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IN REPLY REFER TO:

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MAR 18 1999 '99 MAR 22 A 8:31

REC. OF ENVIRONMENTAL
QUALITY CONTROL

TO: GARY GILL, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: KAZU HAYASHIDA 
DIRECTOR OF TRANSPORTATION

SUBJECT: FINAL ENVIRONMENTAL ASSESSMENT
HANA HIGHWAY, REPLACEMENT OF TIMBER BRIDGE
UAOA BRIDGE AND APPROACHES, DISTRICT OF MAKAWAO
ISLAND OF MAUI
PROJECT NO. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

The Department of Transportation has reviewed the comments received during the 30-day public comment period which began on November 23, 1998. We have determined that the project will not have significant effects and issued a FONSI. Please publish this notice in the April 8, 1999 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the final EA. Please call Emilio Barroga, Jr. at 692-7546 if you have any questions.

Enc.

1999-04-08-MA-~~FEA~~-Hana Highway
Bridges Replacement

APR 8 1999

FILE COPY

February 1999

**HANA HIGHWAY
REPLACEMENT OF THREE TIMBER BRIDGES
UAOA BRIDGE AND APPROACHES
MAKAWAO DISTRICT, MAUI COUNTY, HAWAII
PROJECT NO. BR-036-1(5)**

**Final
Environmental Assessment**

Prepared Pursuant to
Hawaii Revised Statutes, Chapter 343
and
Hawaii Administrative Rules, Title 11, Chapter 200

by the

State of Hawaii Department of Transportation
Highways Division

February 1999

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Date of Approval

Kazu Hayashida

Kazu Hayashida, Director
State of Hawaii Department of Transportation

The State of Hawaii Department of Transportation, Highways Division (HDOT) proposes to replace an existing timber bridge on Hana Highway over Uaoa stream with a new bridge. The project consists of construction of a new concrete bridge South of the existing bridge, realignment of the bridge approach roadways, and removal of the existing bridge. HDOT has determined that the proposed action will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI).

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I. PROJECT OVERVIEW

A. PROJECT LOCATION

Uaoa Stream Bridge is located on the Hana Highway (Route 36) along the north coast of Maui, east of Haiku Town TMK:2-8-4: 55,56,59,60 as shown on Figures 1, 2 and 3. A large reservoir, the Peahi Reservoir, is located south of the bridge along the stream. The existing two lane wooden bridge crosses over Uaoa Stream and the gulch. The side slopes of the gulch drop down steeply to the gulch floor and streambed.

B. EXISTING ROADWAY SYSTEM

The Hana Highway is the sole access road to rural eastern side of Maui. It begins in Kahului town as Highway Route 36 and winds its way to Kapaalaea Reservoir where it changes to Route 360. This road takes you to Hana, Maui. From Hana, the Route changes to Highway No. 31 and continues on to Ulupalakua where it changes again to Route 37 going through Upcountry Maui. At the proposed project site, the Hana Highway is a two lane paved all weather roadbed with appropriate signal markings and speed limit signage.

II. PROJECT NEED AND PROPOSED ACTION

A. DESCRIPTION OF PROJECT NEED

The proposed bridge project will require realignment of the approach highways and removal of the existing bridge structure along the streambed. The existing bridge has been examined by the Federal Highway Administration in accordance with the provisions of the American Association of State Highway and Transportation Officials' policy. It has been determined that a two lane concrete bridge will be designed and built to replace the Uaoa timber bridge.

B. DESCRIPTION OF THE PROPOSED ACTION

The project consists of construction of a new concrete bridge South (upstream side) of the existing wooden bridge, realignment of the bridge approach roadways, and removal of the existing bridge. See Figures 4 to 7 on pages 7 to 10, respectively.

The proposed bridge will be wide enough to accommodate two (2) - twelve (12) feet travel lanes with ten (10) feet shoulders. The proposed bridge will span the Uaoa stream and gulch approximately 310 feet from abutment to abutment. Approximately 600 feet of approach roadways on each side of the existing bridge abutments will be affected by the proposed project. Land for the additional right-of-way will need to be acquired by the State on the south side of the existing right-of-way.

The proposed bridge will be designed in accordance with the 1994 AASHTO LRFD Bridge Design Specifications and subsequent interims. The design speed for the proposed roadway will be 40 miles per hour.

The preliminary estimated construction cost for the proposed project is in the order of magnitude of \$13.5 million. Duration of construction is projected to take approximately 20 months. The construction schedule is undetermined at this time.

III. ALTERNATIVES CONSIDERED

The following alternatives were considered to address the need to correct deficiencies of the existing bridge at Uaoa Stream.

A. No Action Alternative

The retrofit or replacement of Uaoa Bridge is considered essential to the health and safety of the motorists driving along the Hana Highway. The age and design criteria of this bridge require remedial design and construction to bring the bridge up to current construction standards. No action alternative will perpetuate the existence of an old timber bridge which does not meet the current design standards.

B. Rehabilitate and Widen Existing Bridge

Due to the deteriorated state of the existing wooden bridge and the number of deficiencies requiring upgrading to conform to current design standards, this alternative could be considered equivalent to complete replacement of the bridge.

This alternative would require a detour road. A county detour road may be available, however, was deemed to be not economically feasible due to its length and cost of improvements required to upgrade to acceptable standards. Funds appropriated are for bridge replacement, not for upgrade of county roads.

Advantages of this alternative are:

1. work for approaches to bridge would be minimal; and
2. no additional right-of-way acquisition required.

C. Replace Existing Bridge with New in Present Location/Alignment

A detour road would be required for this alternative. A county detour road may be available, however, was deemed to be not economically feasible due to its length and cost of improvements required to upgrade to acceptable standards. Funds appropriated are for bridge replacement, not for upgrade of county roads. The advantages are similar to alternative "B".

D. New Bridge on North (Downstream) Side of Existing Bridge

This alternative was not considered acceptable because of the presence of an irrigation tunnel owned by East Maui Irrigation Co. running along the North side of the existing bridge. In addition, location of columns and footings for the new bridge would have to be restricted by the close proximity of a steep cliff and waterfall on the north side.

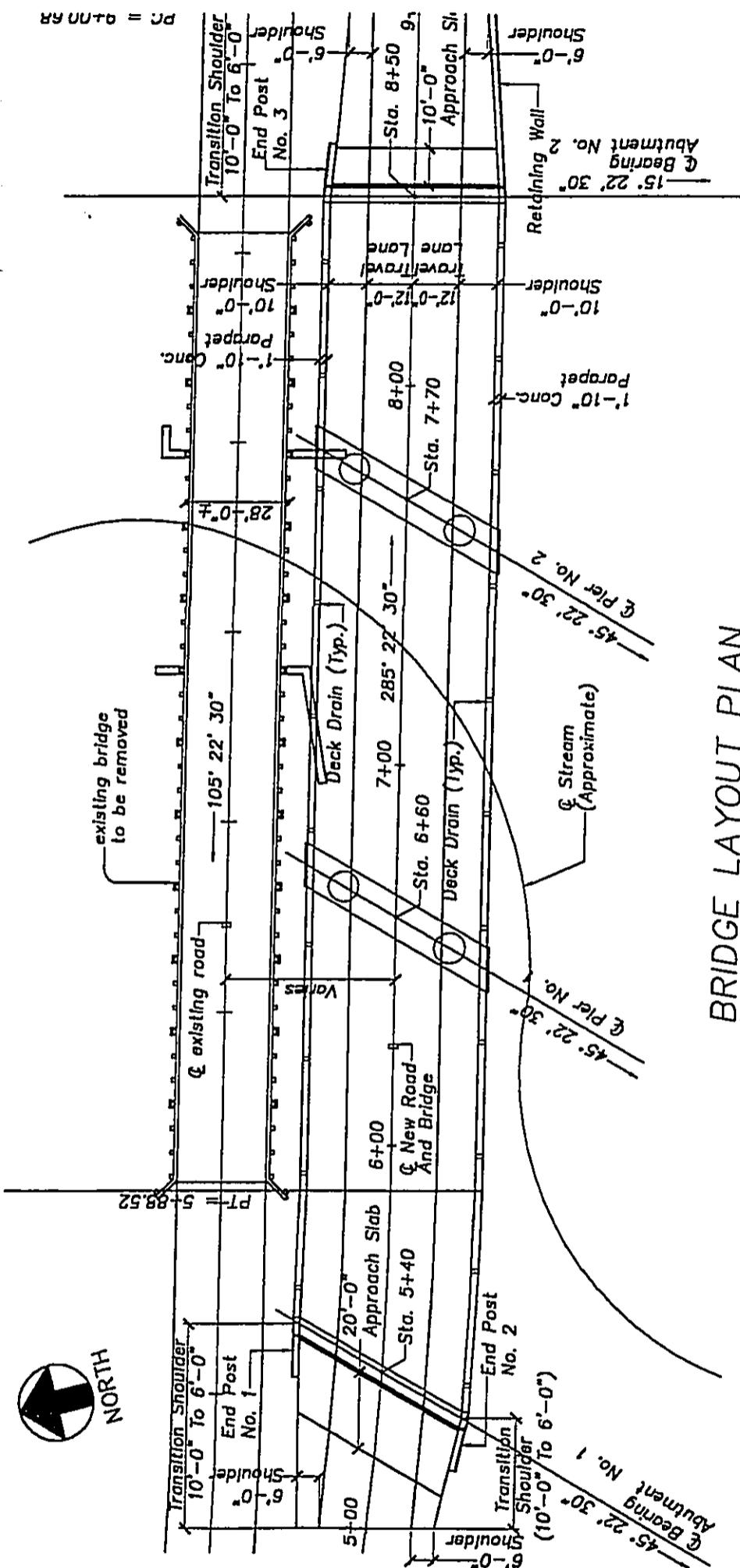
E. New Bridge on the South (Upstream) Side of Existing Bridge

This alternative presents several challenges such as:

1. relatively steep slopes at the west (Wailuku) abutment;
2. retaining walls will be required along the South (mauka) side of the east (Hana) approach roadway;
3. the stream meanders alongside, under and across portions of the bridge, exposing some of the piers to scour action;
4. a pier footing could be affected by an irrigation intake tunnel; and
5. land acquisition of additional right-of-way will be required.

Other than satisfying the need for a wider, safer structure to serve the needs of the community for years to come, this alternative will not require the need for a detour road. While the new replacement bridge is being constructed, the existing road/bridge can be used with limited interruption until switch-over to the new roadway alignment.

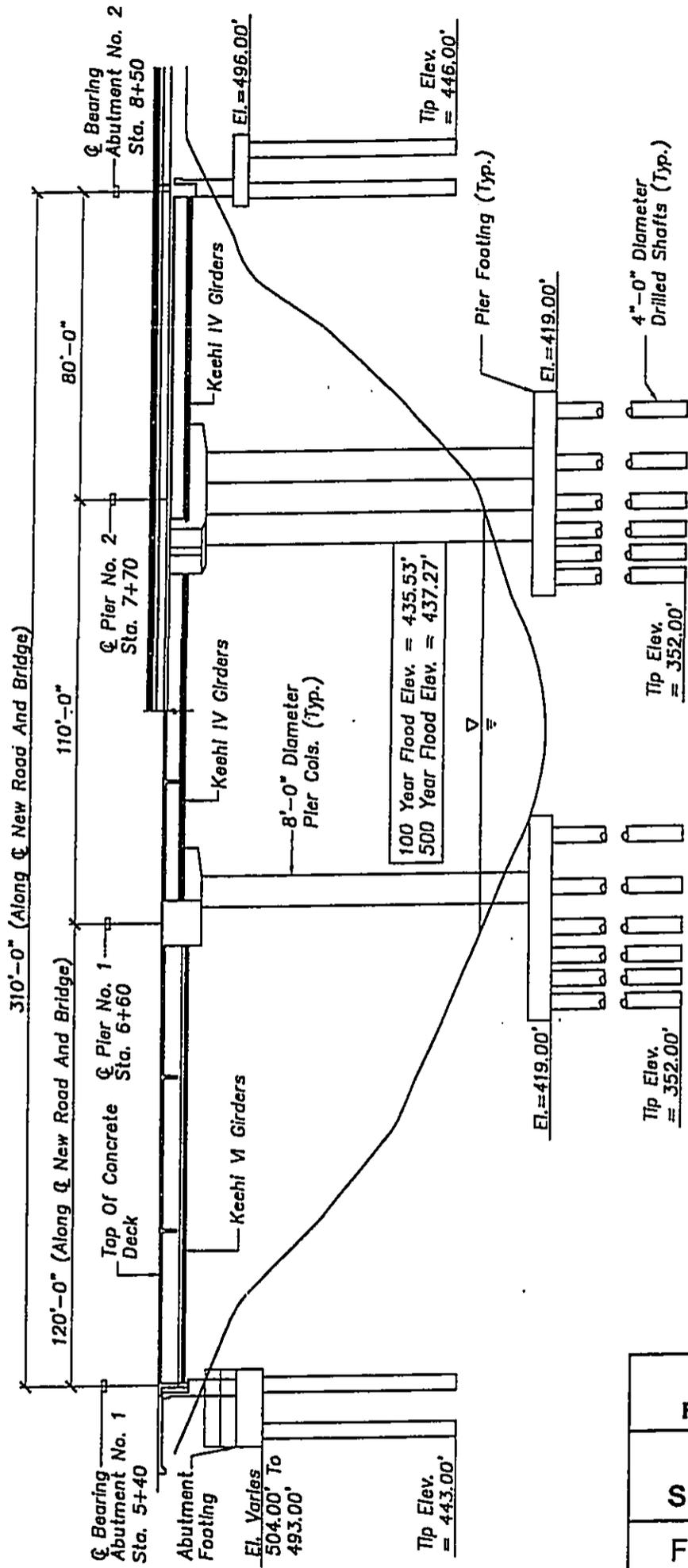
Based on previous investigations by the State Department of Transportation and weighing the advantages and disadvantages of the alternatives considered, it was determined that Alternative "E" was the preferred alternative.



BRIDGE LAYOUT PLAN
Scale: 1"=40'

UAOA BRIDGE F.A.P. No. BR-036-1(5)	
BRIDGE PLAN	
Figure 4	Page 7

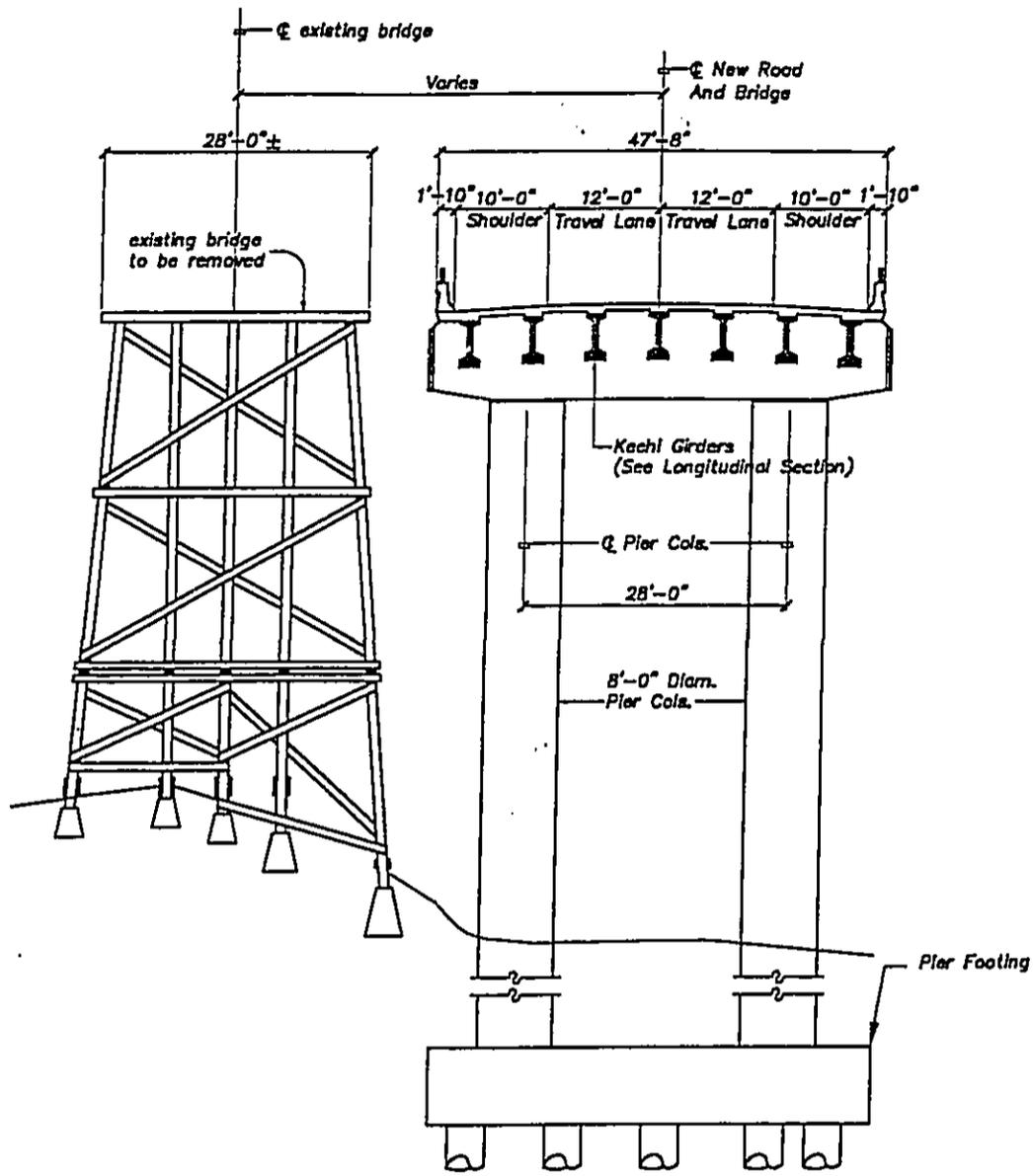
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LONGITUDINAL SECTION / ELEVATION

