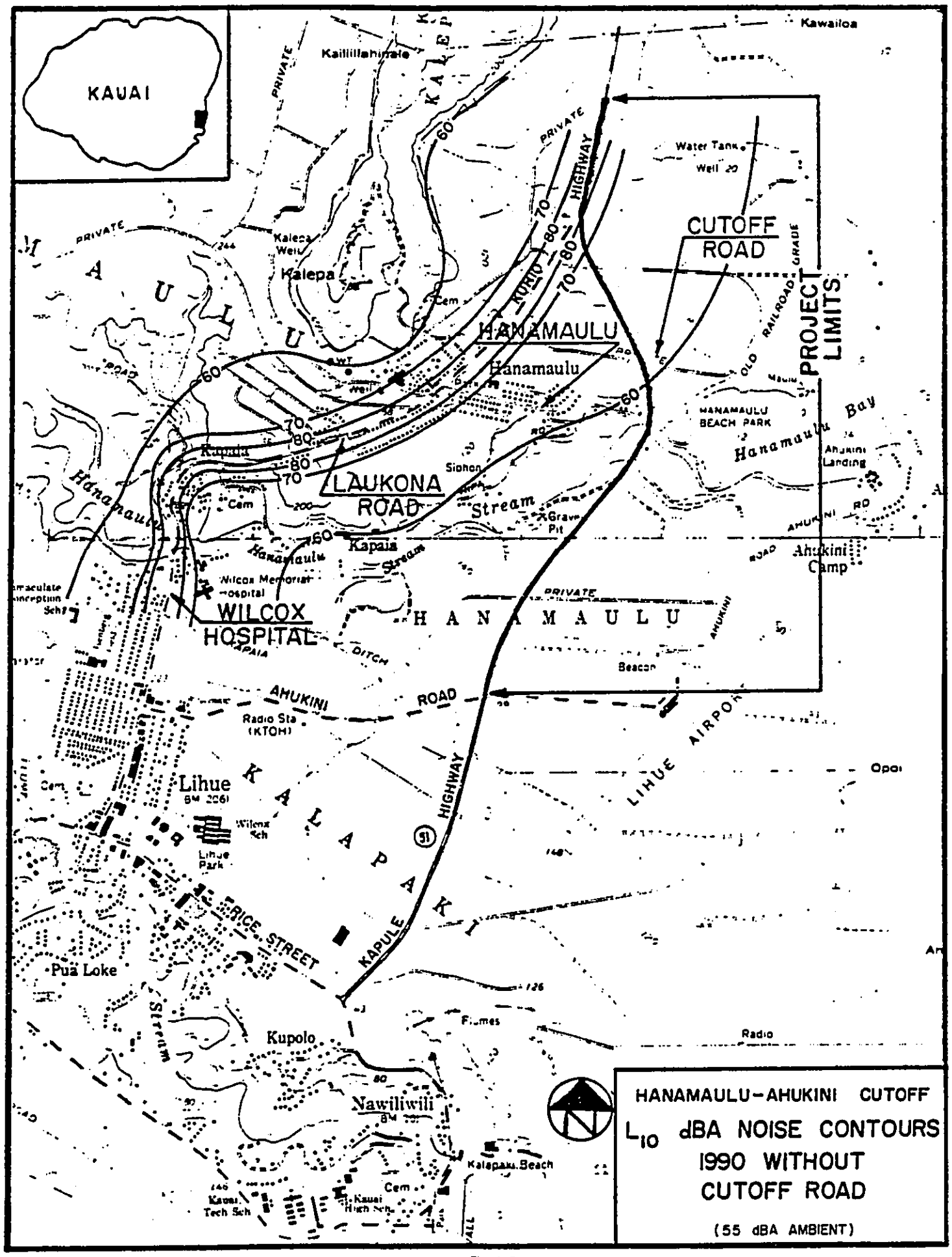
Peak Autos/hr. 8% of ADT Trucks/hr. 2.5% of Peak Miles/hr. 50

Highway Width 50 feet. Observer 75' from edge

Comments Predicted peak noise levels - 1980, 1990 and 2000 along proposed highway.

		YEAR									
		1980		1990		2000					
Item		A	T	A	T	A	T	A	T	A	T
I_{50} reference at 100 feet		64	50	65	52	66	54				
Distance, width adjustment		4	4	4	4	4	4				
$L_{10} - L_{50}$ adjustment		5.9	13	4.3	13	3.9	13				
L_{10} reference at observer		73.9	67	73.3	69	69.9	69				
Segment adjustment											
Barrier adjustment											
Miscellaneous Adjustments	Gradient		2		2		2				
	Road surface										
	Foliage										
	Rows of houses										
	Acceleration										
L_{10} at observer, by veh. type		73.9	69	73.3	71	69.9	71				
L_{10} at observer, summed		75.4		75.3		73.5					


KAUAI
CUTOFF ROAD
PROJECT LIMITS
HANAMAULU TOWN
HANAMAULU VALLEY
LAUKONA ROAD
WILCOX HOSPITAL
HIGHWAY
KUHIO
AHUKINI ROAD
RICE STREET
KAPULE HIGHWAY
LIHUE AIRPORT
Lihue
Kapaia
Hanamaulu
Hanamaulu Bay
HANAMAULU BEACH PARK
Ahukini Landing
Ahukini Camp
Kalepa
Kalepa Well
Kaiiiiiahinale
Kawailoa
Water Tank
Well 20
Wilcox Memorial Hospital
Radio Sta (KTOH)
Beacon
Opoi
Wilcox Sch
Lihue Park
Pua Loke
Kupolo
Nawiliwili
Kalapaki Beach
Kauai Tech Sch
Kauai High Sch
Radio Facility
Flumes
Gravel Pit
Siphon
OLD RAILROAD GRADE
PRIVATE
HANAMAULU-AHUKINI CUTOFF
NOISE STUDY LOCATIONS
USGS LIHUE AND KAPAA QUADS
SCALE: 1" = 2000'

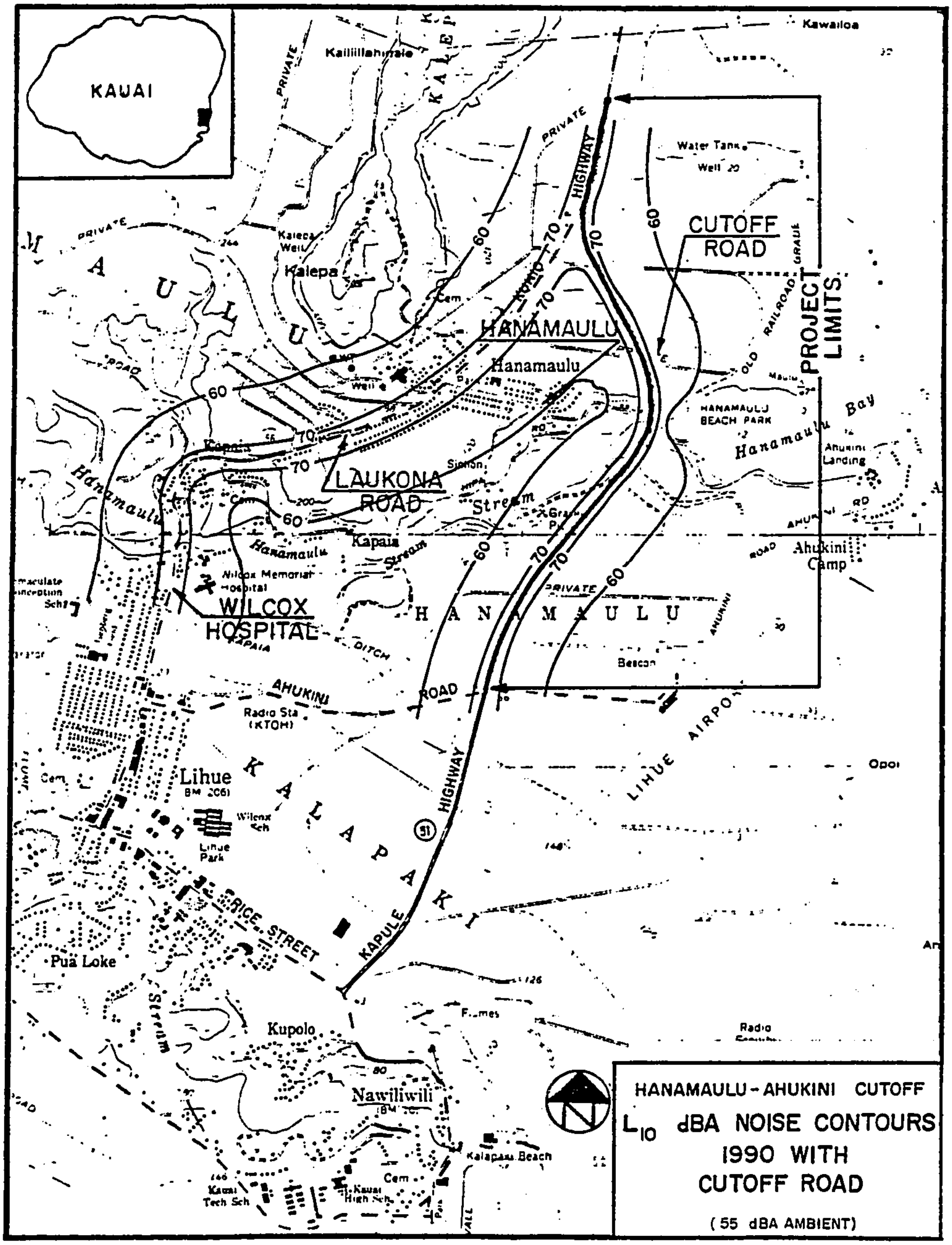


HANAMAULU–AHUKINI CUTOFF

L_{10} dBA NOISE CONTOURS

1990 WITHOUT CUTOFF ROAD

(55 dBA AMBIENT)


KAUAI
HANAMAULU-AHUKINI CUTOFF
L_{10} dBA NOISE CONTOURS
1990 WITH
CUTOFF ROAD
(55 dBA AMBIENT)
CUTOFF ROAD
PROJECT LIMITS
HANAMAULU
LAUKONA ROAD
WILCOX HOSPITAL
HIGHWAY
KAPULE HIGHWAY
RICE STREET
AHUKINI ROAD
LIHUE AIRPORT
Hanamaulu
Kapaia
Lihue
Kalepa
Kawailoa
Hanamaulu Bay
HANAMAULU BEACH PARK
Ahukini Landing
Ahukini Camp
Wilcox Memorial Hospital
Radio Sta (KTOH)
Pua Loke
Kupolo
Nawiliwili
Kalapaki Beach
Kauai High Sch
Kauai Tech Sch
Wilcox Sch
Lihue Park
Water Tank
Well
Opoi
Beacon
60
70

APPENDIX D

TRAFFIC DATA

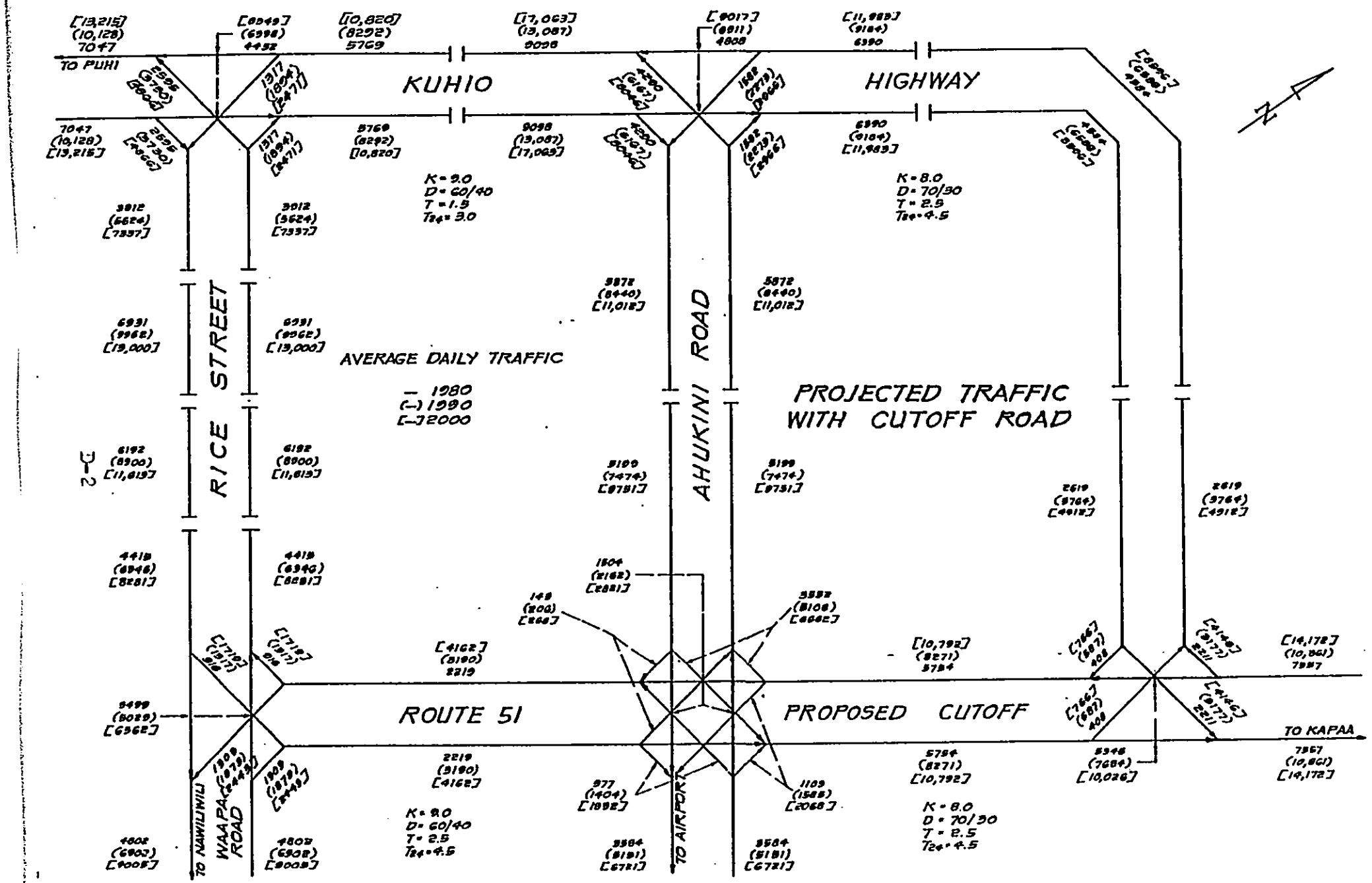
APPENDIX D TRAFFIC DATA

Projected Traffic Without Cutoff Road.

Projected Traffic With Cutoff Road.

Kuhio Highway-Ahukini Road Intersection With and Without Cutoff Road.

Kuhio Highway-Kaumaulii Highway-Rice Street Intersection With and Without Cutoff Road.


