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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
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KAHULUI, HAWAII 96732

May 11, 2000

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DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
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IN REPLY REFER TO:

OFC. OF ENVIRONMENTAL
QUALITY CONTROL

00 MAY 11 P2:05

RECEIVED

Ms. Genevieve Salmonson, Director,
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street
Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Finding of No Significant Impact (FONSI)
Mokulele Highway - Puunene Avenue Roadway Widening Project
Final Supplemental Environmental Assessment

The Department of Transportation has reviewed the draft supplemental environmental assessment and comments received during the 30-day comment period for this project (which began on March 8th 2000 and ended on April 7th 2000). The Department has determined that this project will not have significant environmental effects and has issued a Finding of No Significant Impact (FONSI). Please publish this notice in your May 23rd 2000 Environmental Notice.

We have enclosed four (4) copies of the Final Supplemental EA, and will be transmitting a completed OEQC Publication form and project summary via e-mail (e-mail will be transmitted by Chris Hart & Partners). Should you have any questions, please myself at 808 873-3535, or Mr. Rory Frampton of Chris Hart & Partners at 808 242-1955.

Respectfully,

Robert Staron, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

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MAY 23 2000

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**Final Supplemental Environmental Assessment
(CHAPTER 343 HRS)**

***Mokulele Highway
Puunene Avenue
Roadway Widening***

KAHULUI • KIHEI • MAUI • HAWAII

FEDERAL AID PROJECT CMAQ-0900(57)

**State of Hawaii
Department of Transportation
Highways Division**

May 2000

**Final Supplemental Environmental Assessment
(CHAPTER 343 HRS)**

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Puunene Avenue
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**State of Hawaii
Department of Transportation
Highways Division**

May 2000

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

I. SUMMARY

A: PROJECT SUMMARY

The Highways Division of the State of Hawaii Department of Transportation (SDOT) is issuing this Final Supplemental Environmental Assessment (FSEA). It is the lead local agency for the "Mokulele Highway - Puunene Avenue Roadway Widening Project" which was first reviewed in 1997.

The project consists of establishing a four-lane divided arterial between Piilani Highway and Puunene Avenue. Since the 1997 review, the SDOT has proposed amendments and additions to the original plans in response to public input and further design analysis. The amendments include an adjacent bike and pedestrian path, landscape featuring native plants, and additional improvements to roadways adjacent to the original corridor.

The augmented project area comprises:

- Puunene Avenue east of Dairy Road with adjacent sections of Hansen Road
- Mokulele Highway with adjacent sections of Mehamaha Loop
- Sections of Piilani Highway, South Kihei Road, and North Kihei Road adjacent to Mokulele Highway

B: REGULATORY CONTEXT AND BACKGROUND

As a solution to regional transportation problems foreseen through island-wide transportation studies in 1988 and 1996, the SDOT planned an expansion of Mokulele Highway from two to four lanes, thus providing more capacity between the Kihei-Makena and Wailuku-Kahului regions. State and Federal Environmental Assessments (EAs) of the project were initially published in 1997 and received a FONSI the same year from the State Department of Transportation and the Federal Highway Administration respectively.

The SDOT has proposed amendments and additions to the original plans in response to public input and further design analysis. The amendments include an

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

adjacent bike and pedestrian path, landscape featuring native plants, and additional improvements to roadways adjacent to the original corridor. This Supplementary Environmental Assessment (SEA) discusses the anticipated impacts of the additional improvements and also provides additional detail regarding routing, roadway improvements, and drainage infrastructure.

This Final Supplemental Environmental Assessment is submitted pursuant to Chapter 343 of the Hawaii Revised Statutes (HRS). The State Department of Transportation is the accepting authority for this assessment.

C: NEED FOR PROJECT

The purpose of the improvements as originally proposed in 1997 was to provide additional highway capacity between Wailuku-Kahului, Maui's primary urban center, and the rapidly growing areas of Kihei, Wailea and Makena along Maui's leeward shore. The existing transportation system is experiencing increasing high congestion often resulting in major delays. Previous transportation studies indicate traffic demand would exceed the capacity of a two-lane arterial roadway and illustrate the need to widen Mokulele Highway to a 4-lane highway. Without improvements, Mokulele Highway will operate at LOS F during the peaks periods of the day.

After the completion of the 1997 Environmental Assessment process, a more detailed traffic analysis was prepared that included an expanded assessment of nearby intersections. Additional improvements were recommended to maximize overall efficiency and improve some intersections near Mokulele Highway that would operate at unacceptable levels of service with future traffic volumes. In addition, public input during and after the EA process helped develop additional bikeway and landscaping components of the Project which were requested by the community.

D: ALTERNATIVES

Two "build" alternatives were proposed as refinements to the original "preferred alternative" developed in the 1997 environmental reviews. The two build alternatives differed regarding the improvements in the Kihei "triangle" area. A third alternative, the no-build alternative was also considered. Descriptions of the alternatives are listed below:

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

Alternative A

Alternative A is the proposed project. Specific improvements in Kihei include:

- Realign the Mokulele Highway/Piilani Highway intersections. The purpose of the realignment is to alter the configuration such that the heavy traffic movements, which are the southbound to eastbound left turn and the westbound to northbound right turn, become through movements.
- Demolish Mokulele Highway between Piilani Highway and South Kihei Road.

Alternative B

Specific improvements in Kihei include:

- Realign the South Kihei Road/Mokulele Highway intersection to divert northbound traffic from South Kihei Road to Mokulele Highway.

Alternative C

The No-Build Alternative.