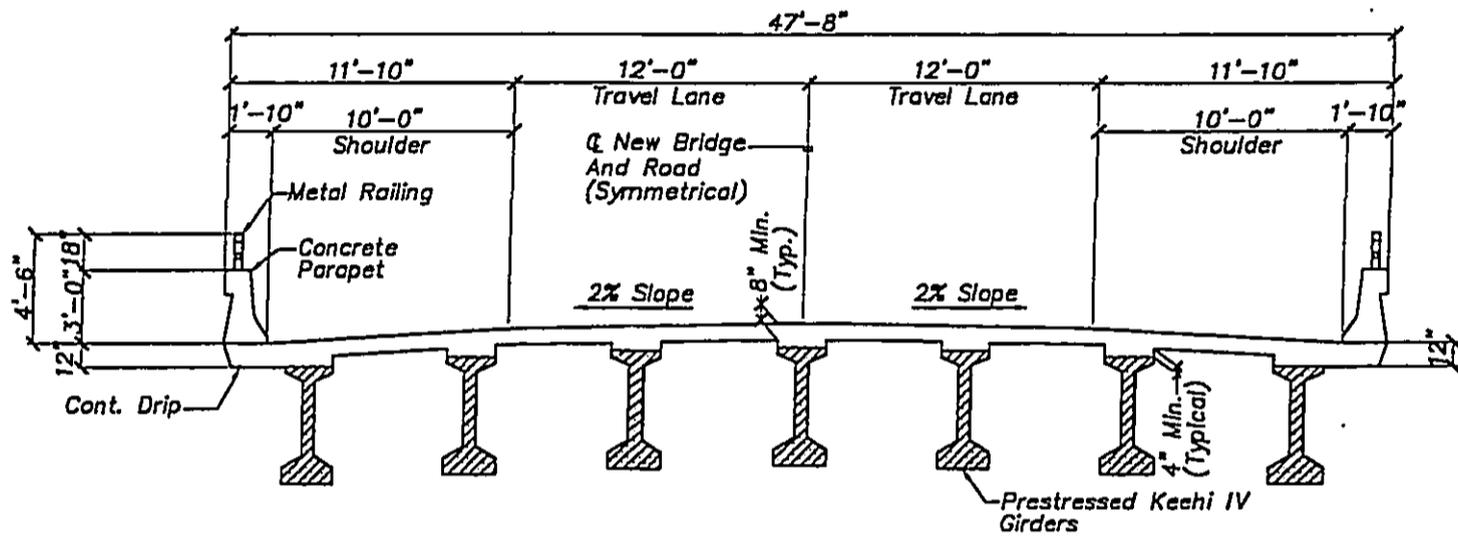
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<p>UAOA BRIDGE F.A.P. No. BR-036-1(5)</p>	
<p>LONGITUDINAL SECTION/ELEVATION</p>	
Figure 5	Page 8



TYPICAL CROSS SECTION
 Scale: 1"=20'

UAOA BRIDGE	
F.A.P. No. BR-036-1(5)	
CROSS SECTION	
Figure 6	Page 9



NORMAL DECK SECTION AT KEEHI IV GIRDER
 Scale: 1/8"=1'-0"

UAOA BRIDGE	
F.A.P. No. BR-036-1(5)	
DECK SECTION	
Figure 7	Page 10

IV. CONSTRUCTION METHODOLOGY

The project consists of construction of a new concrete bridge mauka of the existing wooden bridge crossing Uaoa stream and gulch. The proposed bridge consists of three-spans with two piers on each side of the existing stream. Each pier is supported by concrete footings bearing on concrete drilled shafts. The top of footing elevation will be a minimum of three feet below the existing stream bed elevation. Although the stream section and alignment after construction will remain similar as before construction, installation of the new pier footings will require construction work to encroach partially into the limits of the stream bed.

A general contractor for the project has not yet been selected. Therefore, actual methodology of construction cannot be determined at this time. However, details, guidelines, precautions and restrictions will be provided for the contractor. A method/sequence of construction for the bridge work is as follows:

1. Install silt curtains within stream around limits of cofferdam for pier footing(s). A second line of silt curtains should be installed downstream. Water quality should also be monitored before, during and after construction.
2. Install cofferdam around pier footing(s) to limit surface water from stream to interfere with excavation and concrete placement operations. This will also assist in protecting the stream from being contaminated by the construction work. The cofferdam will likely consist of a series of steel sheet pilings driven a certain depth around the perimeter of each pier footing with structural steel walers and bracings to support the retained soil.
3. Install pier drilled shafts, footings and columns. At the contractor's option, the drilled shafts could be installed prior to excavation for the pier footings. A driller will be brought to the site to drill 48-inch diameter holes for the drilled shafts. The depth is estimated to be about 70 feet below the pier footing. Actual depth will depend on load test and site conditions. After each shaft is drilled to the required depth, reinforcing steel and concrete will be placed within 24 hours. Dewatering will not be required for placement of drilled shaft concrete.

After all drilled shafts for a pier has been installed, the contractor will excavate to the bottom of footing elevation, trim the drilled shafts to the proper height, install the footing reinforcing steel and place concrete for the footing. Dewatering may be required. Measures will be taken to properly dispose of this water. Most likely the water will be pumped to a designated catchment area for proper handling before being reintroduced into the stream or surrounding area.

It is estimated that each pier will require excavation of approximately 1,500 cubic yards of material. The material removed during this excavation could be temporarily stored within the right-of-way and eventually used as backfill with any excess hauled away to an approved County disposal site.

After concrete for the columns have been placed, backfilling around and over the footings can be done. Removal of cofferdam shall be coordinated to least impact the stream.

4. Construct abutments at each end of the bridge. The contractor will be required to provide barriers to protect the stream from debris and excavation materials during the installation of drilled shafts and footings for the abutments.
5. Construct bridge superstructure. Installation of concrete pier caps over columns will be sequenced such that they will also serve as platforms for the girders to span unsupported between abutments and piers. No shorings from the stream bed are required for construction of the bridge superstructure. Crane(s) will be used to set the precast prestressed girders in-place. The forms for the cast-in-place concrete deck slab will be supported solely by the girders.
6. Removal of existing wooden bridge. After the new bridge and approach roadways are completed, the existing bridge will be dismantled and disposed at an approved site. Prior to landfill disposal, existing creosote timber members shall be sampled and tested in accordance with County of Maui, Department of Public Work and Waste Management procedures to determine if they should be treated as hazardous. The existing concrete piers and footings will be abandoned in-place. No work for this phase will be performed within the stream bed below the high water mark. Silt curtains and protective barriers will be required to remain in-place until all work is completed and grassed areas over graded and backfilled areas have taken hold. Clean up and removal of all debris will occur after all phases of work are completed.

V. POTENTIAL IMPACTS AND MITIGATION MEASURES

A. IMPACTS TO THE PHYSICAL ENVIRONMENT

1. Surrounding Land Uses: The proposed project site is located along the Hana Highway (Route 36) along the north coast of Maui, east of Haiku Town. The existing two lane wooden timber bridge crosses over Uaoa Gulch and the stream. The side slopes of the gulch drop down steeply to the gulch floor and streambed. With the exception of minimal traffic impacts due to placement of construction equipment, there will be non-significant impacts to small pockets of residential housing located on Hana Highway or on roadways previously used for cane haul trucks.
2. Threatened or Endangered Species: Char & Associates find in their field work and analysis for the proposed site, that the vegetation within the areas of the proposed new bridge structure, is dominated largely by introduced species such as rose apple, Hilo grass, guava, Java Plum, and an assemblage of weedy herbaceous species commonly associated with agricultural fields and roadsides. None of the plants found during the field studies is a

threatened or endangered species; nor is any plant considered a species of concern (U.S. Fish and Wildlife Service 1997). All of the plants can be found in similar environmental habitats throughout the Hawaiian Islands.¹

3. Wetlands: There are no known wetlands as defined by soil and vegetation types in the proposed project site.
4. Air Quality: At the present time, the traffic volume on the Hana Highway is limited to the residents of north-eastern Maui with an occasional tourist driving to Hana. Consequently, the impact from vehicular emissions is not considered major in terms of negative air quality values.

During the construction phase, the air quality from construction equipment, i.e. generators, front-end loaders, cranes, drilling equipment, material delivery trucks, and miscellaneous onsite equipment will not impact the adjacent environs.

5. Noise Characteristics: Negative impact from noise characteristics due to construction will not be major in terms of impact. There are no established Urban communities located in the immediate proximity of the proposed bridge site. Adjacent pockets of residential units are in the general vicinity, but do not present a significant concern for the temporary construction related noise. State Department of Health noise standards require the contractor to control construction equipment noise with sound muffling devices.
6. Scenic and Open Space Resources: Due to the nature of the proposed bridge design, there will be a minimal and insignificant impact on Scenic and Open Space Resources. The proposed concrete bridge and realigned road will be at approximately the same elevation as the existing road and bridge. The proposed project will not impact current scenic views or any ridge lines in the area.
7. Archaeological Resources: An archaeological inventory survey was conducted by Pacific Legacy, Inc. Dr. Paul L. Cleghorn, Ph.D. in the vicinity of the Uaoa Bridge, in Haiku, Maui.² Cleghorn concludes that, "None of the archaeological resources found at Uaoa Gulch (the current wooden timber Uaoa Bridge; the irrigation ditch complex; a historic grave; and a small stone terrace platform) appear to be significant based on any of the National Historic Register of Historic Places significance criteria." The grave and terrace platform are located outside of the limits of the construction activities

¹Char & Associates, *Botanical Resources Assessment, Uaoa Bridge Replacement*, April 1998.

²Pacific Legacy, Inc., *The Results of an Archaeological Inventory Survey at Uaoa bridge*, January 1999.

for this project and should not be adversely impacted.

If, during the initial land altering activities any archaeological features, or deposits, including human burials, are encountered, work in the immediate vicinity should halt. A professional archaeologist shall be contacted to undertake recording and treatment in strict compliance with the requirements of the Department of Land and Natural Resources.

8. Biological Assessment of Uaoa Stream/Gulch: Pacific Aquatic Environmental, Inc. (PAE) conducted a biological assessment of Uaoa Gulch for the Uaoa Highway Bridge Environmental Assessment.³ These surveys assessed native aquatic and endangered bird species that may occur in areas potentially affected by the Uaoa Bridge construction project. PAE concluded that "Native endangered species are not impacted by the proposed project since it is a very remote possibility that native forest birds such as Iiwi, Apapane, or others still inhabit this low elevation area."

PAE also concluded that no adverse impacts are expected to occur to native stream biota due to the construction of the Uaoa Bridge. This is due almost entirely to the fact that Uaoa Gulch is an intermittently flowing stream from Peahi Reservoir to an unnamed waterfall downstream of Uaoa Bridge.

9. Erosion Control: The project includes excavation and backfilling operations on sloping areas within the gulch for the new pier footings and columns. The contractor will be required to provide synthetic erosion control mats where necessary on bare slopes directly affected by the construction activities to allow hydro-mulched or seeded areas an opportunity to provide adequate ground cover.
10. Water Quality: Water resources within the project area will be required to be protected through Best Management Practices. Installation of the new pier footings will require construction work to encroach partially into the limits of the existing stream bed. As noted in the construction methodology section, the contractor will be required to provide silt curtains at strategic locations to minimize contamination of water resources. Water quality of the Uaoa Stream will be monitored before, during and after construction.

In addition, the following measures will be incorporated to minimize the degradation of water quality and impacts to wildlife resources and habitats:

- 1) no project-related materials will be stockpiled in the streambed;

³Pacific Aquatic Environmental, Inc., *Aquatic and Avian Species Assessment of the Uaoa Highway Bridge Construction Project*, May 20, 1998.

- 2) all project-related materials should be placed or stored in ways to avoid or minimize disturbance to the aquatic environment;
- 3) all maintenance equipment placed in water should be free of pollutants;
- 4) no contamination of the aquatic environment (trash or debris disposal, etc.) should result from project-related activities;
- 5) activities carried out in the streambed should be restricted as much as practicable to periods when the stream is dry or when there is no rain, in order to limit erosion and downstream siltation; and
- 6) a contingency plan to control accidentally spilled petroleum products during construction should be developed.

B. IMPACTS TO THE COMMUNITY SETTING

1. Land Use and Community Character: Existing land uses will not be impacted by the proposed action. Existing land uses remain agricultural, and since the demise of Sugar, the lands are fallow.
2. Population for the Hana District in 1992 was 1895 residents.⁴ This does not include transients, visitors, and other temporary non-residents. The proposed project will not directly impact unplanned population growth.
3. Economy of the area will not be impacted substantially. The project may temporarily benefit the community by providing construction employment and opportunities for the neighboring businesses. At this time, the dollar contributions have not been determined.
4. Police, Fire, and Medical Services will experience improved mobility due to the proposed project. Safety in vehicular traffic flow and also from seismic episodes will increase as the result of the planned improvements.
5. Recreational Services will remain essentially at the current values. The planned improvements will not materially affect existing recreational ocean activities.
6. Education Services will experience a higher degree of safety, with particular attention to multi-passenger school buses. There is no direct physical impacts due to the implementation of this proposed project.

⁴U.S. Census of 1990, District of Hana.

C. IMPACTS TO THE INFRASTRUCTURE

1. Roadways will be impacted during the construction phase with lane closure due to transport of labor, equipment and materials. A new bridge will be built adjacent to the existing bridge, which will be kept open and in operation for the maintenance of traffic flow during the construction period.
2. Drainage will not be significantly impacted on a long term basis, but could experience temporary construction related impacts. The Contractor will have to install Best Management Practices (BMP) as noted previously noted to mitigate these temporary concerns.

VI. DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

A. Agency Determination

Pursuant to Hawaii Administrative Rules Title 11 Chapter 200, the State Department of Transportation determines that the proposed action will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI).

B. Significance Criteria

In accordance with Section 11-200-12 of the Hawaii Administrative Rules, the agency must consider every phase of a proposed action, the expected primary and secondary consequences, and the cumulative as well as the short and long-term effects of the action. The following is the 13 significance criteria for consideration and the State's reasons for supporting the FONSI.

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The proposed project will not involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

The proposed project will not impact scenic views of the ocean or any ridge lines in the area. The new concrete bridge and realigned road will be at approximately the same elevation as the existing road and bridge. The bridge and approaches are located outside of the County's Special Management Area (SMA).

In accordance with the State Historic Preservation Officer, Uaoa Bridge has not been recommended to be listed on the Hawaii or National Register of Historic Places, individually or as part of the Hana Historic Bridges District. Therefore, replacement of this bridge will have "no effect" on the historic

character of the Hana Historic Bridges District.

As previously noted, no significant archaeological resources are known to exist based on any of the National Historic Register of Historic Places significance criteria. However, if any archaeological features, or deposits, including human burials, are encountered during construction, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

An underground irrigation tunnel system owned by East Maui Irrigation Co. exists adjacent to the North (makai) side of the existing bridge and crosses under the proposed bridge to an intake tunnel on the South (mauka) side linking with the stream and the existing Peahi reservoir. Precautions will be imposed by the construction activities to protect the tunnels and water resources from damage.

2. Curtails the range of beneficial uses of the environment.

The project does not curtail the range of beneficial uses of the environment. The new roadway alignment for the new bridge and approaches is located where the grades are relatively steep and unsuitable for most agricultural or recreational activities.

When completed, the new wider bridge will provide an increase in beneficial uses of the environment for vehicular as well as pedestrian traffic by providing improved safety.

3. Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

The proposed project does not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter, HRS. In brief, the State's environmental policy is to conserve the natural resources and enhance the quality of life.

No known significant natural or cultural resources will be destroyed. With a more durable and safer bridge, the quality of life for the community and the users will be enhanced.

4. Substantially affects the economic or social welfare of the community or State.

The project does not substantially affect the economic or social welfare of the community or the State. The proposed project will not negatively or

significantly alter existing residential areas. Population growth and land use changes should be affected minimally. The construction employment created and the economic activities generated by this project is not expected to have substantial effects to the community or the State.

5. Substantially affects public health.

The project does not substantially affect public health. Upon its completion, construction of the new bridge and approaches will have positive impacts in terms of traffic and safety as compared to the "no action" alternative. The project will generate temporary noise, dust, and water quality impacts during the construction. Measures to minimize these impacts will be implemented during the construction period.

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

The project does not involve substantial secondary impacts, such as population changes or effects on public facilities. This project is to replace a deficient bridge with respect to load carrying capacity, deteriorating structural members, and safety.

This project will not have a direct effect on population changes or upon public facilities.

7. Involves a substantial degradation of environmental quality.

The project does not involve a substantial degradation of environmental quality.

During the construction period, the work activities will generate temporary noise, dust, and water quality impacts. Measures to minimize these impacts will be implemented.

The project involves excavation and backfilling along sloped areas. Concerns of erosion and impacts to water resources will be addressed by requiring implementation of best management practice measures to protect the slopes and water quality.

Visually, the new bridge and roadway alignment will not obstruct any present view points or be visually incompatible with the surrounding area.

8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.

The project does not cumulatively have considerable effect upon the environment or involve a commitment for larger actions.

The construction activities will cause temporary noise, dust, and water quality impacts which will cease when the construction is completed. Slope protection measures such as placement of erosion mats and grassing will be implemented to minimize erosion.

This project is to correct a deficient and potentially unsafe condition and is not being undertaken to involve a commitment for larger actions.

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

The project does not affect any rare, threatened, or endangered species, or its habitat. Based on biological and botanical investigations conducted for this project, no endangered plant or animal species, or their habitats are located within the project area.

10. Detrimentially affects air or water quality or ambient noise levels.

The project does not detrimentally affect air or water quality or ambient noise levels. Temporary noise, dust, and water quality impacts during the construction period will be minimized through implementation of mitigation measures. Any future concerns regarding erosion impacting water resource quality will be minimized by providing details to control erosion by providing erosion mats to assist vegetation of sloped areas.

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

The project does not affect and is not likely to suffer damage by being located in an environmentally sensitive area. As previously stated, mitigation measures will be implemented during and after construction to control erosion of areas affected by the construction.

According to the Federal Emergency Management Agency's Flood Insurance Rate Map, panel number 150003 0225B (dated June 1, 1981), the project site is located in Zone C (areas of minimal flooding).

The effects of the construction of this project upon the flood elevation is negligible in both the upstream and downstream directions. The flow of the

stream is not significantly impeded by the construction of the foundation supports adjacent to the it.

