April 10, 1985

Ms. Letitia M. Uyehara
Director
Office of Environmental Quality Control
550 Halekauwila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Based on the recommendation of the Office of Environmental Quality Control, I am pleased to accept the environmental impact statement for the Huleia Bridge Replacement and Approaches as a satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

This environmental impact statement will be a useful tool in deciding whether this project should be allowed to proceed. My acceptance of the statement is an affirmation of its adequacy under applicable laws and does not constitute an endorsement of the proposal.

When the decision is made regarding this action, I expect the proposing agency to carefully weigh the societal benefits against the environmental impact which will likely occur. This impact is adequately described in the statement, and together with the comments made by reviewers, provides a useful analysis of alternatives to the proposed action.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi

cc: Honorable Wayne J. Yamasaki
HULEIA BRIDGE REPLACEMENT AND APPROACHES

FINAL

ENVIRONMENTAL IMPACT STATEMENT

KAUMUALII HIGHWAY
FAP ROUTE 50
LIHUE DISTRICT
ISLAND OF KAUAI

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

AND

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
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KAUMUALII HIGHWAY, FAP 50
HULEIA BRIDGE REPLACEMENT AND APPROACHES
LIHUE DISTRICT, ISLAND OF KAUAII
STATE OF HAWAII

FINAL
ENVIRONMENTAL IMPACT STATEMENT
Submitted Pursuant to 42 USC 4332 (2) (C)

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration
and
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION
Highways Division

Date

Federal Highway Administration
Region IX

The following persons may be contacted for additional information concerning this document:

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(Telephone Number 546-5150)

Mr. Wayne J. Yamasaki  
Director  
Department of Transportation  
State of Hawaii  
869 Punchbowl Street  
Honolulu, Hawaii 96813  
(Telephone Number 548-3205)

The proposed action is to replace the existing two-lane timber trestle bridge at Huleia Stream with a new three-lane (2 basic lanes plus 1 truck lane) reinforced concrete bridge at a new location downstream of the present bridge crossing. New approach roadways are also included in the proposed action.
SUMMARY

A. Description of the Proposed Action

The proposed project involves the replacement of existing Huleia Stream Bridge and approaches on Kaumualii Highway (FAP Route 50) on the Island of Kauai (see Figure I, page I-2). The existing Huleia Stream Bridge, also known as "Halfway Bridge" is a severely deteriorated timber structure which is both structurally and geometrically deficient. The existing alignments of the highway approaches are relatively steep at 6.0% and 6.9%.

B. Major Alternatives Considered

1. General

Three alternatives were considered. Two alternatives (I and II) propose the construction of a new replacement bridge and approach roadways south of the present bridge crossing (see Figure 6, page II-3), and call for a grade-separated crossing of eastbound (Lihue) traffic from the Quarry Access Road. Variations of Alternatives I and II, called Alternatives IA and IIA(Recommended), provide, in lieu of the grade-separated crossing of eastbound traffic from the Quarry Access Road, either an at-grade jug-handle intersection or a left-turn bay intersection for the Quarry Access Road. These alternatives call for the demolition of the existing bridge and the closure of the approach roadways to traffic.

The third alternative, Alternative III, proposes to demolish the existing bridge and construct a new bridge structure on the existing highway alignment.
2. **Recommended Alternative**
   Alternative IIA is recommended because of its superior geometrics, potential for future expansion, and lowest cost of the alternatives that considered realignment of the approach roadways.

3. **Do-Nothing Alternative**
   This alternative is not considered a viable alternative because of the severe structural deficiency of the existing bridge structure, having a sufficiency rating of 3 in the National Bridge Replacement Program, and an estimated life of 5 to 7 years.

C. **Significant Environmental Impacts**
   1. Approximately 6.4 acres of agricultural lands planted in sugar cane will be lost due to highway construction.
   2. There will be short-term adverse effects on air, noise and water quality resulting from construction activities.

D. **Areas of Controversy**
   There are no areas of controversy relative to this project at this time.

E. **Significant Unresolved Issues**
   At this time, there are no unresolved issues from the standpoint of potential environmental impacts.

F. **List of Other Federal Actions Required**
   A Section 404, Department of the Army permit may be required should fill be placed within the normal high water mark of the stream during construction.
G. Circulation of the Draft Environmental Impact Statement

The draft environmental impact statement was circulated on August 22, 1983.
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SECTION 1.

PURPOSE AND NEED FOR ACTION
SECTION I. PURPOSE AND NEED FOR ACTION

A. Location and Background

The project site is located on Kaumualii Highway (FAP Route 50), just east of the Koloa-Lihue District Boundary on the island of Kauai (see Figure 1). The bridge site is approximately 1.77 miles northeast of Maluhia Road, at Mile Post 4.8, and approximately 5 miles west of Lihue. Kaumualii Highway, via the project location, provides the primary transportation link between Lihue (the County seat) and the southwest and westerly areas of Kauai.

The existing Huleia Bridge, also known as "Halfway Bridge", was built in the 1930s when the old government main road to Koloa was realigned to the present alignment of Kaumualii Highway. The two-lane timber bridge is built upon the earlier constructed reinforced concrete bridge deck of the old government main road. The road profile of the new road was raised, resulting in the use of the deck of the old concrete bridge and portion of the old roadbed as foundation for the 13 wood bents supporting the existing bridge. Figure 2 shows a longitudinal section of the existing bridge crossing. The total length of the bridge is 248 feet. The traveled way width (curb to curb) is 24'-4"; a 3'-10" wide wood-plank sidewalk is provided on the south side. Figure 3 shows the existing bridge cross section. The total bridge deck width is 30'-3¾". An asphalt concrete wearing surface is provided for the traveled way.

B. Need for Proposed Action

The existing bridge crossing is structurally deficient and functionally obsolete. It does not meet current geometric criteria for bridges.
PROJECT LOCATION MAP
KAUMUALII HIGHWAY
HULEIA BRIDGE REPLACEMENT
AND APPROACHES
FIGURE 1
The timber structure is severely deteriorated, and termite infestations have been found. The cost to maintain the structure has been increasing in recent years. In 1982, the Department of Transportation expended $75,300 to replace the sidewalk planking and replace the wooden bridge railing. The estimated remaining life of the structure is 5 to 7 years. The bridge is listed as structurally deficient in the National Bridge Replacement Program with a sufficiency rating of 3. (The sufficiency rating is based on a scale from 0 to 100. A rating of 0 designates a structure at failure, while a rating of 100 designates a structurally sound bridge.)

Current bridge geometrics call for the bridge cross-section to carry the shoulder width of the approach roadway across the entire length of the bridge. The existing bridge does not meet this criteria.

In addition, the vertical alignments of the approach roadways are steep and undesirable at 6.0 and 6.80 percent. Accident records show a total of 14 accidents have occurred in the years 1979, 1980 and 1981, on the approach roadways to the bridge.

Another undesirable condition exists on the east approach roadway at its intersection with the Grove Farm quarry access road. Here, slow moving trucks enter Kaumualii Highway, creating the potential for rear-end collisions.

The proposed action is to construct a new bridge to replace the existing structure, at a new location south of the existing crossing. Figure 4 shows the proposed roadway typical section. A minimum right-of-way
TYPICAL SECTION
KAUMUALII HIGHWAY (FAP 50)
PROPOSED APPROACHES TO HULEIA BRIDGE
FIGURE 4

* PROVIDE WHERE REQUIRED.
** USE 8' MINIMUM WHERE NO TRUCK CLIMBING LANE IS PROVIDED.
*** USE 1:1 1/2 SLOPE WHERE LANDSCAPING IS PROVIDED.
width of 100 feet is proposed for the approach roadway. Figure 5 shows the bridge typical section. Provisions for new bridge geometrics, new approach roadway geometrics, a possible grade separation for eastbound traffic from the quarry access road, and truck climbing lanes were considered under the alternatives discussed in Section II.
TYPICAL SECTION
PROPOSED HULEIA BRIDGE
KAUMUALII HIGHWAY (FAP 50)

FIGURE 5
SECTION II.

ALTERNATIVES INCLUDING THE PROPOSED ACTION
SECTION II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. General

In determining the viable alternatives, consideration was given to the following criteria:

1. Construction cost
2. Ease of construction
3. Rights-of-way requirement and type of lands affected
4. Detour considerations and its impact on traffic
5. Potential to improve the approach roadway geometrics
6. Effect on the environment of the area
7. Only two lanes of an ultimate 4-lane (20-year design period) section is proposed at this time due to tight fiscal constraints
8. The Quarry Road access requirements will remain constant in the future

Alignments on the north side (excepting temporary detours) of the existing bridge were eliminated because of the high embankment required for the east bridge approach and the necessity to cut through existing open areas along the unimproved natural west stream bank. Huleia Stream makes a sharp turn westward (going upstream) just north of the existing bridge crossing, which would result in cutting through a larger area of the natural stream bank than alternatives proposed on the south side of the existing bridge.

The roadway design criteria are as follows:

Design Speed 60 mph
Minimum Radius 1500 feet
Maximum Superelevation Rate  8.0%
Minimum Cross Slope  2.0%
Maximum Grade  4.0%
Minimum Grade  0.5%
Highway Classification  Rural
Right-of-Way Width (Minimum)  100 feet

Three alternatives, including the recommended alternative (Alternative IIA), for replacing the Huleia Bridge are discussed in this section. Two of the alternatives propose new bridge structures and approach roadways just south of the present highway alignment. The third alternative replaces the existing bridge on the present highway alignment. Figure 6 shows the alternative alignments that were considered.

B. Alternative I

Alternative I consists of a two-lane replacement bridge approximately 530 feet long at a location about 320 feet downstream (south) of the existing two-lane Huleia Bridge. This alternative requires a new highway approach of about 3,750 feet on the west side and 1,120 feet on the east side of the new bridge structure. Approach roadway slopes are at 6.2%. The total length of the new alignment is approximately 5,400 feet. The existing quarry access road intersection would be improved by providing a grade separated crossing for eastbound (Lihue) traffic to cross under Kaumualii Highway and enter Kaumualii Highway via an on-ramp. Westbound traffic from the quarry access road would enter Kaumualii Highway at an at-grade intersection.
PROPOSED ALTERNATIVES
KAUMUALII HIGHWAY
HULEIA BRIDGE REPLACEMENT
AND APPROACHES

FIGURE 6
A variation of Alternative I, here called Alternative I-A, eliminates the grade separation for eastbound traffic from the quarry access road. There is no difference in the horizontal alignment of Alternative I-A from Alternative I. However, by eliminating the grade separation, the vertical profile of the alignment is lowered, resulting in a shorter two-lane bridge structure, about 445 feet long versus 530 feet for Alternative I. The approach roadway grades remain at 6.2%. There is no change in the total length of the alignment.

Alternative I-A proposes an at-grade jug-handle intersection for the eastbound traffic from the quarry access road to enter Kaumualii Highway via an on-ramp. The westbound traffic would enter Kaumualii Highway on an auxiliary truck climbing lane. The auxiliary lane is proposed because the roadway grade is steeper on the west approach in Alternative I-A than in Alternative I.

In both Alternatives I and I-A, the existing bridge structures will be demolished and the existing approach roadways closed to traffic.

The right-of-way required for Alternative I is approximately 17 acres; Alternative I-A requires approximately 14 acres.

No detouring of existing traffic is required for either Alternative I or Alternative I-A.

C. Alternative II

Alternative II consists of a two-lane replacement bridge approximately 525 feet long at a location about 90 feet downstream (south) from the existing bridge. This proposed alternative requires new highway approaches of approximately 1,540 feet on the west side of the new bridge, and
approximately 1,420 feet on the east side of the new bridge. The approach roadway grades are at 6.8%. The total length of this alignment is approximately 3,500 feet. Similar to Alternative I, a grade separated crossing for the eastbound traffic to Kaumualii Highway from the quarry access road will be provided. Eastbound traffic would merge onto Kaumualii Highway via an on-ramp. The westbound traffic from the quarry access road would enter Kaumualii Highway from an at-grade intersection.

Alternative II-A, the recommended alternative, varies from Alternative II by not providing the grade-separated crossing for eastbound traffic from the quarry access road. This results in a lower vertical profile than in Alternative II, with a shorter bridge length requirement and flatter roadway grades at 4%. The bridge length for Alternative II-A is 350 feet. The total length of the alignment is approximately 4,700 feet.

At the quarry access road intersection, which is a private road, a left-turn bay will be provided. For the eastbound traffic to enter Kaumualii Highway from this road, a left-turn acceleration lane will be provided. Westbound traffic would enter Kaumualii Highway from the at-grade intersection. An auxiliary truck climbing lane is proposed on the west side of the new bridge. Figure 7 shows the Recommended Alignment, and Figure 8 shows the proposed ramp/intersection detail of recommended Alternative IIA.

The existing bridge structure will be demolished and the existing approach roadways will be closed to traffic.

The right-of-way requirement for Alternative II is approximately 7 acres; and for the recommended Alternative II-A is approximately 6.4 acres.
REALIGNMENT ALTERNATIVE II-A (RECOMMENDED)
KAUMUALII HIGHWAY
HULEIA BRIDGE REPLACEMENT
AND APPROACHES
FIGURE 7
ALTERNATIVE II - A RECOMMENDED RAMP/INTERSECTION DETAIL

FIGURE 8
A short detour adjacent and north of the east approach roadway will be required during construction of Alternative II. No detour for existing traffic is required for the construction of Alternative II-A.

D. Alternative III

Alternative III consists of demolishing the existing timber structure and constructing a new two-lane bridge on the present alignment with minor changes to the approach roadway profile and minor improvement to the present quarry access road intersection. As mentioned in Section I, the existing approach roadways have profile grades of 6.0% and 6.8%, which are substandard for 60 mph design speeds. The new bridge would be approximately 260 feet in length.

Because the existing bridge structure would be demolished, detouring of the highway traffic during construction will be required. Three possible alternative detour routes (shown on Figure 9) were considered.

Alternative "A" proposes the construction of a temporary two-lane bridge and approach roadways on the north side of the existing bridge crossing. The total length of the detour is approximately 1,900 feet, including a 209 foot long temporary bridge structure. This detour alignment would require substantial embankment construction in order to build the east approach roadway and would require the construction of a detour roadway for the quarry access road.

Alternative "B" proposes the construction of a temporary two-lane detour along the south side of the existing bridge closely following the alignment of proposed Alternative II-A. This detour calls for a 3,260 foot, two-lane detour road, including a 209-foot detour bridge structure.
DETOUR ALTERNATIVES

ALTERNATIVE A
ALTERNATIVE B
ALTERNATIVE C

ALTERNATIVE DETOUR ROUTES FOR ALTERNATIVE III

FIGURE 9
Alternative "C" proposes the utilization of an existing private road, portions of which are used for hauling sugar cane, as the detour routing while the replacement bridge is under construction. The detour length is approximately four miles long, beginning at a point approximately 1.9 miles (9,000 feet) west of Puhi on Kaumualii Highway, heading south to join Aakukui Road near Kipu, then heading west past the Puhi Airstrip and then north to rejoin Kaumualii Highway at the Kahili Road intersection, about 1.4 miles east of the Maluhia Road intersection. The State would have to arrange to lease the detour right-of-way from Grove Farm and then upgrade the roadway to meet geometric standards for at least a 40 MPH design speed, which would include asphalt concrete pavement, shoulder grading, signing and striping.

E. **Do-Nothing Alternative**

The "do-nothing" alternative is not a viable alternative because it has been determined that the existing timber bridge is structurally deficient per its sufficiency rating of 3 in the National Bridge Replacement Program. In addition, the existing bridge geometrics are functionally obsolete and do not meet current bridge geometric standards.

The existing bridge structure has an estimated remaining life of from 5 to 7 years. To do nothing would only lead to the inevitable when emergency measures to structurally support the bridge would be required to keep the roadway open. Kaumualii Highway via Huleia Bridge is the only highway capable of handling the traffic demand between southwest and west Kauai and Lihue and points east and northeast. Therefore, it is vital to the motorists and to the people that this major highway link be opened to traffic at all times.
F. Summary of Costs for Alternatives

Table I shows the comparative construction costs for each of the viable alternatives discussed hereinabove.

**TABLE 1. COMPARATIVE COSTS (x$1,000)**

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<th>Existing Location**</th>
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<td>Bridge</td>
<td>$3,562</td>
<td>$2,994</td>
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<tr>
<td>Roadway</td>
<td>2,070</td>
<td>2,161</td>
</tr>
<tr>
<td>Ramp</td>
<td>550</td>
<td>342</td>
</tr>
<tr>
<td>Detour Bridge</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Detour Road</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>Quarry Road</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>Subtotal Contingency/10%</td>
<td>6,275</td>
<td>5,596</td>
</tr>
<tr>
<td>Subtotal</td>
<td>6,903</td>
<td>6,156</td>
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<tr>
<td>P.E. 8%</td>
<td>552</td>
<td>492</td>
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<tr>
<td>R.O.W.</td>
<td>479</td>
<td>457</td>
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<td>Total</td>
<td>7,934</td>
<td>7,105</td>
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*South side detour uses Alt-II-A profile.
**Requires construction easement(s)/lease(s) of private lands.

G. Basis of Recommendation

Alternative IIA was selected over the other alternatives for the following reasons:

1. The do nothing alternative is not viable.
2. The existing alignment alternative, Alternative III, focused on the improvement of the bridge only, providing no improvements to the
highway approaches, or to the existing quarry road intersection. No rights-of-way are provided for future widening to a 4-lane facility, which will require a greater future expenditure compared to the realignment alternatives. A large expenditure is also required for non-recoverable detouring provisions. In addition, Alternative III does not have the public's acceptance due largely to inferior geometrics.

3. Therefore, when the realignment alternatives are compared to Alternative III, they provide superior geometrics, minimal detouring costs, and rights-of-way for future widening or addition of lanes.

4. Alternative IIA provides superior geometrics, potential for future expansion, and possesses the lowest cost of the realignment alternatives considered.
SECTION III.

AFFECTED ENVIRONMENT
SECTION III. AFFECTED ENVIRONMENT

A. Natural Environment

1. General

The project site is located about 5 miles west of Lihue on Kau-
mualii Highway (FAP 50). It is approximately half-way between Lihue and Koloa, hence the name "Halfway Bridge" for the Huleia Stream bridge crossing.

There are no residential or commercial developments in the immediate vicinity of the project site. The Grove Farm quarry is located about 1/4 mile north of the existing bridge site. The surrounding land area is used for sugar cane cultivation, open area, farming and cattle grazing.

2. Climate

The island of Kauai has a generally mild climate that is determined by its tropical oceanic environment and its location within the northeast tradewinds. As is common throughout the State, the windward side of Kauai receives more rainfall than the leeward side of the island.

The average annual rainfall near the project site ranges from 61 inches to 90 inches. The wetter months are November through March, and the drier months are May through September.

The winds are true trades and prevail from the northeast about 80 percent of the time. Wind velocity is between 13 and 24 miles per hour. Occasional cyclonic storms pass over the island from the southwest and disrupt the flow of tradewinds. Generally occurring during
dominates the geology of the eastern and southern sectors of the island. The project site is located on the Koloa Volcanic Series lava flows.

4. Soils

The roadway alignments for the new bridge alternatives traverse agricultural lands that, for the most part, are classified as "Prime" according to the "Agricultural Lands of Importance to the State of Hawaii (ALISH)" classification system. The "ALISH" system is based upon the U.S. Department of Agriculture, Soil Conservation Service classification system of prime and unique agricultural lands. Small sections of lands classified as "Other Important" are also within areas traversed by these alternatives.

In addition, the area covered by the project has Land Study Bureau Overall Productivity Ratings of "C", "D" and "E".

The soils in the project area are identified by the U.S. Department of Agriculture, Soil Conservation Service Soil Survey as follows:

(a) Kapaa Silty Clay (KKB, KKC and KkD) - with 3 to 25 percent slopes, runoff is slow to medium, and erosion hazard is slight to moderate. The soil is used for sugar cane, pineapple, pasture, orchards, wildlife habitat and woodland.