KUHIO
HIGHWAY
RICE STREET
AHUKINI ROAD
ROUTE 51
PROPOSED CUTOFF
WAAPA ROAD
TO NAHILILI
TO AIRPORT
TO KAPAA
TO PUHI
AVERAGE DAILY TRAFFIC
– 1980
(–) 1990
[–] 2000
PROJECTED TRAFFIC
WITH CUTOFF ROAD
K = 9.0
D = 60/40
T = 1.5
T24 = 3.0
K = 8.0
D = 70/30
T = 2.5
T24 = 4.5
K = 9.0
D = 60/40
T = 2.5
T24 = 4.5
K = 8.0
D = 70/30
T = 2.5
T24 = 4.5
C-2

APPENDIX E

CLEARANCES

APPENDIX E CLEARANCES

The proposed highway improvements require the following clearances and permits:

		Obtained: Refer to
1.	Clearance from the Department of Land and Natural Resources that environmental impacts will be either avoided or mitigated by the proposed project.	(Page E-2)
2.	Clearance from the State Historic Preservation Officer that the project would have no adverse impacts on features of historical or archaeological significance.	(Page E-3)
3.	Clearance from the U.S. Fish and Wildlife Service that the project would have no unacceptable adverse effect on Hanamaulu Stream or on endangered waterbirds.	(Page E-5 -11)
4.	Bridge permits from the U.S. Coast Guard for the construction of the Hanamaulu Valley bridge, since it is over navigable tidewaters.	
5.	Permits from the U.S. Army Corps of Engineers for the two stream crossings.	
6.	Clearance from the Federal Aviation Administration that the Lihue Airport would not be affected.	(Page E-4)
7.	The Areawide Review Agency Clearance, an inter-governmental agency review clearinghouse to insure coordination of Federally funded projects.	
8.	Conservation District Use application for Conservation lands on south bluff of Hanamaulu Valley (See Figure 10, Page II-25).	
9.	Wetlands Finding in accordance with Executive Order 11990.	(Page E-12)

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

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

October 12, 1976

Mr. T. Hirano
Chief, Highways Division
Department of Transportation

Dear Mr. Hirano:

Subject: Hanamaulu-Ahukini Cut-off Road, Project No. 5IC-01-76, Kauai, Hanamaulu Vicinity

The proposed undertaking will have no effect upon any known historic or archaeological site on or likely to be eligible for inclusion to the Hawaii and/or National Registers of Historic Places. Therefore, this office has no reservations for the Highways Division to proceed with further stages of the corridor location study for the above project. In the event that any unanticipated sites or remains are encountered, please contact this office immediately.

Sincerely yours,

Jane L. Silverman

Jane L. Silverman
Historic Preservation Officer
State of Hawaii

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 30, 1978

Mr. Ralph Segawa
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

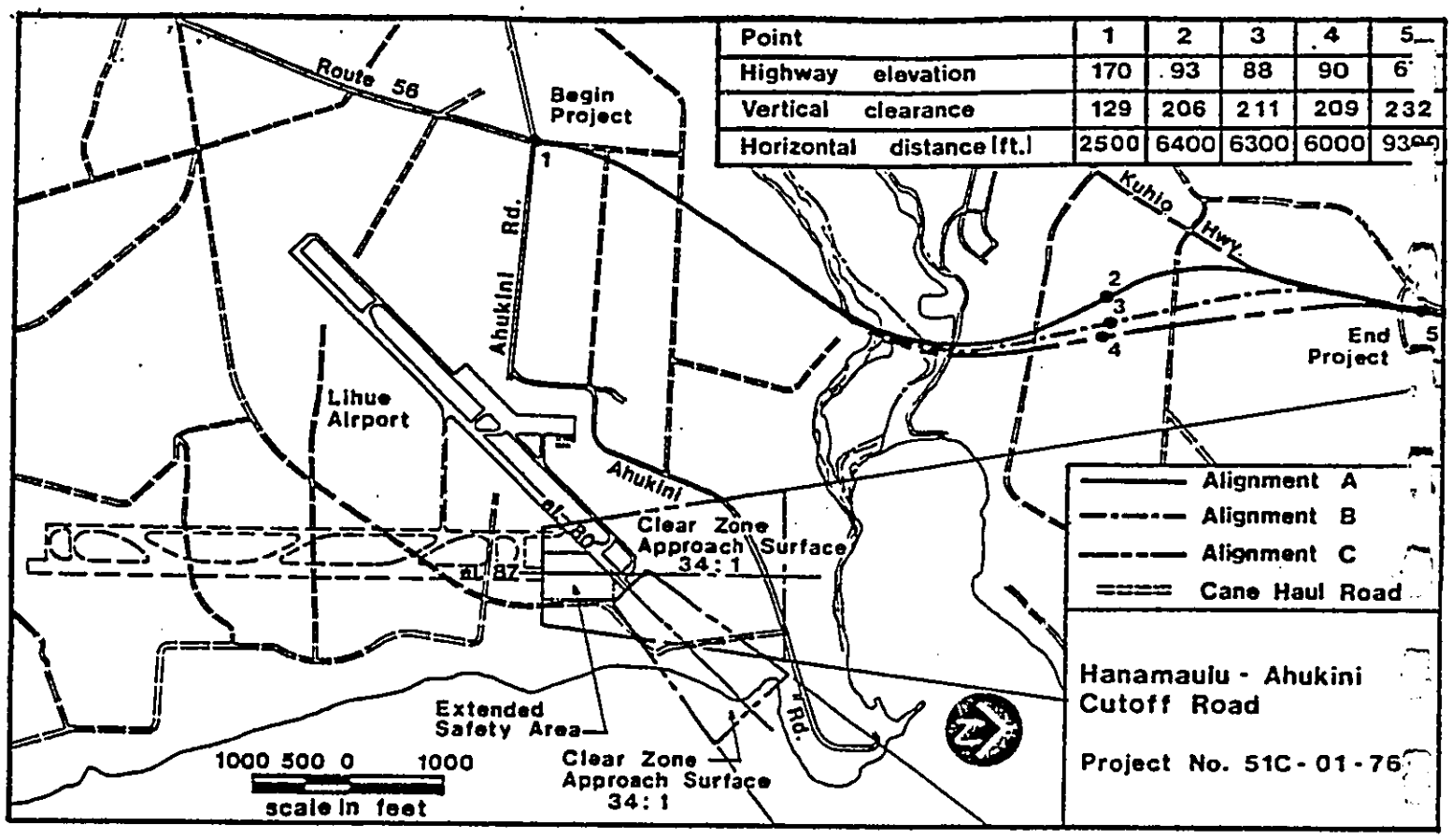
Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for the Proposed FHWA-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, Project No. 51C-01-76, May 12, 1978.

The proposed undertaking will have no effect upon any known historic or archaeological site on or likely to be eligible for inclusion on the Hawaii Register and/or National Register of Historic Places. This office has no reservations for the project to proceed.

In the event that any unanticipated sites or remains are encountered, please inform the applicant to contact this office immediately.

Sincerely yours,

Jane L. Silverman
Historic Preservation Officer
State of Hawaii



SKETCH MAP SUPPORTING
FINDING OF PUBLIC INTEREST AT

LIHUE AIRPORT
LIHUE, ISLAND OF KAUAI

In compliance with Section 318, Title 23 U. S. C., we concur that the location of this airport and the consequent construction of Project No. 51C-01-76, Hanamaulu-Ahukini Cutoff Road, are in the public interest.

Department of Transportation
Air Transportation
Facilities Division

7/31/78
Date

Franklin D. Benson
Supervisory Airports Engineer, APC-620
Federal Aviation Agency
Airports Division

AUG 24 1978
Date

Department of Transportation
Land Transportation
Facilities Division

8/10/78
Date

Federal Highway Administration

8.28.78
Date

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Division of Ecological Services
300 Ala Moana Blvd., Rm. 5302
P. O. Box 50167
Honolulu, Hawaii 96850

Reference: ES

September 27, 1977

Mr. Ralph Segawa
Division Administrator
U. S. Department of Transportation
P. . Box 50206
Honolulu, Hawaii 96850

Re: Hanamaulu-Ahukini Cutoff Road, Proj. No. 51C-01-76, Island of Kauai Environmental Impact Statement Preparation Notice

Dear Mr. Segawa:

We have reviewed the referenced notice, dated 8 August 1977, concerning construction of a cut-off road which could impact endangered waterbird and stream habitat. We noted that field studies will be conducted to assess the quality of existing endangered waterbird habitat in the project vicinity. In addition, research is proposed to evaluate the potential increase in turbidity in Hanamaula Stream because of bridge and road construction and the possible redirection of sugar mill wash water.

Because this project could adversely affect endangered species, we recommend you contact Mr. Eugene Kridler, the Service's Hawaii Endangered Species Coordinator, to determine if formal coordination is required as mandated by Section 7 of the Endangered Species Act of 1973. Mr. Kridler will also be able to assist in establishing adequate criteria to evaluate the quality of the existing endangered

aterbird habitat within the sphere of project influence. He can be contacted at 300 Ala Moana Blvd., Room 5302, P. O. Box 50167, Honolulu, Hawaii 96850, Telephone Number 546-5615.

Since the terrestrial biota largely consists of introduced species, its loss is not expected to be significant. However, road construction could result in adverse impacts to both stream and marine biota. These impacts would generally be caused by increased turbidity resulting from erosion, associated with road construction and claring, redirection of sugar mill wash water, and instream work. In addition, aquatic habitat disruption will occur during construction of the stream crossing. Little data is available to assess the magnitude of these impacts. Therefore, we recommend a biological survey of Hanamaulu Stream be conducted to determine its species composition. The potential impacts on the species should be included in the Environmental Impact Statement.

Please keep us informed of any action taken on this project.

Sincerely yours,

Maurice H. Taylor
Field Supervisor

cc: HA
ARD(AE)
NMFS
HDF&G
Hawaii Endangered Species Coordinator

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

ARIZONA
CALIFORNIA
NEVADA
HAWAII
GUAM
AMERICAN SAMOA

May 12, 1978

IN REPLY REFER TO
HEC-HI

Mr. R. Kahler Martinson
Regional Director
U. S. Fish and Wildlife Service
P. O. Box 3737
Portland, Oregon 97208

Dear Mr. Martinson:

Subject: Hawaii Project F-051-1( ),
Hanamaulu - Ahukini Cutoff Road, 50 USC 402

As provided in Title 50, Part 402, of the Endangered Species Act of 1973, we request the initiation of formal consultation between the Federal Highway Administration and the U. S. Fish and Wildlife Service for the proposed Hanamaulu - Ahukini Cutoff Road, Federal-aid Primary Route 51, Island of Kauai.

Attached is a report, including maps, which describes the known biological resources in the project area.

Mr. Maurice H. Taylor, Field Supervisor, Division of Ecological Services, of your Honolulu Office was previously contacted regarding the proposed project. For your ready reference, we are also attaching his letter to us dated September 27, 1977.

Your attention to this request is appreciated.

Sincerely yours,

Ralph T. Segawa
Division Administrator

By:
H. Kusumoto
Asst. Division Administrator

Enclosure

JOHN 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

RECEIVED
7-11-78
D. E. – KAUAI

July 11, 1978

Mr. Masami Murakami
Acting District Engineer
Land Transportation Facilities Division
Department of Transportation
P. O. Box 1950
Lihue, Kauai, HI

SUBJECT: Hanamaulu-Ahukini Cutoff Road, Project No. 51C-01-76 (LT-KE 3.4471)

Dear Mr. Murakami:

This is in response to your July 7, 1978 letter requesting information on fish and wildlife in the proposed Hanamaulu-Ahukini cutoff road project area.

I have conducted field trips in the vicinity of the proposed road route at Hanamaulu Valley on several occasions during waterfowl censuses and surveys. The only endangered wildlife species I have encountered in the whole of Hanamaulu Valley was the Hawaiian gallinule, Gallinula chloropus sandvicensis. Though only one gallinule was observed, it was well upstream of the proposed roadway. Perhaps the Hawaiian duck, Anas wyvilliana, occasionally uses the flooded stream, but I have not observed it there.

In my opinion, the wildlife habitat that exists along the proposed Hanamaulu Cutoff Road is insignificant to endangered wildlife.

I do not have expertise in the field of fish and aquatic organisms, so cannot advise you on that matter: However, to my knowledge there are no species of fish officially listed as endangered at the present time in the State of Hawaii.

I hope that this sufficiently answers your concerns.

Sincerely yours,

Thomas C. Telfer

Thomas C. Telfer
Wildlife Biologist, Kauai

cc: R. Walker, Wildlife Br., Chief

Attachment 3
E-8

United States Department of the Interior

FISH AND WILDLIFE SERVICE
LLOYD 500 BUILDING, SUITE 1692
500 N.E. MULTNOMAH STREET
PORTLAND, OREGON 97232

JAN 29 1979

915	
DA	
EC	
AD	
PR	
DR	
R-9	

January 22, 1979

In reply refer to:
AFA-SE - 1-2-78-F-45

Mr. Ralph T. Segawa
Division Administrator
Federal Highway Administration
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

This is in response to your request of May 12, 1978, for formal consultation under Section 7 of the Endangered Species Act of 1973, as amended, regarding the proposed Hanamaulu-Ahukini Cutoff Road, Federal-aid Primary Route 51, Island of Kauai, Hawaii. Of concern is the potential effect your proposal may have on three endangered waterbirds; the Hawaiian coot, Fulica americana alai, the Hawaiian duck, Anas wyvilliana, and the Hawaiian gallinule, Gallinula chloropus sandvicensis.

Your original request for consultation did not provide the necessary information needed to adequately evaluate the impacts. The additional information was requested during the July 26, 1978, meeting between Messrs. Kridler and Taylor of our Hawaii staff and Messrs. Kusumoto and Yosui of your staff. Subsequent information was furnished by you to Mr. Kridler in your letter of September 6, 1978. Further information was supplied by Mr. H. Kusumoto, dated January 10, 1979, in which he assured that Alignment "A" for the road has been selected and will be used. A copy of the draft EIS prepared by your agency and the State of Hawaii Department of Transportation was also provided with this letter. The purpose of the proposed road and bridge is to reduce congestion on Kuhio Highway.

The project includes a two-lane highway and bridge, the latter spanning the Hanamaulu Valley. The proposed bridge site is at the narrower seaward end of the valley.

Parts of the Hanamaulu Valley provide known habitat for three species of endangered waterbirds, although population numbers at the project site are considered to be low. Low numbers are a reflection of limited preferred habitat for the three birds. Hanamaulu Valley was inspected by Biologists Kridler and Sincock of our Service late in 1977 and again by Kridler in early 1978.

The DEIS states on Page I-16, Bridge Design Characteristics, that the bridge will rest on piers for the full extent of the crossing and that optimum height over the valley is 65 feet. At this height, road noise and activities would most likely not affect the birds.

Pages III-6 and III-7, Mitigative Measures, state that all fills (e.g. temporary road and embankment) necessary for construction of the bridge will be removed after construction, and resulting potholes created by removal would enhance habitat for waterbirds. This measure would further enhance the habitat if native wetland grasses were planted for cover.

It is our biological opinion that the proposed bridge and highway will likely promote the conservation of the Hawaiian coot, duck and gallinule provided the following conditions are met:

1. Construct Alignment "A";

2. Construct the bridge on piers as described on Page I-16 of the DEIS. The height should be that stated as the preferred one--about 65 feet above the valley floor;

3. Remove immediately after construction all temporary fills and embankments needed for construction and create potholes at least 4 feet deep in their stead;

4. Plant native wetland grasses around these potholes for cover;

5. Place and construct fills and embankments only where necessary and only during periods of seasonally low stream flow to prevent backwater which might flood nests elsewhere in the valley. Such fills and embankments are to be removed prior to the next nesting season;

6. Insure that no debris, chemicals (including petrochemicals) and other deleterious materials enter the water; and

7. Limit construction activities in the valley to the immediate project site.

This concludes formal Section 7 consultation on this project. Should any modifications, other than those discussed above, be considered, or if new information becomes available on listed species, FHWA should reinitiate consultation.

We appreciated the opportunity to consult with you on this matter.

Sincerely yours,

William H. Meyer

William H. Meyer
Acting Regional Director

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAYS ADMINISTRATION
REGION NINE, HAWAII DIVISION

Executive Order 11990
Wetlands Finding

Hanamaulu-Ahukini Cutoff Road (FAP Route 51, Kauai, Hawaii)
Project Number F-051-1(4)

This statement sets forth the finding that there is no practicable alternative to construction in the wetland located near the mouth of Hanamaulu Stream, Kauai, Hawaii, and that the highway proposal includes all practicable measures to minimize harm to the wetland which may result from such use. This finding is made in accordance with the requirements of Executive Order 11990 on the Protection of Wetlands, dated May 24, 1977.

DESCRIPTION OF THE PROJECT

The proposed project involves construction of a cutoff highway in the Lihue area on the Island of Kauai, Hawaii. The Hanamaulu-Ahukini Cutoff Road will extend Kapule Highway (FAP Route 51) approximately two miles northward from its present terminus at Ahukini Road, to Kuhio Highway just north of Hanamaulu. The cutoff road will be constructed in two stages, with a two-lane roadway and a single two-lane bridge across Hanamaulu Stream constructed in the first stage. When demand increases, the cutoff road will be expanded to four lanes and a second two-lane bridge added.