12. Substantially affects scenic vistas and viewplanes identified in County or State plans or studies.

The project does not affect scenic vistas and viewplanes identified in County or State plans or studies. As previously stated, the project does not obstruct any vistas or viewplanes due to the similar finish roadway elevations as the existing bridge and roadway.

No known scenic vistas or viewplanes have been identified by the County of Maui or the State.

13. Requires substantial energy consumption.

The project does not require substantial energy consumption both during as well as after construction is completed. Construction activities will not require special high energy consuming equipment to perform the work. Since the existing roadway and bridge will be open for traffic during the construction of the new bridge and approaches, travelers will not be required to drive longer distances than at present. However, due to construction activities and movement of construction equipment, travel time could be affected. After construction is completed, the improvements will have a negligible effect upon energy consumption.

VII. RELATIONSHIP TO GOVERNMENTAL PLANS AND POLICIES

A. Maui Long-Range Land Transportation Plan

The County of Maui Long Range Land Transportation Plan⁵ consists of three key elements:

1. Highway Element
2. Transit Element
3. Bikeway Element

There is no reference to bridge retrofits or replacements in this report.

- ### B. Maui County General Plan⁶ does not address specifically, the implied nature of Highway Bridge improvements. Transportation facilities are inherently a vital link in the total infrastructure for the safe and efficient movement of people and materials.

VIII. APPLICABLE GOVERNMENTAL PERMITS

The following governmental permits will need to be obtained prior to actual construction commences. The principal concern is to mitigate to the best extent possible, significant negative impacts to the stream/gulch environs.

- A. U.S. Army Corps of Engineers - Section 404 Clean Water Act. Application to be started in February 1999.
- B. State Dept. of Health - Section 401 Clean Water Act. Application to be started in February 1999.
- C. State Dept. of Land and Natural Resources - Stream Channel Alteration Permit (SCAP). Application to be started in February 1999.
- D. Office of State Planning - Coastal Zone Management (CZM). Application to be started in February 1999.
- E. Maui County Special Management Area (SMA) use permit. In accordance with a letter from the County of Maui Planning Department (Exhibit 4), the proposed project is outside of this SMA boundary since the boundary runs along the makai side of the present Hana Highway.

⁵Final Report, *Maui Long Range Land Transportation Plan*, February 1997.

⁶Maui County General Plan.

- F. Federal Section 106 compliance. In accordance with a memorandum from the State Historic Preservation Officer (Exhibit 5), Uaoa Bridge has not been recommended to be listed on the Hawaii or National Register of Historic Places, individually or as part of the Hana Historic Bridges District. Therefore, replacement of this bridge will have "no effect" on the historic character of the Hana Historic Bridges District.
- G. United States Coast Guard Bridge Permit. In accordance with a letter from the U.S. Coast Guard (Exhibit 6), Uaoa Stream Bridge is exempt from a Coast Guard bridge permit under the Coast Guard Authorization Act of 1982.

IX. AGENCIES CONSULTED DURING THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT

FEDERAL:

1. U.S. Army Corps of Engineers
2. U.S. Department of the Interior, Fish & Wildlife Service
3. U.S. Department of Transportation, Federal Highway Administration
4. U.S. Department of Agriculture, Soil Conservation Service

STATE:

5. Department of Agriculture
6. Department of Business, Economic Development & Tourism
7. Department of Health, Environmental Management Division
8. Office of State Planning
9. Department of Land and Natural Resources, Historic Preservation Division
10. Department of Land and Natural Resources, Commission on Water Resource Management
11. Department of Hawaiian Home Lands
12. Office of Environmental Quality Control
13. University of Hawaii - Manoa, Water Resources Research Center
14. University of Hawaii - Manoa, Environmental Center
15. Department of Accounting & General Services

COUNTY:

16. The Honorable Linda Crockett Lingle, Mayor
17. Ms. Alice L. Lee, Chair, County Council
18. Planning Department
19. Department of Public Works & Waste Management
20. Department of Water Supply
21. Department of Parks & Recreation
22. Police Department
23. Economic Development Agency

COMMUNITY & PUBLIC ORGANIZATIONS:

24. Hotel Hana Maui
25. Hana Community Association
26. Hana Ranch
27. Hana Public & School Library

X. REFERENCES

1. Char & Associates. *Botanical Resources Assessment, Uaoa Bridge Replacement*. Prepared for Environmental Communications. April 1998.
2. Pacific Legacy, Inc. *The Results of an Archaeological Inventory Survey at Uaoa Bridge*. Prepared for Environmental Communications. January 1999.
3. Pacific Aquatic Environmental, Inc. *Aquatic and Avian Species Assessment of the Uaoa Highway Bridge Construction Project*. Prepared for State Department of Transportation Highways Division for Environmental Communications. May 20, 1998.
4. U.S. Census of 1990, District of Hana.
5. Final Report, *Maui Long Range Land Transportation Plan*. February 1997.
6. Maui County General Plan.

XI. EXHIBITS

- Exhibit 1 - Botanical Resources Assessment, Uaoa Bridge Replacement by Char & Associates.
- Exhibit 2 - Aquatic and Avian Species Assessment of the Uaoa Highway Bridge Construction Project by Pacific Aquatic Environmental, Inc.
- Exhibit 3 - The Results of an Archaeological Inventory Survey at Uaoa Bridge by Pacific Legacy, Inc.
- Exhibit 4 - Letter from County of Maui Planning Department dated November 7, 1988 regarding SMA determination for Kaupakalua and Uaoa Bridges.
- Exhibit 5 - Memorandum dated April 8, 1998 regarding Section 106 Compliance for Kaupakalua & Uaoa Bridges.
- Exhibit 6 - Letter from the U.S. Coast Guard dated September 18, 1998 regarding Coast Guard bridge permit under the Coast Guard Authorization Act of 1982.
- Exhibit 7 - Draft Environmental Assessment (EA) Comments & Responses.

EXHIBIT 1

BOTANICAL RESOURCES ASSESSMENT

UAOA BRIDGE REPLACEMENT

MAKAWAO DISTRICT, MAUI

by

Winona P. Char

CHAR & ASSOCIATES
Botanical Consultants
Honolulu, Hawai'i

Prepared for: ENVIRONMENTAL COMMUNICATIONS

April 1998

EXHIBIT 1

BOTANICAL RESOURCES ASSESSMENT
UAOA BRIDGE REPLACEMENT
MAKAWAO DISTRICT, MAUI

INTRODUCTION

Uaoa Stream Bridge is located on Hana Highway (Route 36) along the north coast of Maui, east of Haiku Town. A large reservoir, the Peahi Reservoir, is located south (mauka) of the bridge along the stream. The existing, two-lane, wooden bridge crosses over Uaoa Gulch and the stream. The side slopes of the gulch drop down steeply to the gulch floor and streambed.

The proposed bridge project requires realignment of the approach highways and removal of the existing bridge structure. After several engineering and geotechnical studies, the new bridge is proposed to be located on the upstream (south) side of the existing bridge. The new bridge structure will be built as close as possible to the existing bridge to reduce the difficulty of constructing the new approach roadway along the edge of the steep side slopes beyond the Hana (east) abutment where the stream parallels the roadway for several hundred feet. A concrete retaining wall is required for a stretch of the approach roadway beyond the Hana abutment.

Field studies of the areas proposed for the new bridge structure and the realignment of the approach roadways, as well as the area under the existing bridge structure, were conducted on 10 April 1998 by two botanists. The primary objectives of the field studies were to:

- 1) provide a general description of the vegetation on the study site;
- 2) search for threatened and endangered plants as well as species of concern protected by Federal and State endangered species laws; and
- 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

SURVEY METHODS

Prior to the field studies, topographic maps and the new bridge plan were examined to determine terrain characteristics, access, boundaries, and reference points. A copy of the preliminary engineering study was also examined.

Access to the streambed area was from the dirt road which drops into the gulch from the mauka, west (Wailuku) side; the dirt road services the Peahi Reservoir. A walk-through survey method was used. Notes were made on plant associations and distribution, substrate types, drainage, exposure, disturbances, topography, etc. Plant identifications were made in the field. The flowering plant names used in the report follow the most recent treatment of the Hawaiian flora by Wagner *et al.* (1990) and Wagner and Herbst (1994). The names of the ferns and fern allies are in accordance with Lamoureux (1988).

DESCRIPTION OF THE VEGETATION

Gulch and Stream Area

Mixed introduced forest dominated by rose apple (*Syzygium jambos*), native to Malaysia and southeast Asia, covers most of the gulch bottom and slopes. Tree canopy cover is 40 to 60 feet tall and closed. Scattered among the rose apple trees are a few individuals or small stands of other tree species. These include small thickets of the native hau (*Hibiscus tiliaceus*), several clumps of Madagascar olive (*Noronhia emarginata*), Java plum (*Syzygium cumini*), avocado (*Persea americana*), and very large and old common mango trees (*Mangifera indica*). The understory consists of young trees of the species mentioned above, 12 to 15 feet tall, and shrubs of guava (*Psidium guajava*), Christmas berry (*Schinus terebinthifolius*), pluchea (*Pluchea carolinensis*), and coffee (*Coffea arabica*). Ground cover consists largely of rose apple seedlings, 6 inches to a foot tall, and shade-tolerant grasses and forbs such as Hilo grass (*Paspalum conjugatum*), nettle-leaved vervain (*Stachytarpheta urticifolia*), wood-fern (*Christella parasitica*), *Sida acuta*, kiliçopu (*Kyllinga brevifolia*), etc. Areas with barren soil and leaf litter are also common.

On the mauka, west (Wailuku) side, the side slope is almost perpendicular. The steep side slope is mainly barren with a few pockets of plants scattered along its face. The stream along this side of the gulch is diverted into an irrigation intake tunnel which crosses under the highway. The open area along the stream is covered by a low, grassy scrub composed of Guinea grass (*Panicum maximum*), honohono (*Commelina diffusa*), Glenwood grass (*Sacciolepis indica*), Hilo grass, palaça fern (*Sphenomeris chinensis*), yellow ginger (*Hedychium flavescens*), nettle-leaved vervain, etc. Two members of the melastome family, *Clidemia hirta* and *Melastoma herbacea*, both considered noxious weeds, occur here in low numbers.

Under the existing wooden bridge, the stream is only a weak trickle as most of the water has been diverted into the irrigation tunnel. The streambed consists of large, rounded, waterworn boulders, some with a covering of moss and leafy liverworts. Scattered along the streambed and streambanks are patches of yellow ginger, hoçico or warabi fern (*Diplazium esculentum*), and rose apple seedlings. A few native ferns and fern allies are found here. On the damp rock faces and soil are small pockets of *Gonocormus minutus*, a member of the filmy fern family; moa or moa nahele (*Psilotum nudum*), a member of the whisk fern family; and palaça fern. On the trunks of trees, especially kukui trees (*Aleurites moluccana*), a few pakahakaha fern (*Pleopeltis thunbergiana*) are found.

Approach Highways

On the west (Wailuku) side of the approach highway, the steeply cut banks of the highway support a number of native species. On the mauka bank, which appears to receive more moisture, there is a thick mat of uluhe fern (*Dicranopteris linearis*) covering the face of the bank. Scattered through the uluhe are a few plants of pukiawe shrub (*Styphelia tameiameia*), wawae'iole (*Lycopodium cernuum*), palaça fern and çulei shrub (*Osteomeles anthyllidifolia*).

Immediately adjacent to the highway is a strip of low, weedy vegetation composed of plants such as Spanish needle (*Bidens pilosa*), *Chloris virgata*, crabgrass (*Digitaria* sp.), wiregrass (*Eleusine indica*), oriental hawksbeard (*Youngia japonica*), spiny amaranth (*Amaranthus spinosus*), hairy spurge (*Chamaesyce hirta*), *Crassocephalum crepidioides*, etc. Where the highway passes in front of several residential lots, there is a grassy strip composed mainly of Hilo grass.

On the east (Hana) side of the approach highway where a concrete retaining wall is planned, the land was once in pineapple cultivation, but the fields are now overgrown and covered by scrub vegetation. Occasionally, remnant pineapple plants (*Ananas comosus*) and black plastic sheeting are encountered. The vegetation on the former pineapple fields is composed largely of dense mats of hairy swordfern (*Nephrolepis multiflora*), Vasey grass (*Paspalum urvillei*), and broomsedge grass (*Andropogon virginicus*), 2 to 3 feet tall. Scattered about are clumps of elephant grass (*Pennisetum purpureum*), 8 to 12 feet tall, and young Java plum trees, 15 to 18 feet tall. Other plants found here occasionally include lauwa'e fern (*Phymatosorus scolopendria*), uluhe, Hilo grass, hairy horseweed (*Conyza bonariensis*), fireweed (*Erechtites valerianifolia*), flora's paintbrush (*Emilia fosbergii*), California grass (*Brachiaria nutica*), etc. Where the overgrown pineapple fields abut the gulch, rose apple plants have invaded to form an open woodland, 6 to 18 feet tall, with 30% to 40% cover.

DISCUSSION AND RECOMMENDATIONS

The vegetation within the areas of the proposed new bridge structure, the realigned approach highways, and the existing bridge structure is dominated largely by introduced species such as rose apple, Hilo grass, guava, Java plum, and an assemblage of weedy herbaceous species commonly associated with agricultural fields and roadsides. Introduced or alien species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is, Cook's discovery of the islands in 1778.

Twelve native species were found on the study site during the field studies; these occur mainly on the cut bank along the highway on the west (Wailuku) side and on the steeper banks along the stream. All of the native plants occurring on the site are indigenous, that is, they are native to the Hawaiian Islands and also elsewhere throughout the Pacific. These 12 species are: hala (*Pandanus tectorius*), pukiawe (*Styphelia tameiameia*), palaça fern (*Sphenomeris chinensis*), *Gonocormus minutus*, pakahakaha (*Pleopeltis thunbergiana*), moa (*Psilotum nudum*), wawae'iole (*Lycopodium cernuum*), uluhe (*Dicranopteris linearis*), 'ulei (*Osteomeles anthyllidifolia*), *Pycreus polystachyos*, hau (*Hibiscus tiliaceus*), and popolo (*Solanum americanum*). None of the plants found during the field studies is a threatened or endangered species; nor is any plant considered a species of concern

(U.S. Fish and Wildlife Service 1997). All of the plants can be found in similar environmental habitats throughout the Hawaiian Islands.

The proposed bridge replacement project is not expected to have a significant negative impact on the botanical resources. However, it is recommended that areas cleared of vegetation be grassed over as soon as possible to prevent soil erosion and discharge of sediments into the stream. Hilo grass, which is common to locally abundant on the project site, can be used for the revegetation effort.

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EXHIBIT 2

**AQUATIC AND AVIAN SPECIES ASSESSMENT OF THE
UAOA HIGHWAY BRIDGE CONSTRUCTION PROJECT**

**Prepared for:
State Department of Transportation Highways Division
for Environmental Communications**

**Prepared by:
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Honolulu, Hawaii 96826-1499**

20 May 1998

EXHIBIT 2

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EXECUTIVE SUMMARY

Pacific Aquatic Environmental, Inc. (PAE) conducted a biological assessment of avian and stream species in Uaoa Gulch for the Uaoa Highway Bridge Environmental Assessment. Native Hawaiian bird species were not observed in the area of the Uaoa Bridge replacement project. No adverse impacts are anticipated to occur to any native or endangered Hawaiian birds due to the small scale and temporary nature of impacts resulting from the Uaoa Highway Bridge construction project. Additionally, adverse impacts are not expected for native forest birds due to the Uaoa Highway Bridge construction project. This is because it is a very remote possibility that native forest birds such as liwi, Apapane, or others still inhabit this low elevation area.

Uaoa Gulch was determined to be intermittently flowing from Peahi Reservoir to an intermittent waterfall downstream of the main Hana Highway. No permanent aquatic habitats were observed in the area of the Uaoa Bridge replacement construction area. Because Uaoa Gulch is intermittent, native stream fish, crustaceans, mollusks, or aquatic insects were not observed. Therefore, no adverse impacts are expected to occur to native stream biota due to the construction of the Uaoa Highway Bridge construction project. Best management practices should be employed during construction to prevent soil erosion into nearshore ocean areas and Uaoa Bay.

INTRODUCTION

Pacific Aquatic Environmental, Inc. (PAE) conducted a biological assessment of Uaoa Gulch for the Uaoa Highway Bridge Environmental Assessment. These surveys assessed native aquatic and endangered bird species that may occur in areas potentially affected by the Uaoa Bridge construction project. This report is divided into two sections: one for the avian survey and one for the aquatic survey.

The objectives of the fish and aquatic invertebrate assessment of Uaoa Gulch were to 1) describe baseline distribution and abundance of native and introduced fish species, crustaceans, mollusks, and aquatic insects, as well as introduced amphibians, 2) evaluate habitat quality for aquatic biota, and 3) evaluate potential environmental impacts associated with the completion of the Uaoa Bridge construction project.

The objectives of the avian species assessment were to 1) determine species composition of native and introduced birds, with an emphasis on Threatened and Endangered species, 2) evaluate habitat quality for native birds, and 3) evaluate potential consequences associated with the completion of the Uaoa Bridge construction project.

STUDY AREA

According to USGS topographic maps, Uaoa Gulch is intermittent and originates at approximately 1080 ft on the northeastern slopes of Haleakala and enters the ocean at

Uaoa Bay in Maui County. The Hana Highway crosses Uaoa Gulch at approximately 530 ft elevation, with the gulch bottom approximately 50 ft below. To assess the impacts of bridge replacement or expansion, Uaoa Gulch was surveyed from downstream of Peahi Reservoir to an intermittent waterfall downstream of Hana Highway (Figure 1). The gulch below the Uaoa Highway Bridge lies in an incised, and heavily vegetated valley. The following is a brief description of each avian and aquatic sampling station:

Station 1 (480 ft elevation)

Station 1 began in the vicinity of the Hana Highway bridge footings and extended downstream to an impassable waterfall. During this survey small, clear rainwater formed pools drained narrow riffles. Sampling occurred during periods of occasional light showers. Stream gradient was moderate and the stream substrate consisted of a mix of gravel, cobbles and small boulders. Riparian vegetation at this station was predominately rose apple (*Syzygium jambos*), guava (*Psidium guajava*), and yellow ginger (*Hedygium flavescens*).