(b) Hanamalu Silty Clay (HsB) - with 3 to 8 percent slopes, runoff is slow and erosion hazard is no more than slight. The soil is used for sugar cane, pasture, water supply and wildlife habitat.

(c) Rough Broken Land (rRR).

III-3
5. **Flora**

The approach roadways traverse primarily cultivated sugar cane lands. The open space area within Huleia Stream Gulch is the primary floral habitat of significance within the study area. The cane lands have been in cultivation for more than 50 years and have been stripped of any evidence of endemic flora. Some vines and scrub grass are found along the edges of the cultivated fields.

A field survey by Archaeological Research Center Hawaii, Inc. identified the following plant species within the Huleia Stream banks and other unimproved areas within the project area as follows:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
</tr>
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<tr>
<td>Mango</td>
<td>Mangifera indica</td>
</tr>
<tr>
<td>Java Plum</td>
<td>Eugenia cumintii</td>
</tr>
<tr>
<td>Banana</td>
<td>Musa sp.</td>
</tr>
<tr>
<td>Kukui</td>
<td>Aleurites moluccana</td>
</tr>
<tr>
<td>Hala</td>
<td>Pandanus odoratissimus</td>
</tr>
<tr>
<td>Haole Koa</td>
<td>Leucaeria leucocephala</td>
</tr>
<tr>
<td>Ohia Ai</td>
<td>Eugenia malaccensis L.</td>
</tr>
<tr>
<td>Common Guava</td>
<td>Psidium guajava</td>
</tr>
<tr>
<td>Malayan Ground Orchid</td>
<td>Spathoglottis plicata</td>
</tr>
<tr>
<td>White Ginger</td>
<td>Hedychium coronarium</td>
</tr>
<tr>
<td>Yellow Ginger</td>
<td>Hedychium flavescens</td>
</tr>
<tr>
<td>Various Grass Species</td>
<td></td>
</tr>
</tbody>
</table>

The U.S. Department of Interior has been contacted in compliance with Section 7(a) of the Endangered Species Act of 1973 (16 USC 1533), and they have advised that there are no endangered or threatened species listed, proposed, or candidate for listing in the proposed project area.
6. Fauna

No animal life was observed at the project site except for birds. Although no terrestrial mammals were encountered, the project site is likely inhabited by several species of rats, mice, feral dogs and possibly cats. The following is a list of species presumed to inhabit the project site.

<table>
<thead>
<tr>
<th>Mammals</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feral Dog</td>
<td>Canis familiaris</td>
</tr>
<tr>
<td>Feral Cat</td>
<td>Felis catus</td>
</tr>
<tr>
<td>Black Rat</td>
<td>Rattus rattus</td>
</tr>
<tr>
<td>Brown Rat</td>
<td>R. norvegicus</td>
</tr>
<tr>
<td>Polynesian Rat</td>
<td>R. exulans hawaiensis</td>
</tr>
<tr>
<td>House Mouse</td>
<td>Mus musculus</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Birds</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barred Dove</td>
<td>Geopelia striata</td>
</tr>
<tr>
<td>Lace-Necked Dove</td>
<td>Streptopelia chinensis</td>
</tr>
<tr>
<td>Common Mynah</td>
<td>Aeridoheres tristis tristis</td>
</tr>
<tr>
<td>English Sparrow</td>
<td>Passer domesticus</td>
</tr>
<tr>
<td>Cardinal</td>
<td>Richmondella cardinalis</td>
</tr>
</tbody>
</table>

Other Vertebrates

Gecko
Common Toad

Huleia Stream is a major stream which supports a modest freshwater sport fishery throughout its course from headwaters to its
mouth at Nawiliwili Bay. In the lower reaches of the stream, at Huleia Valley, the U.S. Fish and Wildlife Service has established the Huleia National Wildlife Refuge, a distance of approximately 4 miles from the project site. Just downstream of the wildlife refuge is Menemune Fishpond, which is listed on the National Register of Historic Places.

There are 12 species of aquatic macrofauna identified in Huleia Stream according to Survey of Aquatic Macrofauna in Huleia Stream by Amadeo S. Timbol, Ph.D. The report is appended to this EIS.

The twelve species of aquatic macrofauna are as follows:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Origin</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'O'opu-nakea</td>
<td>Awaous stamineus</td>
<td>Endemic</td>
<td>Special Concern*</td>
</tr>
<tr>
<td>Mosquito Fish</td>
<td>Gambusia affinis</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Wild Guppy</td>
<td>Lebistes reticulatus</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Smallmouth Black Bass</td>
<td>Micropterus dolomieu</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Largemouth Black Bass</td>
<td>Micropterus salmoides</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Tilapia</td>
<td>Sarotherodon mossambica</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Crustacea</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tahitian Prawn</td>
<td>Macrobrachium lar</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Crayfish</td>
<td>Procambarus clarkii</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Mollusk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymnaeid snail</td>
<td>Lymnaea sp.</td>
<td>Unknown</td>
<td>None</td>
</tr>
<tr>
<td>Pond snail</td>
<td>Melania sp.</td>
<td>Indigenous</td>
<td>None</td>
</tr>
</tbody>
</table>

*Deacon, et al 1979

III-6
<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Origin</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toad</td>
<td><em>Bufo marinus</em> tadpoles</td>
<td>Introduced</td>
<td>None</td>
</tr>
<tr>
<td>Bullfrog</td>
<td><em>Rana catesbeiana</em></td>
<td>Indigenous</td>
<td>None</td>
</tr>
</tbody>
</table>

According to Timbol, 4 sample stations, 2 downstream and 2 upstream of the existing Huleia Stream Bridge, were established. Only the toad and 'O'opu-nakea were found at all 4 sample stations. Eleven of the 12 species were found at the downstream stations, and only 8 species were found at the upstream sample stations. In general, there is a decrease in the number of species in an upstream direction.

According to the Department of Interior, who were contacted in accordance with Section 7(a) of the Endangered Species Act of 1973 (16 USC 1533), there are no known endangered or threatened species of aquatic macrofauna listed, proposed, or candidate for listing within the project limits.

7. **Stream Hydrology**

Stream hydrology indicates a 100-year flow of 23,000 cubic feet per second at the existing bridge crossing. Backwater effect caused by the existing bridge would cause localized flooding of the existing quarry access road. Appendix C contains the stream hydraulics report.

To date, there have been no known or recorded incidents of flooding in the vicinity of the existing Huleia Bridge crossing.

The U.S. Army Corps of Engineers has indicated that the project site is not in any designated flood plain or special flood hazard area. The Flood Insurance Study for Kauai County shows that the project site is in an area of "minimal flooding". (See page VI-7.)
8. Archaeological/Historical Sites

The State Historic Preservation Officer has concurred with the Department of Transportation's determination that this project will have no effect on any historically significant property (see memorandum from the Department of Land and Natural Resources (DLNR) to the Department of Transportation (DOT), December 29, 1983 in Appendix B). In addition, the existing Huleia Bridge ("Halfway Bridge") is not listed, nor is it being considered, for inclusion as a historical bridge structure by the State Historic Preservation Officer.

A field reconnaissance was conducted primarily along the stream banks of Huleia Stream and no archaeological sites were located within the project area. See Appendix B.

Menehune Fishpond, on the lower reaches of Huleia Stream, is listed on the National Register of Historical Sites. It is approximately 4.5 miles downstream from the project site.

9. Visual

The view plain from the highway is restricted by the cut slopes on the east approach roadway, and usually by the growth of the sugar cane on the west approach. The view at the stream crossing is obstructed by the height and thickness of the vegetation on the stream banks.

10. Noise and Air Quality

A noise study and an air quality study were conducted. No field measurements were necessary because of the lack of sensitive receptors in the project area, and the absence of human habitation/
activities both current and planned in or near the project area. See Appendix A for predicted noise level rationale and computation.

Due to the low traffic volumes projected for the highway, the predicted levels of air pollution are much lower than the State air quality standards. The nearest long-term monitoring station is located at Lihue, approximately 5 miles north of the project site. The annual summary of air monitoring stations in Hawaii is included in Appendix A.

B. Social Environment

1. Population

Between the years 1970 and 1980, the population of the Koloa and Lihue Districts increased 27.5% and 27.0%, respectively. These percentages are slightly below the 31.3% for the County, and slightly higher than the 25.3% for the State of Hawaii. Table 2 shows the County's population trend between 1960 and 1980.

<table>
<thead>
<tr>
<th>Location</th>
<th>1960</th>
<th>1970</th>
<th>1980</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>State of Hawaii</td>
<td>623,772</td>
<td>769,913</td>
<td>965,000</td>
<td>21.7</td>
</tr>
<tr>
<td>County of Kauai</td>
<td>28,176</td>
<td>29,761</td>
<td>39,082</td>
<td>5.6</td>
</tr>
<tr>
<td>District of Koloa</td>
<td>7,012</td>
<td>6,851</td>
<td>8,734</td>
<td>-2.3</td>
</tr>
<tr>
<td>District of Lihue</td>
<td>6,297</td>
<td>6,766</td>
<td>8,590</td>
<td>7.4</td>
</tr>
</tbody>
</table>

The State Department of Planning and Economic Development (DPED) forecasts the County of Kauai population will increase from its 1980 level of 39,082 to 60,400 by the year 2000 (see Table 3).

TABLE 3. POPULATION ESTIMATES AND PROJECTIONS, KAUAI COUNTY, 1985 TO 2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Kauai County</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>40,600</td>
</tr>
<tr>
<td>1990</td>
<td>46,500</td>
</tr>
<tr>
<td>1995</td>
<td>53,100</td>
</tr>
<tr>
<td>2000</td>
<td>60,400</td>
</tr>
</tbody>
</table>

2. Transportation Facilities

Kaumualii Highway is the only public highway that provides access for residents of the west and southwest areas of Kauai to Lihue and areas north, and vice versa. The highway is functionally classified as a minor arterial highway.

Projected traffic data for Kaumualii Highway is shown in Table 4.
TABLE 4. TRAFFIC DATA

<table>
<thead>
<tr>
<th>Traffic Data</th>
<th>Year 1984</th>
<th>Year 1993</th>
<th>Year 2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Traffic (ADT)</td>
<td>13,700</td>
<td>19,000</td>
<td>24,300</td>
</tr>
<tr>
<td>Design Hourly Volume (DHV)</td>
<td>---</td>
<td>---</td>
<td>2,290</td>
</tr>
<tr>
<td>Truck Percentages 24 Hours (T_{24})</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>Peak Hour Factor (K) - AM Peak</td>
<td>8.5</td>
<td>8.5</td>
<td>8.5</td>
</tr>
<tr>
<td>- PM Peak</td>
<td>9.5</td>
<td>9.5</td>
<td>9.5</td>
</tr>
<tr>
<td>Distribution Factor (D) - AM Peak</td>
<td>75/25</td>
<td>75/25</td>
<td>75/25</td>
</tr>
<tr>
<td>- PM Peak</td>
<td>60/40</td>
<td>60/40</td>
<td>60/40</td>
</tr>
<tr>
<td>Truck Percentage (T) - AM Peak</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>- PM Peak</td>
<td>4.0</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>Peak Hour Traffic</td>
<td>1,290</td>
<td>1,790</td>
<td>2,290</td>
</tr>
<tr>
<td>Peak 8-Hour Traffic</td>
<td>7,995</td>
<td>11,090</td>
<td>14,180</td>
</tr>
</tbody>
</table>

3. 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 are headquartered in Lihue. At the time of the last business census (1977), Lihue had only 30% of all retail trade establishments on Kauai, but accounted for 50% of the total annual sales. In addition, Lihue had 33% of all service industries on Kauai and accounted for 51% of the annual receipts.
C. Economic Setting

1. Land Use

The project traverses lands that are designated as Agricultural District by the State, are zoned Open (O) and Agricultural (A) District by the County of Kauai, and are zoned Open and Agricultural on the County of Kauai General Plan. Figure 8 shows the land use of the area in and near the project site.

The approach roadways for Alternatives I and II traverse agricultural lands that are planted in sugar cane at the present time. The land area within the Huleia Stream banks are designated as Open areas. The project does not encroach into any lands designated as Conservation.

Alternatives I and IA are contained within lands owned by Grove Farm Company, Inc. in Tax Map Key (TMK): 3-4-06:1, and leased to McBryde Sugar Company, Ltd. Alternative II and Recommended Alternative IIA also traverse lands that are primarily owned by Grove Farm Company, Inc. in TMK: 3-4-06:1. There are slivers of land adjacent to the existing State right-of-way in TMK: 3-4-01:2; TMK: 3-4-01:3; and TMK: 3-4-05:3 that are required for construction of Alternatives II and IIA, and are owned by Grove Farm Co., Inc. and leased to Lihue Plantation Co., Inc.

The closest commercial activity is the Grove Farm Company quarry operations just north of the existing bridge site, a distance of approximately 1,000 feet. There are no residences within a mile of the project site.
SECTION IV.

ENVIRONMENTAL CONSEQUENCES
SECTION IV. ENVIRONMENTAL CONSEQUENCES

A. Urban and Community Impacts

1. Social and Economic Impacts

The proposed project is not anticipated to have any adverse social impacts, since this project is located on lands that are used for agricultural (sugar cane) purposes or open areas. There are no businesses or residences within the project area or adjacent to the existing highway. Further, it is not anticipated that the proposed project will, of and by itself, induce growth in a particular area. The project proposes to simply replace a structurally deficient bridge structure that is also geometrically obsolete. It does not increase the number of traffic lanes to the highway, nor does it significantly increase its traffic carrying capacity.

However, there will definitely be benefits to be derived by all users of this section of Kaumualii Highway by implementing recommended Alternative IIA. Replacement of the existing bridge will reduce the frequency of bridge maintenance work in the future, thereby reducing the inconvenience to motorists using the route, and also reducing the potential for accidents resulting from bridge maintenance activities. Flattening the approach roadway grades, or the addition of a truck climbing lane in the westbound direction, and the addition of the jug-handle on-ramp in the Lihue-bound direction, will also improve the safety of the roadway by reducing the potential for rear-end collisions. Finally, upgrading the bridge geometrics to current standards by carrying the approach roadway shoulders across the structure will also add to pedestrian and bicyclist safety.

IV-1
A short-term economic gain is the creation of construction jobs and related services. Although this will be of short duration, approximately 9 to 12 months, the project will create work for the construction industry, as well as for the service industries, such as the rock quarries, concrete and asphalt plants, and suppliers of construction materials, such as pipes and reinforcing bars.

2. **Relocation Impacts**

There are no residents or businesses to be relocated by the proposed project. Relocation assistance is available should relocatable agricultural equipment/facilities be affected.

3. **Land Use Impacts**

The proposed project will not significantly alter the overall present land use designations or zoning within the project area.

4. **Considerations Relating to Pedestrians and Bicyclists**

The proposed project, by conforming to current bridge geometrics, will carry the approach roadway shoulders across the bridge, thereby providing an area for pedestrians and/or bicyclists away from the traveled way. The existing bridge structure has no shoulders and provides a 3'-10" sidewalk area on one side of the bridge only.

5. **Visual**

a. **Impacts**

The alternatives, including the recommended alternative, which propose new bridge crossings (Alternatives I and II), will require new cuts into the hillside on the east approach roadway, and require clearing of the thick tree growth within the stream.
bank area. The west approach roadway will be through sugar cane fields. The exposed cut face will project a bare scar until landscape takes hold and covers the slope face. Clearing of the area between the stream banks will not be as noticeable because there will continue to be stands of tall trees on both the up-stream and downstream sides of the bridge crossing.

Landscaping on the completed portion of the west approach roadway will enhance the aesthetics of the roadway through the sugar cane fields.

b. Mitigation Measures

Mitigative measures through the cut area include proper benching to reduce the adverse effects of loose materials falling from great heights, adequate drainage systems both at top of cut and on the benches, erosion protection plantings, and long-term landscaping with appropriate plantings to cover the exposed slope surfaces.

Tree removal in and along the stream banks will remove only those trees that are in the way of the bridge construction. The bridge design will consider architectural treatment to blend the bridge structure into its surrounding environment.

B. Physical Impacts

1. Air Quality and Noise
a. Impact

The proposed improvements are in conformance with the State Implementation Plan for Air Quality.

IV-3
During construction of the proposed project, dust and exhaust emission from construction activities and equipment would be emitted. Noise generated by construction equipment and activities will be noticeable in the immediate area of the project. However, as indicated earlier, there are no sensitive receptors identified at or near the project area.

b. Mitigation Measures

The adverse effects of construction activities are all of short duration, probably no more than a period of 9 to 12 months. Dust will be controlled by watering or other appropriate methods.

2. Energy

Generally, the alternatives considered were such that there would be no significant differences in the energy consumption from the standpoint of fuel consumed. However, there are differences for the energy consumption (in the form of construction material costs) for the alternatives under consideration. These are roughly estimated as indicated below.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Construction BTU</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>(8.93 \times 10^{10})</td>
</tr>
<tr>
<td>IA</td>
<td>(9.12 \times 10^{10})</td>
</tr>
<tr>
<td>II</td>
<td>(6.54 \times 10^{10})</td>
</tr>
<tr>
<td>IIA(Recommended)</td>
<td>(7.36 \times 10^{10})</td>
</tr>
<tr>
<td>IIIA</td>
<td>(3.31 \times 10^{10})</td>
</tr>
<tr>
<td>IIIB</td>
<td>(4.18 \times 10^{10})</td>
</tr>
<tr>
<td>IIIC</td>
<td>(6.63 \times 10^{10})</td>
</tr>
</tbody>
</table>
Alternative III with detour alternative A appears to have the lowest estimated BTU requirements for the construction materials.

3. Stream Hydraulics (Flood Plain)

The 100-year flood for Huleia Stream has a discharge of 23,000 cubic feet per second (cfs) at the existing bridge crossing. Hydraulic analysis of the existing bridge crossing indicates that the backwater effect will cause some flooding along the low point of the Quarry Access Road. The existing bridge structure will be demolished and removed, which should eliminate the potential for flooding along the low point of the Quarry Access Road. The new bridge crossing then will be designed to create minimal backwater effects.

Should any fill be placed in the stream's ordinary high water mark for the new bridge structure or for a temporary bridge structure, a Section 404 Department of the Army permit will be obtained. However, this would not be considered a significant flood plain encroachment.

4. Soil Erosion
   a. Impacts

During construction, there will be some erosion of the cleared and graded areas by storm runoff, which could result in temporary siltation of the Huleia Stream waters.

After the project is completed, it is anticipated that storm runoff from the roadway will not adversely impact the quality of the stream waters. The bridge replacement facility will be nearly similar to the existing facility and should, therefore, not significantly increase road surface pollutants washed into the stream waters.
b. Mitigation Measures

Appropriate erosion control measures, planned and contract-
ed as a part of the total job and applied immediately following
grading, would significantly reduce erosion and siltation of
Huleia Stream waters during construction. The State Department
of Transportation will initiate and implement erosion control
measures as specified in Section 639 - "Temporary Project Water
Pollution Control (Soil Erosion)" of the State of Hawaii Standard
Specifications for Road and Bridge Construction, dated 1976.

During grading and other construction activities, the tem-
porary measures that could be applied include: mulching with
bagasse, hay, netting, or use of other suitable material to pro-
tect exposed surfaces from erosion; construction of temporary
berms and slope drains; construction of sediment traps and silt-
tation basins; hydro-mulching or seeding with quick-growing spe-
cies of grasses; and other measures appropriate to the situation.
Temporary measures to control runoff should be taken by the Con-
tractor at the end of each working day.

Permanent erosion control measures include landscaping and
planting of ground cover on all exposed slopes. New areas ex-
posed to stream flows will be protected by rock revetments, net-
ting, or plantings of fast-growing species appropriate to stream
bank growth.

Outlet of drainage structures, where warranted, will be pro-
tected from erosion by rock or other dissipators to reduce the
discharge velocity from the outlet structures.
Consideration will also be given to construction scheduling so most of the grading work can be completed and stabilized before the wet months of the year.