DESCRIPTION OF THE WETLAND

The valley floor in the vicinity of the proposed highway consists of several sub-divided pastures predominantly vegetated with California grass (Brachiaria mutica), with various weedy species, depending on the degree of maintenance and grazing that the pasture has received. The small pasture at the site of the proposed bridge appears to be abandoned, as it is being invaded by shrubs and noxious weeds (e.g. Leucaena leucocephala, Mimosa pudica, Xanthium strumarium). From such evidence as old dikes, channels and a faint "paddy" pattern, it is apparent that portions of the valley floor were once cultivated in taro (or perhaps rice). These dike patterns are in the wide part of the valley above the proposed bridge site. Several of the pastures are poorly drained, and during wet periods, take

on a marshy aspect. The banks of Hanamaulu Stream are vegetated with a heavy growth of California grass and a few scattered sedges (primarily Cyperus alternifolius). At the proposed bridge site, the northerly bank supports a very dense thicket of mature hau (Hibiscus tiliaceus) and Java plum. The wetland is permanent immediately adjacent to Hanamaulu Stream, but only seasonal a short distance away.

WETLANDS AFFECTED

Construction of the bridge across Hanamaulu Valley will affect a strip of wetland approximately 100 feet wide by 200 feet long (0.5 acres). The major disturbance will occur from the erection of falsework and the construction of a temporary access road.

ALTERNATIVES CONSIDERED

Do-Nothing. Not building the cutoff road would result in the presently congested traffic condition on Kuhio Highway continuing to grow worse. The adverse environmental impacts which would result from the ensuing congestion problems include a high accident rate, increased noise and air pollution, and accompanying social and economic impacts to residents, businesses and institutions serviced by the highway. Therefore, permitting existing trends to continue without altering the present road system is not a desirable alternative.

Widening Kuhio Highway Alternative. The expansion of Kuhio Highway to four lanes to handle higher traffic loads would result in the displacement of many businesses and private homes. In addition, even with the expansion of the highway to four lanes, the desired level of service cannot be attained in terms of operating speed criteria, due to the road's restrictive alighment. This would miss the wetland, but because of the high social and economic costs relative to the proposed cutoff road, widening Kuhio Highway has been rejected as an alternative to constructing a cutoff road.

Alternative to Do Least Harm to the Wetland. Crossing Hanamaulu Valley at various points farther inland was considered, but rejected due to the greater width of the valley and the larger amount of wetland which would be affected. Three alignments which cross the valley at its narrowest point were studied in detail for the Hanamaulu-Ahukini Cutoff Road. All three alternative alignments follow the same route from Ahukini Road to Hanamaulu Stream. The alignment chosen intersects Kuhio Highway south

of the Kauai Hardwood Factory, and will utilize the existing crossing of the unnamed stream adjacent to the Factory. The two alighments which were rejected intersect the highway north of the Factory, and would have required the construction of new crossings on the unnamed stream.

MEASURES TO MINIMIZE HARM

An alignment has been selected which crosses the least amount of wetland possible, and a bridge design has been adopted which will not result in the permanent filling of the wetland. Upon completion of the bridge , all fill material will be removed, and "pot holes" will be created where water can collect and provide waterbird habitat.

COORDINATION AND PUBLIC INVOLVEMENT

The State Division of Fish and Game and the U.S. Fish and Wildlife Service were consulted prior t the preparation of the Draft EIS, when the alternatives were being developed and evaluated. The USFWS Endangered Species Coordinator made the recommendation that "pot holes" be created, and this has been incorporated into the project. Opportunity for early public review was provided at information meetings on Kauai on August 1 and December 15, 1977 and January 24, 1978, through the review proceedure for the Draft EIS (May 23 - June 22, 1978) and at a highway corridor and design public hearing on June 21, 1978.

CONCLUSION

The above factors and considerations establish that there is no practicable alternative to construction in the wetland located in Hanamaulu Valley, Kauai, Hawaii, and that the highway proposal includes all practical measures to minimize harm to the wetland which may result from such use.

Date

For Division Administrator
Federal Highway Administration

APPENDIX F
COMMENTS AND RESPONSES TO DRAFT EIS

APPENDIX F COMMENTS AND RESPONSES TO THE DRAFT EIS

I. DRAFT EIS MAILING LIST

Federal Agencies		Comment Date
Agricultural Stablization and Conservation Service U.S. Department of Agriculture	300 Ala Moana Blvd. Box 50008 Honolulu, Hawaii 96850	No comment Received
Soil Conservation Service U.S. Department of Agriculture	300 Ala Moana Blvd. Box 50006 Honolulu, Hawaii 96850	6/6/78 ENR*
Forest Service U.S. Department of Agriculture	1151 Punchbowl Street Room 323 Honolulu, Hawaii 96813	No comment Received
U.S. Department of Agriculture Office of the Secretary	Office of the Secretary Washington, D.C. 20250	No comment Received
Federal Aviation Administration Department of Transportation	300 Ala Moana-Box 4009 Honolulu, Hawaii 96850	6/19/78
Department of Transportation U.S. Coast Guard Commandant	14th Coast Guard District 677 Ala Moana Blvd. Honolulu, Hawaii 96813	No comment Received
Office of the Secretary U.S. Department of the Interior	18th and "C" Streets, NW Washington, D.C. 20242	6/30/78
Department of Housing and Urban Development	300 Ala Moana Blvd. Box 50007 Honolulu, Hawaii 96850	7/5/78 ENR*
Department of Housing and Urban Development	450 Golden Gate Avenue P.O. Box 36003 San Francisco, CA 94102	No comment Received
Department of Health, Education and Welfare	Federal Office Building 50 Fulton Street San Francisco, CA 94102	No comment Received

* ENR: Evaluation Not Required (no substantial comment)

		Comment Date
Director, Office of Federal Activities (Mail Code A-104) Environmental Protection Agency	Room 537 West Tower Waterside Mall, SW Washington, D. C. 20460	No comment Received
U.S. Department of Commerce National Marine Fisheries Service	2570 Dole Street Honolulu, Hawaii 96822	No comment Received
EIS Coordinator, Region 9 Environmental Protection Agency	215 Fremont Street San Francisco, CA 94108	8/1/78
Advisory Council on Historic Preservation Attn: Mr. Robert Garvey Executive Director	801 19th Street, NW Suite 618 Washington, D. C. 20006	8/28/78 ENR
Department of Commerce Attn: Dr. Sydney R. Galler Deputy Assistant	Secretary for Environmental Affairs Washington, D. C. 20230	No comment Received
Mr. Ernest E. Sligh, Director Environmental Impact Division Office of Environmental Programs Federal Energy Administration	New Post Office Building 12th & Pennsylvania Ave. NW Washington, D. C. 20461	No comment Received
U.S. Army - Corps of Engineers Honolulu District	Building 230, Fort Shafter APO San Francisco 96558	6/20/78
Base Commander Department of the Air Force	15th Airbase Wing (cc) Hickam Airbase Honolulu, Hawaii 96553	6/6/78 ENR*

State Agencies		Comment Date
Department of Accounting and General Services	Attn: Hideo Murakami	6/2/78 ENR
Department of Agriculture	Attn: John Farias Jr.	6/8/78 ENR
Department of Defense	Attn: Maj. Gen. Valentine A. Siefermann	6/2/78 ENR
Department of Education	Attn: Charles G. Clark	5/24/78 ENR
Department of Health	Attn: Dr. James S. Kumagai	6/20/78 ENR
Department of Land and Natural Resources	Attn: Christopher Cobb	5/22/78 ENR
Department of Land and Natural Resources State Historic Preservation Officer	Attn: Jane Silverman	5/30/78
Department of Planning and Economic Development	Attn: Hideto Kono	5/22/78 ENR
Department of Social Services and Housing	Attn: Ronald Lin	5/23/78 ENR
Office of Environmental Quality Control	Attn: Richard L. O'Connell	7/11/78
University of Hawaii		
Environmental Center	Attn: Dr. Doak Cox 2550 Campus Road Honolulu 96822	6/22/78
Water Resources Research Center	Attn: Dr. Stephen Lau 2540 Dole Street Honolulu 96822	5/24/78 ENR

		Comment Date
State Public Libraries		
State Library Branch	478 South King Street	No comment Received
Other Public Libraries		
University of Hawaii (Sinclair and Hamilton)	Attn: Mrs. Muraoka	No comment Received
Department of Planning and Economic Development Library	Attn: Anthony Oliver c/o DPED	No comment Received
Kauai Public Library	4344 Hardy Street Lihue, Kauai 96766	No comment Received
State Archives		No comment Received
Legislative Reference Bureau		No comment Received
News Media		
Honolulu Star Bulletin	Attn: Mr. John E. Simonds 605 Kapiolani Blvd. Honolulu 96813	No comment Received
Honolulu Advertiser	Attn: Mr. George Chaplin 605 Kapiolani Blvd. Honolulu 96813	No comment Received
The Garden Island	3137 Kuhio Highway Lihue, Kauai, Hawaii 96766	No comment Received
State Representatives - 27th District		
The Honorable Richard A. Kawakami	P.O. Box 398 Waimea, Kauai 96796	No comment Received
The Honorable Tony T. Kunimura	RR No. 1 Koloa, Kauai 96756	No comment Received

		Comment Date
The Honorable Dennis R. Yamada	P.O. Box 127 Lihue, Kauai 96766	No comment Received
State Senators - 8th District		
The Honorable George H. Toyofuku	P.O. Box 547 Lihue, Kauai 96766	No comment Received
County of Kauai Agencies		
The Honorable Eduardo Malapit Mayor, County of Kauai	Lihue, Kauai 96766	No comment Received
Kauai County Council Chairman	Attn: Louis Gonsolves, Jr. 4396 Rice Street Lihue, Kauai 96766	No comment Received
Planning Department Director	Attn: Brian Nishimoto 4280 Rice Street Lihue, Kauai 96766	5/23/78
Department of Public Works Chief Engineer	Attn: Henry Morita Lihue, Kauai 96766	6/2/78 ENR
Board of Water Supply Manager	Attn: Walter Bryant Lihue, Kauai 96766	No comment Received
Department of Economic Development	Attn: James Kurita P.O. Box 4396 Lihue, Kauai 96766	8/23/78
Chief of Police	Attn: Roy Hiram 3060 Umi Street Lihue, Kauai 96766	7/5/78 ENR

		Comment Date
Public Utilities		
Citizens Utilities Company (Kauai Electric)	P.O. Box 278 Eleele, Kauai 96705	6/14/78*
Hawaiian Telephone Co.	4444 Rice Street Lihue, Kauai 96766	6/7/78 ENR
Transportation Commission		
Noboru Yamane	RR #1 Kapaa, Kauai 96746	No comment Received
Other Organizations		
American Lung Association Director, Environmental Health	Attn: James W. Morrow 245 N. Kukui Street Honolulu 96817	6/21/78*
President Molokoa Community Association I	Attn: Paul Shinseki 3158 Uluhui Street Lihue, Hawaii 96766	No comment Received
President Molokoa Community Association II	Attn: Raymond Fujikado 3246 Uiki Place Lihue, Hawaii 96766	No comment Received
President Kauai Chamber of Commerce	Attn: Wayne R. Ellis, Jr. 4444 Rice Street Lihue, Hawaii 96766	No comment Received
President Hanamaulu Community Association	Attn: Edward Sarita P.O. Box 42 Lihue, Hawaii 96766	No comment Received
President Lihue Businessmen's Association	Attn: Kiyoto Okimoto 3195 Elua Street Lihue, Hawaii 96766	No comment Received

		Comment Date
President Pua Loke Community Association	Attn: Haruo Sato 3036 Kupu Lane Lihue, Hawaii 96766	No comment Received
Chairperson Lihue Development Plan Advisory Committee	Attn: Yuriko N. Tasaka (Mrs.) 2801 Pikake Street Lihue, Hawaii 96766	No comment Received
The Kauai Outdoor Circle		6/21/78

Individuals

H. Hamilton	6/78 ENR
Helen Hopkins	5/24/78 ENR

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

P. O. Box 50004, Honolulu, HI 96850

June 6, 1978

Mr. Ralpn T. Segawa
Division Administrator
Federal Highway Administration
Region Nine
P. O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

Subject: Draft EIS for the Hanamaulu-Ahukini Cutoff Road
(FAP Route 51, Kauai, HI), Project No. 51C-01-76

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

Thank you for the opportunity to review this document.

Sincerely,

Donald A Myers acting

Jack P. Kanalz
State Conservationist

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

PACIFIC-ASIA REGION
P. O. BOX 4009
HONOLULU, HAWAII 96813

JUN 19 1978

Federal Highway Administration
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Gentlemen:

The Draft Environmental Impact Statement for the Hanamaulu-Ahukini Cutoff Road in Lihue, Kauai, transmitted with your letter HEC-HI of May 17, 1978, has been reviewed.

We note that during a review of the Environmental Impact Preparation Notice, we commented on the problems associated with the acquisition of 600 acres of sugar cane land presently used for disposing of surplus sugar mill wash water. The land is needed for construction of a new runway at Lihue Airport. If a similar situation exists for this highway project, it appears that the problem and its resolution should be addressed. (A)

Thank you for the opportunity to review this document.

Sincerely,

James M. Cox

JAMES M. COX
Chief, Airports Division, APC-600

EVALUATION

FEDERAL AVIATION ADMINISTRATION

A: As the FAA is aware, the State is currently studying this situation (See Page III-13). Various alternatives have been considered, but pumping the water to other areas appears to be the most reasonable solution. However, these studies have not been completed, so any recommendation would be premature. In any case, disposal of the excess wastewater will be in compliance with all State and Federal laws.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
PACIFIC SOUTHWEST REGION
BOX 36098 • 450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102
(415) 556-8200

ER-78/451 June 30, 1978

Mr. Ralph T. Segawa
Division Administrator
Federal Highway Administration
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

The Department of the Interior has reviewed the subject draft environmental impact statement concerning Hanamaulu-Ahukini Cutoff Road, Kauai, Hawaii. This document generally satisfies our concerns with regard to project-associated impacts, and addresses specific erosion control measures to be applied during construction of the proposed cutoff road.

Most of the impacted lands are agricultural in usage and are of little present value to native fish and wildlife. Terrestrial biota in the project area consists largely of introduced species, and its loss is not expected to be significant. However, the wetlands of Hanamaulu Valley provide habitat for several endangered species of native waterbirds, and great care should be taken to avoid adverse impacts to this fragile ecosystem.

The DEIS states that a bridge will be constructed on piers across the narrow, seaward end of the valley. This design and alignment of the stream crossing should minimize its impact on resident waterbirds.

(A) Although no permanent embankments will be used, a temporary road, falsework, and protective embankments may be required during construction of the bridge. However, no mention is made in the statement concerning the need for a permit from the U.S. Army Corps of Engineers to conduct dredging and fill activities in a wetland area. The backwater created by these fills could result in the destruction of nests by flooding.

(B) We recommend that these fills be made only during periods of seasonally low stream flow and be removed prior to the onset of the following rainy season in order to minimize the backwater effect, as well as control erosion and reduce turbidity. Temporary culverts could be installed to provide drainage. Extreme care should be taken to insure that no debris, petrochemicals, or other deleterious materials enter the water.

After temporary fills have been removed, potholes will be created to provide additional waterbird habitat. In this regard, we are pleased to note that the replacement habitat, that is the creation of "potholes" in the wetland corridor, will enhance the marsh for endangered waterbirds. We recommend that the potholes be excavated to a depth of 2 to 4 feet and
(C) that local wetland grasses be planted around them for cover.

Three highway alignments are being considered for further study. Alignments B and C intersect Kuhio Highway north of the Kauai Hardwoods Factory and would require an additional stream crossing. The details of this crossing are not clearly stated in the DEIS; the Final EIS should
(D) be more specific with this regard. If an embankment is used, it should not create a backwater or otherwise restrict stream flow. The culvert should be designed to accommodate flood discharges. Alignment A intersects Kuhio Highway south of the Hardwoods Factory and would not require an additional stream crossing. For this reason, we recommend that Alignment A be selected.