Station 2 (490 ft elevation)

This station started at the Irish crossing on Uaoa Gulch below Peahi Reservoir and extended downstream to the irrigation diversion. A small pool formed by leakage from the irrigation diversion dam dried up completely 30 feet below the diversion. The stream was dry below the irrigation diversion. Stream substrate consisted of large cobble, and small and large boulders. Riparian vegetation consisted mainly of guava, job's tears (*Coix lachryma-jobi*), kukui (*Aleurites moluccana*).

METHODS

Avian Surveys

Surveys of avifauna in Uaoa Gulch were conducted in May 1998. Two census stations were established, the first at 480 ft in elevation in the vicinity of the Hana highway bridge, and second approximately 100 yds to the south at approximately 490 feet elevation in the area around the irrigation ditch. All avian species seen or heard within a 40 yd radius of census stations were recorded. This is the approximate detection distance of most species. All birds detected between census stations were also recorded. Special emphasis was placed on detecting the presence of any native bird species in or around the gulch.

Fish and Aquatic Invertebrates

Field work was conducted during a wet period in May 1998, and data were collected during a period of increased precipitation.

If Uaoa Gulch contained native fish we would have conducted point counts according to the standard Hawaii Division of Aquatic Resources methods (Baker and Foster 1992). As Uaoa Gulch contained only introduced species, point counts were not conducted.

Two representative sampling stations (see STUDY AREA) were established on Uaoa Gulch, and aquatic macrofauna (fish, crustaceans, mollusks, and amphibians) was assessed at each station. Sampling stations were established in Uaoa Gulch both up and downstream of Hana Highway. The entire stream bed area was hiked from Peahi Reservoir to an impassable waterfall downstream of Hana Highway. This allowed us to make above-water visual observations of any potentially occurring fish and aquatic insects as we hiked upstream. Hiking also allowed us to ascertain if the stream was intermittent, or contained permanent springs, pools, or rheocrenes (Polhemus et al. 1992). Above-water observations were conducted as we hiked between different sampling stations.

Composition of the riparian vegetation and stream substrate were evaluated at each sampling station. Habitat condition for native aquatic organisms was evaluated both within sampling stations and throughout the sections of stream that we hiked. Altitude at each sampling station was determined by using a combination of USGS topographic maps and a hand-held Casio altimeter. The altitude given at each sampling station (see STUDY AREA) should be considered approximate.

Aquatic insect sampling was conducted according to Polhemus (1995). Collections of both immature and adult specimens were attempted with aerial nets, but as the stream is apparently intermittent we did not observe any. Visual observations for aquatic insects were conducted as we hiked upstream among sampling stations.

We also emphasized sampling of damselflies and dragonflies (Odonata). Damselflies in the genus *Megalagrion* are currently being studied by the U.S. Fish and Wildlife Service and personnel from the Smithsonian Institution and Bishop Museum. Six species of *Megalagrion* are currently held as candidate Threatened or Endangered species, or Species of Concern on the Federal Register. Moreover, these damselflies give an indication of the relative 'health' of a stream system; they do not typically occur in highly disturbed areas. The number and species of native damselflies observed during hiking in the streambed was also recorded.

RESULTS AND DISCUSSION

Avian Surveys

Six bird species, all human introductions to Hawaii, were recorded during this study (Table 1). The Japanese White-eye (*Zosterops japonicus*) was the most abundant, followed by the Northern Cardinal (*Cardinalis cardinalis*), and the House Finch (*Carpodacus mexicanus*). Common Mynas (*Acridotheres tristis*), Spotted Doves (*Streptopelia chinensis*), and Nutmeg Mannikins (*Lonchura punctulata*) were also seen in small numbers.

Table 1. Bird Species Noted in Uaoa Gulch, May 1998.

Bird Species	Threatened and Endangered Status	Geographic Status
Spotted Dove (<i>Streptopelia chinensis</i>)	None	Introduced
Nutmeg Mannikin (<i>Lonchura punctulata</i>)	None	Introduced
Northern Cardinal (<i>Cardinalis cardinalis</i>)	None	Introduced
Common Myna (<i>Acridotheres tristis</i>)	None	Introduced
House Finch (<i>Carpodacus mexicanus</i>)	None	Introduced
Japanese White-eye (<i>Zosterops japonicus</i>)	None	Introduced

Native Birds:

No native landbirds were seen in the study area. This was expected for two reasons. First, native Hawaiian landbirds are rarely found in areas where the native habitat has been destroyed (Perkins 1903; Berger 1981). The area within and around Uaoa gulch reflects over 100 years of severe human degradation. The edges of the gulch were dominated by relict stands of sugarcane, (*Saccharum officinarum*), and Guinea grass, (*Panicum maximum*), while the slope and bottom of the gulch contained mostly introduced rose apple, (*Syzygium jambos*), and common guava, (*Psidium guajava*). These trees are not known to support populations of native bird species such as Apapane, (*Himatione sanguinea*), liwi (*Vestiaria coccinea*), or Amakihi, (*Hemignathus virens*). It is possible, but very unlikely, that small numbers of any of these species utilize the nectar or arthropod resources of these trees on a short-term, seasonal basis.

The second reason no native landbirds were expected in this area is because this site lies within the low elevation "mosquito zone". Since Hawaiian birds evolved in the absence of mosquitoes, they are highly susceptible to mosquito transmitted diseases such as avian malaria (Warner 1968; van Riper et al. 1986). The presence of mosquitoes below 1500 m elevation on all Hawaiian islands is believed to be a major factor limiting the abundance of lowland native forest bird populations, even in otherwise suitable habitat (van Riper et al. 1986).

Introduced birds:

Japanese White-eyes, *Zosterops japonicus*, are the most abundant land birds in the Hawaiian Islands (Scott et al. 1986). They were first introduced from Japan in 1929 to Oahu (Caum 1933), with an introduction to Maui in the late 1930's (Berger 1981). Japanese White-eyes are omnivores, feeding mostly on fruit, nectar, and insects from understory sites (Guest 1973; Conant 1975). These birds occur from sea-level to 3100 m on Hawaii in a broad range of vegetation types, however they tend to be most

abundant in lowland areas where introduced species dominate the ground cover. The population of Japanese White-eyes appears to have "exploded" within the past 40 years (Scott et al. 1986).

House Finches, *Carpodacus mexicanus*, were introduced to Hawaii before 1870, probably from San Francisco (Caum 1933). By the 1940's they were well established on all Hawaiian Islands (Munro 1944). House Finches are omnivorous and feed on a variety of seeds, buds, and fruit. They are common in cities, agricultural areas, and most types of forest, from sea-level to 2500 m elevation (Berger 1981). Grasslands and open woodlands appear to be their preferred habitat.

Northern Cardinals, *Cardinalis cardinalis*, were introduced to the Hawaiian Islands in 1929 (Caum 1933) and are well established in introduced and disturbed native forests throughout the islands (Scott et al. 1986). They are natives of North America that frequent hedges, thickets, and open woodlands and feed on seeds, fruits, and insects (Bent 1968). These birds are common from sea-level to 2500 m in a diversity of disturbed habitats.

Common Mynas, *Acridotheres tristis*, were introduced from India in 1865 (Caum 1933) and are common to abundant in most lowland areas except forest interiors. These birds are terrestrial omnivores and occur from sea-level to 2300 m elevation on the island of Hawaii (Scott et al. 1986). They appear to prefer dry woodlands and partly open forests with low shrub cover at low elevations. These birds seldom enter high elevation native forests.

Nutmeg Mannikins, *Lonchura punctulata*, were also introduced from India in 1865. These birds are seed eaters and are abundant in grassy areas and along forest edges (Pratt et al. 1987). Nutmeg mannikins rarely enter native forest habitats.

Spotted Doves, *Streptopelia chinensis*, were introduced to Hawaii from southeast Asia sometime in the 1800's and are now common throughout the state below 1200 m in elevation. Spotted Doves range from highly disturbed habitat in cities to openings in native rain forest.

Fish and Aquatic Invertebrate Surveys

Uaoa Gulch is intermittent with sections apparently flowing only during periods of excess runoff from Peahi Reservoir. Downstream of the reservoir only introduced stream biota were observed in Uaoa Gulch (Table 2). Native and introduced damselflies were not observed in Uaoa Gulch. The introduced biota we observed were likely flushed out of Peahi Reservoir during heavy rains into the ephemeral puddles formed in Uaoa Gulch. Native stream biota, and aquatic insects (both native and introduced) were not observed in Uaoa Gulch.

As Uaoa Gulch flows only intermittently and did not contain any springs, seeps, rheocrenes, or permanent pools we did not find any native freshwater aquatic biota. The lack of any aquatic insects in or above the stream channel is also indicative of ephemeral flow. The results of this biological assessment indicate that Uaoa Gulch in the vicinity of the proposed Hana Highway bridge replacement area does not maintain the perennial flow required to support native fish, mollusks, crustaceans, or aquatic insects.

ENVIRONMENTAL CONSEQUENCES

Avian Species (Native Birds):

No adverse impacts are anticipated to occur to native Hawaiian birds due to the small scale and temporary nature of impacts resulting from the Uaoa Highway Bridge construction project. Additionally, no adverse impacts are expected for other native forest birds such as liwi and Apapane due to the Uaoa Highway Bridge construction project. This is because it is a very remote possibility that these birds still inhabit this area.

Fish and Aquatic Invertebrates

Uaoa Gulch is intermittent and contains no native stream biota such as fish, aquatic insects, mollusks, or crustaceans. Therefore, no impacts to native stream biota will occur as the result of construction in the area of the proposed Uaoa Gulch Highway Bridge which will be slightly upstream of the present bridge. However, best management practices should be employed during construction to prevent soil erosion into nearshore ocean areas and Uaoa Bay.

Table 2. Distribution of native and introduced aquatic biota captured in Uaoa Gulch, Maui during May 1998 (See Figure 1 for sampling stations).

Taxon	Elevation (ft)	Threatened, Endangered or Candidate Status	Geographic Status
	480 - 490 ft		
Amphibians			
Bullfrog (<i>Rana catesbeiana</i>)	X	None	Introduced
Fish			
Guppy (<i>Poecilia reticulata</i>)	X	None	Introduced
Green swordtail (<i>Xiphophorus helleri</i>)	X	None	Introduced
Crustaceans			
Crayfish (<i>Procambarus clarki</i>)	X	None	Introduced
Mollusks			
<i>Corbicula fluminea</i> (dead shells)	X	None	Introduced

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PHOTOGRAPHIC RECORD



Photo 1. Uaoa Gulch from Hana Highway Bridge



Photo 2. Uaoa Gulch at irrigation diversion (490 ft)



Photo 3. Uaoa Gulch at Station under bridge (480 ft)

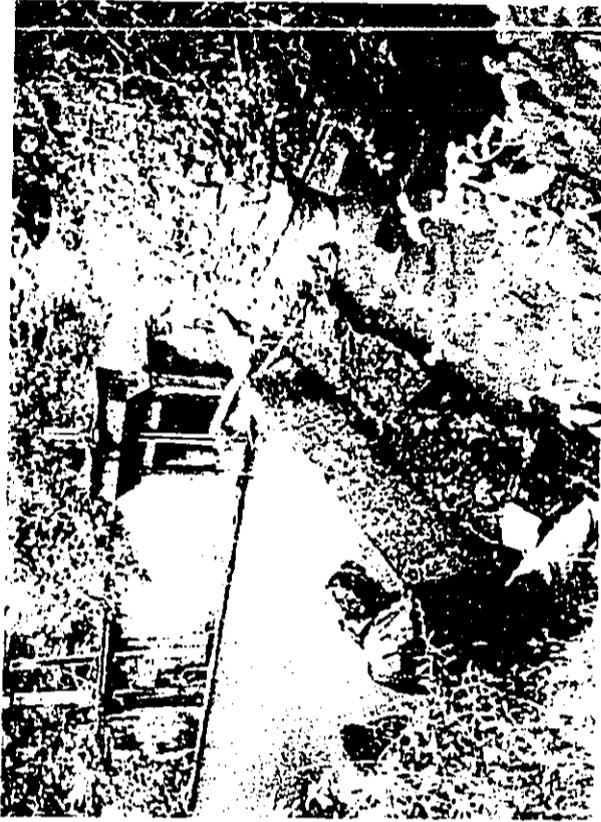


Photo 4. Uaoa Gulch at Station (490 ft)

Pacific Aquatic Environmental - Stream Assessment

Stream	Uana, Maui	Date	5/13/98	Time	1100	Reach		Sample No.	(1)	Comments	
Elevation (ft)	524	Temperature		pH		Personnel	Englund/Hart				
Habitat type	Diversia Pool	Sampling method	General/Appt	Area sampled (ft)							
Maximum Depth (ft)	5 ft.										
Substrate		Percent		Riparian vegetation							
Silt									1) Guava		
Sand (1-3 mm)									2) Job's Tears		
Gravel (3-60 mm)									3) Kukui		
Sm. Cobble (60-150 mm)				% Canopy	100				4) Clidemia, Christmas Berry		
Lg. Cobble (150-250 mm)		25		Flow	$Q = w * d * a * l / t$				Yellow Ginger		
Sm. Boulder (250-500 mm)		25		Width		Depth					
Lg. Boulder (>500 mm)		50									
Bedrock											
Vegetation											
Organic Matter											
Just downstream of Paahi Reservoir, at Irrigation Diversion											

Crustacea	Number	Fish	Number	Comments/Photos
<i>Amphipoda bisulcata</i>		<i>Awaous guamensis</i>		
<i>M. grandimanus</i>		<i>Sicyopterus stimpsoni</i>		
<i>A. lar</i>		<i>Lentipes concolor</i>		
<i>P. clarki</i> ✓	Abundant	<i>Stenogobius hawaiiensis</i>		
		<i>Eleotris sandwicensis</i>		
Mollusca		<i>Kuhlia sandwicensis</i>		
<i>Neritina granosa</i>		Mullet species		
<i>Neritina vespertina</i>		Carangidae		
<i>Crinina newcombi</i>		<i>Cichlasoma nigrofasciatum</i>		
Native Lymnaeidae		<i>Sarotherodon melanothron</i>		
Charidae		<i>Oreochromis mossambicus</i>		
<i>Corbicula fluminea</i> ✓		<i>Gambusia affinis</i>		
		<i>Poecilia reticulata</i> ✓		Abundant
Insecta		<i>Poecilia mexicana</i>		
<i>Megalagrion</i> spp.		<i>Poecilia</i> spp.		
)		<i>Xiphophorus helleri</i> ✓		Abundant
(2)		<i>Micropterus dolomieu</i>		
<i>Lechnura ramburi</i>		<i>Micropterus salmoides</i>		
<i>Lechnura posita</i>		<i>Lepomis macrochirus</i>		
Anax junius		Amphibia		
<i>Anax strenuus</i>		<i>Rana rugosa</i>		
<i>Pantala flavescens</i>		<i>Bufo marinus</i>		
<i>Tramea lacerata</i>		<i>Dendrobates auratus</i>		
Other Odonata		<i>Rana catesbeiana</i> ✓		
Hydropsychidae				

Pacific Aquatic Environmental - Stream Assessment

Stream	Uaoua	Date	5/13/98	Time	1200	Reach		Sample No	(5)	Comments
Elevation (ft)	524	Temperature		pH		Personnel	England / Hart			
Habitat type	Intermittent Pools	Sampling method	General / WMA	Area sampled (ft)						
Maximum Depth (ft)	2.0 ft									
Substrate		Percent		Riparian vegetation	1) Rose Apple					
	Silt	5			2) Guava					
	Sand (1-3 mm)	5			3) Ginger					
	Gravel (3-60 mm)	30			4)					
	Sm. Cobble (60-150 mm)	30	% Canopy							
	Lg. Cobble (150-250 mm)	30	Flow	$Q = w * d * a * l / t$	$a = 0.8$ rough; 0.9 smooth					
	Sm. Boulder (250-500 mm)		Width	Depth	Length	Time				
	Lg. Boulder (>500 mm)									
	Bedrock									
	Vegetation									
	Organic Matter									
Clear, intermittent pools starting new bridge footing, water falls about 50 m downstream of bridge. Water much clearer here, appears to be from recent rains.										
Crustacea	Number		Fish	Number	Comments/Photos					
<i>Hydrobia bisulcata</i>			<i>Awaous guamensis</i>							
<i>M. grandimanus</i>			<i>Sicyopterus stimpsoni</i>							
Lar			<i>Lentipes concolor</i>							
<i>P. clarki</i>	✓	Extremely Abundant	<i>Stenogobius hawaiiensis</i>							
			<i>Eleotris sandwicensis</i>							
Mollusca			<i>Kuhlia sandwicensis</i>							
<i>Neritina granosa</i>			Mullet species							
<i>Neritina vespertina</i>			Carangidae							
<i>Erinna newcombi</i>			<i>Cichlasoma nigrofasciatum</i>							
Native Lymnaeidae			<i>Sarotherodon melanothron</i>							
Clariidae			<i>Oreochromis mossambicus</i>							
<i>Corbicula fluminea</i>	✓	(Prod shells only)	<i>Gambusia affinis</i>							
			<i>Poecilia reticulata</i>	✓						
Insecta			<i>Poecilia mexicana</i>							
<i>Megalagrion</i> spp.			<i>Poecilia</i> spp.							
			<i>Xiphophorus helleri</i>	✓						
			<i>Micropterus dolomieu</i>							
<i>Isonura ramburi</i>			<i>Micropterus salmoides</i>							
<i>Isonura posita</i>			<i>Lepomis macrochirus</i>							
<i>Anax junius</i>			Amphibia							
<i>Anax strenuus</i>			<i>Rana rugosa</i>	✓						
<i>Pantala flavescens</i>			<i>Bufo marinus</i>							
<i>Tramea lacerata</i>			<i>Dendrobates auratus</i>							
Other Odonata										
Hydropsychidae										