Road pollutants entering the stream can be significantly reduced by installing grease traps, as part of the on-site drainage system, just prior to discharge into the stream. The grease traps will require regular maintenance to keep them effective.

5. Flora and Fauna
   a. Impacts

Construction of a new bridge will cause the destruction of trees and shrubs, especially in the unimproved (open) area of Huleia Stream, within the limits of the alternative to be constructed. Some of the trees in the area are in excess of 50 feet in height. However, there are no known species of endangered or rare plant life in the project area.

The fauna will be affected by the new construction, and the habitat for birds and wildlife will be destroyed. However, it is anticipated that the wildlife will evacuate the area as the construction work progresses and establish new habitats in nearby areas.

The aquatic community may be disturbed during construction as a result of increased turbidity in the stream from construction activities. However, the stream flow characteristics will not be altered, as there are no plans to realign the existing streambed, or to construct within the streambed area.
b. **Mitigation Measures**

Bridge site for Alternative IIA is located downstream of the existing Huleia Bridge crossing. The existing bridge structure will be demolished and removed.

As part of the design of the replacement bridge, careful selection of trees to be destroyed and, conversely, trees to be retained and protected, will be indicated on the construction plans to minimize the unnecessary destruction of the larger trees within the project area.

See page IV-6 for discussion on erosion control for mitigation measures to minimize the effect of soil erosion due to construction activities on the water quality of the stream.

After completion of the bridge and roadway construction, it is probable that the wildlife that evacuated their habitats during construction would return to the general area, since much of the shrub and ground cover will quickly grow back.

6. **Prime and Unique Agricultural Lands**

The State Department of Agriculture has identified the sugar cane lands over which Alternatives I and II traverse as "prime" according to the "Agricultural Lands of Importance to the State of Hawaii (ALISH)" classification system. These lands have Land Study Bureau Overall Productivity Ratings of "C" and "D", which mean the land is of average productivity for selected crops such as sugar cane.

Alternative I would remove approximately 16.8 acres of prime sugar cane land from production, while Alternative IA would remove
about 14.0 acres from sugar cane production. Alternative II would remove about 5.2 acres from cane production, and Recommended Alternative IIA would remove about 6.4 acres from cane production. Therefore, implementation of the project could result in a reduction of about 64 tons of raw sugar, based upon 10 tons of raw sugar per acre. Based upon the price of sugar at $360/ton, the displaced cane lands would gross about $23,000 per growing cycle.

In addition, the project would remove about 6.4 acres from the tax rolls, and could result in a revenue loss in property tax of about $10 per year to the County.

The loss of agricultural land in essence is unmitigable since it represents a permanent loss of land resources. The maximum 16.8 acres of prime land represents approximately 0.04% of all agricultural lands in sugar cane on the Island of Kauai (*State of Hawaii Data Book*, 1981, claims Kauai has 46,000 acres of sugar cane under cultivation on Kauai). The approximately 6.4 acres of sugar lands required by Recommended Alternative IIA represents 0.01% of Kauai's sugar cane lands under cultivation.

C. **Historic and Archaeological Preservation**

The proposed project is not anticipated to have any effect upon known historic or archaeological sites listed in, or likely to be eligible for inclusion in, the Hawaii Register and/or National Register of Historic Places. In the event any unanticipated historical or archaeological sites or remains are uncovered during construction, construction will be halted and the State Historic Preservation Officer will be contacted immediately.
D. **Unavoidable Adverse Environmental Impacts**

The primary unavoidable adverse environmental impact resulting from the proposed project is the loss of 6.4 acres of prime agricultural lands. Construction activity will create noise, fugitive dust, silt and exhaust emissions. Excessive siltation from unprotected areas may result if intensive rainfall occurs prior to stabilization.

E. **The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity**

The use of agricultural land for the Huleia Bridge Replacement will provide transportation benefits, but will also remove from sugar cane cultivation prime agricultural lands for generations to come.

F. **Irreversible and Irretrievable Commitments of Resources**

The construction of the Huleia Bridge Replacement will require the commitment of materials, manpower, energy resources and public funds. None of the construction materials used for the bridge replacement project will be recoverable, with the exception of salvageable materials from the detour construction. Public funds and labor, once expended, are irretrievable.

The agricultural land is another resource which will be committed to the construction of the project. Though the removal of land from agricultural use is theoretically not an irretrievable commitment, it is in practice.

G. **Governmental Policies Which Offset Adverse Environmental Effects**

Federal legislation and policies designed to protect the environment have been followed throughout the planning of this project. These include
the National Environmental Policy Act (NEPA), the Endangered Species Act, the Federal Water Pollution Control Act, Executive Order 11988 (Flood Plain Management), and the Historic Preservation Act.

The major, State of Hawaii environmental policies include Chapter 343, Hawaii Revised Statutes (EIS), and Public Health Regulations Chapter 37-A (Water Pollution), 37-B (Erosion Control), 42 and 43 (Air Quality), and 44-B (Community Noise).
SECTION  V.

PROJECT APPROVALS
AND CLEARANCES REQUIRED
SECTION V. PROJECT APPROVALS AND CLEARANCES REQUIRED

As of the date of this EIS document, the proposed highway improvements require the following clearances and/or permits prior to construction:

1. Grading permit from County of Kauai, Department of Public Works. (Pending completion of construction plans.)

2. Applicable provisions of Ordinance No. 175, the Subdivision Ordinance of the County of Kauai.

3. Section 404, Department of Army Permit for construction with the ordinary high water mark of Huleia Stream (depending upon the final construction plan.)

It should be recognized that, in addition, an accepted EIS document is a pre-requisite for several of the above clearances/permits. This EIS document is prepared to meet both Federal and State requirements for an EIS.
SECTION VI.

COMMENTS AND COORDINATION
### SECTION VI. COMMENTS AND COORDINATION

#### A. COMMENTS TO THE EIS PREPARATION NOTICE

<table>
<thead>
<tr>
<th>U.S. Government</th>
<th>Response Date</th>
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<tr>
<td><strong>Advisory Council on Historic Preservation</strong></td>
<td>No Response</td>
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<tr>
<td><strong>Department of Agriculture</strong></td>
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<tr>
<td>Soil Conservation Service</td>
<td>7-02-82*</td>
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<tr>
<td>Forest Service</td>
<td>7-15-82*</td>
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<tr>
<td><strong>Department of Commerce</strong></td>
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<tr>
<td>Economic Development Administration</td>
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<tr>
<td>Environmental Affairs</td>
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<td>National Marine Fisheries Service</td>
<td>6-17-82</td>
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<td><strong>Department of Defense</strong></td>
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<tr>
<td>U.S. Army Corps of Engineers</td>
<td>7-01-82</td>
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<tr>
<td>Department of Health, Education and Welfare</td>
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<tr>
<td>Department of Housing and Urban Development</td>
<td>No Response</td>
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<tr>
<td>Department of the Interior</td>
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<tr>
<td>Assistant Secretary - Program Policy Director</td>
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<tr>
<td>Pacific Division - Fish and Wildlife Service</td>
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<td><strong>Department of Transportation</strong></td>
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<td>Federal Aviation Administration</td>
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<td>U.S. Coast Guard</td>
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<td>Environmental Protection Agency</td>
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<tr>
<td>Federal Energy Administration</td>
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*No Comments*
State Agencies

Department of Agriculture
Department of Accounting and General Services
Department of Defense
Department of Education
Department of Health
Department of Hawaiian Home Lands
Department of Land and Natural Resources
Department of Planning and Economic Development
Department of Social Services and Housing
Office of Environmental Quality Control
University of Hawaii
Environmental Center
Water Resources Research Center

County Government (Kauai)

Jeremy Harris, Kauai County Council Chairman
Department of Planning
Department of Public Works
Department of Water Supply
Fire Department
Police Department

Elected Officials

U.S. Senator Spark M. Matsunaga
U.S. Senator Daniel K. Inouye

Response Date
7-08-82
No Response
6-21-82*
6-22-82
7-01-82
No Response
7-06-82
7-06-82*
No Response
No Response
No Response
No Response
7-07-82
No Response
No Response
No Response
No Response

*No Comments
U.S. Representative Daniel K. Akaka
State Representative Richard A. Kawakami
State Representative Tony T. Kunimura
State Representative Dennis R. Yamada
State Senator George H. Toyofuku
Mayor Eduardo Malapit

Public Utilities
Kauai Electric Company
Hawaiian Telephone Company
Honolulu Gas Company

Organizations
Bishop Museum
Conservation Council
Life of the Land
Kauai Outdoor Circle
Hawaii Audubon Society
Kauai Chamber of Commerce
Lihue Businessmen's Association
The Garden Island
American Lung Association
Kauai Historical Society
Kauai Community Research Group
Kauai Times
Sierra Club

Response Date
No Response
No Response
No Response
No Response
No Response
No Response

6-22-82
6-25-82
No Response
No Response

7-12-82
No Response
No Response
No Response
8-24-82
No Response
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No Response
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<tr>
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<td>Hawaii Transportation Association</td>
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<td>Lihue Plantation Co., Ltd.</td>
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<tr>
<td>McBryde Sugar Company</td>
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<tr>
<td>Grove Farm Company, Inc.</td>
<td>No Response</td>
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<td>Kauai School Bus Association</td>
<td>8-12-82</td>
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<tr>
<td>Byron Cleeland</td>
<td>6-23-82</td>
</tr>
</tbody>
</table>
Mr. Kiyoshi Higashino
Director of Transportation
Department of Transportation
869 Punchbowl St.
Honolulu, HI 96813

July 2, 1982

Dear Mr. Higashino:

Subject: EIS Preparation Notice for the Kaumualii Highway.
        Huleia Bridge Replacement, Project No. DP-050-1(4)

We have reviewed the subject preparation notice and have no comments
to make.

Thank you for the opportunity to review this document.

Sincerely,

Francis C. K. Lim
State Conservationist

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

Gentlemen:

The U.S. Forest Service has received and reviewed your preparation
notice for an EIS relative to the Huleia Bridge Replacement and
Approaches, Project Number DP-050-1(4). We have no comments, and
it will not be necessary for you to send us any further information
on this project.

John D. Kennedy, Director
Land Management Planning
June 17, 1982

Mr. Ryukihi Higash英
Director of Transportation
State of Hawaii
Department of Transportation
366 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Kauwali Highway, Holea Bridge Replacement, Project No. DP-O50-14(1), Environmental Impact Statement Preparation Notice.

We have reviewed the subject preparation notice and offer the following comments for your consideration in development of the Draft Environmental Impact Statement (DEIS):

1. The potential impacts to marine recreational and commercial fisheries resources dependent upon Holea Stream including those found in or near Hāwiliwili Bay should be considered in the DEIS.

2. Mitigation measures for storm siltation and pollution during construction should be discussed in detail.

Thank you for the opportunity to provide comments. We look forward to receiving the DEIS when it is completed.

Sincerely yours,

[Signature]

Doyle E. Gates
Administrator

cc: NMFS-ECological Services
DEPARTMENT OF THE ARMY
U. S. Army Engineer District, Honolulu
P.O. Box 20839
Hanslope, Hawaii 96823

July 1, 1982

Dr. Myruhi Nakashima,
Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Dr. Nakashima:

Thank you for the opportunity to review the Environmental Impact Statement
Preparation Notice for the Kauai County, Waialea Bridge Replacement,
Project No. WP-169-140, sent to us on 20 June 1982. Based on our review
we provide the following comments:

a. A Department of the Army permit is not required for this project.

b. The proposed Waialea Bridge Replacement Structure and Highway
realignment is not in any designated flood plain or special flood hazard area.
According to the Flood Insurance Study for Kauai County, prepared by the
Federal Insurance Administration (FIA) of the U.S. Federal Emergency
Management Agency, the project site is designated Zone C, a zone of minimal
flooding. Inclusion I is the Flood hazard map for the project area prepared
as part of the FIA Flood Study.

Sincerely,

KULIK CHUNG
Chief, Engineering Division

1. Incl. 1

As stated
CORRECTION

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

A
Areas of 100-year flood; base flood elevations and flood hazard factors not determined.

AO
Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.

AH
Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.

A2-A30
Areas of 100-year flood, base flood elevations and flood hazard factors determined.

A39
Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.

B
Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (No ton shading)

C
Areas of minimal flooding. (No shading)

D
Areas of undetermined, but possible, flood hazards.

V
Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.

V1-V30
Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

The numerals indicate the magnitude of difference between the 100-year and 10-year flood elevations. For numerals between 1-20, the difference is one half of the value; for values greater than 20, the difference is 10 less than the numerals shown. This information is used in establishing insurance rates.

100-year contour or riverine elevation line, with elevation in feet above mean sea level.

Zone boundary line
Mr. Kian K. Cheung, Chief
Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

Kamehameha Highway, Huleia Bridge Replacement, Project No. DP-050-1(4), Environmental Impact Statement Preparation Notice

Thank you for your letter of July 1, 1982, relative to the EIS Preparation Notice. We appreciate the information that a Department of Army permit is not required for this project, and that the project site is not in any designated flood plain or special flood hazard area.

Very truly yours,

[Signature]

Department of Transportation

cc: HNFS - WFO
HRSF
EPA, San Francisco

Save Energy and You Serve Americal
MEMORANDUM

To: Mr. Ryokichi Higashitona, Director
Department of Transportation

Subject: Environmental Impact Statement Preparation Notice
Kamehameha Highway, Huleia Bridge Replacement,
Project No. 89-010-144
TII: 3-4-8, Lihue, Kauai

The Department of Agriculture has reviewed the subject notice and offers the following comments.

The approximate area of both bridge alternatives is classified mostly as "prime" according to the Agricultural Lands of Importance to the State of Hawaii (ALISH) classification system. Small sections of "other important" classified lands and lands not classified according to the ALISH system also are traversed by both alternatives. The Soil Conservation Service Soil Survey identifies the soils as: (1) Kahuku silty clays (PHB, HGB, and NGB) with 3-25 percent slopes which are used for sugarcane, pasture, pineapple, orchards and truck crops. (2) Hanamalu silty clay (H02) with 15-25 percent slopes which are used for sugarcane and pasture, and (3) Rough broken lands (R01). The crop Capability Classes for these soils are III, I, II, I, IV, and VIL, respectively. Soils with Capability Classes of III and IV require careful management to permit maximum cultivable use of the soils.

The subject area has Land Study Bureau Overall Productivity Ratings of "C", "D", and "E". Except for the strip of "C" rated lands on the banks of streams, the subject area has fair to excellent crop productivity potential for sugarcane, grazing, and orchard.

Since sugar cultivation is extensively practiced in the subject area, either of the two proposed actions will have some impact on the agricultural resources of the area. The implementation of either alternative will result in the loss of productive agricultural land. Furthermore, affected irrigation facilities and road ways may have to be relocated in order to accommodate construction and operation of a new bridge.

"Support Hawaiian Agricultural Products"
MEMORANDUM

TO: The Honorable Jack K. Suse, Chairman
Department of Agriculture

FROM: Director of Transportation

SUBJECT: KAUAIULI HIGHWAY, HULEIA BRIDGE REPLACEMENT,
PROJECT NO. 20-570-1149, ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE

We thank you for your letter of July 8, 1982, commenting on the EIS Preparation Notice.

The soil classifications within the project area will be included in the Draft EIS.

The impacts to the region as a result of loss of cultivable agricultural lands will be thoroughly discussed, along with mitigating measures in the Draft EIS. Relocation assistance is available should relocatable agricultural support facilities be affected by the proposed action. The possibility of converting the lands under the present bridge into agricultural lands will be investigated.

Yours truly,

[Signature]

Yoshikichi Higashimura
Director of Transportation
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Gentlemen:

Kauaiuli Highway, Huleia Bridge Replacement,
Project No. 20-570-1149, Environmental Impact Statement Preparation Notice

Thank you for providing us the opportunity to review the proposed project, "Kauaiuli Highway, Huleia Bridge Replacement" Environmental Impact Statement Preparation Notice.

We have completed our review and have no comments to offer at this time.

Yours truly,

[Signature]

Joe N. Matsuda
Chief Engr Officer
Dear Mr. Higashihana:

Subject: Request for Comments on Proposed Environmental Impact Statement (EIS) for Kamehameha Highway, Mailia Bridge Replacement, Project No. DP-056-1(C), Environmental Impact Statement Preparation Notice

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

During construction, effective water pollution control measures shall be employed including soil erosion control. Effective air pollution control measures shall be provided particularly for fugitive dust emissions during construction. Coal material shall be disposed of in a manner approved by the Department of Health. Open burning is prohibited.

Sincerely,

[Signature]
Director of Health

STATE OF HAWAII
DEPARTMENT OF HEALTH

July 1, 1982

SPOKESPERSON

STATE OF HAWAII
DEPARTMENT OF EDUCATION

June 30, 1982

OFFICE OF THE DEPARTMENT

KOD TO: Dr. Ryukichi Higashihana, Director
Department of Transportation
P.O. Box 1178
Hilo, Hawaii 96720

SUBJECT: EIS Preparation Notice
Kamehameha Highway, Mailia Bridge Replacement

The Department of Education concurs with the proposed plan to replace the existing Mailia Stream Bridge. The new bridge will ensure that bus transportation of students over Mailia Stream will be routed over a safe bridge structure.

Thank you for the opportunity to comment on the EIS preparation.

[Signature]
Director

Mail to: Hawaiian Electric Company

June 28, 1982

AN EQUAL OPPORTUNITY EMPLOYER
Dr. Ryoichi Higashihonna
Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Dr. Higashihonna:

Thank you for the opportunity to review the EIS Preparation Notice for the new Huleia Bridge (Project No. 01-030-11(4)). We do have a number of comments to offer.

Recreation

No known recreation interests are involved. No Land and Water Conservation Fund projects will be affected by this proposal.

Historic Sites

Our records indicate that this project does not occur on historic properties listed on the Hawaii Register or the National Register of Historic Places, or eligible for the National Register of Historic Places. There are probably, however, previously unidentified resources in the proposed project area. Existing archaeological research data recognizes this possibility. A reconnaissance conducted in 1973 located a number of previously unknown sites within the boundaries of Hauula, Kualoa, and Kipu and recommended that further field work be done.

Therefore, we recommend that a reconnaissance be conducted by a qualified archeologist within the proposed area, and that the survey results be forwarded to our historic sites office for evaluation (ext. 6403). Should the existence of significant resources be substantiated, we may recommend steps to avoid, mitigate, or negate any adverse effects.

If the undertaking has any federal involvement, the provisions of 36 CFR 800 (Advisory Council on Historic Preservation's Procedures for the Protection of Historic and Cultural Properties) need to be complied with.

Sincerely,

[Signature]
Board of Land and Natural Resources and State Historic Preservation Officer
MEMORANDUM

TO: The Honorable Susumu Ono, Chairman
    State Historic Preservation Officer
    Board of Land and Natural Resources

FROM: Director of Transportation

SUBJECT: KAUNIAI HIGHWAY, HUKAIA BRIDGE REPLACEMENT,
            PROJECT NO. DP-030-1(4), ENVIRONMENTAL IMPACT
            STATEMENT PREPARATION NOTICE

Thank you for your letter of July 6, 1982, commenting on the EIS Preparation Notice. Our response to your comments are as follows:

Historic Sites

1. We agree with your recommendation that a reconnaissance survey of the project area be conducted by a qualified archaeologist. A copy of the reconnaissance survey report will be forwarded to your historic sites office for evaluation.

2. Since the project does have federal involvement, the provision of 36CFR800 (Advisory Council on Historic and Cultural Properties) will be complied with, should the reconnaissance survey identify any previously unknown historical resources.

Aquatic Resources

1. The opening sentence will be revised to read as suggested.

2. The spelling of kahuna in the second sentence will be corrected.

3. The third sentence will be revised as suggested.

4. The suggestion to delete the fourth sentence will be considered during the preparation of the EIS.

The potential impacts from the bridge construction, e.g., erosion and siltation, will be discussed in the EIS along with mitigative measures.