E: SUMMARY OF IMPACTS

The additional actions are anticipated to positively affect visual and recreational resources of the surrounding area. Additional roadway improvements will improve the level of service at intersections near or with Mokulele Highway. Archaeological assessments of the new right-of-way have found no cultural materials and anticipate no findings during construction. No perceptible increases in noise levels are projected at the existing receptors along the project corridor, and in most urban locations, the project will reduce noise levels. Air quality is anticipated to improve due to the Project. Impacts to land owners and lessees due to the expanded right of way acquisition will be mitigated through established guidelines set forth in Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended by the Uniform Relocation Act of 1987) CFR Title 49 Part 24. Short-term construction-related impacts to air, noise, and water will be mitigated. In summary, no substantial adverse impacts are anticipated as a result of the additional actions proposed for the Mokulele Highway - Puunene Avenue Roadway Widening Project.

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F: REQUIRED PERMITS

County

- Special Management Area Permit

State

- National Pollutant Discharge Elimination System (NPDES) Permit

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II. PROJECT DESCRIPTION

A: INTRODUCTION

The Mokulele-Puunene Highway Widening Project was initiated to provide additional highway capacity between Wailuku-Kahului, Maui's primary urban center, and the rapidly growing areas of Kihei, Wailea and Makena along Maui's leeward shore.

The original project consisted of widening Mokulele Highway from two lanes to a four-lane divided highway. Small adjacent sections of Puunene Avenue and Piilani Highway would also be widened. Mokulele Highway's intersections with Hansen Road and Piilani Highway would be realigned to improve traffic flow by making the heavy turning movements the new through movements.

On March 23, 1997, a Draft Environmental Assessment (DEA) for the project was published. The State Office of Environmental Quality Control (OEQC) published a Finding of No Significant Impact (FONSI) on July 23, 1997 in accordance with Chapter 343, Hawaii Revised Statutes. Pursuant to the National Environmental Policy Act (NEPA), an Environmental Assessment (EA) was made available for public review. OEQC published the availability of the EA in its November 8th, 1997 Environmental Notice and a FONSI was issued subsequently.

In the period since the State and Federal environmental reviews and consecutive Findings of No Significant Impact, the State Department of Transportation (SDOT) has refined the roadway details and has incorporated additional features at the request of the public. This Supplementary Environmental Assessment (SEA) discusses the anticipated impacts of the additional improvements and also provides additional detail regarding routing, roadway improvements, and drainage infrastructure.

The additional features include the development of a landscape-planting plan, the inclusion of adjacent bike and pedestrian paths, and additional improvements to roadways adjacent to the original corridor. The additional actions are described in detail in the following sections.

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This Final Supplemental Environmental Assessment is submitted pursuant to Chapter 343 of the Hawaii Revised Statutes (HRS). The State Department of Transportation is the accepting authority for this assessment.

B: PROPOSING AND ACCEPTING AGENCIES

The State of Hawaii's Department of Transportation and is the proposing agency for this project. This SEA is submitted pursuant to Chapter 343 HRS guidelines and therefore the State Department of Transportation will be the accepting authority. Contact information is listed below.

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

Mr. Kazu Hayashida, Director
(808) 587-2150

C: NEED FOR PROJECT

Mokulele Highway is the only major highway providing a relatively convenient connection between Kahului and Kihei. Because of the direct connection between Central Maui and Kihei-Makena afforded by Mokulele Highway, the existing transportation system is experiencing increasing high congestion often resulting in major delays. Without improvements, the Maui Long Range Land Transportation Plan has projected dramatically increased congestion due to increases in future traffic volumes.

The travel demand model that was developed as part of the Maui Long Range Traffic Plan projects a Year 2020 daily traffic volume on Mokulele Highway of approximately 31,000 vpd. This magnitude of traffic demand would exceed the capacity of a two-lane arterial roadway and clearly indicates a need to widen Mokulele Highway to a 4-lane cross-section. Without widening, Mokulele Highway would operate at LOS F during the peaks periods of the day.

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The purpose of the proposed widening improvements on Mokulele Highway and Puunene Avenue, is to provide additional highway capacity between Wailuku-Kahului, Maui's primary urban center, and the rapidly growing areas of Kihei, Wailea and Makena along Maui's leeward shore. Intersection improvements are also planned to provide improved efficiency along the entire length of the Mokulele Highway corridor. The improvements are anticipated to reduce travel times and ease existing traffic congestion along the corridor.

The conversion of Mokulele Highway from a 2-lane, undivided roadway to a 4-lane, divided roadway is also expected to increase the traffic safety of this travel corridor. The 1994 edition of A Policy on Geometric Design of Highways and Streets ("Green Book") published by the American Association of State Highway and Transportation Officials, states that "The principal advantages of dividing the multi-lane arterial are increased safety, comfort and ease of operation. Of significance is the reduction in head-on collisions and virtual elimination of such accidents on sections with wide medians. ...Where median lanes for left turns are provided, rear-end collisions and other inconveniences to through traffic resulting from left-turn movements are greatly reduced." The following safety benefits are attributable to medians:

- ◆ separates opposing traffic flow;
- ◆ provides a recovery area for out-of-control vehicles;
- ◆ provides a stopping area in case of emergencies;
- ◆ allows space for speed changes;
- ◆ reduces left and U-turn lane storage space;
- ◆ reduces headlight glare.

It is, therefore, felt that safety will be increased by implementing the median that is part of the proposed Mokulele Highway widening project.

After the completion of the 1997 Environmental Assessment process, a more detailed traffic analysis was prepared that included an expanded assessment of nearby intersections. Improvements were recommended to maximize overall efficiency and improve some intersections near Mokulele Highway that would operate at unacceptable levels of service with future traffic volumes. The additional traffic improvements are described in the following sections.

In addition, public input during and after the EA process helped develop additional bikeway and landscaping components of the Project which were requested by the community. A description of these improvements follows.

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D: ADDITIONAL ACTIONS

1. Landscape Planting

An ad hoc group of individuals from the community participated in the development of a landscape plan for the travelway. Entitled the Mokulele Highway Beautification Committee, the group consisted of members of varied organizations, including the US Fish and Wildlife Service, the Kihei Community Association, The State Department of Transportation, Community Work Day, The Maui Humane Society (Mokulele Animal Shelter), Landscape Architecture firms and bicycling organizations.