Pacific Aquatic Environmental - Stream Assessment

Stream <i>Uaoua, Maui</i>	Date <i>5/13/98</i>	Time	Reach	Sample No. <i>3</i>	Comments
Elevation (ft) <i>524</i>	Temperature <i>20</i>	pH	Personnel <i>England/Hart</i>		
Habitat type <i>Shallow Aol.</i>	Sampling method <i>General/1/1/1/1</i>	Area sampled (ft)			
Maximum Depth (ft) <i>2</i>					
Substrate	Percent	Riparian vegetation			
Silt	<i>10</i>	1) <i>Rose Apple</i>			
Sand (1-3 mm)		2) <i>Kukui</i>			
Gravel (3-60 mm)	<i>30</i>	3)			
Sm. Cobble (60-150 mm)	<i>30</i>	4)			
Lg. Cobble (150-250 mm)	<i>30</i>	% Canopy	<i>100</i>		
Sm. Boulder (250-500 mm)		Flow	$Q = w * d * a * l / t$	<i>a=0.8 rough; 0.9 smooth</i>	
Lg. Boulder (>500 mm)		Width	Depth	Length	Time
Bedrock					
Vegetation					
Organic Matter					
<i>At Irish crossing upstream of diversion intake by ~100m. Water was slightly flowing but extremely turbid.</i>					

rustacea	Number	Fish	Number	Comments/Photos
<i>Atyoida bisulcata</i>		<i>Awaous guamensis</i>		
<i>M. grandimanus</i>		<i>Sicyopterus stimpsoni</i>		
<i>lar</i>		<i>Lentipes concolor</i>		
<i>P. clarki</i> ✓		<i>Stenogobius hawaiiensis</i>		
		<i>Eleotris sandwicensis</i>		
<i>ollusca</i>		<i>Kuhlia sandwicensis</i>		
<i>Neritina granosa</i>		Mullet species		
<i>eritina vespertina</i>		Carangidae		
<i>erinna newcombi</i>		<i>Cichlasoma nigrofasciatum</i>		
Native Lymnaeidae		<i>Sarotherodon melanotheron</i>		
<i>uaridae</i>		<i>Oreochromis mossambicus</i>		
<i>Corbicula fluminea</i> ✓		<i>Gambusia affinis</i>		
		<i>Poecilia reticulata</i>	✓	<i>Abundant</i>
<i>l. secta</i>		<i>Poecilia mexicana</i>		
<i>Megalagrion spp.</i>		<i>Poecilia spp.</i>		
		<i>Xiphophorus helleri</i>	✓	<i>Abundant</i>
<i>Micropterus dolomieu</i>				
<i>Micropterus salmoides</i>				
<i>Lepomis macrochirus</i>				
Amphibia				
<i>Rana rugosa</i>				
<i>Bufo marinus</i>				
<i>Dendrobates auratus</i>				
<i>Rana catesbeiana</i>			✓	<i>Abundant</i>

No Aquatic insects observed in stream reaches or in kick samples, suggesting flow is not permanent in

EXHIBIT 3

THE RESULTS OF
AN ARCHAEOLOGICAL INVENTORY SURVEY
AT UAOA BRIDGE
PEAHI, MAUI, HAWAI'I
(TMK 2-8-04)

Prepared by:

Paul L. Cleghorn, Ph.D.

Pacific Legacy, Inc.
332 Uluniu Street
Kailua, Hawai'i 96734

Prepared for:

Environmental Communications
81 South Hotel, Suite 211
Honolulu, Hawai'i 96813

Revised
January 1999

97-P270

ABSTRACT

An archaeological inventory survey was conducted in the vicinity of Uaoa Bridge, in Haiku, Maui. The bridge was inspected and photographed, the gulch bottom where the footings of the bridge are located was surveyed, the upland flats on both sides of the bridge were examined. Brief archival research was also undertaken.

The current Uaoa Bridge is a high wooden trestle supported bridge. Records at the State Historic Preservation Division (SHPD) were searched, which revealed that Uaoa Bridge is not listed in the Inventory of Bridges from the island of Maui.

Four historic resources were identified in Uaoa Gulch: Uaoa Bridge, irrigation ditches and gates, a historic grave, and a terrace platform. None of these archaeological resources appear to be significant based on any of the National Register of Historic Places significance criteria.

The uplands on either side of Uaoa Gulch have been extensively modified and used in recent times, and have a low likelihood of containing traditional Hawaiian archaeological sites.

If, during initial land altering activities, any archaeological features, or deposits, including human burials, are encountered, work in the immediate vicinity should halt and the State historic Preservation Division should be notified. A professional archaeologist could assist the contractor in undertaking appropriate recording and treatment.

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1.0 INTRODUCTION

Under contract to Environmental Communications, Pacific Legacy, Incorporated has completed an archaeological inventory survey at Uaoa Bridge, in Haiku, Maui, Hawai'i. Specifically, this work consisted of archival research and surface survey. Archival research was conducted prior to fieldwork and aimed to predict the types of historic properties that may be present in the project area and thus direct and focus field research. Field investigations were conducted on 23 April 1998 by the author and assisted by Tom Cleghorn. A subsequent day of field work was conducted on 30 November 1998, with the assistance of Byron Sing from Warren Unimori and Associates. The area surveyed extended from the east to the west sides of Uaoa Gulch along both sides of the Hana Highway (Hwy. 36); approximately 50 m on either side of the Hana Highway were surveyed (Figure 1).

The County of Maui is planning to replace the existing bridge across this gulch. The archaeological investigations reported on herein are to fulfill State requirements for the treatment of archaeological resources.

The State Historic Preservation Division (SHPD) generally requires that an archaeological inventory survey be conducted in a project area as part of the permitting process. An archaeological inventory survey is the first step in treating archaeological resources that may be present in a project area. The purpose of an archaeological inventory survey is to determine if potentially significant archaeological resources are present on a specific parcel of land prior to development activities. If potentially significant resources are present, then a set of procedures must be implemented to manage these resources to mitigate any adverse effects of proposed development. These procedures are generally developed in a Historic Preservation Plan (HPP) after the completion of the archaeological inventory survey.

1.1 PHYSICAL SETTING

The project area is located within the *ahupua'a* of Peahi on the windward side of the island of Maui. Uaoa Gulch is extremely steep sided and densely covered in vegetation. Field observations indicated that the steep sides of this gulch are primarily soil covered with no massive exposures of basalt bedrock. The bottom of the gulch has been scoured by high energy water flow and contain river gravels of cobbles to large boulders. A small alluvial flat is present to the south of the Uaoa Bridge, but this has been bulldozed to create an access road. It appears that this alluvial flat was originally extremely stony.

Because the project area is located on the windward side of the island of Maui, its climate is wet, receiving approximately 75 inches (127 mm) of rain annually. While December to April are the wettest months, all months receive considerable rainfall (Armstrong 1983:63). The area is also relatively warm with a minimum mean of 60-70 degrees Fahrenheit (15.6 - 21.1 degrees Centigrade) and a maximum mean of 70-80 degrees Fahrenheit (21.1 - 26.7 degrees Centigrade) (Armstrong 1983:64). The combination of high rainfall and warm temperatures create lush conditions.

Vegetation observed in the gulches includes mango (*Mangifera indica*); Christmasberry (*Schinus terebinthifolius*); guava (*Psidium guajava*); ti (*Cordyline terminalis*); Java plum (*Eugenia cumini*); hala (*Pandanus odoratissimus*); kukui (*Aleurites moluccana*); hau (*Hibiscus tiliaceus*); avacado (*Persea americana*); awapuhi, or wild ginger (*Zingiber zerumbet*); and various ferns and grasses.

1.2 FIELD METHODS

The project area was surveyed by pedestrian transects. Spacing between the two surveyors ranged from 10-20 m depending on the density of the vegetation (spacing was closer in areas of dense vegetation, and further apart in area of sparse vegetation).

Black-and-white photographs were taken of the area and of all cultural remains encountered.

No subsurface testing was undertaken.

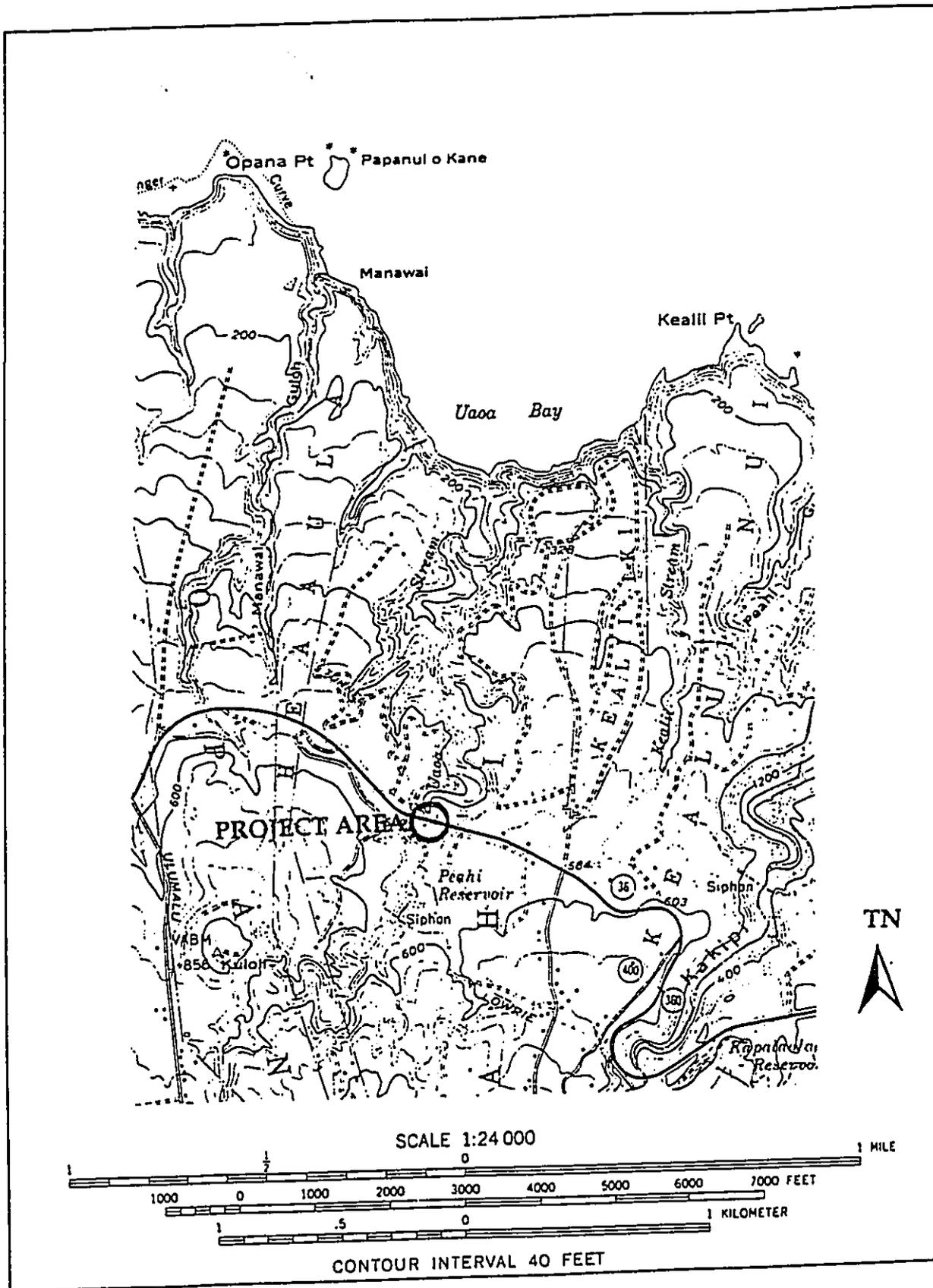


Figure 1. Location of Project Area

2.0 ARCHIVAL RESEARCH

The records at the State Historic Preservation Office were researched to determine if any archaeological sites have been recorded in the project area or in the vicinity of the project area. The site records, manuscript collection, and computerized map data were examined. No archaeological sites have been recorded in the project area or in the immediate vicinity of the project area.

Two historic bridge inventories (Hawaii Heritage Center 1990; and Spencer Mason Architects 1996) were consulted to determine if the Uaoa Bridge has been evaluated as a significant historical resource. The Uaoa Bridge is not included in these inventories. It appears, from analyzing these inventories as well as consulting with staff architectural historian Tonia Moy, that this bridge was probably not deemed significant and thus not included in these studies.

Sources in the Department of Land and Natural Resources Survey Division and Bureau of Conveyances were also researched.

Two Land Commissions Awards (LCAs) were located in the vicinity of the project area. These were:

LCA 5525 (TMK 2-8-04:60). This is a one quarter acre parcel that flanks both sides of the stream immediately inland of the Uaoa Bridge. This LCA was originally awarded to Koki (Book 8, p. 309), but no Royal Patent was granted. This land is currently owned by East Maui Irrigation Co., Ltd.

LCA 4673-B (TMK 2-8-04:28). This is a 3.16 acre parcel that flanks both sides of the stream, approximately 500 feet seaward of the Bridge. This LCA was originally awarded to Kalulo (Book 8, p. 420), and Royal Patent 4058 was issued (Book 17, p. 113). The land is currently owned by Ruth K. Rubotton (1/4), Florentino Javier (1/4), and Alexander and Baldwin Co. (2/4).

2.1 PREDICTIONS

The physical setting of the project area, with its steep sided gulches, and water scoured bottoms and a small stony alluvial flat, suggest that there is a low likelihood of any archaeological sites being present in the gulches. The lack of massive rock outcrops probably precludes the existence of any caves that could have been used for human burials. Finally, the extensive land altering activities associated with residential and ranching activities in the area probably destroyed any low rock features that may have been associated with traditional use of the area. The results of the archival

research generally support these suggestions, because no archaeological sites have been recorded in the project area or in the general vicinity.

While we predicted that no pre-Contact archaeological sites would be found in the project area, field investigations paid particular attention to the gulch bottom and sides.

3.0 RESULTS OF FIELD INVESTIGATIONS

No definite traditional or pre-Contact Hawaiian structures, features, or deposits were found in the project area. However four historic cultural resources were recorded in side of the gulch. The locations of these sites are depicted on Figure 2, and are described below.

3.1 GULCH INTERIOR

All of the historic resources found were located inland of Uaoa Bridge. No historic resources were found seaward of the bridge.

Uaoa Bridge

Uaoa Bridge is a wooden trestle bridge that uses timbers treated with creosote. This bridge extends across the top of Uaoa Gulch, providing a relatively level highway surface. Figure 3 shows the top view of this long bridge and Figure 4 depicts the details of the support structure.

Site 50-50-07-1508 East Maui Irrigation Company Ditches

Approximately 7 m inland of the west end of Uaoa Bridge is network of concrete diversion walls and sluice gates that channel the stream into an underground water tunnel that is operated by the East Maui Irrigation Co., Ltd. Figure 5 shows this network. This network of water diversion features is part of the larger East Maui Irrigation Company ditch complex.

Site 50-50-06-4723 Historic Grave

Approximately 51 m inland of Uaoa Bridge is a historic grave (Figure 6). It consists of a 3.2 m long by 0.5 m high stone retaining wall that supports a wooden white cross. The following name is painted in black letters on the two arms of the cross:

NANIHO

HOLOKAI

Another short section of terrace facing is located down slope of the grave. Red ginger (*Alpinia speciosa*) and *laua 'e* fern (*Microsorium scolopendrin*) is growing around the grave.

Site 50-50-06-4724 Terrace Platform

Located ca. 20 m inland of Uaoa Bridge is a small stone terrace platform (Figure 7). This site is situated up a small ridge leading into the gulch. The terrace platform measures 2.0 by 1.9 m, and has a 0.7 m high retaining wall. The top surface of the terrace platform is paved with basalt cobbles and pebbles.

3.2 GULCH UPLANDS

The land surrounding the gulch has been extensively modified and used:

- NE of the highway - false staghorn fern and banana farm
- SE of the highway - residential area and pasture
- NW of the highway - residential area and pasture
- SW of the highway - residential area

There appears to be a very low likelihood that this "top-side" land contains archaeological resources.

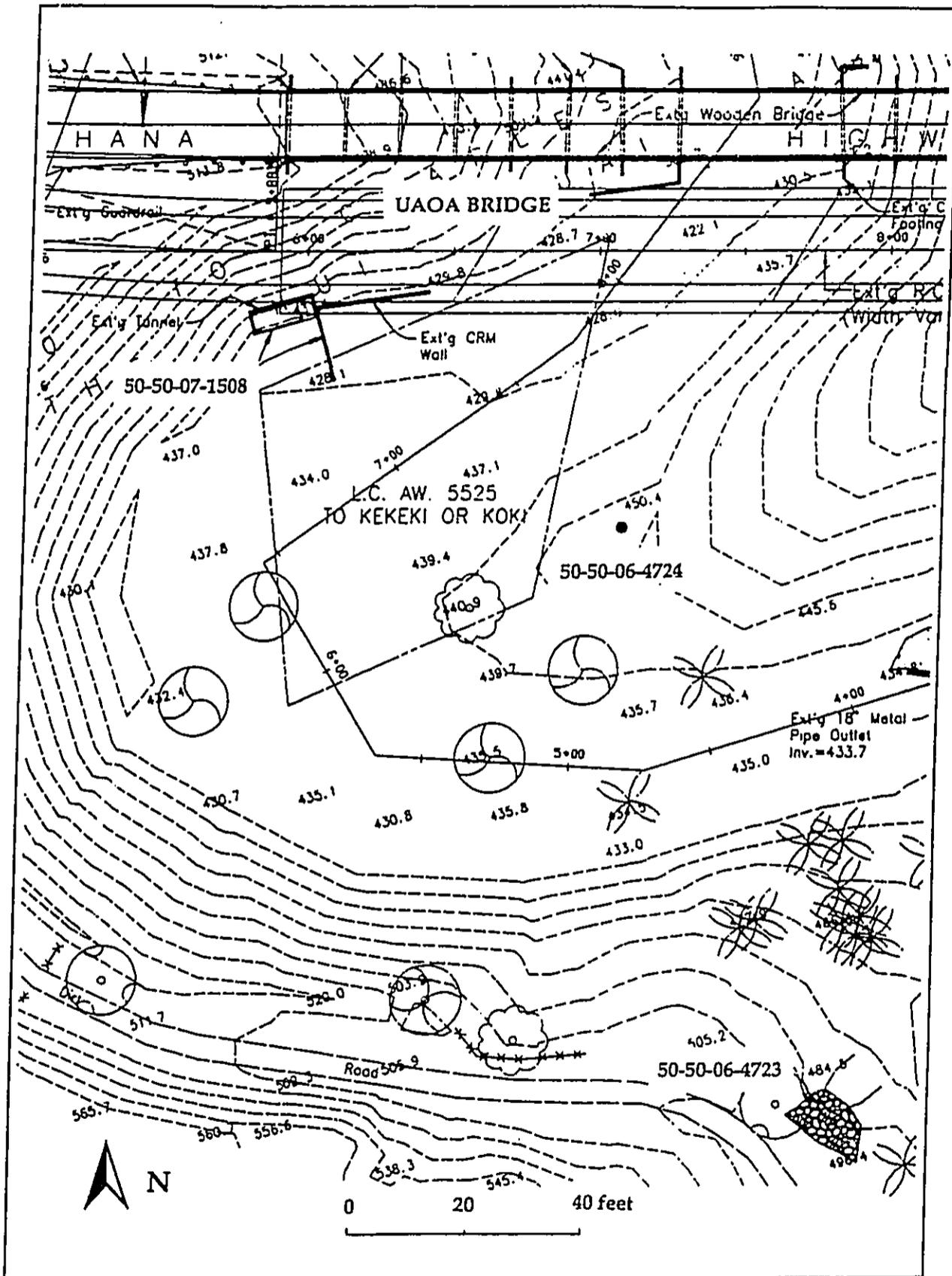


Figure 2. Location of Recorded Historic Resources in the Project Area.