[Signature]

Director of Transportation
July 7, 1982

Mr. Ryokichi Higashino,
Director
State Dept. of Transportation
649 Punchbowl Street
Honolulu, Hawaii 96813

Subject: Kauaiii Highway, Nukala Bridge Replacement
Project No. P.O.-000-114
Environmental Impact Statement

We have no objections to the proposed realignment and bridge replacement alternatives. In reviewing the Environmental Impact Statement, we offer the following comments:

1. The subject area is designated as Agricultural District by the State, is zoned Open and Agricultural District by the County, and is designated as Open and Agriculture on our general plan.

2. The proposal is excepted from the Special Management Area (SMA) Rules and Regulations of the County of Kauai as the project does not fall within the SMA of the County of Kauai.

We appreciate the opportunity to comment on the project and wish to express our support for the proposals which should result in a safer highway for residents and visitors of Kauai.

Yours sincerely,

Brian Ishihara
Planning Director
Honorable Ryokichi Higashionna
Director of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Rick:

Thank you for your recent letter in which you enclosed a copy of the environmental impact statement for the Kauu Bridge Replacement Project.

This impact statement will be extremely helpful to me and my staff in answering many of the questions about the project which may be raised by residents of the area.

I appreciate your keeping me informed of the status of the project.

Aloha and best wishes.

Sincerely,

[Signature]

July 14, 1982

Mr. Ryokichi Higashionna
Director of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: KAUNALILY HIGHWAY, KULEA BRIDGE REPLACEMENT, PROJECT NO. DP-650-1(4), ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE

June 22, 1982

Mr. Higashionna:

We have received your Project No. DP-650-1(4) EIS Preparation Notice and submit the following comments:

1. Kauai Electric has an electrical distribution circuit within the area of the project. Please consider that the State may have to bear the cost of relocating Kauai Electric's equipment in order to accommodate the project.

If you have any questions, please feel free to call Mr. Kelvin Kai, Manager, Transmission & Distribution, at 335-6215.

Very truly yours,

[Signature]

Dennis K. Polich
Administrative Assistant

KAUAI ELECTRIC

A DIVISION OF CITIZENS UTILITY COMPANY

ELECTRIC, TELEPHONE, WATER AND GAS SERVICE TO CUSTOMERS IN OVER 300 COMMUNITIES IN MANY STATES ACROSS THE NATION
Mr. Ryutichi Higashimori
Director of Transportation
State Highway Dept. of Transportation
849 Punchbowl Street
Honolulu, HI 96813

In Reply To:
HST-PA 2.69967, Kaaumii Highway -
Helena Bridge Replacement, Proj. 800-050-1(4)

Dear Mr. Higashimori:

Thank you for the Environmental Impact Statement and the opportunity to comment on this proposal.

Both alternatives I and II will require relocation of our telephone pole line. The extent and cost, which dictates the necessity to enter into a utility agreement with you, is dependent upon the alternative selected.

In either case, we assume that the present Helena bridge will no longer exist thereby eliminating a constraint on our ability to access and maintain important interoffice trunk circuits. If for some reason those circuits go out, all of the east Kaaumii will be isolated from the rest of the world. Therefore, in your plan design, please consider the provision of an adequate high-way to accommodate relocation of our pole line into the new alignment.

We look forward to this improvement as a means of alleviating an increasingly serious traffic problem on Kaaumii and shall provide any assistance expediting this project in completion.

Sincerely,

James Tohda,
Supervising Engineer

August 11, 1982

Mr. James Tohda
Supervising Engineer
Hawaiian Telephone
P. O. Box 591
Honolulu, Hawaii 96816

Dear Mr. Tohda:

Kamaumii Highway, Helena Bridge Replacement,
Project No. 800-050-1(4),
Environmental Impact Statement Preparation Notice

Thank you for your letter of June 25, 1982 commenting on the EIS Preparation Notice.

We will consider the accommodation of the pole lines during the design stage of the project.

Your offer of assistance in expediting this project is appreciated.

Very truly yours,

Ryutichi Higashimori
Director of Transportation

RECEIVED
AUG 11 1982

KUMAUMII TURMOUSE & ASSOCIATES, INC.
Honolulu, Hawaii 96813
Dear Mr. Higashinona:

This letter is in response to your letter of June 10 (HIV-PA 2.65051) on the Kaumuali Highway, Huleia Bridge Replacement, EIS Preparation Notice. We have gone over our archaeological records for Huleia and Elua abanada, as well as Bennett's Archaeology of Kauai (1991). No previously recorded sites are known from the immediate vicinity of the subject project. However, Bennett sites two site areas in Elua, sites 02 and 04 (pp. 129-33), a complex of house sites and a possible habitation.

Agricultural activities have probably destroyed much of the surface indications of cultural remains in the area, however, in view of the previously recorded sites in both Elua and Huleia abanada, a reconnaissance survey is recommended prior to any development procedures, especially in those areas adjacent to the stream. In addition, although conclusive determination will be contingent upon the results of the reconnaissance survey, archaeological monitoring may be necessary during the construction phase of the project to mitigate the potential adverse affects on remains that may be encountered.

If you have any questions, please feel free to contact me at the Department of Anthropology, 847-3511 ext. 126.

Sincerely yours,

Paul L. Cleghorn
Contract Archaeology Manager

Mr. Paul L. Cleghorn
Contract Archaeology Manager
Bishop Museum
P. O. Box 15000-A
Honolulu, Hawaii 96819

Mr. Ryoichi Higashinona
Director
State Department of Transportation
810 Punchbowl Street
Honolulu, Hawaii 96813

[Signature]

[Signature]
Dr. Ryokishi Sigashima
Director of Transportation
Department of Transportation
911 Punchbowl Street
Honolulu, Hawaii 96813

Dear Dr. Sigashima:

Thank you for your letter HWT-82-1,68547 of June 10, 1982 on the Kukui Bridge Replacement, Project No. DP-610-1(4). The Kauai Chamber of Commerce appreciate the opportunity to comment on the alternatives being considered for the proposed project.

The Chamber feels that rehabilitation or replacement of the bridge is absolutely essential since the bridge is an integral part of the belt highway (Route 50) leading to the south and west sides of Kauai.

In reviewing the alternatives presented in the Environmental Impact Statement Preparatory Reports, the following courses of action are recommended:

1. Rehabilitate the existing bridge structure, build a temporary bridge and supporting lead in roads for maintaining the flow of traffic; or,

2. Build a new bridge downstream of the existing bridge and allow the existing bridge to support the flow of traffic while the new bridge is being constructed.

The other option of detouring traffic by means of a private road of approximately four miles length is looked at with disfavor by our directors because of the acquisition, safety hazards and inconvenience that could be caused by routing approximately 13,000 cars a day over this route. Creating and paving a four mile length of some road as a temporary detour would be an unnecessary expense.

Asphalt is very expensive on Kauai as you know.

Rehabilitating the existing bridge while detouring the flow of traffic over a temporary bridge in the near vicinity appears to be the most economical alternative. However, this would mean that motorists would be forever subjected to the hazardous curve at the west end of the structure.

Dr. Ryokishi Sigashima
August 24, 1982
Page 2

It is our recommendation that a new bridge be constructed downstream of the existing bridge as outlined in the EIS notice so that the dangerous curve may be eliminated. Although this may not be the least expensive alternative, it will be engineer safety into our highway to prevent accidents and save lives in one riding consideration.

We appreciate the opportunity to provide our input during the planning stage of this project.

Sincerely,

Paul Douglas, Chairman
Transportation Committee

Roy R. Kanoho
President

V.20
Dear Messrs. Kaneko and Douglass:

Kauai Highway, Huleia Bridge Replacement, Project No. ER-350-1(4), Environmental Impact Statement Preparation Notice

Thank you for your letter of August 24, 1982, commenting on the EIS Preparation Notice.

Your concerns for safety and your recommendations on alternatives will be given consideration as our project plans are developed and when the proposed alternatives are selected.

We appreciate your input to the project.

Very truly yours,

Yoshida Higashionna
Director of Transportation

Hawaii Transportation Association
The Voice of Hawaii's Transportation Industry

July 2, 1982

Hr. Yoshida Higashionna, Director
State of Hawaii
Department of Transportation
809 Punchbowl Street
Honolulu, Hawaii 96813

SUBJECT: See Attached

Gentlemen:

Hawaii Transportation Association concurs with planning improvements to Huleia Bridge and approves alternate plans one or two. We appreciate the opportunity to attend the public hearing.

Sincerely,

Gerald Dela Cruz
Director, Kauai Conference

Encl.

Yoshida Higashionna
Director of Transportation

RECEIVED
SEP 8 '82

Austin, Tytoian & Associates, Inc.
Honolulu, Hawaii 96814
June 23, 1982
P. O. Box 348
Kalaeo, HI 96741

Ryokichi Higashinuma
Director of Transportation
869 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Higashinuma:

I'm not accustomed to writing letters of this sort or attending public hearings, but I have been driving to work between Kalaeo and Lihu'e here on Kaua'i for fourteen years, and I feel that there are two important factors that need to be considered if the halfway (Holua) bridge is going to be replaced.

Twice each year—once in the spring and once in the fall—there is up to a week when visibility in the early morning is almost nonexistent when heading up the hill towards Lihu'e just after crossing the bridge. The sun shines directly into your eyes, and it seems that practically every year there is at least one early-morning traffic accident, even though all cars slow to almost stand-still speed.

When the bridge is replaced, please take the rising sun into consideration. During that week in the fall and in the spring, I actually dread driving to work because of this situation.

The second factor to consider is also a problem especially in the early morning. Just as everyone else seems to do, when I near halfway bridge going to work, I speed up so that there won't be enough space between me and the car in front of me for one of the Kaua'i cement trucks to pull out in front of me so that it'll have to slow down to 10-15 miles per hour until they pick up enough speed after leaving the quarry. There seems to be the most trucks pulling out just when the early-morning traffic is at its peak.

You are probably more aware of these two factors, but since I drive the road every working morning, I thought to pass along to you somebody mentioned these.

Sincerely,

Byron Cleoeland
Mr. Byron Cleland  
P. O. Box 348  
Kalakaua, Hawaii 96741  

Dear Mr. Cleland:  

Kauai School Bus Association  

Dr. Ryokichi Higashinona  
Director of Transportation  
State of Hawaii  
650 Punchbowl Street  
Honolulu, Hawaii 96813  

Dear Dr. Higashinona:  

Re: Kuamualii Highway, Huleia Bridge Replacement, Project No. HW-050-1(4), Island of Kauai  

As an Association, we have reviewed the Huleia Bridge Replacement Project plans and want to express our support towards its completion at the earliest date possible.  

As school bus contractors, our buses use the bridge nearly everyday of the year, transporting students to school or groups on charter excursions.  

Because of our regular use of the bridge, we are interested in knowing when hearings are planned for the project as well as in helping to achieve its completion.  

Sincerely,  

Joseph D. Gomes, Jr.  
President  

cc: Austin, Tatsuai  
and Associates
August 30, 1982

Mr. Joseph D. C. Coness
President
Kauai School Bus Association
P. O. Box 2202
Lihue, Kauai, Hawaii 96766

Dear Mr. Coness:

Kuanalu Highway, Huleia Bridge
Replacement, Project No. RP-555-1(4),
Island of Kauai

Thank you for your letter of August 12, 1982 expressing
your support for the proposed project.

We will send you a copy of the Draft EIS when it is
completed and inform you of the date of any meetings/hearings
on the project.

Your interest and support of the project is appreciated.

Very truly yours,

[Signature]

Director of Transportation
B. DEIS MAILING LIST AND RESPONSES

U.S. Government

Advisory Council on Historic Preservation
Council on Environmental Quality

Department of Agriculture

Agricultural Stabilization & Conservation Forest Service
Land Management Planning Office of the Secretary
Soil Conservation Service USDA Food & Agriculture Council

Department of Commerce


Department of Defense

Corps of Engineers (POD)
C.O., U.S. Army Hawaii U.S. Army Field Engineers (DAFE) C.O. 15th Air Force Wing C.O. Naval Base, Pearl Harbor

Department of Energy

Division of NEPA Affairs

Environmental Protection Agency

Office of Federal Activities (A104) Region IX EIS Coordinator

Federal Emergency Management Agency

Office of Natural and Technological Hazards Program

Department of Health, Education and Welfare

Office of Environmental Affairs

Response Date
August 29, 1983
August 31, 1983
October 6, 1983
August 26, 1983
October 13, 1983
October 27, 28, 1983
September 19, 1983
August 31, 1983
August 30, 1983
August 26, 1983
October 21, 1983
October 21, 1983

VI-25
Kauai County Agencies

County Council
Department of Planning
Department of Public Works
Department of Water
Fire Department
Office of Economic Development
Office of the Mayor
Police Department

Congressional Representatives
Representative Daniel Akaka
Senator Daniel K. Inouye
Senator Spark M. Matsunaga

State Legislators
Representative Richard A. Kawakami
Representative Alfred C. Lardizabal
Senator Lehua Fernandes Salling

Public Utilities
Hawaiian Telephone Company
Honolulu Gas Company
Kauai Electric Co., Ltd.

Kauai Organizations
McBryde Sugar Company
Grove Farm Company, Inc.
The Garden Island
Kauai Chamber of Commerce
Kauai Community Research Group
Kauai Historical Society
Kauai School Bus Association
Kauai Times
Lihue Businessmen's Association
The Kauai Outdoor Circle
The Lihue Plantation Company

Other Organizations
American Lung Association of Hawaii
Bishop Museum
Citizens for Hawaii
Colorado State University, Documents Librarian
Commission on the Handicapped
Conservation Council of Hawaii
Hawaii Audubon Society

September 6, 1983
August 29, 1983
August 29, 1983
September 6, 1983
September 1, 1983
August 24, 1983
August 29, 1983
August 30, 1983
September 9, 1983
Hawaii Transportation Society
Hawaiian Historic Society
Historic Hawaii Foundation
League of Women Voters
Life of the Land
Sierra Club, Hawaii Chapter
LETTERS NOT REQUIRING RESPONSE

1. U.S. Senator Daniel K. Inouye
2. U.S. Navy, Facilities Engineer, Naval Base, Pearl Harbor
5. U.S. Senator Spark M. Matsunaga
6. U.S. Department of Agriculture, Forest Service
7. County of Kauai, Department of Water
8. Kauai Chamber of Commerce, Inc.
9. U.S. Department of Agriculture, Forest Service
10. Department of the Army, HQ U.S. Army Support Command, Hawaii
11. U.S. Department of Transportation, U.S. Coast Guard
12. University of Hawaii at Manoa, Environmental Center
13. State of Hawaii, Department of Defense
14. State of Hawaii, Department of Accounting and General Services
15. Department of the Air Force, HQ 15th Air Base Wing (PACAF)
16. State of Hawaii, Department of Hawaiian Home Lands
17. U.S. Department of Interior, Geological Survey
18. U.S. Department of Interior, Office of the Secretary
19. Oahu Metropolitan Planning Organization
22. State of Hawaii, Department of Planning and Economic Development
23. University of Hawaii at Manoa, Water Resources Research Center
24. U.S. Department of Commerce, NOAA
25. U.S. Department of Commerce, NOAA
27. State Department of Education
28. U.S. Department of Interior, Pacific Southwest Region
LETTERS REQUIRING A RESPONSE

1. County of Kauai, Department of Public Works
2. Hawaiian Telephone Company
3. County of Kauai, Planning Department
4. County of Kauai, Police Department
5. County of Kauai, Fire Department
6. State of Hawaii, Department of Health
7. McBryde Sugar Co.
8. State of Hawaii, Office of Environmental Quality Control
9. State of Hawaii, Department of Agriculture
10. State of Hawaii, Department of Land and Natural Resources
11. Department of the Army, POC, Corps of Engineers
12. U.S. Department of Agriculture, Soil Conservation Service
13. U.S. Environmental Protection Agency
15. The Kauai Outdoor Circle
16. County of Kauai, Planning Department
United States Senate
August 24, 1983

Mr. H. Kumamoto
Division Administrator, Region IV
Federal Highway Administration
U.S. Department of Transportation
300 Ala Moana Boulevard, Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kumamoto:

Mr. H. Kumamoto
Division Administrator, Region IV
Federal Highway Administration
U.S. Department of Transportation
300 Ala Moana Boulevard, Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kumamoto:

Re: ESA/SI

Thank you for sharing with Senator Inouye by your letter of 22 August 1983 the Draft Environmental Impact Statement for the proposed replacement of Huleia Bridge and approaches on Kauai Highway, PAP-50.

Senator Inouye who is presently in Washington, D.C., has no comment to offer on the Draft EIS but will appreciate continuing to be kept informed.

Aloha,

David H. Peters
Executive Assistant
Honolulu Office

The Draft EIS, forwarded by your letter of August 22, 1983 has been reviewed and the Navy has no comments to offer.

Thank you for the opportunity to review the Draft EIS.

Sincerely,

M. M. Dallam
Captain, CEC, U.S. NAVY
Facilities Commander
By Direction of the Commander

NO RESPONSE REQUIRED
Mr. H. Kasumoto  
Division Administrator  
Federal Highway Administration  
U. S. Department of Transportation  
P. O. Box 50206  
Honolulu, Hawaii 96850

Dear Mr. Kasumoto:

The Service has reviewed the Draft Environmental Impact Statement (EIS) concerning Keawauli Highway, PAN 50, Huleia Bridge letter of August 22, 1983. Our concerns have been properly addressed in the EIS. We have no additional comments at this time.

Sincerely,

[Signature]

William R. Kramer
Acting Project Leader
Office of Environmental Services

CC: NHHS
HDAP
HPRAP
DOT, Hawaii

---

NO RESPONSE REQUIRED

Save Energy and You Serve America!
Mr. Kojo Kusumoto
Division Administrator
Federal Highway Administration
Box 50206
Honolulu, Hawaii 96850

Dear Kojo:

This is just to acknowledge receipt of your recent communication addressed to Senator Spark Matsunaga.

Please be assured that the Senator will be responding to you at the earliest possible moment.

Yours truly,

Cherry Matsuno
Administrative Assistant to Senator Matsunaga
August 29, 1983

Mr. H. Kusumoto
Division Administrator
U. S. Dept. of Transportation
Hawaii Division
Honolulu, HI 96850

Re: Draft Environmental Impact Statement, Kauai Highway, FAP-50, Huleia Bridge Replacement and Approaches, Island of Kauai, (FHWA-HI-EIS-82-02-D)

We have reviewed the subject EIS and have no comments to offer. We appreciate the opportunity to have reviewed the subject Environmental Impact Statement.

Enclosed is the EIS booklet for your use.

Raymond H. Sato
Manager and Chief Engineer

Enclosure

August 30, 1983

Mr. H. Kusumoto
Division Administrator
U. S. Dept. of Transportation
Federal Highway Administration
Box 50205
Honolulu, HI 96850

Dear Mr. Kusumoto:

Re: Draft EIS, Kauai Highway, FAP-50, Huleia Bridge Replacement and Approaches, Island of Kauai. (FHWA-HI-EIS-82-02-D)

We have reviewed the subject EIS and have no comments to make. Thank you for the opportunity to review this document.

Sincerely,

Paul Douglas, Chairman
Transportation Committee

David A. Hughes
President

NO RESPONSE REQUIRED

NO RESPONSE REQUIRED
August 31, 1983
1950

Mr. H. Kusumoto, Division Director
U.S. Department of Transportation
Federal Highway Administration
Box 50106
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

We have received and reviewed the EIS for Kaua‘uali Highway,
FMN-50, Huleia Bridge Replacement and Approaches, Island of
Kauai, (FHWA-HI-EIS-82-02-D) and have no further comments. It
will not be necessary for you to send us further information on
this project.

Sincerely,

[Signature]

Jon D. Kennedy, Director
Land Management Planning

---

Mr. H. Kusumoto
Division Administrator
Federal Highway Administration
US Department of Transportation
P.O. Box 50106
301 Ala Moana Boulevard
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

The Draft Environmental Impact Statement (EIS) for the
proposed replacement of Huleia Bridge and Approaches on Kaua‘uali
Highway, FMN-50, Island of Kauai has been reviewed and we have no
comments to offer. There are no Army installations or activities in
the vicinity of the proposed project.