Lihue Plantation presently disposes of sugar mill wash water at a rate of 12,000 gallons per acre per day in the cane fields below Lihue and
(E) Hanamaulu. Since this project will take 35 to 40 acres out of sugar cane production, a surplus of wash water is expected to result. We recommend that this potential surplus be diverted to a municipal sewage treatment system or continue to be used for irrigation.

We appreciate the opportunity to review and comment on this document.

Sincerely yours,

Patricia S. Port

Patricia Sanderson Port
Regional Environmental Officer

cc: Director, OEPR (w/incoming)
Director, Fish and Wildlife Service
Director, Heritage Conservation and Recreation Service
Director, National Park Service
Director, Geological Survey
Reg. Dir., FWS
Reg. Dir., HCRS
Reg. Dir., NPS
Reg. Dir., USGS

EVALUATION
DEPARTMENT OF THE INTERIOR

A: Appendix E, "Clearances", identifies the need for permits from the Corps of Engineers for crossing Hanamaulu Stream and the unnamed stream near the Kauai Hardwoods Factory. These permits will be sought after this EIS is approved.

B: It is true that nests could be so affected, though high backwater is a naturally-occurring hazard in Hanamaulu Valley due to the constriction at the railroad bridge. A recommendation for this project is that the embankments be constructed so that the backwater effect from the embankments is no more than one-half foot greater than that which occurs normally for floods having recurrence intervals of less than 5 years. To avoid possible aggravation of the backwater effect during construction, the contractor will be required to provide an ample minimum flow width opening in the falsework. Preliminary evaluations indicate that such provisions are feasible. The criteria to be used will be established during the design of the bridge. Adequate measures will be taken to insure that no debris or deleterious materials enter the water.

C: Your recommendation that potholes be excavated to a depth of 2 to 4 feet, will be included in the final EIS.

D: Alignment A has been chosen for development, thus, the additional stream crossing will not be required.

E: The quantity and character of the wash water would have an adverse effect on the Lihue Sewage Treatment Plant. Furthermore, this plant currently disposes of its wastes through Lihue Plantation's irrigation system, so ultimate disposal would still be needed. The State is currently studying various alternative solutions, and pumping the water to other areas appears to be the most reasonable. However, these studies have not been completed, so any recommendation would be premature.

REGION IX
450 Golden Gate Avenue
P.O. Box 36003
San Francisco, California 94102

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AREA OFFICE
300 ALA MOANA BLVD., RM. 3318, P. O. BOX 50007
HONOLULU, HAWAII 96850

July 5, 1978

IN REPLY REFER TO:
Johnson (9.7SC/
546-5554)

Ralph T. Segawa
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Subject: Hawaii F-051-1, Draft Environmental Impact Statement
FHWA-EIS-7-03-D, Hanamaulu-Ahukini
Cutoff Road, State Project 51C-01-76

Dear Mr. Segawa:

The subject Draft EIS was reviewed and found that it does not impact on any HUD project along the proposed alignment.

We appreciate the opportunity to comment and look forward to receiving a copy of the Final EIS.

Sincerely,

for Alvin K. H. Pang
Area Manager

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

RECEIVED
STATE DEPARTMENT
OF TRANSPORTATION
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LAND TRANSPORTATION
FACILITIES DIVISION
PLANNING BRANCH

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Project # D-FHW-K40059-HI

Mr. F. E. Hawley, Administrator
Federal Highway Administration
Two Embarcadero Center, Suite 530
San Francisco CA 94111

Dear Mr. Hawley:

The Environmental Protection Agency has received and reviewed the draft environmental statement for the Hanamaulu-Ahukini Cutoff Road.

AUG 8 1978

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EPA's comments on the draft environmental statement have been classified as Category LO-2. Definitions of the categories are provided on the enclosure. The classification and the date of EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequence of the proposed action and the adequacy of the environmental statement.

EPA appreciates the opportunity to comment on this draft environmental statement and requests three copies of the final environmental statement when available.

If you have any questions regarding our comments, please contact Betty Jankus, EIS Coordinator, at (415)556-6695.

Sincerely,

Paul De Falco, Jr.

Paul De Falco, Jr.
Regional Administrator

Enclosure

cc: Council on Environmental Quality

General Comments

(DEIS, Section II.7)

(A) This section states that formal consultation with the U.S. Fish and Wildlife Service has been initiated with regard to endangered species. In accordance with Section 404(b) guidelines (FWPCA, 1972), the FEIS should include the results of consultations with U.S. Fish and Wildlife Service, and their determination regarding the effect of the project on any endangered species.

Water Comments

(DEIS, Section III.13)

(B) This section indicates that the land that may be condemned for the proposed cutoff road right-of-way, and the land that may be used for the proposed Lihue Airport expansion, is now used to dispose of mill wash water for the Lihue Plantation. The alternative disposition of this mill wash water, now spread on 640 acres, may have water quality impacts. The FEIS should address this issue.

EIS CATEGORY CODES

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objection to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

EVALUATION

ENVIRONMENTAL PROTECTION AGENCY

A Formal consultation with the U.S. Fish and Wildlife Service has been concluded, and is documented in Appendix E.

B The FEIS will have more background information on the mill wash water problem and will identify the most feasible solutions. However, the volume of water, the cost to dispose of it elsewhere and the responsibility for disposing of it, are major points of contention that will probably have to be resolved in the courts. In any event the water will be disposed of in accordance with all applicable State and Federal laws.

Advisory Council on
Historic Preservation
1522 K Street N.W.
Washington, D.C. 20005

August 28, 1978

Mr. Ralph T. Segawa
Division Administrator, Region 9
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

The Council has received your request for comments on the draft environmental statement (DES) for the proposed Hanamaulu-Ahukini Cut-Off Road, Project No. 51C-01-76, Island of Kauai, Hawaii. Pursuant to Section 102(2)(C) of the National Environmental Policy Act of 1969 and the Council's "Procedures for the Protection of Historic and Cultural Properties" (36 CFR Part 800), we have determined that your DES appears adequate concerning our area of expertise, and we have no further comment to make at this time.

Sincerely yours,

Louis S. Wall
Assistant Director, Office of
Review and Compliance, Denver

The Council is an independent unit of the Executive Branch of the Federal Government charged by the Act of October 15, 1966 to advise the President and Congress in the field of Historic Preservation.

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

PODED-PV

20 June 1978

Mr. Ralph T. Segawa
Division Administrator
US Department of Transportation
Federal Highway Administration
PO Box 50206
Honolulu, HI 96850

Dear Mr. Segawa:

We have reviewed the Draft Environmental Impact Statement for the Hanamaulu-Ahukini cut-off road which was forwarded to us by your office on 17 May 1978. The proposed project does not affect any US Army Corps of Engineers projects in the Hanamaulu District.

We note that the proposed bridge across lower Hanamaulu Valley lies within the 100-year flood inundation zone shown on the Hanamaulu Flood Hazard Area map prepared by the Department of Land and Natural Resources in cooperation with the Corps. Flood elevation at the proposed stream crossing is 15 feet above Mean Sea Level. However, the proposed bridge does not appear to lie within the 100-year tsunami inundation. Through the execution of the Flood Insurance Study for the island of Kauai authorized by the US Department of Housing and Urban Development, Federal Insurance Administration under the National Flood Insurance Program, the Corps has revised the maximum tsunami runup elevation at Hanamaulu Stream to 12 feet above Mean Sea Level.

(A) Project planning for the stream crossing should include measures to protect the bridge abutments from flood damage, measures to prevent the aggravation of flood hazards and damages and losses to adjacent lands and structures by construction of the bridge. These considerations should be reflected in the Final Environmental Impact Statement (FEIS).

(B) Our regulations indicate that fill material placed incidental to the construction of bridges across non-tidal rivers and streams, including all attendant features both temporary and permanent that are part of single and complete crossing of the waterbody, does not require a

20 June 1978

Department of the Army permit if the following conditions are met:

a. The fill material will not restrict expected high flows of the waterbody.

b. Discharges of fill material into wetlands adjacent to the waterbody will not extend beyond 100 feet on either side of the ordinary high water mark of the waterbody.

c. The discharge is less than 200 cubic yards of fill material below the plane of ordinary high water.

d. The discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act, or endanger the critical habitat of such species.

e. The discharge will consist of suitable material free from toxic pollutants in other than trace quantities.

f. The fill created by the discharge will be properly maintained to prevent erosion and other non-point sources of pollution.

g. The discharge will not occur in a component of the National Wild and Scenic River System or in a component of the State Wild and Scenic River System.

As the Draft Environmental Impact Statement (DEIS) does not provide specific bridge details, we request that plans, including design drawings, be submitted for our review to determine conformance with the above conditions and for a formal determination of the need for a Department of the Army permit. In addition, information which identifies the work to be performed in the stream, the type and quantity of fill to be used, the source of the fill material, the presence or absence of toxic materials in the fill (in accordance with EPA regulations 40 CFR 230.4), the erosion controls to be implemented to prevent any fill from being washed into the stream or adjacent wetlands, and the measures being taken to prevent the disruption of the natural migratory movements of indigenous aquatic fauna in the streams, should be provided.

Attached are specific comments concerning the DEIS for the proposed project for your consideration and use. We hope that you find our comments useful in your preparation of the Final Environmental Impact Statement and appreciate the opportunity to review the Draft EIS.

Sincerely yours,

B. R. SCHLAPAK
Lt Col, Corps of Engineers
District Engineer

3 Incl
1. Flood Hazard Area Map
2. Comments
3. Memorandum

SPECIFIC COMMENTS
ON THE
ENVIRONMENTAL IMPACT STATEMENT
FOR THE
HANAMAULU-AHUKINI CUT-OFF ROAD, KAUAI

a. page 1-16. The Final Environmental Impact Statement (FEIS) should include detailed design drawings of the proposed bridge, bridge abutments and piers, and a discussion of construction methods, equipment, cost and work schedule.

b. page II-5. The section concerning water quality lacks information concerning ambient water quality of Hanamaulu Stream. As the construction of the bridge across Hanamaulu Valley is expected to cause adverse impacts to physical-chemical parameters and biological resources in the lower stream and estuary, the FEIS should consider
(D) including baseline water quality data for the stream and determining whether State Department of Health Water Quality Standards for freshwaters are currently being met.

c. page II-6. The correct spelling for the generic name of
(E) Java plum is Eugenia cumini, for ironwood Casuarina equisetifolia, and for coconut Cocos nucifera. Also, Hibiscus tiliaceous should be underlined.

d. pages II-8,9 (Table 3). There are numerous misspellings in this table which should be corrected in the FEIS. We suggest that you consult the reference guide "Hawaii's Birds" published in 1975 by the Hawaii Audubon Society in Honolulu, for the correct scientific names of these birds.

e. page II-7. It may be valuable to perform a survey of
(F) Hanamaulu Stream in order to access the presence or absence of indigenous aquatic fauna. Due to the estuarine nature of the river mouth and the continuous stream flow, it is highly likely that several endemic fishes (principally o'opu nakea Awaous stamineus, and o'opu akupa Eleotris sandwicensis) and crustaceans (opae) inhabit the lower and middle reaches of the stream system. These species are obligately diadromous: that is, they must have unrestricted access to the ocean after birth and as juveniles in order to successfully complete their life cycle and repopulate the stream. Additional information may be available from the Hawaii Cooperative Fishery Research Unit at the University of Hawaii (2538 The Mall, Honolulu, Hawaii 96822, 948-8350), and the US Fish and Wildlife Service, Office of Ecological Services (Room 5302, 300 Ala Moana Blvd., P.O. Box 50167, Honolulu, Hawaii 96850). Knowledge of the biotic community structure of Hanamaulu Stream, both above and below the project site, will be important for evaluating the application for a Department of the Army permit for the bridge construction, if one is required.

f. page III-6,7. We feel that the FEIS should explain the concept of mitigation for endangered species as stated in the attached correspondence from the Acting Associate Solicitor of the US Fish and Wildlife. In paragraph 4.2 (Mitigation Measures) on page III-6 of the DEIS, it is stated that the destruction of habitat for an endangered species cannot be mitigated. However, on both pages III-6 and III-7, the narrative suggests that this impact can be mitigated after the completion of construction be removing temporary fills and creating "pot holes" where endangered birds may find standing water. This apparent discrepancy needs to be clarified. Furthermore, the FEIS should demonstrate how the input from the US Fish and Wildlife Service has been incorporated into the planning of the proposed bridge design and roadway project as required by the Fish and Wildlife Coordination Act. (G)

g. The results of a cultural/archaeological reconnaissance survey within the project corridor (reference letter on page A-1 of the DEIS), and coordination with the State Historic Preservation Officer concerning the impact of the proposed project on historic resources should be included in the FEIS. (H)

EVALUATION
CORPS OF ENGINEERS

A: During construction of the bridge, temporary embankments may be used to protect falsework (if required) from flooding. The bridge will be approximately 65 feet high and supported by piers designed to withstand maximum flood or tsunami forces. Using piers, rather than partial fill across the valley, will avoid any flood hazard aggravation by the bridge.

B: It is anticipated that a permit will be required; all necessary information will be submitted when this EIS is approved and the bridge design is more complete. Enough details of the bridge will be provided in the EIS to determine the resulting impacts. Design plans of the bridge are not available in the planning phase.

C: Design plans will be submitted to the Corps of Engineers with the application for a Department of the Army permit.

D: The discussion of Page II-4 has been expanded to include a summary of Hanamaulu Stream water quality. The study cited in this paragraph contains the most up-to-date water quality data for the stream.

E: These have been revised in the test and Table 3.

F: Construction of the bridge will not block the stream, and measures will be incorporated to control siltation. An aquatic faunal survey has been conducted by Dr. Amadeo Timbol of the University of Hawaii. There are no native stream animals in the upper reaches of the stream, indicating serious degradation of the habitat. The detailed results of this survey are reported in Appendix H.

G: The referenced correspondence fromthe Acting Associate Solicitor of the U.S. Fish and Wildlife Service deals with the "critical habitat" of an endangered species, and is therefore not directly applicable to Hanamaulu Valley. According to the Department of Land and Natural Resources, Hanamaulu Valley is of insignificant importance with regard to endangered wildlife (See Appendix E). However, because several endangered waterbirds have been cited there, the Federal Highways Administration and the State Department of Transportation have made an effort to design the valley crossing in such a manner as to "insure that (the) actions will not jeopardize the continued existence of a listed species" (quoted from the last paragraph of the cited letter). As a part of this effort, consultation with the USFWS has been carried out from the early stages of the project, as stated in the last sentence of Page III-7. "Formal consultation" was not initiated with the USFWS until the bridge location and conceptual plans were developed (ie. maps drawn), and a preliminary draft EIS was available. Formal consultation has now been concluded, and is documented in Appendix E.

The results of this coordination include the "mitigation measures" outlined on Page III-6, as suggested by the USGS. To clear up the inconsistency in this paragraph, "non-mitigative" has been changed to "adverse" in the first sentence. Since Hanamaulu Valley is not critical habitat, it is felt that the concept of mitigation is applicable in this case.

H: The State Historic Preservation Officer has not indicated that this would be necessary for the subject project (Page E-2). Due to the long history of cane cultivation, it is highly unlikely that a reconnaissance would reveal any archaeological sites. In the event that any unanticipated sites or remains are encountered, work will be halted and the State Historic Preservation Office notified immediately.

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

REPLY TO ATTN OF: DEEV (Mr. H. Nakashima, 4491831)

JUN 1978

SUBJECT: Hawaii F-051-1, Draft Environmental Impact Statement (EIS), FHWA-HI-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76

TO: U.S. Department of Transportation
Federal Highway Administration
Region Nine
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

1. Reference is made to your letter, HEC-HI, dated 17 May 1978, same subject.

2. This office has reviewed the subject draft EIS and has no comment to render relative to the proposed project.

3. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your projects and thank you for the opportunity to review the document.