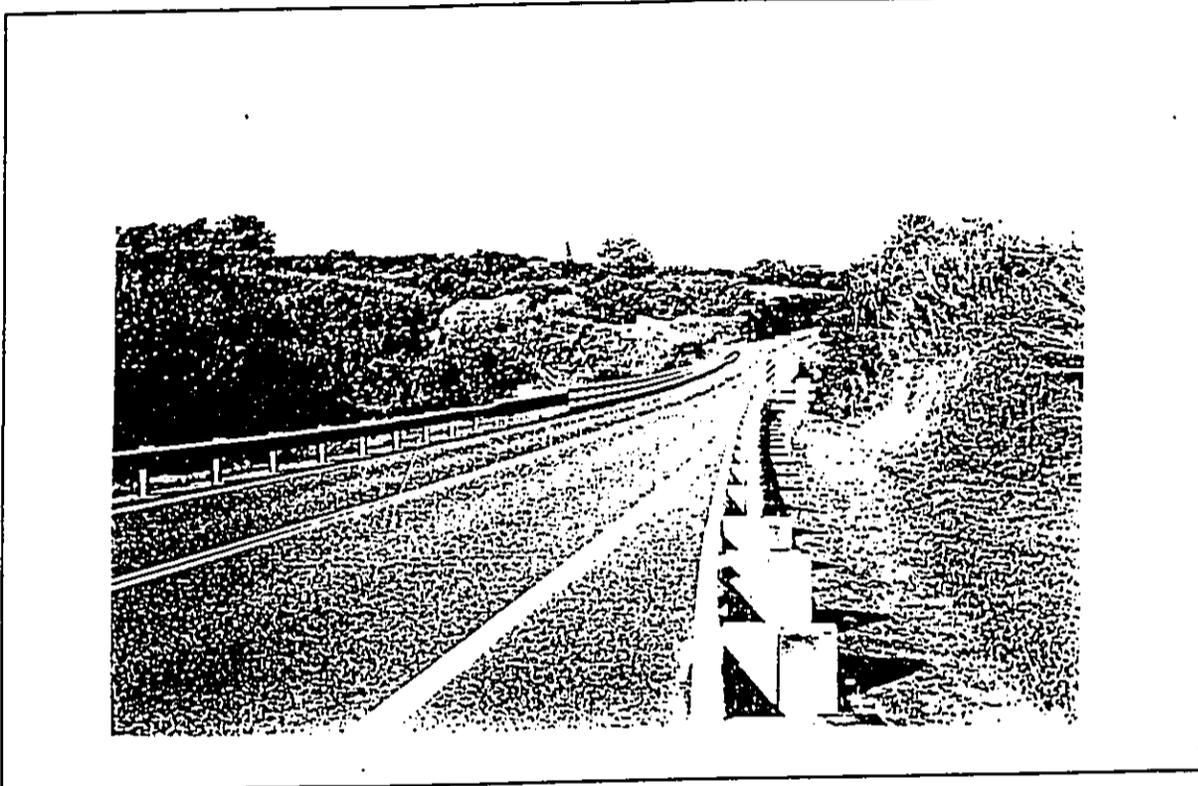


Figure 3. Top of Uaoa Bridge (view to west)

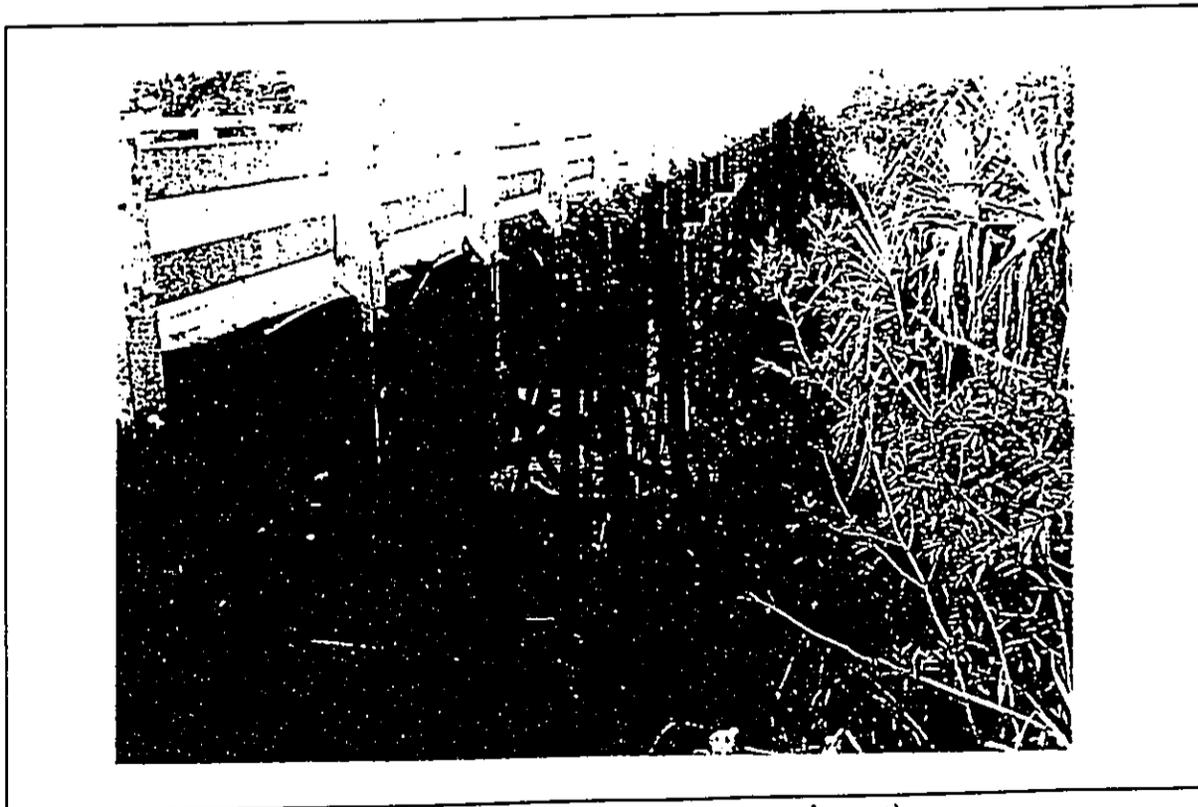


Figure 4. Support Structure of Uaoa Bridge (view to southwest)

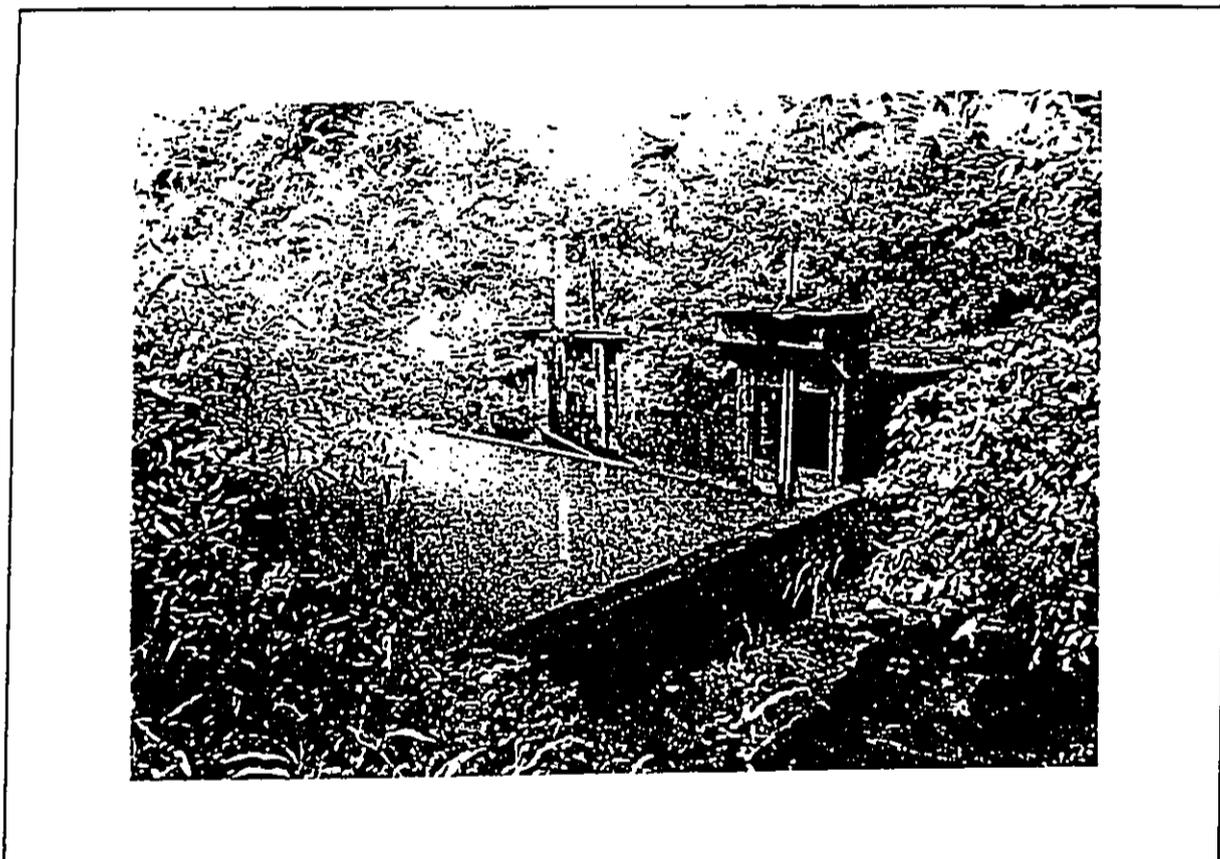


Figure 5. Site 50-50-07-1508. East Maui Irrigation Co. Ditch.



Figure 6. 50-50-06-4723. Historic Grave.



Figure 7. Site 50-50-06-4724. Terrace Platform

4.0 SUMMARY AND DISCUSSION

Archival research, the physical setting of the project area, and the intensive large-scale land altering activities associated with ranching activities and residential development resulted in predicting that there was a low likelihood of finding traditional archaeological sites within the project area. Field investigations confirmed this prediction.

The narrow and steep-sided nature of the gulch in the project area precluded its use for traditional agricultural pursuits. The small alluvial flat south of the bridge is extremely stony and has been bulldozed to form an access road. The geology of the area and lack of exposed rock outcrops indicated that caves that could have been used for human burials would not be present here.

None of archaeological resources found at Uaoa Gulch (Uaoa Bridge; the irrigation ditch complex; the historic grave; and the terrace platform) appear to be significant based on any of the National Register of Historic Places significance criteria.

The existence of the historic grave needs to be communicated to the Maui/Lana'i Burial Council. This communication is for information only. Since it appears that the project will have no effect on this historic grave, no actions or treatments are necessary. Efforts should be directed to ensure that this grave is not inadvertently impacted during the course of the bridge replacement project.

Every effort should be made to avoid impact to the terrace platform. If it appears that construction activities might impact the terrace platform, then archaeological test excavations should be conducted to determine the age and function of this site. If the site is a burial feature, then the remains will need to be appropriately treated, in consultation with the Maui/Lana'i Burial Council.

While no further archaeological investigations appear warranted, there is always the possibility, however remote in this instance, that archaeological resources, including human burials may be encountered during large scale ground altering activities. If any archaeological resources, including human burials are encountered, the contractor must abide by State law (HRS Chapter 6E) and cease excavations in the immediate vicinity of the resource and notify the State Historic Preservation Division at (808) 587-0047. A professional archaeologists could assist the contractor in meeting their legal requirements.

5.0 REFERENCES CITED

Armstrong, R. Warwick (ed.)

1983 *Atlas of Hawaii* (Second Edition). Honolulu. University of Hawaii Press.

Award Books

n.d. Department of Land and Natural Resources Award Books (microfilmed in 1964). Honolulu. Bureau of Conveyances, Department of Land and Natural Resources.

Foote, D. E., E. L. Hill, S. Nakamura, and F. Stephens

1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. Washington D. C. Soil Conservation Service.

Hawaii Heritage Center

1990 Historic Bridge Inventory and Evaluation : Islands of Maui and Molokai. Prepared for the State of Hawaii Department of Transportation. On file in the State Historic Preservation Division. Honolulu.

Spencer Mason Architects

1996 State of Hawai'i Historic Bridge Inventory and Evaluation. Prepared for the State of Hawaii Department of Transportation. On file in the State Historic Preservation Division. Honolulu.

EXHIBIT 4



HIGHWAYS DIVISION
869 Punchbowl Street
Honolulu, Hawaii 96813

FAX TRANSMITTAL

Fax Number 587-2342
DATE April 8, 1997

TO: NKOS, Inc.
ATTN: Mr. Paul Santo, P.E.
Fax Number 941-5424

FROM: HWY-DS (Emilio Barroga, Jr.)
Number of pages (including this sheet) 2
If you do not receive all the pages, please call Emilio at 587-2123.

SUBJECT: HANA HIGHWAY REPLACEMENT OF TIMBER BRIDGE, UAQA BRIDGE & APPROACHES
PROJECT NO. BR-036-1(5)

The SMA boundary is along the makai side of Hana Highway (see attached County of Maui letter dated November 7, 1988).

EXHIBIT 5

BENJAMIN J. CAYetano
GOVERNOR OF HAWAII

RECEIVED

98 APR 13 P7:32



STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

April 8, 1998

MEMORANDUM

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

DR. BEAT COLOMA-AGARAN

AGRICULTURE DEVELOPMENT
PROGRAM

AQUATIC RESOURCES
CONSERVATION AND

RESOURCES ENFORCEMENT

CONVEYANCES
FORESTRY AND WILDLIFE

HISTORIC PRESERVATION
DIVISION

LAND DIVISION
STATE PARKS
WATER AND LAND DEVELOPMENT

RECEIVED
APR 13 2 42 PM '98
DEPT. OF TRANSPORTATION
HIGHWAYS DIVISION

LOG NO: 21293
DOC NO: 9804tm03
Architecture

TO: Mr. Pericles Manthos, Administrator
Highways Division
Department of Transportation

FROM: *TM* Michael D. Wilson, Chairperson and
State Historic Preservation Officer *Michael D. Wilson*

SUBJECT: Section 106 Compliance
Hana Highway, Replacement of Timber Bridges
Kaupakulua Bridge & Uaoa Bridge, Maui
Project No. BR-036-1(5)

We concur that the latest draft of the Historic Bridge Inventory does not recommend Kaupakulua Bridge or Uaoa Bridge to be listed on the Hawaii or National Register of Historic Places, individually or as part of the Hana Historic Bridges District. According to the study, the recommended historic district begins at Hoalua Stream Bridge and therefore does not include Kaupakulua or Uaoa Bridge. Therefore, we concur that the replacement of these bridges will have "no effect" on the historic character of the Hana Historic Bridges District.

Thank you for the opportunity to comment. Should you have further questions, please call Tonia Moy at 587-0005.

TM:jk

c: Elizabeth Anderson

EXHIBIT 6

U.S. Department
of Transportation

United States
Coast Guard



Commander
Fourteenth Coast Guard

300 Ala Moana Blvd
Honolulu, HI 96850-4982
Staff Symbol: (oan)
Phone: (808)541-2315
FAX: (808)541-2309

16590
Serial 32085
18 SEP 1998

Mr. Fred Rodriguez
Environmental Communications
P. O. Box 536
Honolulu, HI 96809

Dear Mr. Rodriguez:

Thank you for personally meeting with my bridge representative and submitting the proposal for the Uaoa Stream Bridge project.

The Uaoa Stream Bridge is exempt from a Coast Guard bridge permit under the Coast Guard Authorization (CGA) Act of 1982 as set forth in the following paragraph.

Section 107 of the CGA Act of 1982, Public Law 97-322, exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used or susceptible to be used as a highway for interstate or foreign commerce and can not be used for transportation or commerce with reasonable improvements.

The CGA Act, however, does not exclude such bridges from Coast Guard jurisdiction for purposes other than approval of location and plans of bridges. The requirements under 14 U.S.C. 85 for lights and signals on structures including bridges and other Coast Guard responsibilities under the Ports and Waterways Safety Act of 1972, as amended by the Port and Tanker Safety Act of 1978, are still applied.

If you have any further questions on this matter please contact my bridge administrator, LTJG Dan Stulack, at (808) 541-2319.

Sincerely,

A handwritten signature in cursive script that reads "T. D. Hooper".