Thank you for the opportunity to comment on the EIS.

Sincerely,

[Signature]

Ronald A. Borrello
Colonel, Corps of Engineers
Director of Facilities Engineering

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NO RESPONSE REQUIRED

NO RESPONSE REQUIRED
H. Kusunoto,
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Hawaii Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kusunoto:

The Fourteenth Coast Guard District has reviewed the Draft Environmental Impact Statement, Kauai Highways, of Kauai and has no objection or constructive comments at the present time.

Sincerely,

J. R. Schmidt
Commander, U. S. Coast Guard
District Planning Officer

By Direction of
Commander, Fourteenth Coast Guard District

September 2, 1983
R&D 0783

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

Dear Mr. Kusunoto:

Draft Environmental Impact Statement
Kauai Highways, PAP-50
Kulea Bridge Replacement and Approaches
Lihue, Kauai

The Environmental Center has received the above mentioned document. We have briefly reviewed the DEIS and have no substantive comments to offer. We would, however, appreciate receiving two copies of the Final Environmental Impact Statement for our records.

We appreciate the opportunity to comment on the Draft Environmental Impact Statement.

Sincerely,

Dem C. Cox
Director

cc: OSOC
Jacqueline Miller
Pamela Brehm

NO RESPONSE REQUIRED

AN EQUAL OPPORTUNITY EMPLOYER
U. S. Department of Transportation
Federal Highway Administration
P. O. Box 10206
Honolulu, Hawaii 96823

Gentlemen:

Thank you for providing us the opportunity to review the proposed project:
Kaumualii Highway, PAP-50, Haleiwa Bridge Replacement and Approaches, Island of Kauai (Draft Environmental Impact Statement).

We have completed our review and have no comments to offer at this time.
A Final EIS will not be needed for this project.

Yours truly,

Jerry N. Hattori
Major, HAWC
Contr & Engr Officer

NO RESPONSE REQUIRED
U.S. Department of Transportation
Mall Division
ATTN: Mr. H. Kusumoto
Box 50206
Honolulu, HI 96850

Dear Sir


Mr. H. Kusumoto, Division Administrator
U. S. Department of Transportation
Federal Highway Administration
Region V, Hawaii Division
P. O. Box 50203
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

SUBJECT: Puleia Bridge Replacement and Approaches

This is in response to your letter of August 22, 1983 requesting comments on the subject project.

The Department of Hawaiian Home Lands has reviewed the draft Environmental Impact Statement and has no comments to make at this time as the project does not directly affect DHHL lands.

Sincerely yours,

[Signature]

Chairman

NO RESPONSE REQUIRED
United States Department of the Interior
U.S. Department of Transportation
Federal Highway Administration
P.O. Box 50206
Honolulu, Hawaii 96850

Subject: Draft Environmental Impact Statement, Kaumuali Highway, PAP-90, Huleia Bridge Replacement and Approaches, Island of Kauai, (PPLA-81-612-02-02-09)

Gentlemen:
The U.S. Geological Survey, Hawaii District, has no comments to offer in regards to the above subject draft.

We appreciate this opportunity in having been able to review this draft.

Sincerely,

[Signature]
District Chief

Mr. H. Kusumoto
Division Administrator
Federal Highway Administration
Region Nine, Highway Division
Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kusumoto

This is in regard to the request for the Department of the Interior's comments on the draft environmental statement concerning Kaumuali Highway (PAP 90), Huleia Bridge, Kauai County, Hawaii.

This is to inform you that the Department will have comments but will be unable to reply within the allotted time as we have just received your submission of duplicate copies to satisfy our intradepartmental needs. Please consider this letter as a request for an extension of time in which to comment on the statement.

Our comments should be available about early November.

Sincerely,

[Signature]
Bruce Blanchard, Director
Environmental Project Review

NO RESPONSE REQUIRED

NO RESPONSE REQUIRED
October 5, 1983

Mr. Haroshi Kusamoto
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
P.O. Box 50206
Honolulu, Hawaii 96850

Subject: Draft EIS - Kawaumali Highway, PAP-50, Hulala Bridge Replacement and Approaches, Island of Kauai
(FHWA-HI-EIS-82-02-0)

Dear Mr. Kusamoto:

Your letter of August 22, 1983 requested a review of the above mentioned document related to OMPO's own field of knowledge and responsibility. OMPO's responsibility is limited to the Island of Oahu and as such, we have no comments to offer on the Draft EIS.

Sincerely,

[Signature]

Gordon Lum
Acting Executive Director

October 13, 1983

Mr. E. Kusamoto
Division Administrator
Federal Highway Administration
U.S. Department of Transportation
P. O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kusamoto:

The National Marine Fisheries Service (NMFS) has received a copy of the Draft Environmental Impact Statement (DEIS), Kawaumali Highway, PAP-50, Hulala Bridge Replacement and Approaches, Island of Kauai (FHWA-HI-EIS-82-02-0). The following comments are offered for your consideration:

General Comments

The concerns outlined in our letter of June 17, 1982 (Section VI, p. VI-6) on the DEIS Preparation Notice have been addressed to our satisfaction in the DEIS. We have no additional comments at this time.

Sincerely yours,

John J. Houghton
Acting Administrator

cc: F/JUS, Terminal Island, CA
F/US, Washington, D.C.

bc: NMFS, DOT, Hawaii
Mr. H. Kunimoto
U. S. Department of Transportation
P. O. Box 20206
Honolulu, Hawaii 96850

Dear Mr. Kunimoto:


I have reviewed those portions of the above Draft EIS relating to energy and have no substantive comments to submit. Energy considerations do not appear to be a dominant factor for this project.

Sincerely yours,

John W. Suga, Director
Pacific Site Office

Mr. H. Kunimoto
Division Administrator
U. S. Department of Transportation
Federal Highway Administration
Box 20206
Honolulu, Hawaii 96850

Dear Mr. Kunimoto:

Subject: Draft EIS, Kamalii Highway, FAP-50, Hoalea Bridge Replacement and Approaches, Island of Kauai

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

Very truly yours,

John W. Suga

cc: Office of Environmental Quality Control

NO RESPONSE REQUIRED
Mr. H. Kusumoto
Division Administrators
Federal Highway Administration
U.S. Department of Transportation
Box 50295
Honolulu, HI 96850

Deer Mr. Kusumoto:

SUBJECT: Draft Environmental Impact Statement for Huleia Bridge Replacement and Approaches, Kaumualii Highway, Kaua'i, Island of Kaua'i, July 1983

We have reviewed the subject DEIS and offer the following comments. A section on some of the engineering aspects of the alternative alignments, including bridge dimensions, flow capacity, borrow sources, cuts and fills, etc. would be very helpful.

Thank you for the opportunity to comment. This material was reviewed by WREC personnel.

Sincerely,
Edwin T. Murabayashi
WREC Coordinator

This is in reference to your draft environmental impact statement of the Kaumualii Highway, PAP-50, Huleia Bridge Replacement and Approaches, Island of Kaua'i, State of Hawaii (Department of Transportation - Federal Highway Administration). Enclosed are comments from the National Oceanic and Atmospheric Administration.

Thank you for giving us an opportunity to provide comments which we hope will be of assistance to you. We would appreciate receiving four copies of the final environmental impact statement.

Sincerely,
Joyce M. Wood
Chief
Ecology and Conservation Division

Enclosure

NO RESPONSE REQUIRED

AN EQUAL OPPORTUNITY EMPLOYER
TO: Joyce M. Wood, Director
Eco-Log and Conservation Division, FF2

FROM: 

PROM: G. H. Khan, Acting Regional Director
Southeast Region, FF2

(DOT = FHA)

Attached are the original comments on the subject DEIS for inclusion in the Departmental response. A copy has been sent to the local Federal Highway Administration office for the NEPA commenting procedures implemented on March 25, 1982.

Attachment.

CHAND'S DDS INC.
P. 0. Box 726
Koloa, Kauai Hawaii 96756

September 15, 1983

State of Hawaii
Department of Transportation
665 Punchbowl Street
Honolulu, HA 96813

Dear Sir:

RE: KAUMUALI'I HIGHWAY
HULEIA BRIDGE
REPLACEMENT & APPROACHES
PROJECT NO. DP-050-(4)

As a School Bus Contractor who utilizes the Huleia Bridge daily, may I suggest that Alternative 1 be used on the proposed project.

1). From the stand point of long term utilization, Alternative 1 will best serve the public;

2). Truck traffic that comes out from Grove Farm Quarry will have a SAFE approach to enter Kaumuali'i Highway;

3). The new alignment of Kaumuali'i Highway will be SAFER.

I hope that my suggestion will help your department in making the right bridge decision which will provide the driving public with a SAFE and PERMANENT BRIDGE.

Sincerely yours,

David C. H. Chang
Vice-President
CHANG'S DDS INC.

NO RESPONSE REQUIRED
TO: Honorable Ryukichi Higashihona, Director
Department of Transportation

FROM: Dr. Dennis N. Thompson, Superintendent
Department of Education

SUBJECT: Draft EIS, Kauai Highway

The Department of Education has no further comments to add to our earlier response of June 22, 1983. Thank you for the opportunity to review the subject matter.

cc: Mr. James Edington
Kauai District

NO RESPONSE REQUIRED

AN EQUAL OPPORTUNITY EMPLOYER

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
PACIFIC SOUTHWEST REGION
DORIS H. ROSE BB
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102
(415) 956-3200

In Reply Refer To
ER 82/31119
SPECIAL \100 SPECIAL
SPECIAL 982008

October 28, 1983

Mr. H. Kusumoto
Division Administrator
Federal Highway Administration
Region Nine, Highway Division
P.O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

This is in regard to the request for the Department of the Interior's comments on the Draft Environmental Impact Statement concerning Kauai Highway (H-530), Naalehu Bridge, Maui County, Hawaii.

We find this document well written and all of the concerns of the Department have been addressed. We have no comments to offer at this time.

Thank you for giving us this opportunity to comment.

Sincerely,

Patricia Sanderson
Regional Environmental Officer

cc: Dr. Ryukichi Higashihona, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Director, OPRR
Director, Fish and Wildlife Service
Director, Geological Survey

NO RESPONSE REQUIRED
LETTEN NO. 1

EVALUATION - COUNTY OF KAUAI, DEPARTMENT OF PUBLIC WORKS (August 29, 1983)

In the realignment alternatives, after construction of the proposed improvements, the existing bridge will be demolished, and its highway approaches will be closed to traffic. The highway right-of-way will be retained for the ultimate 4 lanes.

August 29, 1983

Mr. H. Kusunoto
Division Administrator
Federal Highway Administration
Hawai'i Division
Box 5800
Honolulu, HI 96803

Dear Mr. Kusunoto:

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT
KUAMALI'I HIGHWAY, KIP G3, DALEIA BRIDGE REPLACEMENT AND APPROACHES (FHWA-HI-81-93-02-2)

Reference is made to your letter dated August 22, 1983 requesting comments on the captioned project. Our comments is as follows.

Alternative I and II will create a remnant section of the Kuamalii Highway that we feel is no longer necessary as a government roadway.

As such, we are requesting that the remnant be disposed of to the shifting landowner rather than to the County. The County does not have the resources to maintain the roadway and especially the timber bridge which is alleged to be severely deteriorated and infested with termites.

We thank you for the opportunity to comment on the Draft Environmental Impact Statement.

Very truly yours,

/AS

LAWRENCE KITAMURA
County Engineer
August 30, 1983

Mr. H. Kusumoto
Division Administrator
H. S. Department of Transportation
Federal Highway Administration
P. O. Box 50096
Honolulu, HI 96850

Subject: Draft Environmental Impact Statement, Kaauwai Highway,
PAP-50, Waiela Bridge Replacement and Approaches,
Island of Kauai, (HMR-84-152-02-02-03)

Dear Mr. Kusumoto:

Thank you for the draft E.I.S. and the opportunity to comment on this
proposal.

As previously stated, both alternatives I and II will require relocation of
our telephone pole line. The extent and cost which dictates the necessity
to enter into a Utility Agreement with the State Highway Department of
Transportation is dependent upon the alternative selected.

In either case, we assume that the present Waiela Bridge will no longer
exist thereby removing a serious constraint on our ability to access and
maintain important inter-office telephone trunk circuits. These circuits
are the only link that West Kauai residents have to communicate with the
rest of the world. Therefore, in your plan design, please consider the
provision of an adequate right-of-way to accommodate relocation of our pole
line into the new alignment.

We appreciate the opportunity to comment on the project and wish to express
our support for the proposal which will result in a safer highway for residents
and visitors on Kauai.

Sincerely,

[Signature]

James Tahata
Supervising Engineer

HAWAIIAN TELEPHONE
GFS

LETTER NO. 2

EVALUATION - HAWAIIAN TELEPHONE (August 30, 1983)

2A The existing right-of-way will be retained for future expansion of the highway.
We will consider the utility relocation requirements during the design stage.
September 6, 1983

Mr. H. Kasumoto
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Region Nine, Hawaii Division
Box 52056
Honolulu, Hawaii 96850

Subject: Draft Environmental Impact Statement, Kaaalii Highway,
FP-50, Nulua Bridge Replacement and Approaches,
Island of Kauai (FHWA-HI-1982-02-05)

We wholeheartedly support the project and concur that there is a need for
the proposed improvements in consideration of the high numbers of accidents
in that vicinity, the condition of the bridge, and the present conflicts
with trucks exiting from the quarry site.

Any of the three alternatives being proposed are acceptable and will
contribute towards a safer and more convenient travel way. However, we do
prefer Alternatives I and II since these proposals will provide the optimum
amount of improvements to the highway with the best amount of inconvenience
to motorists during construction. These alternatives would further have the
least removal of prime agricultural land for the highway improvements.

Although we are concerned, we feel that the amount being removed for a new
alignment is insignificant compared to the long-range safety benefits to be
derived for residents on Kauai. Please note that compliance to County
Subdivision Ordinance No. 175 will be required for the realignment of the
right-of-way for Alternatives I and II.

Mr. H. Kasumoto
Division Administrator
Page 2
September 6, 1983

Relative to detouring, Alternative A or B is acceptable.

Thank you for allowing us to comment, and we hope that our inputs will help
you.

Avery J. Yoon
Planning Director

LETTER NO. 3

EVALUATION - COUNTY OF KAUII, PLANNING DEPARTMENT (September 6, 1983)

The proposed improvements will improve overall safety, improve the access at
the quarry road intersection, and reduce conflicts with trucks exiting from the
quarry site. Alternative IIA was selected because it is the most feasible
alternative based on superior geometrics, potential for future expansion, and
the lowest cost of realignment alternatives. County Subdivision Ordinance No.
175 will be complied with for the realignment of the right-of-way.
LETTER NO. 4

EVALUATION - COUNTY OF KAUAI, POLICE DEPARTMENT (September 1, 1983)

POLICE DEPARTMENT
COUNTY OF KAUAI
2050 LILU STREET
LILU (Maalaea Sta.)
TELEPHONE: 245-8711

September 1, 1983
Reference: N64-41

H. Kusu moto
Division Administrator
Federal Highway Administration
U.S. Department of Transportation
P.O. Box 50106
300 Ala Moana Blvd.
Honolulu, HI 96850

Dear Mr. Kusu moto,

This is in reply to your letter regarding the Huleia Bridge replacement and approaches.

After reviewing the proposal, we feel that the best solution to the problem is the construction of a bridge in accordance with Alternative 1A.

We also recommend that the bridge be constructed 52 feet wide, with the shoulder on the side of the bridge 10 feet wide (as desired). This would allow for future expansion of the bridge if necessary without any further construction.

Sincerely,

Roy K. Hiram
Chief of Police

Submitted by

Vincent J. Wisniski
Lieutenant Traffic Safety

Alternative 1IA was selected over Alternative 1A because of lower costs and because Alternative 1A has greater right-of-way impact.

The proposed Huleia Bridge has a 50-foot width (24-foot travel lanes, 12-foot truck climbing lane, 4-foot shoulder on the north side and 6-foot shoulder on the north side next to the truck-climbing lane). Future expansion cannot be accommodated by building 10-foot wide shoulders now.
LETTER NO. 5

EVALUATION - COUNTY OF KAUAI, FIRE DEPARTMENT (September 6, 1983)

5A Alternative IIA is recommended because it is the most feasible alternative based on superior geometry, potential for future expansion, and low cost.

5B We agree that Alternative III will change road conditions and may increase the Fire Department's response time to emergencies during the construction period.

5C The realignment alternative will be superior to the existing alignment alternative during construction in terms of safety and minimizing response time for emergency vehicles.

5D We will send you a copy of the Final EIS.

U.S. Department of Transportation
Federal Highway Administration
Box 50206
Honolulu, HI 96850

Gentlemen:

Subject: Hanamaulu Highway, Haleia Bridge Replacement and Approaches,
Project No. DF-050-1(4), Island of Kauai

We have reviewed the above subject Environmental Impact Statement Draft dated July 20, 1983 and have the following comments:

1. We support alternatives I or II which will improve the existing conditions and minimize rerouting of traffic during the construction of the project. (Para 3)

2. Alternative III will alter the traffic and road conditions which will have a definite effect on the fire department's response time to emergency incidents to the east and west of the project site.

3. Realigning the highway as in alternative I will be much more effective for the safety of emergency vehicles and also minimize response times.

Please send us the Final EIS.

If you have any questions, please write or call William Ewaki at 246-4121.

Very truly yours,

Albert C. Braun, Jr.
Fire Chief
LETTER NO. 6

EVALUATION - STATE DEPARTMENT OF HEALTH (September 7, 1983)

The DOT will include as appropriate and where required in the specifications for the project, the mitigative measures given in the EIS for the control of stream siltation, soil erosion, and dust control. The DOT will ensure that the contractors perform the mitigative measures in a timely and effective manner.

Mr. R. Kusumoto
Division Administrator
Federal Highway Administration
U.S. Department of Transportation
P. O. Box 50206
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

Subject: Request for Comments on Proposed Environmental Impact Statement (EIS) for Kawaihau Highway, PAP-50, Huleia Bridge Replacement and Approaches, Island of Kauai (FHWA-HI-EIS-82-02-R)

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

The Department of Transportation should include the mitigative measures given in the EIS for the control of soil erosion and stream siltation and effective dust control measures in the specifications for the project. The DOT Inspectors should ensure that the contractors perform the mitigative measures in a timely and effective manner.

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.

Sincerely,

[Signature]

Deputy Director for Environmental Health

cc: DMO, Kauai
McBryde
SUGAR COMPANY, LIMITED

September 9, 1983

Mr. K. Kamimoto, Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Region Nine, Hawaii Division
P. O. Box 30000
Hawaii, Hawaii 96850

Dear Mr. Kamimoto:

DRAFT ENVIRONMENTAL IMPACT STATEMENT, KAUNALIHI HIGHWAY
PAP-50, HULEIA BRIDGE REPLACEMENT AND APPROACHES, ISLAND
OF KAUAI, HI (FHWA-IL-82-EIS-02-01)

We offer the following comments concerning the drafts:

ENVIRONMENTAL IMPACT STATEMENT

Alternative I

1. What will happen to the existing McBryde and Grove Farm warehouses located east of the present bridge?

2. This alternative will remove the most cane area. Will there be any way to farm the cane north of the new road?

3. Will the project have any effect on the Waite Inlet tunnel?

Alternative II

1. We are in favor of this alternative because less cane land is lost and no major detour is required.

Alternative III

1. We are out in favor of this alternative due to the major detour of traffic on our cane haul roads.

We would desire a copy of the final EIS.

Sincerely,

Vicki Scott
Vice President and General Manager

LETTER NO. 7

EVALUATION - McBryde Sugar Company (September 9, 1983)

Alternative I

1. The McBryde and Grove Farm warehouses located east of the present bridge are just outside of the proposed right-of-way and should not be impacted based on our preliminary plans and field inspections.