Two important aspects of the plan include:

1) The majority of landscaping will be native shrubs and trees, including:

Kou	Hau	Hala
Kamani	Milo	Naio
A'ali'i	Ma'o	Kului

2) Rather than consistent "hedge-like" planting along the highway, landscaping will be concentrated in five areas. Two of the areas include "Gateways" to the communities of Kahului and Kihei. The gateway sections will receive the greatest emphasis and may include non-native plants to identify the community's culture or historic features. Suggested non-natives include Coco-Palms for the Kihei Gateway and Monkey-Pod trees for the Kahului Gateway. The remaining three concentrations would be incorporated as "rest areas" on the bike / pedestrian pathway.

Details of the landscaping plans are included in Figures 3A through 3G.

2. Bikeway & Pedestrian Path

A 10-foot paved bikeway and a 3-foot gravel pedestrian/jogging path will be constructed as part of the revised Project. The pathways will be located on the east (upland) side of the Highway, and will be separated from the northbound travel-lanes by a 10-foot roadway shoulder and a 20-foot landscaped buffer. Three rest areas will be incorporated along Mokulele Highway. Typical sections of the bikeway and rest areas are included in Figures 3A through 3G.

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3. Improvements to Roadways Adjacent to the Original Project Corridor

Additional improvements are planned at two intersections in north Kihei nearest the Mokulele Highway Widening.

Along Piilani Highway, the four-lane roadway will be extended an additional 1300' south towards the intersection with Uwapo Road. Improvements were previously terminated just before Waiakoa Bridge. The new addition includes the construction of a new bridge for northbound traffic upslope (east) of the existing Waiakoa bridge. Revised striping on the southern (Makena) side of the intersection with Uwapo will allow the two lane southbound traffic to continue through the intersection before merging into one lane.

To improve the operation of the intersection of North Kihei Road and South Kihei Road, the intersection would be expanded, re-aligned, and signalized. The terminus of South Kihei Road would be moved approximately 300' east of the current intersection. Besides creating a more effective "T" intersection, the re-alignment of approximately 700 feet of South Kihei Road away from the coast will create a larger buffer from nearby condominium projects.

Improvements to Puunene Avenue will be extended to the intersection with Kuihelani Highway and Dairy Road. The Avenue will be expanded to accommodate two-lane travelways in each direction with separate turning lanes.

The north and south termini of Mehameha Loop will be aligned across corresponding intersections with the Hawaiian Cement access road (north) and the future MEO facility access road (south). The adjustments to Mehameha Loop will simplify and reduce the number of intersections along Mokulele Highway.

E: ALTERNATIVES

Four alternatives were considered as part of the 1997 Environmental Assessments. They included:

- The Preferred Alternative which included widening Mokulele Highway and Puunene Avenue
- The Mokulele Highway/Puunene Bypass Alternative which would create a bypass road to coincide with the future Maui Lani Parkway intersection with Kuihelani Highway rather than expand Puunene Avenue

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- The No Action Alternative
- The Transportation Systems Management ("TSM") Alternative would increase the efficiency and effectiveness of the existing transportation system through service-oriented programs such as bus systems, signalization, carpooling programs, and the development of alternative travel modes.

Two "build" alternatives were proposed as refinements to the original "preferred alternative" described in the 1997 environmental reviews. The preferred alternative (A) was selected due to the inability of the other alternatives to meet the expected level of vehicle traffic over the projected planning period.

Both build alternatives included the following additional improvements:

- Realign Mehamaha Loop (South) to intersect Mokulele Highway at the MEO/Raceway to create a four-leg intersection.
- Realign Mehamaha Loop (North) to intersect Mokulele Highway at Quarry Road, also creating a four-leg intersection.
- Realign the Mokulele Highway/Puunene Avenue intersection to provide a larger radius and extend Hansen Road to intersect the new alignment of Puunene Highway.

The two current build alternatives differed regarding the improvements in the Kihei "triangle" area. A third alternative, the no-build alternative was also considered. Descriptions of the alternatives are listed below:

Alternative A

Alternative A is the proposed project, the preferred alternative. Specific improvements in Kihei include:

- Realign the Mokulele Highway/Piilani Highway intersections. The purpose of the realignment is to alter the configuration such that the heavy traffic movements, which are the southbound to eastbound left turn and the westbound to northbound right turn, become through movements.
- Demolish Mokulele Highway between Piilani Highway and South Kihei Road.

Alternative B

Specific improvements in Kihei include:

- Realign the South Kihei Road/Mokulele Highway intersection to divert northbound traffic from South Kihei Road to Mokulele Highway. This traffic would then use the signalized intersection of Mokulele Highway at Piilani

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Highway rather than the unsignalized intersection of North Kihei Road at South Kihei Road. This will allow the intersection of Mokulele Highway at Piilani Highway to operate more efficiently and reduce the number of northbound left turns at the intersection of North Kihei Road at South Kihei Road.

Alternative C

Maintain the existing intersection configurations and increase the capacity of the study intersections to accommodate 2020 traffic to the best possible level-of-service. Projections for Alternative C are the same as the No-Build Scenario.

F: PROJECT SCHEDULE AND COST

Construction of the Highway improvements will occur phases with construction generally starting from the south and progressing northward. The specific areas selected for each phase will depend on funding availability. Preliminary plans call for two phases. Phase I will include improvements in north Kihei and along Mokulele Highway, stopping at the Animal Shelter near the northern intersection with Mehamaha Loop. Phase II of the project will improve the northern remainder of Mokulele Highway and Puunene Avenue. Initiation of phase I is anticipated in early 2001. The project is anticipated to be completed in 2004.

Total estimated construction costs will be approximately \$80 million. The estimated acquisition cost for of right-of-way (ROW) is \$4.7 million. Funding for the project will be provided through the State Department of Transportation and the Federal Highway Administration. The Federal Aid number for the project is CMAQ-0900(57).