T. D. HOOPER
Commander, U. S. Coast Guard
Chief, Aids to Navigation Branch
By direction of the District Commander

HWY-DS
2.2823

FEB 26 1999

T. D. Hooper, Commander
U.S. Coast Guard
Chief, Aids to Navigation Branch
By Direction of the District Commander
300 Ala Moana Blvd
Honolulu, Hawaii 96850-4982

Dear Commander Hooper:

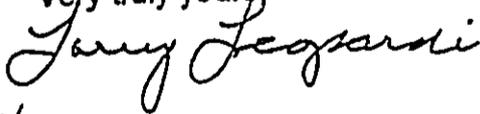
Subject: Bridge Permit Requirements
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge & Approaches, Maui
Project No. BR-036-1(5)

We received your letter dated September 18, 1998, and noted for the record your advice of the exempt status for the Uaoa Stream Bridge for Coast Guard bridge permit under Section 107 of the Coast Guard Authorization Act of 1982.

We will maintain the necessary level of contact to insure that further Coast Guard jurisdiction is not omitted.

Thank you for your cooperation.

Very truly yours,



for KAZU HAYASHIDA
Director of Transportation

EB

bc: HWY-DS ✓

EXHIBIT 7

**LIST OF AGENCIES WITH COMMENTS TO THE DRAFT ENVIRONMENT
ASSESSMENT**

1. Department of Hawaiian Home Lands (11/19/98)
2. Department of the Army (11/20/98)
3. State of Hawaii, DAGS (11/20/98)
4. Department of Business, Economic Development & Tourism (11/24/98)
5. U.S. Department of Agriculture (11/27/98)
6. County of Maui, Police Department (12/3/98)
7. County of Maui, Department of Planning (12/3/98)
8. U.S. Department of the Interior (12/7/98)
9. Office of Environmental Quality Control (12/18/98)
10. County of Maui, Department of Public Works and Waste Management (12/28/98)
11. County of Maui, Department of Water Supply (12/30/98)

BENJAMIN J. CAYETANO
GOVERNOR
STATE OF HAWAII



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

KALI WATSON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOBIE M. K. M. YAMAGUCHI
DEPUTY TO THE CHAIRMAN

November 19, 1998

To: Honorable Kazu Hayashida, Director
Department of Transportation

Attn: Emilio Barroga

From: Kali Watson, Chairman
Hawaiian Homes Commission

fa *Daniel Yagobian*

Subject: Draft Environmental Assessment, Hana Highway
Replacement of Three Timber Bridge, Uaoa Bridge and
Approaches, TMK 2-8-4:55, 56, 59, 60, Makawao, Maui,
Dated October, 1998

Thank you for the opportunity to review the subject application.
The Department of Hawaiian Home Lands has no comment to offer.

If you have any questions, please call Daniel Ornellas at
586-3837.

c: OEQC
Wilson Okamoto & Associates, Inc.

HWY-DS
2.2824

FEB 26 1999

TO: RAYNARD SOON, CHAIRPERSON
HAWAIIAN HOMES COMMISSION
DEPARTMENT OF HAWAIIAN HOME LANDS

FROM: *Jr* KAZU HAYASHIDA *Jerry Segura*
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
HANA HIGHWAY, REPLACEMENT OF TIMBER BRIDGE
UAOA BRIDGE AND APPROACHES, DISTRICT OF MAKAWAO
ISLAND OF MAUI
PROJECT NO. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

Thank you for your memorandum of November 19, 1998. We will note your position of "no comment to offer". In the event the project is altered or changed, we will contact Mr. Daniel Omellas of your office.

Thank you for your prompt response and continuing cooperation.

EB

bc:

HWY-DS ✓



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

November 20, 1998

REPLY TO
ATTENTION OF

Civil Works Branch

Mr. Emilio Barroga
State of Hawaii
Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Barroga:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Hana Highway Replacement of Three Timber Bridges, Makawao, Maui (TMKs 2-8-4: 55, 56, 59, and 60). The following comments are provided in accordance with U.S. Army Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Based on the information provided, any work below the ordinary high water mark in Uaoa Stream may require a DA permit. For further permit requirements, please contact Mr. Peter Galloway of our Regulatory Section at 438-9258 and refer to file number 990000047.

b. According to the enclosed Federal Emergency Management Agency's Flood Insurance Rate Map, panel number 150003 0225B (dated June 1, 1981), the project site is located in Zone C (areas of minimal flooding). For further information regarding the flood zone designation, please contact Ms. Jessie Dobinchick of my Planning-Engineering Section staff at 438-8876.

Sincerely,

Paul Mizue, P.E.
Chief, Civil Works Branch

Enclosure

KEY TO MAP

500-Year Flood Boundary	—————	
100-Year Flood Boundary	—————	
Zone Designations* With Date of Identification e.g., 12/2/74		
100-Year Flood Boundary	—————	
500-Year Flood Boundary	—————	
Base Flood Elevation Line With Elevation in Feet**	~~~~~513~~~~~	
Base Flood Elevation in Feet Where Uniform Within Zone**		(EL 987)
Elevation Reference Mark		RM7x
Coastline Mile		• M 20

**Referenced to the National Geodetic Vertical Datum of 1929

***EXPLANATION OF ZONE DESIGNATIONS**

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	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.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	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. (Medium 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.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

FIRM
FLOOD INSURANCE RATE MAP

MAUI COUNTY, HAWAII

PANEL 225 OF 400
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
150003 0225 B

EFFECTIVE DATE:
JUNE 1, 1981



federal emergency management agency
federal insurance administration

01/20/81 06:14

FEB 15 1999

HWY-DS
2.2825

Mr. Paul Mizue, P.E.
Chief, Civil Works Branch
Department of the Army
U.S. Army Engineer District Honolulu
Fort Shafter, Hawaii 96858-5440

Dear Mr. Mizue:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge & Approaches, Maui
Project No. BR-036-1(5)

We received your agency comments dated November 20, 1998, and we respond with the following:

- a. Based on our determination that a Department of the Army permit will be required for work within the stream, a permit application will be prepared and processed.
- b. In the event that further information regarding the project location within Zone C is required, we will contact Ms. Jessie Dobinchick of your Planning-Engineering Section.

Thank you for your cooperation.

Very truly yours,

Kazu Hayashida
for KAZU HAYASHIDA
Director of Transportation

EB
bc: HWY-DS ✓



BENJAMIN J. CAYETANO
GOVERNOR

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

RECEIVED
NOV 23 10 52 AM '98
DEPT OF TRANSPORTATION
HIGHWAYS DIVISION
LETTER NO. (P) 1742.8

NOV 20 1998

TO: Mr. Emilio Barroga, Jr.
Highways Division
Department of Transportation

SUBJECT: Draft Environmental Assessment (EA) for Hana Highway
Replacement of Three Timber Bridges, Uaoa Bridge and
Approaches Makawao District, Maui County

Thank you for the opportunity to review the subject Draft EA
which we received on November 9, 1998.

We do not foresee the project impacting any of our existing or
proposed facilities. Therefore, we have no comments to offer at
this time. However, we welcome the opportunity to review the
project's Final EA and subsequent Environmental Impact
Statements.

If you should have any questions, please contact Mr. Ronald Ching
of the Planning Branch at 586-0490.

GORDON MATSUOKA
Public Works Administrator

RC/ET:jy
c: Mr. Fred Rodriguez, Environmental Communications

HWY-DS
2.2826

FEB 25 1999

TO: GORDON MATSUOKA
PUBLIC WORKS ADMINISTRATOR
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES

FROM: *Jerry Leppanen*
KAZU HAYASHIDA
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
HANA HIGHWAY; REPLACEMENT OF TIMBER BRIDGE
UAOA BRIDGE AND APPROACHES, DISTRICT OF MAKAWAO
ISLAND OF MAUI
PROJECT NO. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your memorandum of November 20, 1998. We will note your position of "no comment to offer at this time".

Thank you for your prompt response and continuing cooperation.

EB

bc: HWY-DS ✓



**DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM**

BENJAMIN J. CAYETANO
GOVERNOR
BEJI F. NAY
DIRECTOR
BRADLEY J. MOSSMAN
DEPUTY DIRECTOR
RICK EGGER
DIRECTOR, OFFICE OF PLANNING

OFFICE OF PLANNING
235 South Beretania Street, 6th Fl., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel.: (808) 587-2846
Fax: (808) 587-2824

Ref. No. P-7820

November 24, 1998

Mr. Fred Rodriguez
Environmental Communications
81 South Hotel Street, Suite 211
Honolulu, Hawaii 96813

Dear Mr. Rodriguez:

Subject: Hana Highway - Replacement of Three Timber Bridges, Uaoa Bridge and Approaches, Makawao District, Maui County, TMK: 2-8-4:55, 59 & 60

We have reviewed the Department of Transportation's proposal to replace an existing wooden bridge on Hana Highway over Uaoa Stream with a new bridge. The project's relationship with governmental plans and policies on page 11 should include conformance with the State Plan and State Transportation Functional Plan, and compliance with the Hawaii Coastal Zone Management (CZM) objectives and policies of Chapter 205A, Hawaii Revised Statutes. If Federal funds are used for the project, a Federal consistency submission to our office will be required.

If there are any questions, please contact Christina Meller of our CZM Program at 587-2845.

Sincerely,

Bradley J. Mossman
Bradley J. Mossman
Director
Office of Planning

Post-It® Fax Note	7671	Date	12/4	# of pages	1
To	PAUL SANTO	From	FRED R.		
Co./Dept.	ANY FEDERAL	Co.			
Phone #	\$?	Phone #			
Fax #	941-5424	Fax #			

RECEIVED
DEC 4 1998
NISHIMURA, KATAYAMA,
OKI & SANTO, INC.

FEB 05 1999

HWY-DS
2.2827

TO: BRADLEY J. MOSSMAN, DIRECTOR
OFFICE OF STATE PLANNING
DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

FROM: *for* KAZU HAYASHIDA *Jerry Leonard*
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
HANA HIGHWAY, REPLACEMENT OF TIMBER BRIDGE
UAOA BRIDGE AND APPROACHES, DISTRICT OF MAKAWAO
ISLAND OF MAUI
PROJECT NO. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your comments dated November 24, 1998, and we respond with the following:

- a. The project conforms with the State Plan and State Transportation Functional Plan.
- b. A Coastal Zone Management (CZM) permit will be prepared and submitted for Federal consistency.

Thank you for your continuing cooperation.

EB

bc: HWY-DS ✓



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

Our People...Our Islands...In Harmony

November 27, 1998

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

ATTN: Mr. Emilio Barroga, Jr., Highways Division

Dear Mr. Barroga:

Subject: Draft Environmental Assessment (DEA) - Hana Highway Replacement of
Three Timbers Bridge, Uaoa Bridge. and Approaches, Makawao, Maui, HI

We have reviewed the above mentioned document and have no comments to offer at
this time.

Thank you for the opportunity to review this document.

Sincerely,

Kenneth M. Kaneshiro (Acting)

KENNETH M. KANESHIRO
State Conservationist

cc:
Mr. Fred Rodriguez, Environmental Communications, 81 S. Hotel St., #211,
Honolulu, HI 96813

FEB 25 1999

HWY-DS
2.2828

Mr. Kenneth M. Kaneshiro
State Conservationist
United States Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Kaneshiro:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge & Approaches, Island of Maui
Project No. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your letter dated November 27, 1998, and appreciate your prompt response. We will note your "no comments to offer at this time".

Thank you for your continuing cooperation.

Very truly yours,

Jerry Leysardi
for
KAZU HAYASHIDA
Director of Transportation

EB

bc: HWY-DS ✓



LINDA LINGLE
MAYOR

OUR REFERENCE
RN:at
YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

55 MAHALANI STREET
WAILUKU, HAWAII 96793
(808) 244-6400
FAX (808) 244-6411



THOMAS M. PHILLIPS
CHIEF OF POLICE

CHARLES H.P. HALL
DEPUTY CHIEF OF POLICE

December 3, 1998

Mr. Emilio Barroga, Jr.
Department of Transportation
Highways Division
State of Hawaii
869 Punchbowl Street
Honolulu, HI 96813

Dear Mr. Barroga:

Project: Hana Highway Replacement of Three Timber Bridges
Uaoa Bridge and Approaches Makawao District Maui County

We have received and reviewed your Draft Environmental Assessment on the above project and we have no comments at this time.

Thank you for the opportunity to comment on the above project.

Very truly yours,

THOMAS M. PHILLIPS
Hon Chief of Police

FEB 18 1999

HWY-DS
2.2829

Mr. Thomas M. Phillips, Chief
Police Department
County of Maui
55 Mahalani Street
Wailuku, Hawaii 96793

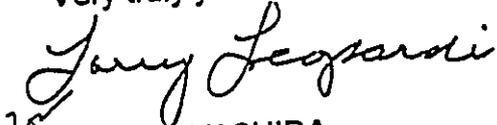
Dear Chief Phillips:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge & Approaches, Island of Maui
Project No. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your letter dated December 3, 1998, and appreciate your prompt response. We will note your "no comments to offer at this time".

Thank you for your continuing cooperation.

Very truly yours,



KAZU HAYASHIDA
Director of Transportation

EB

bc: HWY-DS ✓

LINDA LINGLE
Mayor

LISA M. NUYEN
Director

DONALD A. SCHNEIDER, II
Deputy Director



COUNTY OF MAUI
DEPARTMENT OF PLANNING

CLAYTON I. YOSHIDA
Planning Division

AARON H. SHINMOTO
Zoning Administration and
Enforcement Division

December 3, 1998

Mr. Emilio Barraga, Jr.
Department of Transportation
Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Barraga:

RE: Draft Environmental Assessment Report - Hana Highway
Replacement of Three (3) Timber Bridges, Uaoa Bridge and
Approaches, Makawao District, Maui County, TMK: 2-8-4:55, 56,
59, 60, Makawao District, Island of Maui, Hawaii

The Maui Planning Department (Department) has reviewed the subject Draft Environmental Assessment (EA) Report. The proposed project is located on Hana Highway (Route 36). The project consists of construction of a new concrete bridge South (upstream site) of the existing two (2) lane wooden bridge which crosses Uaoa Stream and gulch, removal of the existing bridge, and realignment of the bridge approach roadways. The new bridge will be wide enough to accommodate two twelve (12) foot travel lanes with ten (10) foot shoulders. The proposed bridge will span the Uaoa Stream and Gulch approximately 310 feet from abutment to abutment. Approximately 600 feet of approach roadways on each side of the existing bridge abutments will be affected by the proposed project. Land for the additional right-of-way will need to be acquired by the State on the south side of the existing right-of-way. Duration of construction is projected to take approximately twenty (20) months.

The EA Report identifies the environmental challenges, such as, steep slopes at the west (Wailuku) abutment; retaining walls along the South (mauka) side of the east (Hana) approach roadway; the stream which meanders alongside, under, and across portions of the bridge exposing some of the piers to scour action; and pier footing affected by an irrigation intake tunnel. However, the report barely touches on the erosion-control measures on how these "challenges" will be addressed and how runoff will be controlled particularly during the rainy season. In addition to identifying some

Mr. Emilio Barraga, Jr.
December 4, 1998
Page 2

of the erosion-control measures that would be taken, the reliability of the measures should be discussed in the report.

A biological assessment was conducted, however, the assessment does not discuss types of replacement vegetation other than "Hilo Grass" will be used to prevent erosion and discharge of sediments into the stream. The biological assessment should identify the species of trees and other vegetation that would be planted to replace the existing mature trees and plants.

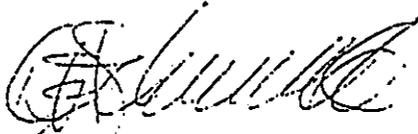
There is no discussion on water quality and the effects of construction on water quality and runoff, particularly during the rainy season.

The Scenic and Open Space Resources conclude that the new bridge will replace the existing bridge and will not be intrusive or sticking up in the air. Does this mean that the new bridge will not be any higher than the existing bridge? How will the scenic and open-space views of the area change or remain the same with the new bridge design and materials used? There was no discussion or drawings on the details of the side elevation and bridge guardrails. Will these be in concrete or metal? Concrete and natural materials would be more in keeping with the character of the area.

The Archaeological Resources Section of the report and Inventory Survey addresses archaeological and historical significance in the area surrounding the bridge, but there is no discussion on the historical significance of the bridge itself. Also, is this bridge discussed in the DOT's Historic Bridges Survey Report?

Thank you for the opportunity to review this project. Should you have any questions, please call this office at 243-7735.

Sincerely,



for
LISA M. NUYEN
Director of Planning

Mr. Emilio Barraga, Jr.
December 4, 1998
Page 3

LMN:JH:osy

c: Clayton Yoshida, AICP, Planning Program Administrator
Aaron Shinmoto, P.E., Planning Program Administrator
Julie Higa, Staff Planner
Project File
General File
S:\ALL\JULIE\UAOA.EA\DRAFTEA.LTR

FEB 26 1999

HWY-DS
2.2830

Ms. Lisa M. Nuyen, Director
Department of Planning
County of Maui
250 South High Street
Wailuku, Hawaii 96793

Dear Ms. Nuyen:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge and Approaches, Island of Maui
Project No. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your comments dated December 3, 1998, and we respond with the following:

1. On page 5 of Exhibit 1 of the Draft Environmental Assessment (DEA), the botanical consultant, Char and Associates, recommends that "areas cleared of vegetation be grassed over as soon as possible to prevent soil erosion and discharge of sediments into the stream. Hilo grass, which is common to locally abundant on the project site, can be used for the revegetation effort".
2. Erosion control during the rainy season will function in much the same way that streams function today. The improvements to the bridge consist of design and construction of replacement piers and pier foundations within the stream proper (see Figure 4, Site Plan of the DEA). Control of the stream flow during the temporary construction interruption will be discussed with the State Department of Land and Natural Resources for the Stream Channel Alteration Permit (SCAP). In terms of Best Management Practices (BMP) for soil erosion measures to be employed, the measures directed by the DLNR will be complied with. Also, the monitoring of water quality impacts due to surface runoff will also be evaluated.