2. This alternative will impact more cane land than the other alternatives.

3. The Waite Inlet tunnel may be impacted. Appropriate relocation and adjustment will be made as required.

Alternative II

1. Alternative III, which is similar in alignment to Alternative II is recommended because of its lower estimated cost. The impacts to cane land are minimized and no major detour is required as in Alternative III.

Alternative III

1. This alternative, due to its detouring requirements and inferior geometrics, is not recommended.

A copy of the final EIS will be sent.
LETTER NO. 8

EVALUATION - STATE OFFICE OF ENVIRONMENTAL QUALITY CONTROL (September 14, 1983)

LETITIA N. UYEHARA
Interim Director

September 14, 1983

Mr. H. Kusumoto
Division Administrator
U.S. Department of Transportation
Federal Highway Administration
Box 50226
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

Subject: Draft EIS, Kauaii Highway, FAP-50, Huleia Bridge Replacement and Approaches, Island of Kauai

We have reviewed this EIS and have no objections. If this project involves condemnation of land we suggest that the affected people be notified early in the project's review process.

Sincerely,

LETITIA N. UYEHARA
Interim Director
MEMORANDUM

To: U.S. Department of Transportation
   Federal Highway Administration

Through: Office of Environmental Quality Control

Subject: Draft Environmental Impact Statement (EIS) for
   Kamehameha Highway, PAP-50, Hühu Bridge Replacement
   and Approaches, Island of Kauai
   FMMA-II-EIS-82-05-D
   TRN: 3, 4, 5, 6 Linne, Kauai

The Department of Agriculture has reviewed the subject document
and has no further comments to offer. However, the reference to the
availability of relocation assistance -- should relocatable agricul-
tural support facilities be affected by the proposed action (Memorandum
from Department of Transportation to Department of Agriculture dated
July 27, 1983) -- should be included in the appropriate section of
the EIS.

Thank you for the opportunity to comment.

Jack K. Sinia
Chairman, Board of Agriculture

Support Hawaiian Agricultural Products
LETTER NO. 10

Mr. H. Kusumoto
Hawaii Division Administrator
U. S. Department of Transportation
Box 5036
Honolulu, Hawaii 96850

Dear Mr. Kusumoto:

Thank you for the opportunity to review the draft environmental impact statement for Holei Bridge and its approaches.

We note that various erosion and sediment control measures are proposed.

However, it is anticipated that excessive siltation may become an unavoidable adverse impact should unprotected areas receive intensive rainfall prior to stabilization. For this reason, we recommend that every effort be made to minimize erosion and sedimentation during and after project construction.

Sincerely,

Chairperson
Board of Land and Natural Resources
LETTER NO. 11

DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, D.C.

September 19, 1983

Mr. Robert Gannett
Department of the Army
Federal Highway Administration
Washington, D.C.

Dear Mr. Gannett:

This is in reference to Letter 521, dated March 30, 1983, in reply to which you wrote on April 12, 1983.

As we indicated in our previous letter, the proposal to install a section of the ordinary high water mark of the channel in the vicinity of the project, as shown in Figure 4 of the project report, is not acceptable to the Corps of Engineers. The Corps is not in a position to accept or approve a section of the ordinary high water mark for construction within the vicinity of the project as proposed.

Please note that the Corps' position remains unchanged from that indicated in our previous letter. We, therefore, request that you submit a proposal for a section of the ordinary high water mark that is acceptable to the Corps of Engineers.

Sincerely,

[Signature]

Chief, Regulatory Division

VI-55
LETTER NO. 12

EVALUATION – UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

(October 6, 1983)

Alternative IIA has been selected for the following reasons:

1. Alternative III focuses on replacement of the existing bridge with no improvement to the highway approaches or to the Quarry Road intersection. It does not provide for rights-of-way for future widening to a 4-lane facility and it requires large expenditures of non-recoverable costs for detouring of traffic. In addition, Alternative III did not have the public’s acceptance due to inferior geometrics.

2. Alternative IIA provides superior geometrics, rights-of-way for future widening, and possesses the lowest cost of all the realignment alternatives.

Mr. H. Kusumoto
Division Administrator
Federal Highway Administration
Region Nine
U.S. Department of Transportation
P.O. Box 52006
Honolulu, HI 96850

October 6, 1983

Dear Mr. Kusumoto:

Subject: Draft EIS for the Proposed Replacement of Nakela Bridge and Approaches, Kaumualii Highway, PAP-50, Kauai, HI

We have reviewed the subject environmental impact statement and offer the following comments:

Alternative III, in our opinion, is the most desirable plan of action. It would result in the least amount of erosion during construction and would not result in any prime agricultural land being converted to other uses. There would be some temporary impact on the farming operation adjacent to the selected detour route, but the land would remain in agricultural use.

Thank you for the opportunity to review the document.

Sincerely,

FRANCIS C.H. IIA
State Conservationist
21 OCT 1983

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

Dear Mr. Kusumoto:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) titled
UHILIA BRIDGE REPLACEMENT AND APPROACHES. We have the
enclosed comments regarding this DEIS.

We have classified this DEIS as Category LO-4 (lack of
objections - more information needed). The classification
and date of EPA's comments will be published in the Federal
Register in accordance with our public disclosure
responsibilities under Section 309 of the Clean Air Act.

We appreciate the opportunity to review this DEIS.
Please send two copies of the Final Environmental Impact
Statement (FEIS) to this office at the same time it is
officially filed with our Washington, D.C. office. If
you have any questions, please contact Loretta Kahn
Bassaman, Chief, EIS Review Section, at (415) 974-8188
or FTS 454-8188.

Sincerely yours,

Charles W. Murray, Jr.
Assistant Regional Administrator
for Policy, Technical, and
Resources Management

Water Quality Comments

13A
The EIS should identify specific mitigation measures to
minimize the impacts of soil erosion during and after
construction. These measures should include the use of
stilling basins and revegetation if appropriate.

Although the bridge replacement facility will be similar
and is not anticipated to significantly increase the level
of surface road pollutants washed into stream waters, the
EIS should discuss measures to reduce the amount of
pollutants entering the stream.

Air Quality Comments

13B
It should be noted that we did not provide comments on
the EIS Preparation Notice (as stated on p. VI-1) because
we had already responded to the Notice of Intent (see
Appendix B). In that response, we recommended that the
DEIS:

a. Include the results of recent monitoring for TSP
at Lihue.

b. Compare those data with applicable air quality
standards.

13C
c. Describe the effects upon air quality resulting
from project construction and operation.

The DEIS does not provide this information. Although we
agree that the project is not likely to have a significant
adverse impact upon air quality, the EIS should include the
most relevant data available to ascertain project impacts.
We therefore reiterate the recommendation above, for the FEIS.
LETTER NO. 13

EVALUATION - UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (October 21, 1983)

Water Quality - To minimize the impacts of soil erosion during and after construction, the mitigation measures will include, the implementation of Section 8.29 - "Temporary Project Water Pollution Control (Soil Erosion)" of the State Standard Specifications for Road and Bridge Construction and other measures as appropriate, as described in Section IV, page 19-6.

Surface road pollutants entering the stream can be significantly reduced by installing grease traps on the on-site drainage system just prior to the outlet into the stream.

The State Annual Summary of Hawaii Air Monitoring Stations is included in Appendix A, which includes the TSP for Ehu, along with the State and Federal Air Quality Standards.

U.S. Department of Transportation
Federal Highway Administration
P.O. Box 58236
Honolulu, Hawaii 96850

Dear Sir:

This is in reference to your draft environmental impact statement of the Kaahumanu Highway, SR-58, Waiola Bridge Replacement and Approaches, Island of Maui State of Hawaii (Department of Transportation - Federal Highway Administration). Enclosed are comments from the National Oceanic and Atmospheric Administration.

Thank you for giving us an opportunity to provide comments which we hope will be of assistance to you. We would appreciate receiving four copies of the draft environmental impact statement.

Sincerely,

[Signature]

John Wood
Chief
Ecology and Conservation Division

Enclosure
TO: PP2 - Joyce Wood

FROM: N - X. E. Tappan

SUBJECT: DEIS 8308.19 - Landfill Highway, FAP 50, Hulea Bridge Replacement and Approaches, Libres District, Island of Kauai, State of Hawaii (Department of Transportation - Federal Highway Administration)

October 23, 1983

The subject DEIS has been reviewed within the areas of the National Ocean Service's (NOS) responsibility and expertise, and in terms of the impact of the proposed action on NOS activities and projects.

Geodetic control survey monuments may be located in the proposed project area. If there is any planned activity which will disturb or destroy these monuments, NOS requires at least 90 days' notification in advance of such activity in order to plan for their relocation. We recommend that funding for this project include the cost of any relocation required for NOS monuments. For further information about these monuments, please contact Mr. John Spencer, Chief, National Geodetic Information Branch (NCGIF), or Mr. Charles Novak, Chief, Network Maintenance Section (NCQ182), at 6001 Executive Boulevard, Rockville, Maryland 20852.
LETTER NO. 15

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

October 27, 1983

Mr. Barbara Hubbard
President
The Kauai Outdoor Circle
P.O. Box 921
Lihue, Hawaii 96766

Dear Mr. Hubbard:

Kauai Highway, Muleia Bridge Replacement and Approaches, Project No. 60-050-1(4), Draft Environmental Impact Statement

Thank you for your letter of September 19, 1983. As requested, we will keep you informed of any decisions concerning the replacement of Muleia Bridge.

Very truly yours,

Ryokichi Higashionna
Director of Transportation

cc: FHWA

Hwy-P

AN

-PA
January 22, 1985

Maui County Department of Transportation

R. P. Bathurst, Director of Transportation

January 22, 1985

Vi-6

Wi-16

See response to Letter No. 3, page VI-47.
C. LIST OF PREPARERS

Below is a list of persons who were primarily responsible for preparing this Draft Environmental Impact Statement (DEIS).

1. Amadeo S. Timbol
   - Ph.D. Marine Biology
   - Professor - Kauai Community College
   - Prepared "Survey of Aquatic Macrofauna in Huleia Stream, Kauai"

2. Francis K.W. Ching
   - Consultant Archaeologist
   - Conducted archaeological reconnaissance and flora survey

3. Ted S. Kawaguchi
   - P.E., B.S.C.E., M.S.C.E.
   - 25 Years in planning, design and environmental assessment of highways and other civil projects
   - SEE Consultant and prepared DEIS document

4. Albert Ng
   - P.E., B.S.C.E.
   - State DOT Project Manager
   - Engineering design and project manager for State DOT

5. Gary Choy
   - P.E., B.S.C.E.
   - State DOT
   - Air and noise study

6. George Shigano
   - P.E., B.S.C.E.
   - State DOT Advance Planning Engineer
   - Overall project manager for State DOT
SECTION VII.

SUMMARY AND EVALUATION OF TESTIMONIES
EVALUATION SUMMARY
Public Informational Meeting
Held on 03-14-81
Kaumuali Highway,
Huleia Bridge Replacement and Approaches
Project No. 06-056-1(4)

D. PRATT, President of Grove Farm Co.

COMMENTS: Mr. Pratt stated that he is against Alternative III, that he favors the other alternatives and that Alternative III does not solve or improve the safety problems (due to the vertical and horizontal curves at the same location).

Alternative I and II do provide a better access under the highway and a chance to accelerate before merging with traffic. Raising the elevation of the bridge helps the heavy trucks once they do get moving along. If its a flatter highway they can better accelerate before merging.

Mr. Pratt said that in the past few years he has been a lot of near accidents in this area where a slow moving truck is pulling onto the highway and a speeding vehicle on the highway has to abruptly stop to miss hitting it.

Mr. Pratt summarized by saying Alternatives I and II, IA and IIA are good improvements and will make this highway location a much safer area.

EVALUATION: Alternatives I, IA, II and IIA provide better geometrics for the truck traffic from the quarry access road. The concept of Alternative III is just to replace the bridge on the existing alignment.

JAMES SHIMO, Representative for Lihue Plantation Co.

COMMENTS: Mr. Shimo stated that of the two alternatives, Alternative I and II (including their variations), he favors Alternative IIA with the on-ramp because the objective of improving the roadway is achievable at approximately $5 million. This is less than Alternative I which costs in the neighborhood of $6 million to $7 million.

Mr. Shimo stated that Alternative IIA is also desirable because it will not utilize the cane haul road. If highway traffic is re-routed to the cane haul road, it will compete with sugar operations.

Mr. Shimo stated he has three questions:

a. If an on-ramp is desirable for traffic safety and efficient use by the traffic entering Kaumuali Highway, why then is there not such a design for cane haul (truck) units on the Ahukini-Hanamaulu Cut-off Road? (Mr. Shimo stated they have tried to get an overpass or underpass with no success, including even traffic lights.)

b. A hilly-climbing lane is not provided to west-bound traffic. Should there not be such a lane provided for?

c. On Kahio Highway you can get hill-climbing on both sides but its still a three-lane (highway section). If we are to make the bridge a three-lane (highway section), is there a plan to install a four-lane (highway section) to Kaumuali Highway like Kahio Highway which is slated for four-lanes bounded to Kapaa from Lihue?

EVALUATION: Alternative IIA has the lowest cost of the realignment alternatives. The use of the cane haul road for detouring is apparently not desirable due to conflicts with cane operations. A
truck climbing lane for west-bound traffic will be considered where necessary due to steep grades. Alternatives I and II do incorporate this feature.

Ultimately, there will be traffic demand for a four-lane section. In the realignment alternative concept, the existing highway alignment location can be used in the future to build the additional two lanes.

The quarry access is a major problem in replacing the existing bridge and approaches. There are no alternative access points for quarry road traffic and it appears that due to the terrain and economics the access must be confined to the east side of Kulia Stream. The on-ramps and underpass features are the design concept considered to improve safety required by the quarry road traffic of which a large percentage is trucks.

HAROLD EICHELBURGER, Resident of Kekaha and commuter

COMMENTS: Mr. Eichelburger stated that Alternative I would be, by far, the best of the alternatives because it goes the farthest in addressing the existing problems and specifically one of the problems encountered is the excessive grade of the road approaches. Also, on the inbound lane to Lihue in the morning, there are lines, (about a week) in the spring and again the fall, when the slope results in driving straight into the sun, and in a space of 500 to 800 feet you cannot see. From speeds of 45 to 50 mph, people will slow down and others won't.

The current structure does not have adequate shoulders.

Mr. Eichelburger cited examples of accidents, including the Reo truck accident which occurred at the existing bridge.

He supports Alternative I with some additions. There should be longer acceleration lanes for the heavy traffic entering from the quarry in both directions. For traffic from the west side entering the quarry, there should be either a stacking lane/left-turn lane or other alternative way of entering the quarry. Right now, left turning traffic has to wait on the highway.

He said that the quarry traffic represents one of the greatest hazards. You have not only people picking up crushed road products from the quarry, you have the traffic of the ready-mix trucks (Hale Kauai), Hawaiian Silicas and their employees. Recently it was not too bad because construction was slow, but three years ago when construction was at a peak, the trucks would force their way into the traffic on the highway.
Mr. Eichelburger summarized by stating he favors Alternative I with improved longer acceleration lanes for entering quarry traffic and improvements (left-turn/stacking lane) for traffic from the west turning into the quarry (access road).

EVALUATION: We will consider Mr. Eichelburger's suggestions for longer acceleration lanes.

A stacking/left-turn lane was not incorporated in the proposed designs due to the additional cost and low volume of quarry road traffic, but such a feature will be re-evaluated and possibly incorporated when the ultimate four-lane section is developed in the future.
APPENDIX A

AIR QUALITY AND NOISE STUDY
Due to the low traffic volumes for all years, the predicted pollution levels are much lower than the State air quality standards.

The pollution levels for all alternatives will remain the same since the traffic volume remains the same for all alternatives. The predicted levels at the shoulder and at various distances show low levels, even when assuming the worst case conditions.

The area is in the rural area of Kauai and it is not expected to affect any change in pollution levels between the build and no-build alternatives.

The Annual Summary of Hawaii Air Monitoring Stations - 24-Hour Sampling, and the air quality standard, follow.
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<th>Dept. of Health, Hilo</th>
<th>Hilo, Hilo (Mt. Dula)</th>
<th>Kalani, Hilo</th>
<th>Kailua, Hilo</th>
<th>Kalaeloa, Hilo</th>
<th>Kahului, Maui</th>
<th>Kihei, Maui</th>
<th>Hilo, Maui</th>
<th>Lihue, Kauai</th>
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<td>b. Number of samples</td>
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<td>55</td>
<td>46</td>
<td>53</td>
<td>44</td>
<td>46</td>
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<td>47</td>
</tr>
<tr>
<td>c. Range of values</td>
<td>14-50</td>
<td>20-150</td>
<td>57</td>
<td>23-98</td>
<td>10-59</td>
<td>11-45</td>
<td>4-163</td>
<td>12-139</td>
<td>7-50</td>
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<td>d. Arith. average of values</td>
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<td>55</td>
<td>30</td>
<td>44</td>
<td>33</td>
<td>26</td>
<td>69</td>
<td>46</td>
<td>17</td>
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<td>0</td>
<td>0</td>
<td>5</td>
<td>3</td>
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**SULFUR DIOXIDE (ppm)**

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<th>Kalani, Hilo</th>
<th>Kailua, Hilo</th>
<th>Kalaeloa, Hilo</th>
<th>Kahului, Maui</th>
<th>Kihei, Maui</th>
<th>Hilo, Maui</th>
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<tr>
<td>a. Period of sampling (mos.)</td>
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<td>11</td>
<td>12</td>
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<td>10</td>
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* Particulate matter = 100 ng/m³; sulfur dioxide = 80 ng/m³.
** Sampling for sulfur dioxide at these sites was discontinued on January 1, 1983.
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<td>100 ug/m³ (0.05 ppm)</td>
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<td>3 hr.</td>
<td>400 ug/m³ (0.15 ppm)</td>
<td>365 ug/m³ (0.14 ppm)</td>
<td>1300 ug/m³ (0.5 ppm)</td>
<td>800 ug/m³</td>
<td>1600 ug/m³</td>
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<td>Annual</td>
<td>20 ug/m³ (0.008 ppm)</td>
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<tr>
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<td>(0.14 ppm)</td>
<td>(0.3 ppm)</td>
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<td>1.5 ug/m³ (0.00017 ppm)</td>
<td>1.5 ug/m³ (0.00017 ppm)</td>
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Conversions: 0 25°C

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3/83 - EPS

A-3
The predicted noise levels of the subject project were obtained using a simplified worst case analysis and hence are applicable to all three roadway alternatives. Tables 1, 2 and 3 show the predicted $L_{eq}(h)$ noise levels at 50', 100' and 150' from the roadway centerline. Although the noise levels closer to the roadway are relatively high, no traffic noise impact is expected for the following reasons:

1) No sensitive receptors have been identified in the project area.

2) The project is located in a rural area currently zoned Agricultural, Conservation, and Open Space.

3) Improvements or activities devoted to frequent human habitation neither exist nor are planned or programmed in or near the project area.

4) The Design Noise level criterion (Noise Abatement Criteria) that is applicable to this study is classified as Activity Category D, undeveloped lands, as set forth by FHWA 7-7-3 and 23 CFR Part 772 (FHWA Docket No. 70-33, Notice 3).

5) Neither FHWA 7-7-3 nor 23 CFR Part 772 identify any upper limit of acceptable traffic noise level conditions for Activity Category D.