4. Transmittal of your finalized EIS to this office will not be necessary.

ROBERT Q. K. CHING
Chief, Engineering, Construction
and Environmental Planning Div
Directorate of Civil Engineering

GEORGE R. ARIYOSHI
GOVERNOR

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

HIDEO MURAKAMI
COMPTROLLER

MIKE N. TOKUNAGA
DEPUTY COMPTROLLER

LETTER NO. (P)1760.8

JUN 3 1976

Mr. Ralph Segawa
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
Region Nine
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

Subject: Draft EIS - FHWA-HI-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76

We have reviewed the subject statement and determined that the project will not have any adverse environmental effects on any existing or planned facilities serviced by our Department.

Thank you for this opportunity to comment.

Very truly yours,

Mike N. Tokunaga

HIDEO MURAKAMI
for State Comptroller

GEORGE R. ARIYOSHI
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

JOHN FARIAS, JR.
CHAIRMAN, BOARD OF AGRICULTURE

YUKIO KITAGAWA
DEPUTY TO THE CHAIRMAN

BOARD MEMBERS:
Suzanne D. Peterson
MEMBER - AT - LARGE
ERNEST F. MORGADO
MEMBER - AT - LARGE
Sidney Goo
MEMBER - AT - LARGE
Federico Galdones
HAWAII MEMBER
James B. Nishida
KAUAI MEMBER
FRED M. OGASAWARA
MAUI MEMBER

June 2, 1978

Mr. Ralph T. Segawa
Division Administrator, Region Nine
Federal Highway Administration
U. S. Department of Transportation
P. O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

The Department of Agriculture has reviewed the subject document and finds that those areas of concern to this agency have been adequately examined.

We appreciate the opportunity to comment.

Many thanks,

JOHN FARIAS, JR.
Chairman, Board of Agriculture

GEORGE R. AHIYOSHI
GOVERNOR

VALENTINE A. SIEFERMANN
MAJOR GENERAL
ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
~~FORT RUGER, HONOLULU, HAWAII 96816~~
3949 Diamond Head Road, Honolulu, Hawaii 96816

HIENG

Mr. Ralph T. Segawa
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

Hawaii F-051-1( ), Draft Environmental Impact Statement, FHWA-HI-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76

Thank you for your undated letter transmitting the Draft Environmental Impact Statement for the above subject project. We have no comments to offer on this project at this time, and the Draft Statement is returned herewith.

Yours truly,

VALENTINE A. SIEFERMANN
Major General, HANG
Adjutant General

Enclosure

CHARLES G. CLARK
SUPERINTENDENT

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

May 24, 1978

Mr. Ralph T. Segawa
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
P.O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

SUBJECT: Hawaii F-051-1 ( ), Draft Environmental Impact Statement, FHWA-HI-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76

Thank you for your letter of May 17, 1978 on the subject matter.

The Department of Education will not be affected by the project.

Sincerely,

CHARLES G. CLARK
Superintendent

CGC:WO:jl

cc: Kauai District Office
Mr. Koichi H. Tokushige

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

Audrey W. Mertz, M.D., M.P.H.
Deputy Director of Health

Henry N. Thompson, M.A.
Deputy Director of Health

James S. Kumagai, Ph.D., P.E.
Deputy Director of Health

June 20, 1978

In reply, please refer to:
File: EPHS - SS

MEMORANDUM

To: Mr. Ralph T. Segawa, Division Administrator
Federal Highway Administration, U.S. Department of Transportation

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76

Thank you for allowing us to review and comment on the subject EIS. On the basis that the project will comply with all applicable Public Health Regulations, please be informed that we have no objections to this project.

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.

for JAMES S. KUMAGAI, Ph.D.

cc: Environmental Quality Commission
Land Transportation Facilities Division, State DOT

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

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

W. Y. THOMPSON, Chairman
~~CHRISTOPHER COBB, CHAIRMAN~~
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

May 22, 1978

YOUR: HEC - HI

Mr. Ralph T. Segawa
Federal Highway
Administration
P. O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

SUBJECT: Hawaii F - 051 - 1( ), Draft Environmental Impact Statement, FHWA-HI-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76.

We have no comments to add to our letters of October 16, 1976 and August 17, 1977.

Very truly yours,

W. Y. THOMPSON
Chairman of the Board

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 30, 1978

Mr. Ralph Segawa
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

Thank you for the opportunity to review and comment on the Draft Environmental Impact Statement for the Proposed FHWA-EIS-7-03-D, Hanamaulu-Ahukini Cutoff Road, Project No. 51C-01-76, May 12, 1978.

The proposed undertaking will have no effect upon any known historic or archaeological site on or likely to be eligible for inclusion on the Hawaii Register and/or National Register of Historic Places. This office has no reservations for the project to proceed.

(A) In the event that any unanticipated sites or remains are encountered, please inform the applicant to contact this office immediately.

Sincerely yours,

Jane L. Silverman
Historic Preservation Officer
State of Hawaii

EVALUATION

DEPARTMENT OF LAND AND NATURAL RESOURCES
HISTORIC PRESERVATION OFFICER

A: In the event any unanticipated sites or remains are uncovered during construction, the State Historic Preservation Officer will be contacted immediately.

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

May 22, 1978

MAY 24 19

Ref. No. 6434

Mr. Ralph T. Segawa
Hawaii Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

Subject: Draft EIS - Hanamaulu-Ahukini Cutoff Road

We have reviewed the above document and can find no substantive comment to offer on the proposed project. We will not require a copy of the Final EIS document.

Thank you for the opportunity to review the project proposal.

Sincerely,

HIDETO KONO

GEORGE R. ARIYOSHI
GOVERNOR

ANDREW I. T. CHANG
DIRECTOR OF SOCIAL SERVICES & HOUSING

STATE OF HAWAII
DEPARTMENT OF SOCIAL SERVICES AND HOUSING

May 23, 1978

MEMORANDUM

TO: Environmental Quality Commission

FROM: Andrew I. T. Chang, Director

SUBJECT: Environmental Impact Statement Review
Title: Hanamaulu - Ahukini Cutoff Road
Location: Hanamaulu, Kauai
Classification: Agency Action

The Department of Social Services and Housing has reviewed the subject E.I.S. and could offer no comments relative to the proposed action.

Thank you for allowing us to comment on this matter.

Andrew I. T. Chang
Director

cc: Department of Transportation

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 HALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

July 11, 1978

MEMORANDUM

TO: R. Higashionna, Director
Department of Transportation

FROM: Richard L. O'Connell, Director
Office of Environmental Quality Control

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT FOR HANAMAULU-AHUKINI CUTOFF ROAD, KAUAI

We have reviewed the above document and offer the following comments for your consideration:

Page I-7

(A) What does the annual maintenance cost of $4,285/lane/mile for Kuhio Highway include?

Page I-13

(B) The draft EIS states, "The proposed Hanamaulu-Ahukini Cutoff Road is being designed to accommodate the projected year 2000 traffic at level C service." Level C service should be explained.

Page I-14

(C) A sprinkler system will be used for landscaping. Has any consideration been given to use of sewage effluent from the Lihue Sewage Treatment Plant? We recommend a discussion of this possibility.

Page II-3

There is discussion concerning the backwater characteristics of the existing stream valley. It states, "The backwater effects during flood periods on Hanamaulu Stream are primarily the result of the embankment of the old railroad crossing." The problem of dense population of water hyacinth at the mouth of the stream also contributes to the flooding of the area. Although the plants are periodically removed, this is not done routinely. Eventually, the plants become a
(D) nuisance. There should be discussion of this problem and how it relates to the flooding of the stream area. Will the proposed bridge be subject to flooding because of the dense aquatic vegetation at the mouth?

Page II-4

The EIS states, "The average coliform, phosphorus and nitrogen levels in Hanamaulu Bay all exceed the State Standards for Class A waters (County of Kauai 1973)." The poor water
(E) quality is due to surface runoff from cane fields and pastures. Runoff from pavement will also contribute to the water quality problem. Thus, there should be discussion on the effect of surface runoff from the asphalt, what effect it will have on the endangered water habitat, and what mitigation measures will be used to reduce this impact.

Page II-7

(F) The Hawaiian Coot, Koloa Duck, and Hawaiian Gallinule are also classified as endangered on the State of Hawaii's endangered specie list. We recommend coordination with the Department of Land and Natural Resources.

Page II-8

(G) Pluvialis dominica on Table 3 should be listed as Pacific Golden Plover.

Page III-5

(H) What is the average flow rate for Hanamaulu Stream?

Page III-6

(I) The south side of the stream is the feeding and resting habitat for the Koloa Duck. What is the distance from the proposed alignments?

Page III-8

(J) The EIS indicates that the proposed alignment would not meet the Federal Design Standards of 70 dBA for a highway corridor through a residential area. Would the noise effect the endangered species nearby? What mitigating measures are proposed for the residents that will be affected?

Cost of Wildlife Habitat

(K) In estimating the cost-benefit ration, what is the value placed on the endangered species? What is the criteria used to determine the value of the endangered species and loss of their habitat?

Effect on the Endangered Species

(L) The discussion of endangered species should be expanded. The final document should include a summary of the consultation with the U.S. Fish and Wildlife Service and how the Department of Transportation will comply to the Fish and Wildlife Coordination Act. If possible, the proposal for mitigating measures should be included.

Alternatives

(M) Since highway projects tend to promote the use of the automobile, it is important to recognize the state and national goal to reduce our energy dependence. Emphasis should be placed on the conservation of energy and the use of transportation alternatives such as carpools and mass transit. Thus, we strongly recommend a discussion be presented on alternatives which emphasize energy conservation. For example, carpooling or a bus system may reduce the need for another alignment, therefore, no action may be a feasible alternative.

The EIS Regulations state that responses to comments should be made within fourteen days after the end of the comment period. However, we will exercise the discretion provided by the regulations and will consider responses made after the prescribed fourteen day response period. We thank you for the opportunity to review this document.

We trust that these comments will be helpful to you in preparing the final EIS.

Attachment

LIST OF COMMENTORS

*Helen Hopkins	May 24, 1978
Department of Social Services and Housing	May 23, 1978
American Lung Association	June 21, 1978
Department of Health	June 20, 1978
Environmental Center	June 22, 1978

*comment is attached

EVALUATION

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

A: Annual maintenance costs include resurfacing, restriping, replacing damaged signs and guardrails, cleaning culverts, cutting grass, caring for landscaping and other miscellaneous items.

B: Level of service is a classification of highway driving conditions and is a function of roadway width, horizontal and vertical alignment, traffic volume, driving speeds and other factors. Since level of service is basically a technical term used by highway engineers, the term will be deleted. The design characteristics will be explained in terms more understandable to the layman.

C: The source of water for landscaping has not been determined at this time. One source that will be considered is the water from Lihue Planatation's irrigation system, which in part consists of the effluent from Lihue Sewage Treatment Plant.

D: Compared to the constriction in the floodplain caused by the railroad embankment, the effect of the water hyacinths on backwater is minor. The bridge will be 65 feet above the valley floor, and its pilings will be constructed to withstand maximum flood or tsunami forces.

E: The proposed cutoff road will contribute oil, fuel residues and rubber particles to the runoff into Hanamaulu Stream. At full four-lane development there will be roughly 7 additional acres of impervious highway surface contributing approximately 30-acre-feet of runoff per year. This small volume of runoff does not justify treatment, especially when there are much more significant sources of pollution in the watershed that must be dealt with (eg. piggeries and other livestock). During construction, siltation ponds or other measures will be employed to reduce the sediment load reaching the stream.

F: We are aware that the species noted are endangered, as stated in the fourth sentence of the second paragraph on Page II-7. The Department of Land and Natural Resources has indicated to us that in several waterfowl censuses and surveys conducted by the Department in the area, the only endangered wildlife species encountered was the Hawaiian gallinule Gallinula chloropus sandvicensis. Only one gallinule was observed, well upstream of the proposed roadway. In the opinion of the Kauai wildlife biologist for the Department of Land and Natural Resources, the wildlife habitat that exists along the proposed Hanamaulu Cutoff Road is insignificant to endangered wildlife.

G: These names have been corrected.

H: There is no gauge on Hanamaulu Stream at the proposed bridge location, so this data is not available. The only time that the flow of Hanamaulu Stream was monitored was 1912-1914 at the Kapaia Bridge. The mean flow for that period was 13.7 cfs.

I: The proposed crossing would temporarily disturb a strip, roughly 100 feet wide, through the area where several Koloa were observed.

J: Since there are no residential areas in the proposed highway corridor (with the exception of one home), the Federal Design Standard does not apply; it is only given here for comparison. It is our opinion that noise from the highway would not affect the endangered waterbirds. This is based on observations of endangered waterbirds close to Kuhio Highway at numerous points between Kalihiwai and Lumahai Streams. No mitigating measures are proposed to reduce the noise from the bridge other than using properly designed expansion joints.

K: The cost-benefit analysis is based solely on construction and maintenance costs, versus user benefits in the form of reduced accidents and reduced driving time and maintenance costs. Wildlife values are considered separately in the Environmental Impact Statement.

L: These suggestions have been incorporated in the Final Environmental Impact Statement. Consultation with the U.S. Fish and Wildlife Service is documented in Appendix E.

M: The need for a more efficient transportation corridor between Lihue and Hanamaulu is immediate. Without imposing totalitarian measures (which would not be accepted), encouraging the use of mass transit or similiar solutions would not reduce traffic enough to alleviate the existing problems. Furthermore, the adverse impacts of the "no action" alternative - increased congestion and attendant increases in air pollution, noise and fuel consumption - make this alternative unacceptable (See Page IV-1).

University of Hawaii at Manoa

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

Office of the Director

June 22, 1978

Mr. Richard O'Connell
Office of Environmental Quality
Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. O'Connell:

Review of Draft Environmental Statement for
Hamamaulu-Ahukini Cutoff Road, Kauai, Hawaii

The Environmental Center's review of the above cited EIS has been prepared with the assistance of Marshall Mock, Kauai Community College; John Walters, Oceanography; Paul Bartram, Pacific Urban Studies Planning Program; Doak Cox, Jacquelin Miller, and Barbara Vogt, Environmental Center.

In general, the document covers most of the known and potentially significant socio-economic impacts that can be expected to occur as a result of this project. The areas in which our reviewers suggest further clarification are as follows.

The major reason for choice of alignment between the Hamamaulu-Ahukini Cutoff Road and Kuhio Highway seems to center around the Kauai Hardwoods Store and the ability of tour buses to gain easy access to the Kauai Hardwood's parking lot. We are in agreement with the project's statement (IV-6) that an "isolated business on a high speed highway is generally undesirable from a traffic safety (A) standpoint" and would like to see the traffic safety aspect be of prime importance in the final decision on alignment. An alternative cutting mauka of Kuhio Highway (B) should be investigated. There also seems to be some question about the destination of traffic, whether it goes to the airport and the industrial area, or more toward (C) the westside of the island.

(D) Page I-16: We are pleased to note that consideration of aesthetics will be included in the final bridge design. Will the final plans for bridge construction be circulated for public review prior to approval?

The following corrections should be made to the flora and fauna lists:

(E) Page II-6: Eugenia cumini
Casuarina equisetifolia
underline Hibiscus tiliaceus

Page II-8: Anas acuta
Gallinula chloropus haw.
Heteroscelus incanum
Anas (not Spatula) clypeata
Copsychus malabaricus

Page II-9: Garrulax canorus
Lonchura punctulata
Meleagris galloparo int.
Mimus polyglottos
Paroaria coronata (not cucullata)
Cardinalis (not Richmondena cardinalis)

(F) The EIS does not adequately assess the impact of the proposed highway on the wildlife. The list of bird species appears to have been taken not from any scientific study but from the files of VTN Paci-ic. Why is there no reference to the source used by VTN Pacific? Why is VTN Pacific not listed in the bibliography? Furthermore, in page III-6, that statement is made that "it is highly unlikely that this site would be utilized by waterbirds." Such unsupported references and statements leave these portions of the EIS uncompleted. Has a scientific and comprehensive survey been taken of the birds and freshwater fauna in the project area?

(G) Page II-6: What is meant by the "spoil dump" along Hanamalu Stream?

(H) Page III-4: The "unnamed stream" needs clarification. Is the stream seasonal or the result of irrigation runoff?

(I) Pages III-6, III-19: With regard to mitigating measures, there are several references to steps that "can" be taken to aleviate or reduce certain environmental impacts. The wording should be rephrased to steps that "will" be taken otherwise the suggested mitigating measures statements are meaningless.