Ms. Lisa M. Nuyen
Page 2

HWY-DS
2.2830

3. The new bridge improvements will not increase the height of the existing bridge, but will replace the timber pier with concrete pier columns and footings. Bridge materials are based on current Federal Department of Transportation safety code standards, and open space view of the current bridge will not be changed to any significant level. The replacement of the timber bridge with concrete will be the extent of visual change.
4. Exhibit 5 of the DEA is a memorandum dated April 8, 1998, to Mr. Pericles Manthos, Administrator, Highways Division, Department of Transportation from Mr. Michael Wilson, former Chairperson and State Preservation Officer, Department of Land and Natural Resources, concurring that the latest draft of the Historic Bridge Inventory does not recommend Uaoa Bridge to be listed on the Hawaii or National Register of Historic Places, and therefore, replacement of Uaoa Bridge will have "no effect" on the historic character of the Hana Historic Bridges District.

Thank you for your cooperation and continuing concern.

Very truly yours,

Kazu Hayashida
KAZU HAYASHIDA
Director of Transportation

EB

bc: HWY-DS ✓



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Pacific Islands Ecoregion
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

In Reply Refer To: LLLW

DEC 7 1998

Mr. Emilio Barroga Jr.
Department of Transportation, State of Hawaii
Highways Division
869 Punchbowl Street
Honolulu, Hawaii 96813

Re: Hana Highway Replacement of Three Timber Bridges Uaoa Bridge and Approaches
Makawao, Maui, Hawaii

Dear Mr. Barroga Jr.:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft Environmental Assessment for the referenced action which was received in our office on November 9, 1998. The project sponsor is the State Department of Transportation, Highways Division. The Service offers the following comments for your consideration.

The proposed project includes the construction of a new, two lane concrete bridge, south of the existing bridge, realignment of the bridge approach roadways, and the removal of the existing bridge. The proposed bridge will span the Uaoa stream and gulch for a distance of approximately 310 feet from abutment to abutment. Approximately 600 feet of approach roadways on each side of the existing bridge abutments will be affected by the proposed project. Land for the additional right-of-way will need to be acquired by the State on the south side of the existing right-of-way. According to the DEA, Uaoa stream runs intermittently from Peahi Reservoir to an unnamed waterfall downstream of Uaoa Bridge.

No significant adverse impacts to fish and wildlife resources are expected to result from the proposed project. However, the Service recommends that the following measures be incorporated into the project to minimize the degradation of water quality and impacts to fish and wildlife resources and habitats:

1. no project-related materials should be stockpiled in the streambed;
2. all project-related materials should be placed or stored in ways to avoid or minimize disturbance to the aquatic environment;
3. all maintenance equipment placed in the water should be free of pollutants;

4. no contamination of the aquatic environment (trash or debris disposal, etc.) should result from project-related activities;
5. activities carried out in the streambed should be restricted to periods when the stream is dry or when there is no rain, in order to limit erosion and downstream siltation; and
6. a contingency plan to control petroleum products accidentally spilled during construction should be developed. Absorbent pads and containment booms should be stored on site to facilitate the clean up of petroleum spills.

The Service believes that the incorporation of these measures into the project will minimize the potential for project-related adverse impacts to fish and wildlife resources. The Service appreciates the opportunity to comment on the proposed project. If you have questions regarding these comments, please contact Fish and Wildlife Biologist Lorena Wada by telephone at (808) 541-3441 or by facsimile transmission at (808) 541-3470.

Sincerely,



Robert P. Smith
Pacific Islands Manager

cc: DAR, Honolulu
DAR, Maui

HWY-DS
2.2831

FEB 26 1999

Mr. Robert P. Smith
Pacific Islands Manager
U. S. Department of Interior
Fish and Wildlife Service
300 Ala Moana Boulevard, Room 3-122
Box 50088
Honolulu, Hawaii 96850

Dear Mr. Smith:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge and Approaches, Island of Maui
Project No. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your comments dated December 7, 1998, on the subject project and we respond with the following:

1. Your comment, "No significant adverse impacts to fish and wildlife", will be noted.
2. Your recommended measures for minimizing the degradation of stream water quality and impacts to fish and wildlife resources and habitats will be reviewed and implemented in the Best Management Practices (BMP) required by other permitting authorities.
3. We will maintain contact with your Fish and Wildlife Biological services offered by your agency on an as needed basis.

Thank you for your continuing cooperation.

Very truly yours,


KAZU HAYASHIDA
Director of Transportation

cc: HWY-DS(EB) ✓



HIGHWAYS DIVISION
601 Kamokila Blvd., Room 688
Kapolei, Hawaii 96707

FAX TRANSMITTAL

DATE December 23, 1998

TO: NKOS, INC.
ATTN: Mr. Paul Santo, P.E.
Fax Number 941-5424

FROM: HWY-DS (Emilio Barroga, Jr.)
Number of pages (including this sheet) 5

SUBJECT: HANA HIGHWAY, REPLACEMENT OF TIMBER BRIDGES, UAOA BRIDGE &
APPROACHES, MAUI, PROJECT NO. BR-038-1(5)

REMARKS:

Draft EA comments from OEQC for your action.

HWY-DS

RECEIVED
DEC 23 1998

NISHIMURA, KATAYAMA,
OKI & SANTO, INC.



OEQC FAX

BENJAMIN J. CAYETANO
Governor
GARY GILL
Director

OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 So. Beretania St., Ste. 702
Honolulu, Hawaii 96813

Telephone (808) 586-4186
FAX (808) 586-4186

Date: 12-18-98

To: Emilio Barraza

Agency or Organization Name: DOT

Facsimile Number: 692-7555 Phone Number: 692-7545

Total number of pages, including this page: 4

IF YOU DO NOT RECEIVE ALL OF THE PAGES OR THE TRANSMISSION IS UNCLEAR,
PLEASE CALL OEQC AT 586-4186

From: Jeyan Thirugnanam

Re: Draft EAs 1) Uaoua Bridge and 2) Kaupakulua Bridge

Remarks: ① Segmentation of projects is not allowed.
please combine all projects that are
similar in nature into a single Final
Environmental Assessment.

② Please include reasons for determination. See
attached example. (For Uaoua Bridge only.)

Please make sure these concerns are addressed
in the final environmental assessment.

Date FAX received: _____ Time: _____

BENJAMIN J. CAYetano
GOVERNOR



GARY GILL
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

226 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

December 21, 1998

Mr. Kazu Hayashida, Director
Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Subject: Segmentation of Hana Highway Bridge Projects

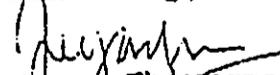
In the past two weeks, we have received two separate environmental assessments for projects associated with Hana Highway Bridges. We received environmental assessments for: i) Uaoa Bridge & Approaches; and ii) Kaupakulua Bridge & Approaches.

Section 11-200-7, Hawaii Administrative Rules, states that "a group of actions proposed by an agency or applicant shall be treated as a single action when: (1) the component actions are phases or increments of a larger total undertaking; (2) an individual project is a necessary precedent for a larger project; (3) an individual project represents a commitment to a larger project; or (4) the actions in question are essentially identical and a single statement will adequately address the impacts of each individual action and those of the group of actions as a whole."

Accordingly, we recommend that a single final environmental assessment be prepared for the projects mentioned above.

Should you have any questions, please call Nancy Heinrich at 586-4185.

Sincerely,


Jayan Thirugnanam
Planner

c: Environmental Communications
R.M. Towill

HWY-DS
2.2339

January 11, 1999

TO: DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
ATTENTION: JEYAN THIRUGNANAM

FROM: PERICLES MANTHOS
ADMINISTRATOR
HIGHWAYS DIVISION

Jerry Leosardi

SUBJECT: HANA HIGHWAY, REPLACEMENT OF TIMBER BRIDGES
UAOA BRIDGE AND APPROACHES AND
KUAPAKULUA BRIDGE AND APPROACHES, MAUI
PROJECT NO. BR-036-1(5)
DRAFT ENVIRONMENTAL ASSESSMENTS

Thank you for your letter of December 21, 1998, regarding your comments on the separate Draft Environmental Assessments for the two bridges.

Uaoa Bridge and Kaupakulu Bridge, which are about two miles apart, are entirely two separate highway facilities. Construction documents are being prepared by two different consultants and construction work will be staggered depending on the availability of funds. To save time and additional consultant fees that may be incurred by combining the Final Environmental Assessments into one, we prefer to have a separate Final Environmental Assessment for each bridge.

Should you have any questions, please call Emilio Barroga, Jr. at 692-7546.

bc: HWY-DS ✓

MAR 2 1998

HWY-DS
2.2834

TO: GARY GILL, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
FROM: *for* KAZU HAYASHIDA *Jerry Legardi*
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
HANA HIGHWAY, REPLACEMENT OF TIMBER BRIDGE
UAOA BRIDGE AND APPROACHES, DISTRICT OF MAKAWAO
ISLAND OF MAUI
PROJECT NO. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

This is to respond to the fax directive by your staff dated December 18, 1998, regarding the Draft Environmental Assessment for the subject project.

In accordance with the Department of Health Rules (11-200-12) 8.1 (1-13), a determination of Findings of No Significant Impact (FONSI) has been made for the proposed bridge improvements. This determination has been incorporated into the Final Environmental Assessment as requested.

Thank you for your continuing concern.

EB

bc: HWY-DS ✓

LINDA LINGLE
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 243-7845
Fax: (808) 243-7955



COUNTY OF MAUI
**DEPARTMENT OF PUBLIC WORKS
AND WASTE MANAGEMENT**
200 SOUTH HIGH STREET
WAILUKU, MAUI, HAWAII 96793

RALPH NAGAMINE, L.S., P.E.
Land Use and Codes Administration

EASSIE MILLER, P.E.
Wastewater Reclamation Division

LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

Solid Waste Division

December 28, 1998

Mr. Fred Rodriquez
Environmental Communications
81 South Hotel Street, #211
Honolulu, Hawaii 96813

Dear Mr. Rodriquez:

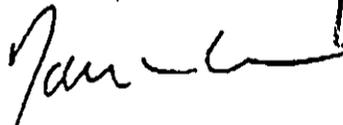
SUBJECT: HANA HIGHWAY - REPLACEMENT OF THREE TIMBER BRIDGES
UAOA BRIDGE AND APPROACHES
DRAFT ENVIRONMENTAL ASSESSMENT
TMK: (2) 2-8-004:055, 056, 059 AND 060

We reviewed the subject submittal and have the following comment.

1. Appropriate sampling and testing of creosote timbers are to be conducted and results submitted prior to landfill disposal.

If you have any questions, please call David Goode at 243-7845.

Sincerely,


for CHARLES JENCKS
Director of Public Works
and Waste Management

RECEIVED
JAN 04 1999

NISHIMURA, KATAYAMA,
OKI & SANTO, INC.

DG:co/mt
S:\LUCA\ICZM\UAOA.WPD

Post-It Fax Note	7871	Date	1-4	# of pages	1
To	PAUL	From	FRE		
Co./Dept.		Co.			
Phone #	FH	Phone #			
Fax #		Fax #			

MAR 1 1999

HWY-DS
2.2832

Mr. Charles Jencks, Director
Department of Public Works and Waste Management
County of Maui
200 South High Street
Wailuku, Hawaii 96793

Dear Mr. Jencks:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge & Approaches, Island of Maui
Project No. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

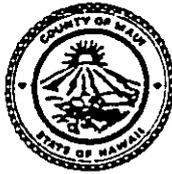
We received your comments dated December 28, 1998, and in response to your concerns, provisions will be made for the sampling and testing of creosote coated timbers prior to landfill disposal. All test results will be provided to Maui County for review and acceptance.

Thank you for your continuing cooperation.

Very truly yours,

Jerry Segars
for
KAZU HAYASHIDA
Director of Transportation

EB
bc: HWY-DS ✓



**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 243-7816 • Fax (808) 243-7833**

December 30, 1998

Mr. Fred Rodriguez
Environmental Communications
81 South Hotel Street, # 211
Honolulu, Hawaii 96813

Re: Hana Highway Replacement of Three Timber Bridges
Uaoa Bridge and Approaches Makawao District, Maui County

TMK: 2-8-4:55, 56, 59, 60

Dear Mr. Rodriguez,

Thank you for the opportunity to provide comments in preparation of the draft environmental assessment (EA). The Water Department has the following comments and general concerns:

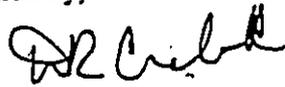
The Department of Water Supply system ends approximately 60 feet from the west side of the existing bridge at stand pipe nc. 252. Realignment of the road will affect our existing 4 inch line running along the mauka side of Hana Highway. This line, stand pipe # 252, and appurtenances will need to be relocated outside the construction area. Attached is a section of our fire protection map showing the alignments of the waterlines in the project area. Please contact our engineering division at 243-7835 to discuss these issues.

The project overlies the Haiku aquifer. The Department of Water Supply strives to protect the integrity of both surface water and groundwater resources by encouraging the use of best management practices (BMPs) relevant to potentially polluting project activities. We encourage the applicant to build BMPs into the design and implementation of the bridge replacement project. There are many BMP references available. We have attached sample BMP for road and bridge construction and a reference list of BMP resources. Additional information can be obtained from the State Department of Health.

If you need additional information, please contact the Water Resources and Planning Division anytime at (808) 243-7199.

JAN 5 1999

Sincerely,



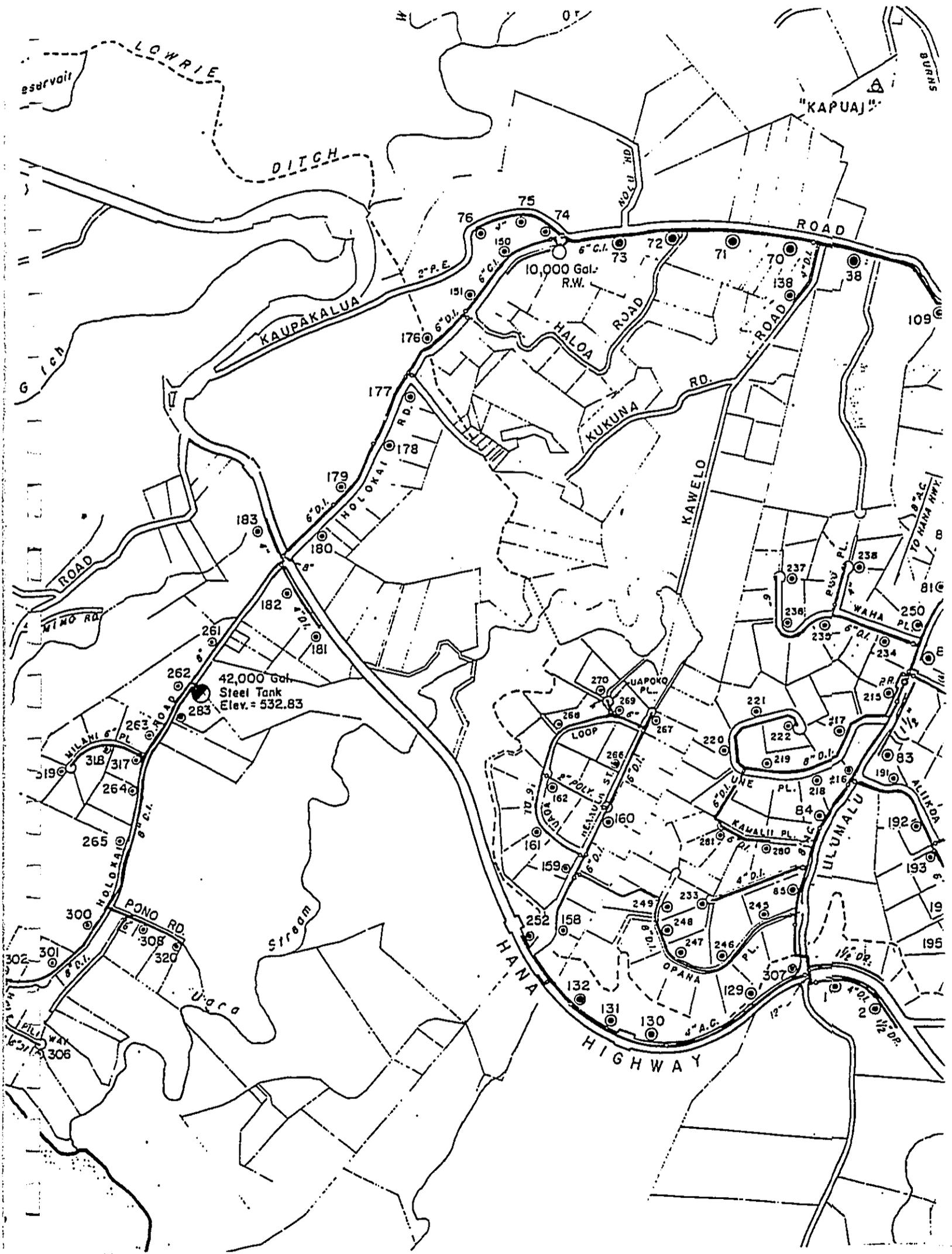
David Craddick
Director

emk

c: engineering division

attachments:

Selected BMPs from "Guidance Specifying Management Measures For Sources of Nonpoint
Pollution In Coastal Waters." U.S. EPA.
References for Further Reading from "The Megamanual - Nonpoint Source Management Manual."
Commonwealth of Massachusetts
Department of Water Supply Fire Protection Map



HWY-DS
2.2833

MAR 1 1999

Mr. David Craddick, Director
Department of Water Supply
County of Maui
P.O. Box 1109
Wailuku, Hawaii 96793-7109

Dear Mr. Craddick:

Subject: Draft Environmental Assessment
Hana Highway, Replacement of Timber Bridge,
Uaoa Bridge & Approaches, Island of Maui
Project No. BR-036-1(5)
TMK 2-8-4: 55, 56, 59, 60

We received your comments dated December 30, 1998, and we respond with the following:

1. We have checked the location of our proposed bridge improvements and the standpipes noted in your letter are not within the limits of our project.
2. Regarding the protection of the Haiku Aquifer, we do plan to specify Best Management Practices (BMP) to prevent the polluting of surface and groundwater resources.
3. When the final design is completed, the Water Supply, Engineering, Water Resources and Planning Divisions will be contacted.

Thank you for your continuing interest and timely comments.

Very truly yours,

Jerry Leosardi

for
KAZU HAYASHIDA
Director of Transportation

EB

HWY DS ✓