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**III. AFFECTED ENVIRONMENT,
ENVIRONMENTAL CONSEQUENCES,
AND MITIGATION MEASURES**

The original Environmental Assessment provided a description of the affected environment and identified potential impacts and mitigation measures in a variety of functional areas relating to the Physical, Social and Economic Environment. The proposed project additions will not affect the original assessment for the following functional areas: climate; geology and soils; hydrology; agricultural resources; fauna; and State Land Use Districts and County Zoning.

The following sections assess potential impacts and mitigation measures, which differ from the previous assessment because of the incorporation of the proposed project changes.

A: PHYSICAL ENVIRONMENT

1. Land Use

As noted in the original EA, right of way expansion primarily occurs to the east (mauka) of Piilani and Mokulele Highways within the Phase I project boundaries (i.e. the southern half of the project). Along the Phase II project area most of the right of way acquisition will occur to the west of the existing right of way.

Land ownership of the affected parcels, lessees and Tax Map Key (TMK) numbers are provided in the table below.

<u>TMK</u>	<u>Owner</u>	<u>Lessor</u>
3-8-4:030	A&B	
3-8-4:002	A&B	Ameron
3-8-4:023	A&B	
3-8-4:024	A&B	Pfizer Genetics Inc.
3-8-8:001	State of Hawaii	A&B
3-8-8:001	State DHHL	
3-8-8:014	State of Hawaii	
3-8-8:007	A&B	

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3-8-8:032	State of Hawaii	County of Maui
3-8-8:008	State of Hawaii	A&B
3-8-8:008	State DHHL	
3-8-5:002	A&B	
3-8-5:021	A&B	Hawaiian Foliage
3-8-5:034	Harry Weinberg	
3-8-77:09	H & J Weinberg	Pfizer Genetics Inc.
3-8-5:001	A&B	
3-8-5:019	A&B	
3-8-5:022	A&B	
3-8-5:027	A&B	Hawaiian Foliage
3-8-5:029	A&B	Hawaiian Foliage
3-8-6:002	A&B	
3-8-6:003	A&B	
3-8-6:069	A&B	
3-8-6:071	First Assembly of God	

Newly identified areas which will require additional right of way acquisition and a brief description of impacted uses are as follows:

East of the existing Piilani/Mokulele intersection in order to allow for the realignment and straightening of the newly configured intersection. (TMK 3-8-4: 24) This area is currently occupied by the Pfizer Genetics seed corn facilities. The existing buildings near Mokulele Highway will need to be removed and/or relocated from the makai portion of the parcel.

East of Piilani Highway in order to accommodate the new bridge construction and widening of Piilani Highway to four lanes up to and through the Uwapo Road intersection. (TMKs 3-8-4: 2, 23 & 30) Ameron HC&D currently operates a concrete batching plant on the north side of Waiakoa gulch. This facility will need to be relocated.

East of the existing terminus of South Kihei Road in order to provide for the new section of South Kihei Road. (TMK 3-8-5: 34) This parcel is currently vacant.

Immediately north and west of the existing intersection of North Kihei Road with Mokulele Highway. (TMK 3-8-5: 21) A portion of a green house operated by Hawaiian Foliage and Landscape currently occupies this area, the portion will need to be removed.

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All other areas of right of way expansion consist of vacant land the majority of which is in agricultural use. No residences will be affected by right of way expansion.

Mitigation of right of way acquisition will take place according to the regulations established by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended by the Uniform Relocation Act of 1987). CFR Title 49 Part 24. In order to provide uniform and equitable treatment for persons being displaced, this federal law provides for relocation advisory assistance and payments. The Uniform Relocation Act requires that the State would pay for moving expenses and re-establishment costs for businesses that are dislocated. Also, if improvements and lands are being taken then the act requires that payment be made based on fair market value of improvements.

2. Topography / Landforms

Roadway improvements in the north Kihei area and along Puunene Avenue require minimal grade and fill. The addition of a new bridge at Waiakoa Stream will minimize topographical changes to the streambed.

Drainage improvements include graded inlets / outlets at drainage culvert, cut-off channels, and small shoulder swales. None of the drainage improvements are considered to be substantial changes in topography.

No substantial impacts to topography are anticipated as a result of Project and additional actions.

3. Air Quality

As part of the 1997 Environmental Assessment, BD Neal & Associates produced an air quality study for the Mokulele Highway Widening Project. The study concluded that the proposed highway improvements would have a positive impact on the air quality of the roadway and the surrounding area. No long-term mitigation measures were recommended. The consultant also anticipated short term impacts due primarily to fugitive dust. Standard short-term mitigation measures were discussed although none were specifically recommended.

The author provided a theoretical discussion on vehicle-related air pollutants, specifically that the increases in air quality would be due to the increased efficiency (travel speeds) possible with the highway improvements. Areas of decreased

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

efficiency (congested areas, traffic lights, etc.) would have lower air quality, and in particular - higher levels of carbon monoxide. Taken in context, however, the proposed highway improvements were calculated to reduce overall carbon monoxide emissions by 82% versus the no build alternative for the year 2020.

The author was asked to comment on the anticipated effects of the additional actions of the project. Conclusions (Appendix A) were consistent with the original discussion and findings:

Increasing the Scope of the project will likely increase short-term impacts on air quality during the period of construction. After construction is completed, the proposed design changes will presumably result in an overall long-term improvement in traffic flow in the area and consequently and overall long-term improvement in air quality. However carbon monoxide concentrations will likely increase in some specific areas where traffic signals are installed or roadway capacity is increased.

Construction related mitigation measures and including Best Management Practices (BMPs) will be detailed in an erosion control report drafted by the project engineers. The State Department of Health will review the erosion control report before the issuance of a NPDES permit for construction activities.

Construction related impacts will be mitigated by frequent watering of the project site to control fugitive dust, establishing landscaping as early as possible in uncovered areas, and covering open-bodied trucks when they are transporting wind-erodible materials,

In summary, short-term impacts will be mitigated in a planned manner. Long-term impacts due to the project and additional actions are anticipated to be positive. Therefore no substantial impacts to air quality due to the additional actions are anticipated.