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* Peak Hour Volume
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A-5

* Peak Hour Volume

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**Table 3**

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<tr>
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* Peak Hour Volume
NOISE STUDY
KAMUALU'I HIGHWAY, HULEIA BRIDGE REPLACEMENT
PROJECT NO. DP-058-1(4)

METHODLOGY USED IN ANALYSIS
FIDIA-80-77-108 FIDIA Highway Traffic Noise Prediction Model
SHP 1.1 FIDIA Level 1 Highway Traffic Noise Prediction Computer Program

ANALYSIS YEAR

TRAFFIC VOLUMES
From Traffic Assignment Project TA 01-7

VEHICLE SPEED USED IN ANALYSIS
Kamualu'i Highway 50 mph (80.5 km/hr)

REPORTED NOISE LEVELS
L eq (h) (dBA)

RECEIPION LOCATIONS ANALYZED
50 feet from centerline of roadway
100 feet from centerline of roadway
150 feet from centerline of roadway

ASSUMPTIONS USED IN ANALYSIS
Straight, infinitely long, level roadway
No attenuation due to terrain (i.e. level ground from roadway to receptor)
Soft ground (site) conditions (Alpha = 0.5)
APPENDIX B

HISTORICAL AND ARCHAEOLOGICAL SURVEY
Gentlemen:

On April 27, 1982 personnel of Archaeological Research Center Hawaii, Inc. performed an archaeological reconnaissance of the above subject project area. The purpose of this reconnaissance was to determine the presence or absence of archaeological sites.

The study area is a proposed highway corridor approximately 600 feet wide and it located south of Kawaihao Highway and extends on both sides (east and west) of Huleia Bridge ("Halfway Bridge"). The main area of concentration was to the Huleia Gulch south of the bridge. However, the entire project area was inspected. Vegetation consists of Ohia, mango, Java plum, banana, hulu, hala, kalo, and an admixture of grasses and vines.

The entire area south of Huleia Bridge was inspected on foot as this was the only place in the project area which was likely to contain archaeological remains. No archaeological sites were located. The only thing of historical interest was the remains of the original bridge which once spanned Huleia Stream (the present wooden bridge is the third bridge to be built here). The rest of the study area is presently under cane cultivation and as earlier archaeological studies have demonstrated that such lands are void of intact archaeological sites (see ARCH's unpublished manuscript on the Russian Fort Elizabeth).
MEMORANDUM

TO: The Honorable Wayne J. Yamasaki, Director
Department of Transportation

FROM: Susumu Ono, Chairperson and
State Historic Preservation Officer

SUBJECT: Huleia Bridge Replacement,
Project No. DP-050-1(4)

Thank you for your memorandum of December 22, 1983, requesting our office's comments on the above project. The Huleia Bridge is not listed in the National Register of Historic Places. We concur with your Department's determination that this project will have no effect on any historically significant property.

Susumu Ono

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

DEC 29 1983
APPENDIX C

DRAINAGE REPORT FOR
HULEIA STREAM
TABLE OF CONTENTS

1. INTRODUCTION
   A. Purpose, Scope, and Procedure
   B. Description of Proposed Project
   C. Description of Existing Characteristics

II. HYDROLOGIC ANALYSIS

III. HYDRAULIC ANALYSIS

IV. RISK EVALUATION

EXHIBITS

1. Location Map
2. Typical Section of Existing Bridge
3. Location of Gaging Station - Hwtkp 550
4. Stream Gaging Station Number 550 - Discharge Data
5. 50-Year Peak Discharges
6A. 100-Year Peak Discharges
6B. Bridge Backwater Analysis
7. 50-Year Backwater Analysis
7A. 100-Year Backwater Analysis
8. Stream Backwater Sections
9. Section at Point of Maximum Backwater and Section at Quarry Road Low Point

PREPARED BY
AUSTIN, TSUTSUI & ASSOCIATES, INC.
ENGINEERS * SURVEYORS
HONOLULU, HAWAII

AUGUST 1962
1. INTRODUCTION

A. Purpose, Scope, and Procedure

The purpose of this report is to evaluate floodplain encroachments of the proposed project in accordance with Executive Order 11980, "Flood Plain Management" and Federal Highway Administration policies and procedures.

The scope of this study includes both hydrologic and hydraulic analyses of Huleia Stream with regard to the proposed project, and discussions relating to risks associated with the possible floodwater encroachments.

Investigation and evaluation procedures included field investigations of the project area, research and study of published reports and literature pertinent to the proposed project and discussions with personnel of Federal, State and County agencies including U.S. Army Corps of Engineers, U.S. Geological Survey, Federal Highway Administration, Department of Agriculture - Soil Conservation Service, State Department of Transportation, County of Kauai - Department of Public Works.

B. Description of Proposed Project

The State Department of Transportation proposes to replace the existing Huleia Stream Bridge with a new 2-lane bridge structure which would meet the current design standards for bridge loading and geometries.

The project site is located on Kauai Island (Hawaii Route 50), just west of the Kalua-Lihu District Boundary on the Island of Kauai (Exhibit 1). The alternative bridge sites being considered are all located downstream (southerly) of, and within 600 feet of the existing bridge crossing.

C. Description of Existing Characteristics

The existing Huleia Stream Bridge is a timber-plate girder bridge which was constructed on a concrete bridge deck built some time earlier (Exhibit 2 shows the typical existing bridge section). At the bridge section, the stream bed is at elevation 3100 feet; the concrete deck is at about elevation 315 feet; and the highway is at elevation 350 feet.

The lands within the proposed project area are zoned primarily for agricultural use and are planted primarily with sugarcane. On the east bank, upstream of the existing bridge is the quarry access road. There are no homes in the nearby vicinity of the bridge.
HYDROLOGIC ANALYSIS

Huleia Stream stretches from the Kilauea Forest Reserve to Nawiliwili Bay. Approximately 4.5 miles above the mouth of the stream is a U.S. Geological Survey gaging station (Number 550) with a drainage area of approximately 17.6 square miles. Exhibit 3 shows the gaging station location. The maximum peak discharge recorded was on November 28, 1970, which was estimated from flood marks to be approximately 26,000 cubic feet per second (cfs). The crest-stage gage was destroyed on November 26, 1970 by high water. (See Exhibit 4 for the recorded water year peak discharges from 1962 to 1981.)

The Huleia Stream bridge lies approximately 3,000 feet upstream of the gaging station (Number 550). At the bridge crossing, the contributing drainage area is approximately 12.8 square miles (or 2,000 acres). The County of Kauai, Department of Public Works, "Storm Drainage Standards", February 1992, design curves for estimating the peak discharge for 50-year and 100-year frequency storms (Plates 6 and 8A) are based upon the U.S. Geological Stream gaging station data. The design discharge used in this report is 16,000 cfs for a 50-year storm and 23,000 cfs for a 100-year storm. (See Exhibits 5 and 8A.)

HYDRAULIC ANALYSIS

The hydraulic analysis is based on the existing bridge remaining in place, and the new bridge, being constructed downstream, having little or no effect on the stream hydraulics. It is further assumed that, since the bridge is so far inland from the mouth of the stream, there would be no tailwater effects due to tidal fluctuations, and the stream is assumed to be free flowing.

The existing bridge backwater analysis is based on the U.S. Department of Transportation, Federal Highway Administration, "Hydraulics of Bridge Waterways" (Revised March 1978). Accordingly, it should be noted that this method is reasonably valid if (a) the channel in the vicinity of the bridge is essentially straight, (b) the cross sectional area of the stream is fairly uniform, (c) the gradient of the bottom is approximately constant, (d) the flow is free to contract and expand, (e) there is no appreciable scour of the bed in the constriction, and (f) the flow is in the subcritical range (or of Type I flow).

Determination of Fracture Number revealed that the Type of flow at the constriction of the existing bridge is supercritical (or of Type II flow). Bear in mind, that in the case of natural streams where the roughness of the flood plain and main channel differ materially and the channel cross sections are irregular, the Fracture number becomes less of a meaningful parameter. The bridge backwater computation was thereby done by both the Type I flow approach and the Type II flow approach methods. The Type I flow approach method did not show unreasonably high backwater results. In fact, the Type I approach showed a backwater rise less than that calculated by the Type II flow approach. Thus, in spite of the Fracture Number determination...
of a Type II flow condition, the bridge backwater analysis revealed
the flow condition to be of Type I (See Exhibit 6 - Bridge Backwater
Analysis, 8 sheets).

Further backwater analysis was done from the point of maximum
bridge backwater, based upon the standard Step Method for natural
stream. Exhibits 7 and 7A show the computed water surface elevations
for the 50 year and 100 year return storms. Exhibit 8 shows the
locations of each of the stations for which the water surface eleva-
tions were computed. The point of the maximum bridge backwater is
identified at Station 0100.

The backwater computations show that the quarry access road
would be inundated during both a 50 year and a 100 year return storm.
Exhibit 9 shows a cross section of the flooding at the low point on
the quarry road.

IV. HYDROLOGICAL EVALUATION

The hydrologic and hydraulic analyses reveal the existing bridge
backwater effects will cause inundation to the quarry road and the
immediate area adjacent to the road. The area to the northeast
(from side) of the low point on the access road has been filled and
graded, and the area of the quarry truck scale is higher than the
computed water surface elevation of the backwater for a 100 year
storm. Therefore, only local flooding in the adjacent area of the
quarry road is anticipated. There are no structures or dwellings in
the area of anticipated flooding.

The construction of a new bridge structure downstream of the
existing bridge structure will most probably have no adverse effect
on the upstream flow conditions. Preliminary considerations for
the new bridge indicate a larger waterway opening than that provided
by the existing bridge.
LOCATION MAP
KAUMUALII HIGHWAY
HULEIA BRIDGE REPLACEMENT

DOWNSTREAM VIEW
SCALE: 1" = 30'

HIGHWAY
WOODEN TRESTLE

C-5
### Island of Kauai

**Location:** Naalehu Stream near Hilo.

**Drainage Area:** 17.6 sq mi.

**Gage:** Crest-stage gage. Prior to Nov. 13, 1959, water-stage recorder at same site and datum. Prior to Nov. 13, 1959, crest-stage gage at datum 2.5 ft lower. Altitude of gage is 210 ft (from topographic map).

**Water-year records:**

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d From floodmark.

**References:**

"An Investigation of Floods in Hawaii - Through Sept. 30, 1973"  
U.S. Department of Interior Geological Survey  
### Section & Bridge:

#### Stage-Discharge Curve

- **Gw**: Groundwater level
- **Gc**: Channel bottom level
- **Gd**: downstream water level

#### Table: Water Surface Elevation (ft)

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<th>Q</th>
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**A&A Project:** ILEIA STREAM

**Bridge Backwater Analysis:** 3D146

**Section & Bridge:**

**A&A Bridge & Associates:** 88H

### 50-Year Frequency Storm

- **Q** = 16,000 cfs
- **Normal Water Surface (N.W.S.)** = 325.3 ft

<table>
<thead>
<tr>
<th>Sub Area</th>
<th>Location</th>
<th>W.P.</th>
<th>R.H.</th>
<th>n</th>
<th>K = 0.85</th>
<th>Q = 1522</th>
<th>V = 16,000</th>
<th>Q = 2,033</th>
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<td>A</td>
<td>8</td>
<td>3</td>
<td>1,953</td>
<td>0.010</td>
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<tr>
<td>B</td>
<td>830</td>
<td>80</td>
<td>1,787</td>
<td>0.025</td>
<td>161,431</td>
<td>14,713</td>
<td>16.04</td>
<td>1,817,707</td>
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<tr>
<td>C</td>
<td>130</td>
<td>32</td>
<td>2,246</td>
<td>0.045</td>
<td>10,930</td>
<td>916</td>
<td>7.51</td>
<td>55,013</td>
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</table>

- **K = 119,173**
- **Q = 16,000**
- **Q * V = 4,179,753**

\[ S_{50} = \left( \frac{Q}{K} \right)^4 \times \left( \frac{16,000}{119,173} \right)^2 = 0.00738 \text{ ft/ft} \]

### 100-Year Frequency Storm

- **Q** = 23,000 cfs
- **Normal Water Surface (N.W.S.)** = 327.7 ft

<table>
<thead>
<tr>
<th>Exp.</th>
<th>Area</th>
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<th>Q = 1522</th>
<th>V = 23,000</th>
<th>Q = 2,033</th>
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<td>25</td>
<td>0.040</td>
<td>2.599</td>
<td>15.76</td>
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<td>0.60</td>
<td>15,301</td>
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<tr>
<td>B</td>
<td>1010</td>
<td>80</td>
<td>6.422</td>
<td>0.035</td>
<td>233,802</td>
<td>20,794</td>
<td>20.58</td>
<td>8,813,566</td>
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<tr>
<td>C</td>
<td>120</td>
<td>41</td>
<td>3.446</td>
<td>0.048</td>
<td>21,527</td>
<td>1,201</td>
<td>5.05</td>
<td>163,958</td>
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</table>

- **K = 251,174**
- **Q = 23,000**
- **Q * V = 8,382,335**

\[ S_{100} = \left( \frac{Q}{K} \right)^4 \times \left( \frac{23,000}{251,174} \right)^2 = 0.00738 \text{ ft/ft} \]
## Backwater Analysis: Type 1 Flow

<table>
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<tr>
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<th>50-yr</th>
<th>100-yr</th>
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<th>Q = 23,000</th>
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<td>321.1</td>
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<tr>
<td></td>
<td>566</td>
<td>1255</td>
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<tr>
<td>Hg, ft</td>
<td>830</td>
<td>1040</td>
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<tr>
<td>Vg, fps</td>
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<td>16.33</td>
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<tr>
<td>Vh, fps</td>
<td>13.20</td>
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<td>Gq, cfs</td>
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<td>20,734</td>
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<tr>
<td>Hg</td>
<td>0.54</td>
<td>0.30</td>
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<tr>
<td>Sum h, ft</td>
<td>1,529.733</td>
<td>8,932.333</td>
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<tr>
<td>Kc (Fig. 6)</td>
<td>1.12</td>
<td>1.15</td>
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<tr>
<td>A, 50, ft</td>
<td>66</td>
<td>81</td>
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<tr>
<td>J</td>
<td>0.080</td>
<td>0.080</td>
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</tr>
<tr>
<td>Ah (Fig. 7A)</td>
<td>0.152</td>
<td>0.152</td>
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<tr>
<td>σ (Fig. 7B)</td>
<td>0.93</td>
<td>0.98</td>
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<tr>
<td>ΔΔp = ΔK + ΔT</td>
<td>0.160</td>
<td>0.149</td>
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<tr>
<td>e = 1.98</td>
<td>0.992</td>
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<tr>
<td>ΔKu (Fig. 8)</td>
<td>0.023</td>
<td>0.020</td>
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</tr>
<tr>
<td>Θ</td>
<td>45°</td>
<td>45°</td>
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<tr>
<td>ΔKo (Fig. 10A)</td>
<td>-0.02</td>
<td>-0.04</td>
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<tr>
<td>K* = Kf + AΔK + ΔKo + ΔΔp</td>
<td>0.0173</td>
<td>0.183</td>
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<tr>
<td>H</td>
<td>1.12</td>
<td>1.15</td>
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<tr>
<td>A, CG ft</td>
<td>1080</td>
<td>1410</td>
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<td></td>
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<tr>
<td>hy = 0.74/105</td>
<td>1.01</td>
<td>1.04</td>
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<tr>
<td>Backwater h, ft</td>
<td>2.13</td>
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## Backwater Analysis: Type 1 Flow (Continued)

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<th>Q, cfs</th>
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<th>Q = 16,000</th>
<th>Q = 23,000</th>
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<tbody>
<tr>
<td>lb CG p, ft</td>
<td>15</td>
<td>15</td>
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<tr>
<td>b (Fig. 11)</td>
<td>0.580</td>
<td>0.390</td>
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<tr>
<td>H</td>
<td>75</td>
<td>10</td>
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<tr>
<td>Δh, (assumed), ft</td>
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<td>5.89</td>
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<tr>
<td>ΔA</td>
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<tr>
<td>Lx, (Fig. 12)</td>
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<td>1.16</td>
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<td>w (Fig. 13)</td>
<td>1.84</td>
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<td>Lx</td>
<td>2.04</td>
<td>1.58</td>
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<tr>
<td>L, ft</td>
<td>153</td>
<td>141</td>
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</tr>
<tr>
<td>Lx * Lx = L^2</td>
<td>161</td>
<td>161</td>
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<tr>
<td>d (w), ft</td>
<td>0.00738</td>
<td>0.00133</td>
<td></td>
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<tr>
<td>s (Lx, ft)</td>
<td>1.35</td>
<td>1.32</td>
<td></td>
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<tr>
<td>H.S. upstream = Stage EL + h^* + S.L, ft</td>
<td>328.78</td>
<td>329.91</td>
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</tr>
<tr>
<td>h^* = K* - ΔKc + ΔKo</td>
<td>0.023</td>
<td>0.040</td>
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<tr>
<td>h^* = K^* * Hc = HA * H</td>
<td>0.0193</td>
<td>0.310</td>
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<tr>
<td>D (Fig. 14)</td>
<td>0.18</td>
<td>0.26</td>
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<tr>
<td>h^* = 0.85 (δ - 1)</td>
<td>0.08</td>
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<tr>
<td>Σ (Lx = B + (Hx)</td>
<td>0.13</td>
<td>0.13</td>
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<tr>
<td>H.S. downstream = Stage EL - h^* - S.L, ft</td>
<td>324.45</td>
<td>305.02</td>
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<tr>
<td>Δh = h^* + (S.L - 2H)</td>
<td>4.33</td>
<td>5.63</td>
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**Project:** Huleia Stream  
**Bridge Backwater Analysis**  
**Type 1 Flow**  
**Date:** [Fill in the date]  
**Engineer:** [Fill in the name]  
**Location:** [Fill in the location]  
**Scale:** [Fill in the scale]  
**Sheet No. 6 of 8**
### Backwater Analysis: Type II Flow

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<tbody>
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#### Stage Elevation, ft

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<th>200-yr</th>
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<tbody>
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#### Approach, 60 ft

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#### Approach, 60 ft

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#### Top Width of Flow, ft

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#### Provide F = 0.54

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<tbody>
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#### Upstream F = 0.54

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#### Bridge F = 1.01

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#### Super Critical

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### Backwater Analysis: Type II Flow (Continued)

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#### Channel

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#### Channel

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#### Channel

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#### Channel

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<tbody>
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#### Depth Upstream = h^*

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<tbody>
<tr>
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<td>2000</td>
<td>3000</td>
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**Note:** According to Section 10.3, since h^* for Type II Flow is greater than h^* for Type I Flow, it is assumed that Type II flow occurs.
APPENDIX D

SURVEY OF AQUATIC MACROFAUNA FOR HULEIA STREAM, KAUA'I
STUDY OF AQUATIC MACROFAUNA IN HUALEA STREAM, KAHAI

Submitted to: Austin, Tuxcom & Associates, Inc. by
Andrea S. Tielol, Ph. D.

INTRODUCTION

Stream were an essential part in sustenance and growth of Hawaiian culture. Streams also provide habitat for a variety of aquatic animals which can be divided into two primary groups. To one group, *macrofauna*, belong those too small to be seen and easily identified with the naked eye and to another, *mesofauna*, belong the larger animals. This brief survey deals only with macrofauna, particularly those species which are readily recognizable and/or can be collected or enumerated by established methods. A consideration, important to any work on a stream and its drainage basin, is the *mesofauna* character of most prominent aquatic macrofauna. Amphibious animals reside in streams but undergo larval development in the ocean. Thus, certain fishes, crustaceans, and mollusks must have suitable environmental conditions throughout the stream channel for hatchlings to reach the ocean and postlades to return months later to migrate upstream to their places of permanent residence.

Objectives

The objectives of this study are as follows: 1) to compile a species list of fishes, crustaceans, mollusks, and other large (1/2" minimum size) aquatic organisms living in that part of Hualoa Stream as shown in the map (Fig.1, later); 2) to determine the distribution and relative abundances of the resident aquatic macrofauna; 3) to determine which of these residents have economic value, such as sport or subsistence fishing; 4) to assess the possibility that "endangered," "threatened," and of "special concern" species would be present in Hualoa; and 5) assess the potential impact the construction of a replacement for the Halfway (Hualoa) Bridge in some general way.

Study Area

Tielol and Racotiek (1976) define a stream as surface water flowing in a discrete channel or channel system that discharges to the ocean at a single point. Hualoa Stream is located mostly in the Linole-Koiloa area. It receives discharges from 11 cases and several unamed tributaries. The entire system has about 163 ha of channel. Almost all of the tributaries have been tapped for storage in several reservoirs. The diverted water is used for agricultural use.