(J) Page III-13: Mention is made of excess water resulting from condemnation of cane lands for the highway. What are the State plans for the disposal of this excess mill wash water?

(K) Mention is also made of "relocating overhead utilities along the alignment". Does this indicate that utilities will be placed underground?

(L) Pages A-44 and A-45 are extremely difficult to read. All pages in the EIS should be clearly legible.

(M) Page E 3-5: Concern with the impacts of the project on the endangered waterbirds was expressed by the Fish and Wildlife service in September 1977 with the recommendation that the plans be coordinated with Mr. Eugene Kridler, the Service's Hawaii Endangered Species Coordinator. We note however, that action on this recommendation for consultation with U.S. Fish and Wildlife Service as provided

in Title 50, part 402 of the Endangered Species Act of 1973, was delayed for some 8 months until May 12, 1978, the same date the draft EIS was released. Therefore we conclude that all plans in the draft EIS document have been derived without benefit of the expertise and consultation of the designated Federal advisor on endangered waterbirds,

We strongly recommend that acceptance of this DEIS be deferred until the plans are revised as necessary after a full review by the Fish and Wildlife Endangered Species coordinator.

Thank you for the opportunity to review this EIS.

Yours very truly,

Doak C. Cox
Director

DCC/lmk

cc: Ralph Segawa ✓
Marshall Mock
John Walters
Paul Bartram
Jacquelin Miller
Barbara Vogt

EVALUATION

ENVIRONMENTAL CENTER - UNIVERSITY OF HAWAII

A: Traffic safety has always been one of the primary concerns. Alignment A will be designed to provide safe egress and ingress for Kauai Hardwoods Store.

B: Such an alignment has been discussed a number of times since a bypass road was first conceived. It was considered in the formulation of the Lihue Development Plan, but dropped due to high costs and to serious impacts to the operations of Lihue plantation.

C: The primary purpose of the Cutoff Road is to serve traffic to Lihue Town, the harbor area and the airport, and to relieve traffic congestion on Kuhio Highway between Lihue and Hanamaulu.

D: The final bridge plans will be available for public inspection. The plans, however, will not be circulated for public review.

E: These spellings have been corrected.

F: The source of the bird species list for the vicinity of the airport (Table 3) is clearly cited on Page II-9. VTN Pacific's field studies were concentrated in Hanamaulu Valley and the unnamed stream near the Kauai Hardwoods Factory; the bird species observed in these localities are indicated with asterisks on the list (which applies to the general project area). The area of the unnamed stream was investigated on February 24, 1978 by VTN Pacific, and was found to be an inconsequential cane field drainage course, with a dense growth of hau and Java plum along the south bank and sugar cane up to the north bank. There is no waterbird habitat in the vicinity of the potential crossings, though the area near the mouth of the stream has several drainage canals that may be utilized by Koloa. These observations led to the conclusion that the crossing site was not likely to be utilized by waterbirds. They will be added to the bibliography.

G: The spoil dump is on the upper edge of the valley wall, and does not extend to the stream. A fairly large volume of fill was apparently dumped down the south valley wall where the quarry access road and the upper cane road intersect. It is now thickly vegetated, but shows evidence of shallow creep and minor sliding.

H: Field investigations indicate that the stream carries mostly surplus irrigation water.

I: The suggested rewording has been incorporated.

J: The State is currently studying various alternatives, but pumping the water to other areas seems to be the most reasonable solution. However, these studies have not been completed, so any recommendation would be premature. In any case, the recommended solution will be in conformity with all State and Federal laws.

K: Overhead utilities will not be placed underground; the reference is to moving utility poles that fall within the proposed alignment.

L: We apologize for the poor legibility, but the carbon copy "originals" were not very good. The legibility will be improved in the Final EIS.

M: This project was discussed with the staff of the U. S. Fish and Wildlife Service (USFWS)(including the Endangered Species Coordinator), and the Division of Fish and Game on numerous occasions between June 1977 and March 1978. "Formal Consultation" was not initiated, until maps of the bridge crossing and the draft EIS were available. The mitigating measures described on Page III-6 were suggested by the USFWS during the informal consultation period. Results of the formal consultation with the USFWS has been included in the Final EIS.

UNIVERSITY OF HAWAII
Water Resources Research Center

May 24, 1978

Ralph T. Segawa
U.S. Department of Transportation
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa,

Re: Hawaii F-051-1( ), Draft EIS, Hanamaulu-Ahukini Cutoff Road

We have reviewed the Draft EIS and have no critical comment. We do not need to receive the Final EIS.

Thank you for the opportunity to participate in the review process for this project.

Sincerely,

Reginald H. F. Young
Asst. Director, WRRC

RHFY:jm

EDUARDO E. MALAPIT
MAYOR

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

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

May 23, 1978

Mr. Ralph T. Segawa
Division Administrator
U. S. Department of Transportation
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Subject: Draft Environmental Impact Statement, FHWA-HI-EIS-7-03-D,
Hanamaulu-Ahukini Cutoff Road, State Project 51C-01-76

Our comments on the subject matter indicating our support of the proposed Cutoff Road are contained in our letter to Mr. E. Alvey Wright, then the Director of Transportation, dated August 2, 1977. We, therefore, have no additional comments to make on the contents of the Draft EIS.

We note, however, that neither this Draft nor the EIS Preparation Notice were sent to the owners of the land for comment. Since the Cutoff Road (A) affects them directly, we believe it would be logical to request comments from them.

Thank you for affording us to comment on the subject matter.

BRIAN NISHIMOTO
Planning Director

cc: Mayor E. Malapit
Ed Nakano
Public Works (Morita)

P.S. Under Appendix A (List of Organizations contacted for Draft EIS) the asterik (*) should be deleted from the Planning Department. We commented as noted on page A-35 & 36.

EVALUATION

PLANNING DEPARTMENT, COUNTY OF KAUAI

A: Only lands owned by Lihue Plantation will be directly impacted by the proposed Cutoff Road. No homes in the valley will be directly impacted. The homeowners in the valley were given the opportunity to comment on the proposal at the public hearing held on June 21, 1978.

EDUARDO E. MALAPIT
MAYOR

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

HENRY MORITA
COUNTY ENGINEER
TELEPHONE 245-3318

CLAY KAGAWA
DEP. COUNTY ENGINEER
TELEPHONE 245-3602

June 2, 1978

Mr. Ralph T. Segawa
Division Administrator
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

RE: DRAFT ENVIRONMENTAL IMPACT STATEMENT
HANAMAULU - AHUKINI CUT-OFF ROAD
STATE PROJECT 5IC-01-76

Reference is made to your letter dated May 17, 1978 with the draft environmental impact statement for the subject project.

We believe the subject project is required to relieve the traffic congestion along Kuhio Highway. A one roadway system as is the case with Kuhio Highway, concentrates all residential and tourist traffic through Hanamaulu, Kapaia and Lihue. As a result, Kuhio Highway is congested esepcially during peak traffic hours. The project to develop an alternative route to the Lihue - Nawiliwili and airport will separate local and through traffic and will ease the traffic congestion problem.

Very truly yours,

HENRY MORITA
County Engineer

/c

EDUARDO E. MALAPIT
MAYOR

JAMES N. KURITA
DIRECTOR

COUNTY OF KAUAI
OFFICE OF ECONOMIC DEVELOPMENT
4396 RICE STREET
LIHUE, KAUAI, HAWAII 96766
TELEPHONE 245-4556

August 23, 1978

Mr. Ralph T. Segawa
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

Subject: Comments on the EIS for the Hanamulu-Ahukini Cutoff Road, State Project 51C-01-76

Attached for your consideration are the views and concerns of my staff regarding the proposed Hanamaulu-Ahukini Cutoff Road. This is in response to your letter dated May 17, 1978.

The date by which these comments were requested has passed. However, I do hope they will help you in your evaluation of the impacts of this proposed project.

Sincerely yours,

James N. Kurita

JAMES N. KURITA
Director

With the forecasts of continued growth in communities to the north of the project area, measures will have to be taken to mitigate traffic congestion on Kuhio Highway between Hanamaulu and Lihue. The Hanamaulu-Ahukini Cutoff Road is the most practical alternative for alleviating this traffic problem.

From an economic point of view, issues or factors that will have to be further investigated and decided upon include the following:

1. Choice of alignments A,B or C
2. Hardships placed on Lihue Plantation's sugar operations around the project area
3. Number of lanes for the proposed Cutoff Road

Alignment A, B or C

If alignment A is chosen, then future traffic increases will make turning into or exiting from the Kauai Hardwood Store very difficult and dangerous and would hamper the free flow of traffic.

Alignment B and C would be better from a traffic safety point of view. Although alignment B would provide a view of the Kauai Hardwood Store, there would still be no access to it. Consequently, alignment C, which provides for increased safety and free flow of traffic, is the best option.

Furthermore, tourists traveling towards the communities or areas to the south of Lihue will continue to utilize Kuhio Highway when coming from the north.

However, the Kauai Hardwoods Store is a unique feature of the

island of Kauai and should be given assistance if there is any reason to relocate due to the construction of the Cutoff Road.

Hardships placed on Lihue Plantation's operations around the project area

The Hanamaulu-Ahukini Cutoff Road will impact the efficiency of L.P.'s sugar operations at the following areas:

1. Sugar lands makai of the proposed road on the northern side of Hanamaulu Town
2. Sugar lands makai of the proposed road on the southern side of Hanamaulu Stream
3. Sugar lands makai of Kapule Highway

It is important that provisions are made to allow for the continued irrigation of these lands and the least hinderance possible of the movement of the cane haul trucks. The acreage in the above three areas total more than 11% of L.P.'s sugar lands, a very sizeable amount.

A possible solution is building under or overpasses for the cane haul trucks at strategic locations. If these lands are later urbanized, the under/overpasses could be utilized for automobile traffic.

Number of lanes for the proposed Cutoff Road

The Kapule Highway ends at Rice Street with nowhere to go due to the construction of the Lihue Town Estates. Through traffic should not be diverted to Nawiliwili due to the industrial nature of the area. Furthermore, the traffic on Rice Street is quite heavy presently and will not handle too much additional traffic. For these reasons, this Cutoff Road cannot serve as a major Lihue Bypass Road.

However, if the agriculture, aquaculture and tourist industries continue to grow, traffic will deem that this Cutoff Road be ex-

panded to a 4-lane road due to the traffic to the airport and dock facilities.

Purchasing of land for the 4 lanes at this time is recommended, especially on the north side of the Hanamaulu Stream due to the possibility of urbanization of this area.

Other positive impacts of the proposed Cutoff Road

1. Saving of gasoline due to shorter route to Lihue and elimination of traffic tie-ups at peak traffic hours.

2. Will encourage the use of bicycles and other energy efficient modes of transportation, especially from Hanamaulu due to the elimination of having to climb the Kapaia Hill between Hanamaulu and Lihue.

3. Will give more "depth" to Lihue and encourage expansion along Kapule Highway, Ahukini Road and other connecting roads, rather than strip development along Rice Street and Kuhio Highway.

Conclusion

Your EIS thoroughly covers the impacts that will be attributable to the Hanamaulu-Ahukini Cutoff Road, with the exception of its impacts on Lihue Plantation's sugar operations. However, this is understandable due to the fact that negotiations are still continuing with Lihue Plantation. Please note the importance of L.P. to Kauai's economy, more so with its plans for their new bagasse-burning plant for producing electricity for the island.

POLICE DEPARTMENT

COUNTY OF KAUAI
3060 UMI STREET
LIHUE, HAWAII 96766
TELEPHONE 245-6721

OUR REFERENCE

YOUR REFERENCE

JUL 10 1978

915
DA
EC ✓
AD
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✓
Copies to
SHD
TR
R-9

ADDRESS ALL COMMUNICATIONS TO
ROY K. HIRAM
CHIEF OF POLICE

July 5, 1978

Mr. Ralph T. Segawa
Division Administrator
Department of Transportation
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Segawa:

We are in favor of the Hanamaulu-Ahukini Cutoff Road because it will alleviate the traffic congestion.

Anything which can be done which would expedite the construction of this project will be much appreciated.

Very truly yours,

ROY K. HIRAM
Chief of Police

RECEIVED
STATE DEPARTMENT
OF TRANSPORTATION
JUL 12 2 39 PM '78
LAND TRANSPORTATION
FACILITIES DIVISION
PLANNING BRANCH

CITIZENS UTILITIES

COMPANY

P. O. BOX 278 • ELEELE, KAUAI, HAWAII 96705 (808) 335-3131

June 14, 1978

File #77-6-102

U.S. Department of Transportation
Federal Highway Administration
Hawaii Division
P.O. Box 50206
Honolulu, HI 96850

ATTENTION: Mr. Ralph T. Segawa

SUBJECT: HANAMAULU-AHUKINI CUTOFF ROAD - ENVIRONMENTAL IMPACT STATEMENT

Dear Mr. Segawa:

We have reviewed your draft copy of the Environmental Impact Statement for the subject project and have no additional comments to those made in our letter dated July 18, 1977.

(A) We would like to suggest that a statement regarding energy conservation be added to the statement inasmuch as the Cutoff Road will reduce the gasoline consumption for all vehicles traveling in that area in two ways:

1) People living in the Kapaa area and working in the Nawiliwili area will have a shorter distance to travel.

2) Traffic congestion will decrease on Kuhio Highway and, therefore, reduce gasoline consumption.

Since Kauai Electric is interested in energy self-sufficiency for Kauai, energy conservation is the first and immediate step in striving toward this goal.

Very truly yours,

BOYD T. TOWNSLEY
Manager

BTT:kk

KAUAI ELECTRIC

A DIVISION OF CITIZENS UTILITIES COMPANY

ELECTRIC, TELEPHONE, WATER AND GAS SERVICE TO CUSTOMERS IN OVER 550 COMMUNITIES IN MANY STATES ACROSS THE NATION

EVALUATION

CITIZENS UTILITIES COMPANY (Kauai Electric)

The cutoff road will, in fact, increase total vehicle-miles driven in the Lihue area by 0.6%. This is due to the traffic being re-distributed over a longer total road system. However, since traffic will flow more efficiently, there should be some savings in fuel consumption, but this is not quantifiable with the available data.

HAWAIIAN TELEPHONE COMPANY

P.O. BOX 501 • LIHUE, HAWAII 96766 • TELEPHONE 245-2034 • CABLE: TELHAWAII

EZRA R. KANOHO
ISLAND MANAGER

June 7, 1976

Ralph T. Segawa, Division Administrator
Federal Highway Administration
P. O. Box 50206
Honolulu, Hawaii 96850

In Reply to: HEC-HI, Hanamaulu-Ahukini Cutoff Road

Dear Mr. Segawa:

Thank you for the draft of the Environmental Impact Statement and the opportunity to comment on this subject.

We estimate that a total of three telephone poles may be affected by this project at either Hehi Road and/or the proposed alignment with Kuhio Highway. On this basis Hawaiian Telephone will absorb the cost of such pole-line relocations and rearrangements.

We look forward to this roadway as a means of alleviating an increasingly serious traffic problem on Kauai and shall provide any assistance in expediting this project to completion.

Sincerely,

Ezra R. Kanoho

Ezra R. Kanoho
Island Manager

ERK/i

245 North Kukui Street, Honolulu, Hawaii 96817, Telephone (808) 537-5966

AMERICAN LUNG ASSOCIATION *of Hawaii*

June 21, 1978

U.S. Department of Transportation
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Gentlemen:

Subject: Draft Environmental Impact Statement
Hanamaulu-Ahukini Cutoff Road
State Project 51C-01-76

We have reviewed those portions of the subject EIS pertaining to traffic and air quality impact and our technical comments are attached. In general, we found the methodologies employed satisfactory; however, several of our comments suggest that for various reasons the overall impact may have been underestimated, particularly during the years through the early 1990's.

Since the analysis was primarily "worst case" oriented, it would have been more informative had some discussion of frequencies of occurrence of CO concentrations been included. This is particularly important when the screening analysis indicates the possibility of standards violations.