4. Noise Characteristics

A revised Environmental Noise Assessment Study (Appendix B) was prepared to assess the impacts of the Project's additional roadway improvements. The analysis utilized recent traffic data, and projected noise level via the latest Federal Highway Administration Traffic Noise Model (TNM).

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use.

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The current FHWA procedures for highway traffic noise analysis and abatement are contained in 23 CFR 772. These procedures specify the requirements that State highways agencies must meet when using Federal-aid funds for highway projects. FHWA noise abatement criteria, as a function of land use activity categories, are given in these procedures. The maximum hourly equivalent sound levels, Leq, for traffic noise exposure for corresponding land use categories are listed in Appendix B. For residential areas, the noise abatement threshold is 67 dB.

The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15 dB.

The study extrapolated the acquired acoustical data with respect to projected traffic volumes per each of the improvement alternatives. Both AM and PM comparisons were made at four locations selected as "noise-sensitive areas". These areas included:

- A Near the condominiums along South Kihei Road
- B At the closest condominiums along North Kihei Road
- C Near the Animal Shelter
- D Near the Church abutting Puunene Avenue

Results of the study found that the sound levels for (preferred) roadway alternative A were lower at all locations than the no-build alternative except for at area B, near the condominiums along North Kihei Road. (See Appendix B for a detailed presentation of sound level measurements and predicted changes)

At location B, the predicted noise levels for roadway alternative A would be 0.8 (AM peak traffic) and 0.1 (PM peak traffic) decibels higher than the no-build alternative. These increases would be imperceptible (a 3.0 decibel increase is considered barely perceptible), however current sound levels are above the FHWA Noise Abatement threshold of 67 decibels for residential areas. The acoustical engineer indicated that a reduction in the speed limit from 45 to 35mph along North Kihei Road would decrease the sound levels approximately 1.5db, which would mitigate the "build" alternative so that sound levels would be less than the "no-build" alternative. However, since the amount of potential increase (due to improvements) or decrease (due to mitigative measures) is too minute to be

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perceptible, no tangible benefit would occur from reducing the speed limit, and thus the mitigation measure is not warranted.

Projected noise levels will not change significantly for areas A and B, however will substantially decrease at areas C and D. Therefore, no long-term adverse noise impacts are anticipated. Short-term construction-related impacts will be mitigated through adherence to the Department of Health's regulation regarding vehicular noise requirements, allowable noise levels for construction equipment, and associated limits of operational hours when noise levels exceed permissible levels. Therefore, no substantially adverse impacts due to noise are anticipated for the project and the additional actions.

5. Biological Resources

No rare, threatened, or endangered species, or their habitat are known to exist in the expanded project area. No substantial impacts to unique or special biological resources are anticipated. This conclusion has been made based on the original botanical study, field inspections of the new project areas, and consultation with the U.S. Fish and Wildlife Service in 1997 and 2000.

Several Monkey-Pod trees along Puunene Avenue will be removed. Project planners are continuing to work with the landscape architects and the community to possibly relocate these trees within the new "gateway" planting plan, or possibly along Hansen Road. The affected area, however, will be extensively replanted with a combination of native shrubs and trees.

6. Shoreline Processes

The proposed expanded project areas are located inland and will have no foreseeable impact to shoreline processes.

7. Flood and Tsunami Hazard

According to the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) CP# 150003-0255B, the additional roadway improvements in north Kihei are located in zones V18, A0, and A4. Zone V18 is described as areas of the 100-year coastal flood with velocity (wave action); with base flood elevations and flood hazard factors determined. Area A0 is described as areas of 100-year shallow flooding where depths are between one and three feet; average depths of inundation are shown, but no flood hazard factors are determined. Zone A4 is described as areas of 100-year flooding where base elevations and flood hazard

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factors are determine. 1992 Revisions to the FIRM reduced the V18 boundary approximately 400 feet inland between Mokulele Highway and Uwapo Road and changed the Base Flood Elevation at the Mokulele/ North Kihei Intersection from 12 to 8 feet.

Bikeway improvements along Mokulele Highway are described as falling within zones C, B, A and A0, by the Pre-Final Drainage Report (Appendix C).

Although portions of the additional improvements are located within the flood and tsunami zones, roadway improvements are unlikely to be damaged or cause further hazard by such natural disasters. Drainage improvements for the project are designed to re-route the existing off-site flow under rather than over the roadways (as it presently does in storm situations).

The greater elevation and improved drainage facilities will make the roadway more usable in a flood or tsunami disaster, which will expedite evacuation of the lowland areas under such emergency.

No substantial impacts to flood or tsunami hazards are anticipated as part of the Project or additional actions.

8. Archaeological and Cultural Resources

Two additional archaeological assessments were conducted in response to modifications to the original 1997 project boundaries. The studies, marked Addendum II and Addendum III of the Puunene Bypass/ Mokulele Highway Improvements Corridor are included in Appendix D.

Addendum II surveyed the area along Puunene Avenue in proximity to the Dairy Road intersection, as well as the "Kihei Triangle", where South Kihei Road would be re-aligned with North Kihei Road.

Addendum III surveyed the area mauka of Piilani Highway between Waiakoa Bridge and Uwapo Road, and a section at the (northwestern) corner of North Kihei Road and Mokulele Highway.

In both studies, no archaeological sites or features were found to exist, and no further archaeological work was recommended.

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During the initial (1997) environmental assessment, two sites with potential historical significance were identified as proximal to the Project. The first site is a section of the Puunene Naval Air Station (identified as SIHP No. 5Q-50-04-4164) that was utilized during and after World War II as a dumping site of military equipment. The second site is a plantation camp known as McGerrow Village. The findings of the original Archaeological Report, including fieldwork and aerial photographs, were reviewed and accepted by the State Historic Preservation Division. The agency concluded in their May 7, 1997 comments that "in view of these facts, we can now say that the proposed undertakings will have no effect on significant historic sites known to be in the vicinity of the project site."