A tributary for Hualoa regularly monitored by the U.S.S. and water-quality partial-record station 599 showed an increasing discharge between 15 and 45 cfs in 1975 (USGS 1975). Some physicalchemical features of this particular tributary are: water temperature between 20° and 21°C, pH 7.4, and specific conductivity between 70 and 90 microhos (USGS 1975). A portion of Hualoa's mainstream channel had been modified (Tielol and Racotiek 1976). The same study assigned Hualoa Stream an ecological quality status of exploitative-consumptive, meaning that it has from moderate to low natural and/or water quality.

Review of Literature

Apart from the already mentioneds studies done by the USGS and Tielol and Racotiek, no other published literature is available for Hualoa Stream.

METHODS

Sampling Stations

Four sampling stations were surveyed, two upstream of Halfway Bridge and two downstream. Their approximate locations are shown in Fig. 1. Stream channel length was obtained with the use of a 1:2000 map on photoprints of U.S.S. topographic quad sheets. Elevations were estimated from the same quad sheets.

Station 1 (loc. 722 ft. - 67.7 a.)

This is located immediately upstream of half way bridge, some 5.5 miles of stream channel measured from the stream mouth (Halelelei Falls). Station 1 is first of two stations downstream of half way bridge.
Station 2 (elev. 300 ft = 90 m)
Located more than two miles upstream of Stn 1 and about 0.4 miles downstream of the Halfway Bridge. This is the second of two stations downstream of the bridge.

Station 3 (elev. 360 ft = 110 m)
This station is between the Halfway Bridge and the concrete plant. It is half-mile upstream of Stn 2. This is the first of two stations upstream of Halfway Bridge.

Station 4 (elev. 400 ft = 122 m)
About half-mile upstream of Stn 3, it is located between the unlined waterfall (now dry) and the quarry. Both physical features are marked in the topographic map. This is the second of two stations located upstream of the Halfway Bridge.

Biological
A stretch of about 90 x 1 m stretch of stream channel was examined and animals which could be seen were identified and counted. Boulders, rocks, and stones were examined for mollusks. Data are reported in a semi-quantitative basis. For purposes of this report, "abundant" data were computed to represent animals found in a 20 x 1 m quadrate of stream channel.

*Abundant* (x) means that the species was not seen at that site. *Uncommon* (x) indicates that only one was sighted, while *common* (x) means that between 2 and 5 were observed. *Abundant* (xv) means between 6 and 10 were seen, and *very abundant* (xv) means many individuals, from 11 to 100 or more.

Terms used in designating the origin of animals are: endemic, means occurring naturally in Hawaii only; *indigenous*, means occurring naturally in Hawaii and also elsewhere; *introduced* or *exotic*, means that the animal was brought to Hawaii either intentionally or accidentally; and *native*, includes both endemic and indigenous animals.

Additional terms include *anadromous*, a designation for species which engage in completely free movement between fresh and marine water, not for purposes of breeding (Myers 1969). This behavior involves the passive downstream passage of eggs or larvae to the ocean during freshet flow with later
active upstream migration. A species has economic value if it has sport, recreational, subsistence or commercial value.

Endangered species means a species which is in danger of extinction throughout all or a significant portion of its range (Deacon, et al. 1979). A threatened species is one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (Deacon, et al. 1979). Special concern species are those that could become threatened or endangered by relatively minor disturbances to their habitat or that require additional information to determine their status (Deacon, et al. 1979). These definitions do not have legal status under the Federal Endangered Species Law.

The list of data was checked for endangered, threatened and of special concern species using these publications: USFWS list of Endangered and Threatened Species (1977) and Deacon, et al. (1979).

Hydraulic Residence and Streamside Vegetation

A visual examination was made at each sampling station to determine water clarity, flow velocity, bottom type and riparian vegetation. All of these were determined subjectively. The composition of substrate (bottom type) was approximated (e.g. bedrock > boulders > sand). Riparian vegetation was identified in the field. Trees and shrubs (e.g. mauna) that form the vegetative canopy are listed first, the vegetative ground cover (e.g. California grass) second.

RESULTS AND DISCUSSION

Results are representative of about 9 miles (15 km) of the lower main-stem channel from the mouth (excluding the estuary) to the falls. Since there are additional 56 miles (90 km) of stream channel, such inventories here do not represent species composition or distribution of macroinvertea in the entirety of the stream.

Macroinvertea

At least 12 species of aquatic macroinvertea live in the lower channels of Kula Stream. These are 6 fishes, 2 crustaceans, 2 mollusks, and 2 amphibia.

These animals are listed in Table 1. As far as their origins, 6 are native, 1 is endemic and another is undetermined. There are five (4 fishes, 1 crustacean) species which have some economic values. A brief description of each of these species follow.

1. Acanthobrama ("o'opu-sakena"

The "o'opu-sakena is the largest (up to 35 cm) of the freshwater gobies. The life history of this endemic goby had been studied by Leers (1956). It supports a seasonal, anadromous fishery on the island of Kauai. Big Save Supermarket in Kapa'a had "o'opu sales for sale at $7.99/lb. on November 12, 1962 (Peterson, State Aquatic Biologist, verbal communication). This goby is an obligate anadromous animal and needs suitable environmental conditions throughout the stream channel for the eggs to reach the ocean and the post-larvae (hinana) to migrate upstream to their place of permanent residence. It is widely distributed on all islands, but is found in small numbers on Oahu that it is considered of "special concern" by Deacon et al. (1979).

2. Microgobius dolgulst (smallmouth black bass)

Brought to Hawaii in 1953, this fish grows from one-half to three pounds and is considered a very good sports fish that lives in streams and reservoirs. The smallmouth black bass is distinguished from the largemouth black bass by a less deeply notched dorsal fin. It is generally a smaller fish than the largemouth black bass. This fish is not anadromous.

3. Microgobius salmoides (largemouth black bass)

Introduced from California in 1908, this fish grows from one pound to as much as seven pounds. It is a very desirable fresh water sports fish in Hawaii, lives in streams and reservoirs. The largemouth black bass is distinguished from the smallmouth black bass by a more deeply notched dorsal fin. It is often taken from the same waters as the smallmouth black bass. This fish is not anadromous.

4. Synbranchus macrocephalus (sillago)

This cichlid fish has variable color, from dark brown to very gray, sometimes with brown and black fins. The dorsal fin with 27 -
Table 1. Aquatic Nematodes in the Lower Channels of Island Streams, Kauai (March 1985)

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common/Local Name</th>
<th>Origin</th>
<th>Listing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ameiva annulata</td>
<td>o'opu-marua</td>
<td>endemic</td>
<td>Special concern (Macan, et al. 1999)</td>
</tr>
<tr>
<td>2. Gambusia affinis</td>
<td>acuette fish</td>
<td>Introduced</td>
<td>none</td>
</tr>
<tr>
<td>3. Gambusia siligata</td>
<td>wild puppys</td>
<td>Introduced</td>
<td>none</td>
</tr>
<tr>
<td>4. Micropterus dolomieui</td>
<td>sailmouth black bass</td>
<td>Introduced</td>
<td>none</td>
</tr>
<tr>
<td>5. Micropterus salmoides</td>
<td>largemouth black bass</td>
<td>Introduced</td>
<td>none</td>
</tr>
<tr>
<td>6. Sarotherodon mossambicus</td>
<td>tilapia</td>
<td>Introduced</td>
<td>none</td>
</tr>
</tbody>
</table>

**Other Animals**

29 species and soft dorsal rays. Can attain a weight of less than five pounds. It was brought to Hawaii in 1935 from Singapore. While it usually prefers fresh water found in the mouths of rivers, it can live and reproduce in pure fresh water, in salt water, or in brackish water. The tilapia has very good adaptability and dual utility as bait and food fish. Moderate quantities are sold in local markets. It provides good fishing especially for youngsters. This fish is not anadromous.

5. Cyprinodon variegata (Tabblian prawn)

This introduced, anadromous prawn is an Indo-Pacific stream-dwelling animal which was imported to Hawaii in 1956 (Brosch 1956). Since introduction, the Tabblian prawn has established itself successfully in fresh and brackish waters on all the major islands. Prawns grow up to 10 cm SL (measured from base of orbit of eye to tip of rostrum) while females attain 11 cm SL. Hatching occurs are found throughout the year. It is harvested for food but is sold commercially.

**Distribution and Relative Abundances**

The occurrence and relative abundances of the aquatic animals are shown in Table 2. Two species (o'opu-marua, tilapia) are found in all four stations. Eleven species were found downstream of the Halfway bridge (Stns 1 and 2) while only 8 species were found upstream of the bridge. In general, there is a decrease in the number of species in an upstream direction.

It is interesting to note that the site which harbors the least number of species as well as the lowest abundance (except for tilapia) is that site between the bridge and the canary plant (Stn 2). Very fine silt was observed on the left bank, indicating that at certain times, the water may be subject to turbidity (see nature of bottom, Stn 2, Appendix A).
Table 2. Distribution and Relative Abundances of Aquatic Macroflora in Lower Bulsa Stream, Kaua‘i (March 1983)

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Station 1</th>
<th>Station 2</th>
<th>Station 3</th>
<th>Station 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FISH</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Lipotheres albatriss</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>2. Hemichromis affinis</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>3. Labidochromis chisum</td>
<td>0</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>4. Lepomis cyanellus</td>
<td>++</td>
<td>+</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>5. Lebistes retusus</td>
<td>+</td>
<td>0</td>
<td>0</td>
<td>++</td>
</tr>
<tr>
<td>6. Lebistes retusus bimaculatus</td>
<td>+++++</td>
<td>+</td>
<td>+++++</td>
<td>0</td>
</tr>
<tr>
<td><strong>FISH</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Lepomis reticulatus</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>2. Lepomis reticulatus</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>3. Lepomis reticulatus</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>4. Lepomis reticulatus</td>
<td>+++++</td>
<td>+</td>
<td>+++++</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bivalve</th>
<th>Station 1</th>
<th>Station 2</th>
<th>Station 3</th>
<th>Station 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pteria palustris</td>
<td>+</td>
<td>+</td>
<td>0</td>
<td>+</td>
</tr>
<tr>
<td>2. Pteria palustris</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+</td>
</tr>
</tbody>
</table>

The endemic and economically valuable 'ō'opu-nakes has low abundances (uncommon) in the sites immediately upstream (Station 1) and immediately downstream of the Halfway Bridge (Station 2). Both of these stations are within a unique downstream of the coral plant.

**Physical Features**

Appendix A lists the physical features of all four sampling stations. The uppermost station (Station 4) is mostly of bedrock and the rest are of the boulders-gravel-sand composition. A common feature of the four stations is the algae covering most substrates. The predominance of algae on the substrate could be due to a combination of warmer waters and mild organic pollution, both of which stimulate algal growth. Algae lower the dissolved oxygen content of the water through respiration at night and increase the biochemical oxygen demand upon decomposition after death (Yates and Coon 1955).

**Riparian Vegetation**

The riparian plants are typical of streamside vegetation in well-developed areas. Most of the Bulsa drainage area is under sugar cane cultivation. The forest contains mostly of exotic plants. The vegetative strip (buffer strip) is between 10 and 30 meters wide. Appendix B enumerates the plants found on both banks of the sampling stations.

**Conclusions**

1. There are at least 18 species of aquatic macroflora living in the sites surveyed.
2. Only two species were found in all four stations. More species live downstream of the Halfway Bridge than upstream.
3. There are five economically valuable species, four fishes and one crustacea. The endemic 'ō'opu-nakes is sometimes sold commercially. In addition, the 'ō'opu-nakes has biological value due to its endemic. No dollar value can be assigned to this feature.
4. The 'ō'opu-nakes is listed as of "special concern" although this listing is not legal under the Federal Rare and Endangered Species Law.
5. We did not find *Pentostigma concolor* (‘ō’opu-alama‘a) or *Syringodium sitecum* (‘ō’opu-napili) in the sites surveyed. Since the sites surveyed represent

| Number of species | 10 | 0 | 5 | 6 |
only 9 acres (14 ha) of 65 acres (102 ha), we cannot definitely say that these embankments, napoamoa species are also absent in the upper reaches of the stream.

6. Two of the five species with economic value are napoamoa. The 'o'opus-made and the Tahitian green nunulei pass away from the stream to the sea and back upstream again.

JUVENAL EFFECTS AND RECOMMENDATIONS

Most streamside construction activity usually entails the construction of feeder roads, temporary offers and storage buildings and space. These results in removal of streamside vegetation, scraping and grading of the ground. The potential impacts of such activities are discussed in this section. Some recommendations, in a very general way, are given to mitigate their deleterious effects.

Elevated Water Temperatures

The removal of riparian vegetation in the construction site and immediate vicinity will expose that part of the stream to insolation, resulting in elevated water temperatures and excessive evaporation. Excessive evaporation may result in reduced stream flow. Increased stream flow means higher water temperatures. Work done by Takeda and Kuroki (1970) show that stream channels without riparian vegetation canopy have higher water temperatures than stream with such canopy.

High water temperatures can have undesirable affects on the quality of water for fish production. High temperatures will result in increased maintenance energy requirements of aquatic animals (Brown 1957, Burns 1972). Excessive high temperatures can be lethal to fish and other aquatic animals. Firthway (1977) found that the lethal temperature for adult 'o'opus-made was between 30.2 and 30.6°C with 305 (71°F) of the fish dying at 30.1°C. The post-larvae 'o'opus-made were more tolerant with range for mortality intervals (first death to final death) between 30.0 and 30.5°C with 320 at 30.1°C (Firthway 1977, p. 36). However, little is known about the effect of elevated temperature on the viability of the postlarvae. In addition, Firthway's lethal temperature values were obtained under controlled laboratory conditions where only temperature was the variable parameter. The lethal temperatures could be lower in the field if the stream is also turbid as well as polluted. The exotic tilapia has been found more handy with the adults surviving at between 42.7 and 43.1°C with 320 at 42.5°C (Firthway 1977, p. 36). Thus, if the elevated temperatures persist in the stream for long periods, the stream will only have tilapia and other exotic species. Warmer water allows unwanted or less valuable fish to become established. These "lesser" fish increase competition for the available food and habitat for the endemis, sport and commercial fishes. Such competition will cause the more desirable fish to decline in numbers.

High Sedimentation and Excessive Sedimentation

If the streamside vegetation ground cover is also removed, increased turbidity and excessive sedimentation due to erosion may also result. Because the nearby land is in cultivation, it is possible that soil organic pollution may also result. Petroleum by-products dripping from construction vehicles in another potential source of pollution.

The impact of road (and bridge) construction on the stream and the fauna comes from the resulting erosion and silting in the stream. Water turbidity and excessive sedimentation will alter the character of the stream. Burns (1972) reported turbidity greater than 3,000 ppm resulting from such construction. Excessive sedimentation may also alter the biological character of the stream. Fine particulate matter will become suspended in the water increasing turbidity and decreasing light penetration resulting in reduced primary productivity. Fine particles also have the effect of clogging the gills of fishes, which will lead to suffocation. The tilapia, largemouth black bass, smallmouth black bass, 'o'opus-made and the Tahitian green have been detrimentally affected. Settling of particles in rapids and riffles will reduce the natural habitats of the economically valuable endemic 'o'opus-made which have well oxygenated, clear flowing riffles. Buist et al. (1975) list additional pollutants and discuss their effects.

Recommendations

The streamside vegetation on lower Huleia Stream is limited to vegetative strips on both banks. It is known that the presence of a well-designed buffer...
strip will control stream temperatures and minimize changes in the stream macrofauna (Fisher and Likens 1973). What has not been known is which characteristics of buffer strips are important in this control. Because of the inverse relationship between temperature change and discharge, buffer strips are very effective for the control of water temperatures on these small streams such as Huleia. Brown and Brester (1972) gives a value of

between 100 and 200 feet (30 - 60 m) standard width for all buffer strips will assure adequate protection for most streams. As for Huleia, the streamside vegetative strips are already narrower than 100 ft (30 m) in most places. Any more vegetative clearing could subject the stream to excessively elevated water temperatures as well as increased turbidity due to soil erosion. It is recommended that further riparian clearing should be kept to the absolute minimum.

If at all possible, no new feeder roads should be built. There are already existing feeder roads which could fill such needs. This will minimize soil erosion and the resulting turbidity and salinization.

LITERATURE CITED


Dublin, New York.


### Appendix A

**Some Hydrochemical Characteristics of Sampling Stations in Lower Nualaa Stream, Kauai (March 1955)**

<table>
<thead>
<tr>
<th>Sampling Station</th>
<th>Water Clarity and Stream Flow</th>
<th>Nature of Bottom</th>
<th>Width and Nickstream Depth (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water clear; slow flow</td>
<td>Boulder, gravel, sand covered with algae</td>
<td>y = 9.8; d = 0.06 - 1.2</td>
</tr>
<tr>
<td>2</td>
<td>Water clear; slow flow</td>
<td>Boulder, gravel; boulders covered with blue-green algae and some filamentous algae. Deeper pools covered with leaf litter.</td>
<td>y = 6; d = 0.15 - 0.20</td>
</tr>
<tr>
<td>3</td>
<td>Water clear; flow slight faster than of Stn 2</td>
<td>Gravel; gravel is covered with algae. Bottom of pools covered with leaf litter. Left bank covered with a thick layer of very fine silt.</td>
<td>y = 3; d = 0.15 - 0.20</td>
</tr>
<tr>
<td>4</td>
<td>Water clear; flow slight faster than of Stn 3</td>
<td>Bedrock, few boulders. Small pockets of gravel and sand in riffle portion. Bedrock covered with algae.</td>
<td>y = 1.2; d = 0.10 - 0.40</td>
</tr>
</tbody>
</table>

### Appendix B

**Dominant Streamside Vegetation on banks of Sampling Stations in Lower Nualaa Stream, Kauai (March 1955)**

<table>
<thead>
<tr>
<th>Sampling Station</th>
<th>Biparison Vegetation right bank</th>
<th>Biparison Vegetation left bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>guava (<em>Psidium guajava</em>)</td>
<td>California grass</td>
</tr>
<tr>
<td></td>
<td>Java plum (<em>Diospyros catesba</em>)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>California grass (<em>Eucalyptus salicina</em>)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>mango (<em>Mangifera indica</em>)</td>
<td>mango</td>
</tr>
<tr>
<td></td>
<td>guava</td>
<td>Java plum</td>
</tr>
<tr>
<td></td>
<td>Java plum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>California grass</td>
<td>California grass</td>
</tr>
<tr>
<td>3</td>
<td>guava (<em>Psidium guajava</em>)</td>
<td>Juice box (<em>Sambucus capensis</em>)</td>
</tr>
<tr>
<td></td>
<td><em>Alnus rubra</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td>California grass</td>
<td>California grass</td>
</tr>
<tr>
<td>4</td>
<td>guava (<em>Psidium guajava</em>)</td>
<td>Java plum</td>
</tr>
<tr>
<td></td>
<td><em>Alnus rubra</em></td>
<td>California grass</td>
</tr>
</tbody>
</table>

Note: Species comprising the vegetative canopy are given first; the vegetative ground cover follow.
Air Quality Comments

The Draft Environmental Impact Statement (DEIS) should:

a. Include the results of recent monitoring for TSP at Lihue,
   b. compare those data with applicable air quality standards, and
   c. describe the effects upon air quality resulting from project construction and operation.

404(b) Permit Comments

The Honolulu U.S. Army Corps of Engineers should be contacted to determine the need for a Section 404 fill permit for any portion of the proposed project. If a permit is required, the EPA will review the project in accordance with 40 CFR 230 promulgated pursuant to Section 404(b) of the Clean Water Act. Our evaluation would focus on the maintenance of water quality, and the protection of wetlands, fisheries and wildlife resources. If applicable, the results of further study should indicate the amount of dredging required, potential disposal sites, types of fill material to be utilized, and quantities to be discharged into waters and wetlands that fall under Section 404 jurisdiction.

Sincerely yours,

[Signature]
Jake McNamara, Director
Surveillance and Analysis Division
Attachment
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