Sincerely yours,

James W. Morrow, Director
Environmental Health

JWM:ct
Att.

cc: OEQC
VTN Pacific

AMERICAN LUNG ASSOCIATION
OF HAWAII

ENVIRONMENTAL IMPACT STATEMENT REVIEW

. . . an air quality assurance program

Project: HANAMAULU-AHUKINI CUTOFF ROAD Date: June 21, 1978

1. Page B-2. It is stated that stability Class D represents "adverse" dispersion conditions.

   This statement is not quite correct in that Class D normally indicates neutral stability as described by Pasquill and Gifford. Class D stability was selected as representative of adverse meteorology in the EPA screening method because a previous study by McElroy and Pooler in St. Louis found that in an urban area plume dispersion under conditions indicative of Class E and F stability corresponded most closely with estimates made using Class D stability curves. Since Lihue is more nearly a rural area, Class E and F stability curves would be more representative of "worst case" or "adverse" dispersion conditions. The point is "D" stability is not necessarily "adverse" for Lihue.

2. Page B-2. It is stated that "the national CO background level of 1 ppm has been assumed."

   This is probably a typographical error since there is no national background level. The sentence probably should have read: "A natural CO background level of 1 ppm was assumed." See page 33 of the EPA screening method (EPA 450/4-75-001).

3. Page B-12.

   The assumption of a 0.8 G/Cy ratio for the police-controlled intersection fronting Wilcox Hospital seems a bit unrealistic. If, as stated in the EIS, there is already a congestion problem at this point on Kuhio Highway due to turning movements into the hospital and converging traffic from one to two lanes, it would seem that the flow along that segment was not in fact getting the benefit of 80% of the "green" time, but something less. It would seem that vehicles waiting to turn into the hospital would be getting a disproportionate share of the "green" time as they held up Kuhio traffic while waiting to turn. This deserves some reevaluation. The high G/Cy ratio for Kuhio Highway may result in an underestimation of CO concentrations at nearby receptor locations.

STATE OFFICE
[illegible] N. Kukui St.
Honolulu, Hawaii 96817
Telephone 537-5966

HAWAII COUNTY
Post Office Box 925
Hilo, Hawaii 96720
Telephone 935-1206

KAUAI COUNTY
Post Office Box 391
Lihue, Hawaii 96766
Telephone 245-1142

MAUI COUNTY
Cameron Center
Wailuku, Hawaii 96793
Telephone 244-5110

4. Page B-12. It is stated that "The measure of congestion used in the HIWAY model is the demand/capacity ratio, or peak traffic volume (V) divided by the capacity of the individual lane (C)."

This is a minor technical comment intended to clear up an apparent misconception. Input to HIWAY does not include any "measure of congestion" such as the V/C ratio. However, the screening method which was the principal analytical tool used in this study does use V/C ratios in its various curves for estimating CO concentrations. The HIWAY model itself was only one part of the procedure necessary to generate the curves in the screening method (EPA 450/4-75-001).

5. Page B-13, Table 6. Note 1 states "V/C values for each lane are the same, since the projected ADT's for the in-bound and out-bound directions are identical (Appendix D)..."

The note does not seem quite correct since Table 6 depicts peak hour V/C ratios and the peak hour in-bound and out-bound traffic volumes are not the same in Appendix D (pp. D-3 and D-4).

6. Page B-15. "... but using an atmospheric stability class typical of a rural location (as opposed to urban, as built into the HIWAY model) would decrease the calculated concentrations."

There are two errors in this sentence. First of all, there is no urban or rural location or stability "built in" to HIWAY. As mentioned in Comment 4, HIWAY is simply the line source model that was used to generate the curves found in the screening method, not HIWAY.

Secondly, if the screening method incorporated an "E" or "F" stability which would be more likely to occur in a rural area, then the CO estimates would increase, not decrease.

7. Page B-17. "... it is evident that the existing condition on Kuhio Highway is undesirable from an air quality viewpoint. The calculated values greatly exceed the stringent State Standards for CO and approach the more lenient Federal Standards."

This statement is inconsistent with the results reported in Table 8 (p. B-16) and with the assessment made in the third paragraph on page III-10.

8. Finally, we would comment that since this EIS was prepared the Environmental Protection Agency has issued its latest update on motor vehicle emission factors.* The EF's in that document are of significantly greater magnitude than those presented in Supplement 5 to AP-42 (the reference cited in this EIS). Thus, the CO estimates in the EIS (at least through 1990) have been underestimated.

*U.S. Environmental Protection Agency
Mobile Source Emission Factors, For Low-altitude Areas Only
(Final Document), March, 1978. EPA-400/9-78-006

EVALUATION

AMERICAN LUNG ASSOCIATION

The Air Quality calculations were performed again for the Final EIS, using the HIWAY computer model, and not the screening method outlined in the Draft EIS. The new results obtained are shown in Appendix C of the Final EIS.

The evaluation of specific points follows:

1. To represent adverse dispersion conditions in a rural environment stability Class E was assumed in the revised calculations.

2. The typographical error was corrected to read "natural".

3. The G/Cy ratio for the police-controlled intersection fronting Wilcox Hospital was lowered to 0.7 to more realistically represent peak hour traffic conditions.

4. The misconception has been cleared up. It is understood that the V/C ratio is used in the screening method and not in the HIWAY program. Calculations performed for the Final EIS followed the procedures necessary for input to the HIWAY program.

5. The Final EIS calculations were corrected to reflect the morning peak hour traffic volumes shown in Appendix D. During the morning peak hour, traffic is much heavier in the Lihue-bound direction than in the Hanamaulu-bound direction.

6. The two errors in this sentence have been deleted. It is understood that there is no stability condition "built in" to HIWAY, since stability is one of the parameters used as input to the program. In addition, it is recognized that CO concentrations would tend to increase with the higher stability conditions found in rural areas.

7. Table 8 in Appendix B of the Draft EIS has been re-labeled Table 7 in the Final EIS. The revised figures in this table, and the assessment made in the third paragraph of page III-10 are now consistent with the revised statement: "...it is evident that the existing condition on Kuhio Highway is undesirable from an air quality viewpoint. The calculated values significantly exceed the stringent State Standards for CO through 1980 and slightly exceed the more lenient Federal Standards for 8-hour concentrations, in 1977".

8. The calculations in the Final EIS were performed using the EF's shown in the latest update to Supplement 5 to AP-42: U.S. Environmental Protection Agency, Mobile Source Emission Factors, For Low-Altitude Areas Only (Final Document), March 1978. EPA-400/9-78-006

9058

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P. O. BOX 921
LIHUE, HAWAII 96766

THE KAUAI OUTDOOR CIRCLE

June 21, 1978

RECEIVED
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JUN 28 3 08 PM '78
LAND TRANSPORTATION
FACILITIES DIVISION
PLANNING BRANCH

Mr. R. Higashionna, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Higashionna:

The Kauai Outdoor Circle has reviewed the final draft of the Environmental Impact Statement for the Hanamaulu-Ahukini Cutoff Road, Project No. 51C-01-76, Kauai, Hawaii. The statement from the viewpoint of the Circle is excellent. Your inclusion of landscaping as an integral part of highway construction, your inclusion of erosion control measures with temporary and later permanent plantings, and the indication that there will be bike lanes as shown in your typical roadway section on page I-15 all agree with the goals and purposes of our organization. In addition The Kauai Outdoor Circle is pleased to see that this effort is part of the "Lihue Airport Gateway Beautification Project".

We would like to make three additional comments:

1. Planning for planting of the 30' medial strip should be included as part of the landscaping plan.
2. If the Land Transportation Facilities Division provides scenic turnouts along the cutoff adequate litter containers should be provided at each stop, and landscaping should also be an integral part of these areas.
3. Adequate litter containers should also be placed along the highway where it is safe to do so.

Thank you for considering the viewpoint of the Kauai Outdoor Circle through the statement we are making this evening as well as through the statement we made August 1, 1977.

Sincerely,

THE KAUAI OUTDOOR CIRCLE

Maile C. Williams
Maile C. Williams
Hanamaulu-Ahukini Cutoff Road Committee

Clare Miller
Clare Miller
President

cc: Mr. Elwin Nakano, Mr. Douglas Sakamoto

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LAND TRANSPORTATION
DEPT. OF TRANSPORTATION

EVALUATION

THE KAUAI OUTDOOR CIRCLE

1. The 30-foot median will be landscaped. It should be noted that the type of plantings for the medial strip will be determined by traffic safety cirteria.

2. Provisions for scenic turn-outs are not being considered at this time. However, if scenic turn-outs are added at a later date, litter containers will be installed.

3. Litter containers on the highway will be considered, based on need and safety.

9 of ?

To Director of Transportation
869 Punchbowl St
Honolulu 96813

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FACILITIES DIVISION

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LAND TRANSPORTATION
FACILITIES DIVISION
PLANNING BRANCH

3501 Discovery Bay
1778 Ala Moana
Hon 96815

Dear Sir:

This is to confirm that in my opinion the Hanamalu Cutoff Road is a very good idea and I support it 100%. I own a property in Honolulu and I welcome the cut off to avoid traffic when going to Lihue [illegible] Hospital.

Yours Truly,

H. Hamamoto

May 24, 1978

U. S. Dept. of Transportation
Federal Highway Admin.
Region Nine
Hawai'i Division
Box 50206
Honolulu, Hawai'i 96350

Attn: Mr. Ralph T. Segawa, Division Admin.

Gentlemen:

Thank you for sending me a copy of the EIS on the HANA-MAULU-AHUKINI CUTOFF ROAD. Because I will be leaving Kaua'i shortly and will not be back in time to reply, I will not be making comments on the statement.

However, since some areas of Kaua'i are not near a library it is difficult for members of the public to find time to study such statements and make an adequate comment on them. Therefore, I am going to make this statement available to other people who might wish to comment.

I would like to add, that though I have not had time to study the statement, I agree thoroughly that a by-pass of Lihue Town from the airport is badly needed.

Yours truly,

Helen Hopkins

Helen C. Hopkins
P. O. Box 266
Hanalei, Hawai'i 96714

APPENDIX G

PUBLIC HEARINGS

APPENDIX G

SUMMARY OF PUBLIC HEARING

A public hearing on the Cutoff Road was held on June 21, 1978 at the Wilcox Elementary School Cafetorium in Lihue, Kauai.

The following person spoke at the hearing:

SPEAKERS	REPRESENTING
Chuck Swanson, Moderator	Department of Transportation, State of Hawaii
Kenneth Nagai, Consultant	Land Transportation Facilities Division
John Rego	Self
Malcom Smith	Kauai Hardwoods Factory
John Loomis	Lihue Plantation Company
Betty J. Bell	Wilcox Memorial Hospital and Health Center
Chris Mills	Self
Clare Miller	Kauai Outdoor Circle
John Schroeder	Self
James Tehada	Self
Eddie Sarita, Councilman	County
Tony Kunimura, Representative	State

Mr. Swanson, from the State Department of Transportation, opened the meeting and introduced the public officials. Mr. Swanson explained that this was a combined corridor-and-highway-design public hearing, and discussed the agenda for the rest of the hearing, which included a presentation by Mr. Kenneth Nagai of Wilson Okamoto and Associates, followed by a short recess and testimony by the persons wishing to speak at the hearing.

Mr. Nagai gave a brief background on the traffic situation in the area and the need for the project. He described the different alternatives available for relieving the present situation, including the possible development of Kuhio Highway as a major highway route and the development of the cutoff road.

Mr. Nagai went on the discuss the major design features of the project and the social, economic and environmental impacts anticipated from the project's development. The three alignments considered (A, B and C) were covered in detail, together with their relative advantages and disadvantages.

Mr. Nagai explained that evaluation of data up to that time had made Alignment C the preferred alignment. He reiterated the fact that the preference for this alignment was only a tentative decision, and that a final decision would be made only after the testimony at the public hearing was evaluated.

After the recess the following testimony was received:

1. Mr. John Rego stated a preference for Alignment C, and expressed concern for the impact of the proposed cutoff road on a family grave-yard located near the proposed right-of-way.

2. Mr. Malcom Smith, owner of the Hardwood Factory stated a preference for Alignment A. (Reason: economic impact on factory).

3. Mr. John Loomis, of the Lihue Plantation, the only landowner affected by the project, stated a preference for Alignment A. (Reason: acquisition of least amount of sugarcane land).

4. Ms. Bell, of the Wilcox Memorial Hospital and Health Center expressed support of the proposed cutoff road and urged the State to proceed with the project with all dispatch.

5. Mr. Mills spoke in favor of the proposed Cutoff Road, without registering a preference for a particular alignment.

6. Ms. Miller, of the Kauai Outdoor Circle praised the provisions for landscaping and erosion control measures. In addition, Ms. Miller made recommendations for planting the medial strip and provision of scenic turnouts with adequate litter containers.

7. Mr. Schroeder expressed concern that the cutoff road would lead to congestion in the lower part of Lihue toward the harbor, and suggested that an alignment for the cutoff road mauka of Kuhio Highway should be considered.

8. Mr. Tehada agreed with the remarks made by Mr. Schroeder.

9. Mr. Edward Sarita, President of the Hanamaulu Association (also County Councilman) stated a preference for an alignment which was essentially Alignment A. (Reason: economic impact on factory).

10. Mr. Kunimura, State Representative spoke in favor of Alternative A.

9115

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

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LAND TRANSPORTATION
FACILITIES DIVISION

June 29, 1978

Dr. R. Higashionna, Director
Department of Transportation
869 Punchbowl Streeet
Honolulu, Hawaii 96813

Re: Hanamaulu-Ahukini Cut Off Road-Project No. 51C-01-76

Dear Dr. Higashionna:

We would like to offer a few comments on the above mentioned project.

First, we would encourage the final plan to provide for non-signalized ingress and egress configerations on the Kapaa or north entrance onto Kuhio Highway.

This would result in less intransit delay time for our trucks and contribute to a safer intersection.

Second, we would encourage the final plan to eliminate the unsafe valley and highway turn at Kauai Hardwoods.

While we sympathize with Kauai Hardwoods, the combination downhill turn on Kuhio Highway along with customer ingress and egress at Kauai Hardwoods has created an extreme safety hazard for our trucks.

Therefore, in the event that this unsafe situation at Kauai Hardwoods cannot be alleviated, we would endorse Alignment "B" and encourage the elimination of traffic signals at the north intersection. Alignment "B" was chosen or "C" in order to minimize the amount of cane acerage required.

Very truly yours,

Geoffrey M. Miller
Manager

GMM:mf

2154

AMFAC, INC.
700 BISHOP STREET
P.O. BOX 3230
HONOLULU, HAWAII 96801
TELEPHONE: (808) 546-8111

July 3, 1978

Mr. Tetsuo Harano
Chief, Land Transportation
Facilities Division
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Re: Hanamaulu-Ahukini Cutoff Road

This letter is a follow up to the statement of The Lihue Plantation Company, Limited made at the Corridor-Design Public Hearing on June 21, 1978.

The Company favors alignment A in that the least amount of agricultural land is required for the right-of-way. It has been stated that the initial phase of the project will be a two-lane highway and that the final phase will be a four-lane divided highway. The date for the final phase is not definite. It is further proposed that the right-of-way necessary to accommodate the final phase be acquired at this time. We have reason to believe that the acquisition of land now to be needed at some undetermined future date may not be legally permissible.

Other concerns are related to the effect on the Company's operations as brought about by the new highway.

- Access to and from the L-29 Quarry on the south side of Hanamaulu Valley must be maintained.
- Irrigation facilities must be maintained.
- A new junction to allow a safe entry of empty cane haul units headed north must be provided if the proposed cutoff road is to become a four-lane divided highway.

- Two cane haul road crossings must be provided for Fields L-29 and Hm-1.

Since the highway may ultimately be a high-speed four-lane-divided highway, safe truck crossings without unreasonable delays are imperative. This applies to the empty haul cane units traveling north as well as the loaded and empty units used in harvesting operations in Fields L-29 and Hm-1.

The Lihue Plantation Company, Limited would be pleased to discuss these points in further detail.

Very truly yours,

AMFAC, INC.