Since the completion of the original EA process, it has been determined that some remnant structures associated with the former military use of the Puunene Naval Air Station will need to be demolished and removed from the corridor. The remnant structures include concrete slabs, asphalt pavement, and portions of storage tanks. SDOT and FHWA will coordinate with the State Historic Preservation Division to ensure that the appropriate level of identification and documentation takes place prior to demolition of these structures.

Lands to be included through the supplemental actions were surveyed as part of this Supplemental Environmental Assessment. According to the reports, no surface archaeological features or historic sites were encountered within the subject areas and no further work was recommended.

Therefore, no adverse effect on historic or archaeological sites is anticipated as part of the supplemental actions of this project. However, should any sub-surface archaeological or cultural materials be found during grubbing or other construction activities, the Department of Land and Natural Resources Historic Preservation Division will be notified.

9. Visual Resources

Additional roadway improvements in the Kihei Area are not anticipated to have any substantial impact on mauka or makai viewplanes. The improvements will not block ocean views or scenic mauka ridgelines.

Several Monkey-Pod trees along Puunene Avenue will be removed. Project planners are continuing to work with the landscape architects and the community to possibly relocate these trees within the new "gateway" planting plan, or possibly along Hansen Road. The affected area, however, will be extensively replanted with a combination of native shrubs and trees.

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The addition of landscape planting along the Highway is anticipated to positively affect the visual resources of the travelway, and provide a more attractive entry into the communities of Kihei and Kahului.

A positive effect upon visual resources is anticipated due to the additional actions of the Project.

10. Hazardous Waste

A portion of the project corridor runs through property which was used as the Puunene Naval Air Station during World War II. Remnant structures associated with the former military use will need to be demolished and removed from the corridor. The remnant structures include concrete slabs, asphalt, and underground storage tanks. It is possible that some of the structures may contain or could have generated hazardous waste materials.

The U.S. Army Corps of Engineers is currently in process of removing underground fuel storage tanks as part of a former military site remedial clean up program. Prior to initiation of construction of this project, SDOT will perform an assessment to determine if any hazardous material associated with the former military use are present within the corridor. If hazardous materials are identified, a plan will be developed for safe removal and disposal in accordance with the requirements of the State Department of Health.

B: SOCIAL AND ECONOMIC ENVIRONMENT

1. Population and Economy

No substantial impacts to population and economy are anticipated as a result of the additional actions.

By situating the additional improvements along the existing transportation corridors, the project minimizes secondary effects on growth. By expanding existing infrastructure rather than creating new infrastructure in undeveloped areas, population growth and other development can be better managed with such tools such as land-use zoning and community planning.

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C: PUBLIC SERVICES

No direct impacts to public services are anticipated as a result of the additional actions. The improved operation of the travelway, including the improved operation of the north Kihei intersections as a result of the additional actions, however, will provide superior access to services in other regions. Currently emergency medical facilities are not available in the Kihei-Makena region, requiring travel to the Wailuku-Kahului region

D: LOCAL INFRASTRUCTURE

1. Water

Short-term uses of water include the watering of the construction area in order to mitigate dust emissions. The additional roadway improvements will increase the demand for dust-control water by a negligible amount. The construction contractor will provide water for dust-control purposes. As a mitigation measure, non-potable water may be used for such purposes.

Water for landscaping along the highway will be provided by the contractor during the establishment period. The Mokulele Highway Beautification Committee has been consulting with roadside landowners who may provide longer-term care for the nearby planting. Demands for irrigation are not anticipated to be substantial, and can be mitigated by using non-potable water and by selecting plants for the final planting plan which are best adapted to the environment.

No substantial changes in water demand are anticipated as a result of the Project and additional actions.

2. Drainage

The 1999 Pre-Final Drainage Report for the Project is included as Appendix C.

The report provides a hydrologic analysis of offsite and onsite watersheds and hydraulic calculations for the proposed drainage structures, including a bridge, culverts, concrete drop inlets, median and shoulder swales and interception ditches.

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Current drainage infrastructure is unable to handle storm runoff, which occasionally overflows onto the Highway and reduces vehicular traffic to one lane.

Potential watersheds and proposed drainage infrastructure has been assessed in accordance to the appropriate Federal, State, and County guidelines.

The Projects drainage improvements will expand the capacity of the drainage facility and therefore, no substantial impacts to drainage infrastructure are anticipated.

3. Wastewater

No wastewater generating improvements are part of the Project or additional actions. No substantial impacts related to the wastewater disposal or transmission systems are anticipated as part of the Project and additional improvements.

5. Electrical and Telephone Systems

No changes in electrical or telephone service are anticipated as part of the Project and additional improvements.

6. Transportation

An additional traffic assessment study (Appendix E) was prepared to assess traffic conditions with and without the additional roadway improvements. The proposed project (Alternative A) included the original roadway improvements, however project conclusions now considered traffic levels at the intersections in north Kihei. Below are the alternatives used in the analysis.

Alternative A

Alternative A is the proposed project. The improvements associated with Alternative A are:

- 1) Realign the Mokulele Highway/Piilani Highway intersections. The purpose of the realignment is to alter the configuration such that the heavy traffic movements, which are the southbound to eastbound left turn and the westbound to northbound right turn, become through movements.
- 2) Demolish Mokulele Highway between Piilani Highway and South Kihei Road.
- 3) Realign Mehameha Loop (South) to intersect Mokulele Highway at the MEO/Raceway to create a four-leg intersection.

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- 4) Realign Mehamaha Loop (North) to intersect Mokulele Highway at Quarry Road, also creating a four-leg intersection.
- 5) Realign the Mokulele Highway/Puunene Avenue intersection to provide a larger radius and extend Hansen Road to intersect the new alignment of Puunene Highway.