J. E. Loomis
Director, Real Estate
Agriculture Group

JEL:vk

cc: Lihue Plantation Co.
D. W. Ballie

APPENDIX H

STREAM SURVEY

APPENDIX H STREAM SURVEY

Aquatic Macrofauna in Hanamaulu Stream, Kauai

by

Amadeo S. Timbol, Ph. D.

Aquatic Biologist

(Submitted to VTN, Honolulu)

Introduction

This is a biological reconnaissance of Hanamaulu Stream to compile a list and to determine relative abundances of resident fish, shrimp, prawn and other aquatic macrofauna. Special attention was given to native animals, e.g. gobies such as Lentipes concolor (o'opu alamoo). The significance of the native animals is discussed and on the basis of these natives, an assessment of the stream's ecological quality status is made.

The aquatic macrofauna in Hanamaulu Stream are briefly discussed by the Division of Fish and Game (State of Hawaii 1965).

Methods

Eight stations were selected: four in the estuarine section of the stream in the vicinity of the proposed Hanamaulu-Ahukini Cutoff Bridge and four in the freshwater section (See Appendixes A and B for station parameters and locations).

A stretch of 20 by 1 m of stream channel was pre-measured and animals which could be seen with the naked eye recorded, enumerated and identified. Observations were sometimes made with the aid of a face mask and snorkel. When needed for positive identification, specimens were caught with a hand net and released live in the same area. Boulders, rocks and stones in the freshwater section were examined for the endemic freshwater mollusk, Neritina granosa (hihiwai).

Terms used in this report designating the origin of animals are: (1) endemic, means occurring naturally in Hawaii only; (2) indigenous, means occurring naturally in Hawaii and also elsewhere ; (3) introduced, means that the animal was brought to Hawaii either intentionally or accidentally; and (4) native, includes both endemic and indigenous animals. Terms and signs used to indicate relative abundances are: absent (0) which means it was neither collected nor seen in the 20 x 1 m site; uncommon (+) where only one was sighted or collected; common (++), between 2 and 5 individuals; and abundant (+++) means more than 5, sometimes up to a hundred or more.

Results

At least 15 species of aquatic animals were found in Hanamaulu Stream (Table 1). Of these, 9 are fish, 3 crustacea, 2 mollusk, and 1 amphibia. Nine species are native to Hawaii, 5 are introduced while the origin of 1 has not been determined. The important native animals are:

Fishes

1. Awaous genevittatus (o'opu naniha)

This small (up to 15 cm) indigenous goby is characterized by a broad, slaty blotch extending from below the eye downward and backward across the cheek. It lives in brackish water and in the lower reaches of streams. It was found only in the estuarine portion of Hanamaulu Stream.

2. Awaous stamineus (o'opu nakea)

This endemic goby reaches a maximum of 35 cm and on Kauai, it is the basis of a seasonal, ethnic fishery. It is an obligately diadromous animal and must have access to salt water when young before finally migrating far upstream to live. The juveniles and adults do not have a slaty blotch on the cheek. At Hanamaulu, it was found only in the estuary.

Table 1. List of Macrofauna in Hanamaulu Stream, Kauai (December 1978).

Scientific Name	Local Name	Origin	Listing[1]
A. FISH			
1. *Awaous genevittatus*	o'opu naniha	indigenous	none
2. *Awaous stamineus*	o'opu nakea	endemic	depleted on Cahu[2]
3. *Caranx* sp.	papio	indigenous	none
4. *Eleotris sandwicensis*	o'opu okuhe	endemic	none
5. *Gambusia affinis*	mosquitofish	introduced	none
6. *Kuhlia sandvicensis*	aholehole	endemic	none
7. *Mugil cephalus*	mullet[3], amaama	indigenous	none
8. *Poecilia reticulata*	guppy	introduced	none
9. *Tilapia* (=*Sarotherodon*) *mossambica*	tilapia	introduced	none
B. CRUSTACEA			
1. *Macrobrachium grandimanus*	opae oehaa	indigenous	none
2. *Macrobrachium lar*	Tahitian prawn	introduced	none
3. *Procambarus clarkii*	crayfish	introduced	none
C. MOLLUSK			
1. *Melania* sp.	pond snail	indigenous	none
2. *Theodoxus vespertinus*	brown wi	endemic	none
D. AMPHIBIA			
1. *Rana* sp.	frog[4]	undetermined	none

[1]Considered as endangered or threatened in official register or scientific publications. Depleted means the species still occurs in numbers adequate for survival but heavily reduced in numbers and continues to decline at a rate substantially greater than can be sustained (Miller 1972).

[2]Miller 1972

[3]Two additional mullet species, *Neomyxus chaptalii* (uouca) and *Chelon engeli* may be present.

[4]Possibly two species, *Rana rugosa* and *Rana castebiana*.

3. Eleotris sandwicensis (o'opu okuhe)

This goby-like endemic fish is characterized by separate pelvic fins (true gobies have fused pelvic fins). It attains a length of 25 cm and lives in brackish water and in the lower reaches of streams. At Hanamaulu, it was found only in the estuary.

Neither the Lentipes concolor (o'opu alamoo) nor the Sicydium stimpsoni (o'opu nopili), two endemic gobies, were found in Hanamaulu Stream. There are possibly three reasons why both of these species are absent. Firstly, with regards to Lentipes, the longitudinal gradient of the stream is low. From the stream mouth, the stream goes through a flat area, gradually rises up the slopes of Kilohana Crater. This type of stream gradient is not Lentipes habitat. Lentipes inhabits pristine, steep-gradient streams (Maciolek 1978). Maciolek (personal communication) has not found the Lentipes in Hanamaulu Stream and does not expect to.

Secondly, the o'opu nopili is widely distributed in high grade (nearly pristine to pristine) streams irregardless of stream gradient. Because of this requirement, the nopili is designated as an "indicator" species for high grade streams (Timbol and Maciolek 1978). Its absence in Hanamaulu suggests stream degradation (e.g. pollution).

Thirdly, both of these gobies are obligately diadromous and must have a suitable continous pathway from the estuary up to the headwaters. That they are absent in the freshwater section of the stream could be due to some physical barrier (e.g. dry stream channel for most part of the year).

Crustacea

1. Macrobrachium grandimanus (opae oehaa)

This small (up to 15 cm total length) native prawn is characterized

by a straight rostrum with a 15/4 rostral formula and the second chelae unequal in size. It inhabits mixohaline waters and lower reaches of streams. In Hanamaulu, it was found only in the estuary section of the stream.

Missing is a second native crustacea, Atya bisulcata (opae kalaole) Most Kauai stream harbor these atyids.

Mollusk

1. Melania sp.

This small (ca 5 cm), ubiquitous pond snail used to be known as Thiara granifera. It was found in both brackish and freshwater in Hanamaulu.

Absent, is another endemic freshwater mollusk, Neritina granosa (hihiwai) which is usually found in Kauai streams.

Other animals previously recorded in Hanamaulu Stream but not found in this reconnaissance are the endemic polychaete, Nemalycastis hawaiiensis, which was common among roots of water hyacinth (Maciolek, unpublished data). The smallmouth bass (Micropterus dolomieui), largemouth bass (Micropterus salmoides) and the bluegill (Lepomis macrochirus) were also previously listed (State of Hawaii 1965). We did not found these three game fishes in the stream but it is possible that they are in the reservoirs, flumes and irrigation ditches in the Hanamaulu basin.

During this field trip, a 68-year old resident whose residence is immediately upstream of the proposed cut-off bridge, was interviewed. He claimed that he had lived all his years in the vicinity. The last time he saw hinana (goby fry) in large quantities in Hanamaulu was 40 years ago, when the reservoirs in the Hanamaulu basin were not yet built. He remembers that he last saw o'opu nopili some 20 years ago. Likewise, Chinese catfish (Clarias fuscus)

and dojo (Misgurnus anguillicaudatus) used to be found in the rice paddies. These paddies are now sugar cane areas. It is highly possible that dojo and Chinese catfish are still in the marshy areas of Hanamaulu.

Occurrence and relative abundances of macrofauna in Hanamaulu Stream are given in Table 2. Roughly, there are about twice (13 versus 7) more species in brackish water than in freshwater. Of the 15 species in the list, three species; the mosquitofish (Gambusia affinis), the pond snail (Melania sp.) and the frog (Rana sp.) are ubiquitous and abundant. Most of the other animals are limited to either brackish or freshwater. Three of the 15 animals are marine visitors (Caranx sp., Mugil cephalus and Kuhlia sandvicensis) and are found in abundance. The native gobies, o'opu naniha and nakea ranged from uncommon to common. In addition, both of these gobies are not found beyond the estuarine section of the stream. The poeciliids (mosquitofish and guppy) are abundant in the freshwater section. These are mentioned as possible forage for exotic game fishes by the Division of Fish and Game.

At elevations higher than Stations 6 through 8, only native damselfly (Megalagrion vagabundum), native pond snail and exotic poeciliids are present (Maciolek, unpublished data).

Conclusions

At least 15 species of aquatic animals are in Hanamaulu stream.

Awaous stamineus, a goby that lives in the headwaters of streams, is found only in brackish water suggesting absence of a suitable migratory pathway.

Lentipes concolor, a goby recommended for endangered status, was not found and the physiography of the stream suggests that it is not there.

Table 2. Distribution and Relative Abundances of Aquatic Macrofauna in Hanamaulu Stream, Kauai. (December 1978).

Scientific Name	Sampling Station							
	Brackish				Freshwater			
	1	2	3	4	5	6	7	8
A. FISH								
1. *Awaous genevittatus*	++	++	++	++	0	0	0	0
2. *Awaous stamineus*	0	+	+	++	0	0	0	0
3. *Caranx* sp.	+++	++	++	0	0	0	0	0
4. *Eleotris sandwicensis*	+	++	+	+	0	0	0	0
5. *Gambusia affinis*	0	++	++	0	+++	+++	+++	+
6. *Kuhlia sandvicensis*	+++	+++	+++	0	0	0	0	0
7. *Mugil cephalus*	+++	+++	++	++	0	0	0	0
8. *Poecilia reticulata*	0	0	0	0	+++	+++	0	+++
9. *Tilapia mossambica*	+++	++	+++	++	0	0	0	0
B. CRUSTACEA								
1. *Macrobrachium grandimanus*	++	+++	+	++	0	0	0	0
2. *Macrobrachium lar*	0	+	+	+	+	0	0	+
3. *Procambarus clarkii*	0	0	0	0	+	+++	0	+
C. MOLLUSK								
1. *Melania* sp.	0	+++	+++	+++	+++	0	+++	++
2. *Theodoxus vespertinus*	0	+++	+++	+++	0	0	0	0
D. AMPHIBIA								
1. *Rana* sp.	0	+	0	++	0	+++	++	+

Legend: +++ = abundant
++ = common
+ = uncommon
0 = absent or not seen

See also Methods and Appendix B

Sicydium stimpsoni, a goby sensitive to stream degradation, was not found. This suggests stream degradation.

Other native animals that are usually found in Kauai streams but absent in Hanamaulu are: the crustacea Atya bisulcata and the mollusk Neritina granosa. Their absence also suggests stream degradation.

The absence of the four native gobies, the two native crustaceans and the endemic freshwater mollusk in the freshwater section of Hanamaulu indicates serious stream degradation. This finding reinforces the ecological quality grade III (exploitive consumptive, moderate to low quality and well exploited) given to Hanamaulu Stream in a previous study (Timbol and Maciolek 1978).

Literature Cited

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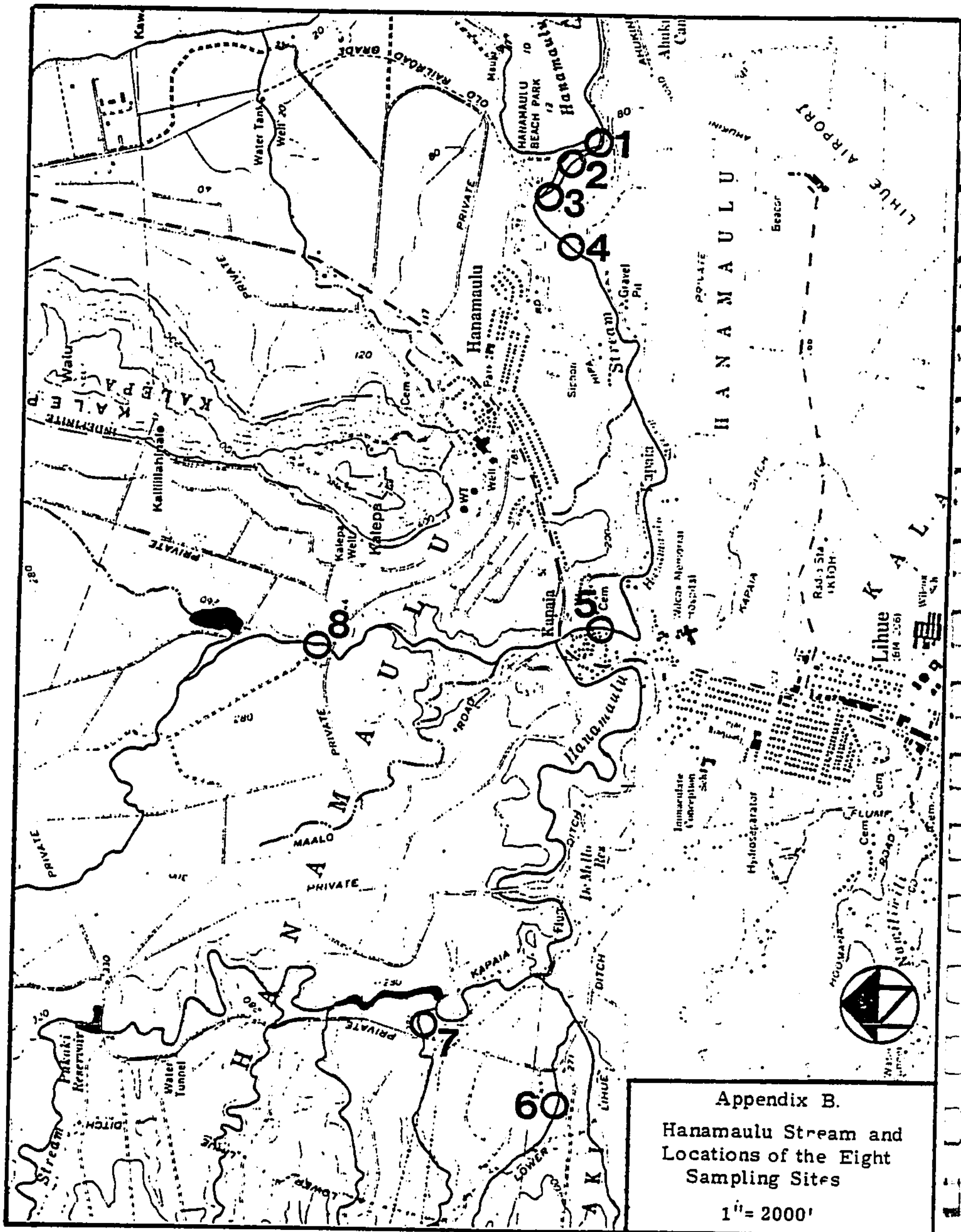
Appendix A

Some Physicochemical Parameters of Sampling Stations in Hanamaulu Stream, Kauai (December 1978)

Sampling Station	Parameter		
	Nature of Stream Flow	Nature of Bottom	Water Classification
1	No perceptible ocean-ward flow, subject to wave action	Sandy	Brackish
2	No perceptible ocean-ward flow, not subject to wave action	Sandy-muddy	Brackish
3	Very slow flow ocean-ward	Muddy-silty	Brackish
4	Slow flow ocean-ward	Muddy-silty	Brackish
5	Strong riffle, rapid	Sand, gravel	Freshwater
6	Not flowing, between 3 and 30 cm depth	Mud, covered with rotting leaves	Freshwater
7	Strong riffle, comes out of culvert, goes underground some distance downstream	Mud, covered with rotting leaves	Freshwater
8	Strong riffle	Clay, mud and rotting leaves	Freshwater



Appendix B.
Hanamaulu Stream and Locations of the Eight Sampling Sites
1" = 2000'