Alternative B

Realign the South Kihei Road/Mokulele Highway intersection to divert northbound traffic from South Kihei Road to Mokulele Highway. This traffic would then use the signalized intersection of Mokulele Highway at Piilani Highway rather than the unsignalized intersection of North Kihei Road at South Kihei Road. This will allow the intersection of Mokulele Highway at Piilani Highway to operate more efficiently and reduce the number of northbound left turns at the intersection of North Kihei Road at South Kihei Road.

Alternative C

Maintain the existing intersection configurations and increase the capacity of the study intersections to accommodate 2020 traffic to the best possible level-of-service. Projections for Alternative C are the same as the No-Build Scenario.

Based on the traffic study, Alternative A, the proposed realignment of the Mokulele Highway/Piilani intersection, provides the best overall level-of-service in the Kihei Triangle area. Therefore, the proposed improvements remain the preferred alternative.

As detailed in the traffic analysis report, overall levels of service improve as a result of the proposed project. A net positive effect on traffic is anticipated.

IV. RELATIONSHIP TO POLICIES AND REGULATION

A: GENERAL PLAN OF THE COUNTY OF MAUI

The Maui County General Plan (1990 Update) sets forth broad objectives and policies to help guide the long-range development of the County. As stated in the Maui County Charter, "The purpose of the General Plan is to recognize and state the major problems and opportunities concerning the needs and the development of the County and the social, economic and environmental effects of such development and set forth the desired sequence, patterns and characteristics of future development."

The proposed additional actions of the Project are in keeping with the following General Plan Objectives and Policies:

Policies:

Support the development of a county-wide network of bikeways and pedestrian paths.

Support Maui County's street tree plan and encourage landscape planting, irrigation and maintenance programs along all public highways and rights-of-way.

B: KAHULUI-WAILUKU & KIHEI-MAKENA COMMUNITY PLANS

The proposed project is located Kahului-Wailuku and Kihei-Makena Community Plans, two of the nine Community Plan regions established in the County of Maui. Planning for each region is guided by the respective Community Plans, which are designed to implement the Maui County General Plan. Each Community Plan contains recommendations and standards that guide the sequencing, patterns and characteristics of future development in the region.

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The proposed project is in keeping with the following Kahului-Wailuku Community Plan's goals, objectives, and policies:

Transportation Recommendations:

Provide bikeway and walkway systems in the Wailuku-Kahului area which offer safe and pleasant means of access...

Accommodate bicycle and pedestrian ways within planned roadway improvements (1994 Draft Plan)

Urban Design Objectives and Policies:

Improve pedestrian and bicycle access within the region (1994 Draft Plan).

Enhance the appearance of major public roads and highways in the region. (1994 Draft Plan).

Use native Hawaiian plants for landscape planting in public projects to the extent practicable (1994 Draft Plan).

The proposed project is in keeping with the following Kihei-Makena Community Plan's goals, objectives, and policies:

Housing and Urban Design

Encourage the use of native plants in landscaping in the spirit of Act 73, Session Laws of Hawaii, 1992. (Objective)

Provide an aesthetic landscaped entry way and park at the north end of Kihei, north of the future commercial area. (Implementing Action)

Transportation

Widen Pi'ilani Highway, between Mokulele Highway and Wailea Ike Drive, to four lanes (Implementing Action)

Widen Mokulele Highway to four lanes (Implementing Action)

C: SPECIAL MANAGEMENT AREA OBJECTIVES AND POLICIES

1. Recreational Resources

Objectives:

Provide coastal recreational resources accessible to the public.

Policies:

a. Improve coordination and funding of coastal recreation planning and management; and

b. Provide adequate, accessible and diverse recreational opportunities in the coastal zone management area by:

1. Protecting coastal resources uniquely suited for recreation activities that cannot be provided in other areas;

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2. *Requiring replacement of coastal resources having significant recreational value, including, but not limited to, surfing sites and sandy beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;*
3. *Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;*
4. *Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;*
5. *Encouraging expanding public recreational use of county, state and federally owned or controlled shoreline lands and waters having recreational value;*
6. *Adopting water quality standards and regulating point and non-point sources of pollution to protect and, where feasible, restore the recreational value of coastal waters; and*
7. *Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits, and crediting such dedication against the requirements of Section 46-6 of the Hawaii Revised Statutes.*

Response:

All proposed improvements are inland from the beach and coastline, and therefore will not considerably affect coastal recreational resources.

2. Historical/Cultural Resources

Objectives:

Protect, preserve and where desirable, restore those natural and man-made historic and prehistoric resources in the coastal zone management areas that are significant in Hawaiian and American history and culture.

Policies:

- a. *Identify and analyze significant archaeological resources;*
- b. *Maximize information retention through preservation of remains and artifacts or salvage operation; and*
- c. *Support state goals for protection, restoration, interpretation and display of historic resources.*

Response:

No historical or cultural artifacts have been found within the SMA boundaries of the project site, and previous surface disturbances have made it unlikely that any near-surface findings would be substantially intact.

Although no important archeological sites are believed to be in the project location, should any human or historic remains be uncovered during development, all work at that location will be stopped and the State Historic Preservation Division will be contacted.

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3. Scenic and Open Space Resources

Objectives:

Protect, preserve and, where desirable restore or improve the quality of the coastal scenic and open space resources.

Policies:

- a. Identify valued scenic resources in the coastal zone management area;*
- b. Insure that new developments are compatible with their visual environment by designing an location such developments to minimize the alteration of the natural land forms and existing public views to and along the shoreline;*
- c. Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources; and*
- d. Encourage those developments which are not coastal dependent to locate in inland areas.*

Response:

The majority of the project has no coastal views. Scenic resources along the transportation corridor will be improved with the addition of landscape planting.

4. Coastal Ecosystems

Objectives

Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems

Policies:

- a. improve the technical basis for mature resource management;*
- b. Preserve valuable coastal ecosystems of significant biological or economic importance;*
- c. Minimize disruption and degradation of coastal water ecosystems by effective regulation of stream diversions, channelization and similar land and water uses, recognizing competing water needs; and*
- d. Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land water uses which violate state water quality standards.*

Response:

As documented in the original Environmental Assessment, sources of water in the area include the Kealia Pond Wildlife Refuge and the Pacific Ocean.

As previously mentioned, any additional fugitive dust impacts will be mitigated in a similarly planned manner with an erosion control report which will detail mitigation strategies and BMPs.

The proposed drainage structures within the roadway will not cause a substantial change of runoff volume or quality from pre-construction conditions. Therefore, longer-term impacts caused by sedimentation and/or

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contamination of upstream waters flowing into the ocean or Kealia Pond will not be created nor substantially increased by the proposed improvements.

Short-term impacts due to dust and project runoff can and will be mitigated. No long-term impacts are anticipated. Therefore, no substantial impacts to water resources are anticipated due to the Project and additional actions.

5. Economic Uses

Objectives:

Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

- a. *Concentration in appropriate areas the location of coastal dependent development necessary to the state's economy;*
- b. *Insure that coastal dependent development such as harbors and ports, visitor facilities, and energy-generation facilities are located, designed, and constructed to minimize adverse social, visual and environmental impacts in the coastal zone management area; and*
- c. *Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:*
 1. *Utilization of presently designated locations is not feasible,*
 2. *Adverse environmental effects are minimized, and*
 3. *The development is important to the State's economy.*

Response:

The majority of the project is located outside the Special Management Area. Improvements within the SMA area are not proximate to the coastline.

The majority of project improvements are located in existing transportation corridors.

6. Coastal Hazards

Objectives:

Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion and subsidence.

Policies:

- a. *Develop and communicate adequate information on storm wave, tsunami, flood, erosion and subsidence hazard;*
- b. *Control development in areas subject to storm wave, tsunami, flood, erosion and subsidence hazard;*
- c. *Ensure that development comply with requirements of the Federal Flood Insurance Program; and*

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d. Prevent coastal flooding from inland projects

Response:

Although portions of the additional improvements are located within the flood and tsunami zones, roadway improvements are unlikely to be damaged or cause further hazard by such natural disasters. Drainage improvements for the project are designed to re-route the existing off-site flow under rather than over the roadways (as it presently does in storm situations).

All development within the V and A zones will be in accordance with Chapter 19.62 of the Maui County Code and applicable Flood Area regulations. The greater elevation and improved drainage facilities will make the roadway more usable in a flood or tsunami disaster, which will expedite evacuation of the lowland areas under such emergency.

No substantial impacts to flood or tsunami hazards are anticipated as part of the Project or additional actions.

7. Managing Development

Objectives:

Improve the development review process, communication, and public participation in the management of coastal resources and hazard.

Policies:

- a. Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development;*
- b. Facilitate timely processing of the application for development permits and resolve overlapping of conflicting permit requirements; and*
- c. Communicate the potential short and long-term impacts of proposed significant coastal developments early in their lifecycle and in terms understandable to the general public to facilitate public participation in the planning and review process.*

Response:

Informational public meetings have been held regarding the original Mokuale Highway Widening Project and in terms of the new actions regarding landscape planting and the addition of a bike/pedestrian pathway. Little of the project is in the Special Management Area (SMA) or is considered in the "coastline" area. Opportunity for further public review of the proposed actions will be provided during the County's (SMA) public hearing process.

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8. Public Participation

Objectives:

Stimulate public awareness, education and participation in coastal management.

Policies:

- a. *Maintain a public advisory body to identify coastal management problems and to provide policy advice and assistance to the coastal zone management program;*
- b. *Disseminate information on coastal management issues by means of educational materials, published reports, staff contact and public workshops for persons and organizations concerned with coastal related issues, development, and government activities; and*
- c. *Organize workshops, policy dialogues, and site specific mediations to respond to coastal issues and conflict.*

Response:

Informational public meetings have been held regarding the original Mokulele Highway Widening Project and in terms of the new actions regarding landscape planting and the addition of a bike/pedestrian pathway. Little of the project is in the Special Management Area (SMA) or is considered in the "coastline" area. Opportunity for further public review of the proposed actions will be provided during the County's (SMA) public hearing process.

9. Beach Protection

Objectives:

Protect beaches for public use and recreation.

Policies:

- a. *Locate new structures inland from the shoreline setback to conserve open space and to minimize loss of improvements due to erosion;*
- b. *Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions of erosion at the sites and do not interfere with existing recreational and waterline activities; and*
- c. *Minimize the construction of public erosion-protection structures seaward of the shoreline*

Response:

All proposed improvements are inland from the beach and coastline, and therefore will not affect public beach or ocean resources.

10. Marine Resources

Objectives:

Implement the State's ocean resource management plan.

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Policies:

- a. Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;*
- b. Assure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;*
- c. Coordinate the management of marine and coastal resources and activities management to improve effectiveness and efficiency;*
- d. Assert and articulate the interest of the state as a partner with federal agencies in the sound management of the ocean resources within the United States exclusive economic zone;*
- e. Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon the ocean and coastal resources; and*
- f. Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.*

Response:

All proposed improvements are inland from the beach and coastline, and therefore will not affect public beach or ocean resources.

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V. COORDINATION AND COMMENTS

The project was reviewed by State and Federal agencies and was issued a FONSI by the SDOT and Federal Highways Administration in 1997. A public informational meeting was held on May 7, 1997, in Kihei.

An ad hoc group of individuals from the community participated in the development of a landscape plan for the travelway. Entitled the Mokulele Highway Beautification Committee, the group consisted of members of varied organizations, including the US Fish and Wildlife Service, the Kihei Community Association, The State Department of Transportation, Community Work Day, The Maui Humane Society (Mokulele Animal Shelter), Landscape Architecture firms and bicycling organizations.

In addition, a copy of the Draft Supplemental EA was sent to Federal, State and County organizations as part the Chapter 343, HRS, review process. Agency comment letters and responses, where appropriate, are included in Appendix F. The following is a list of agencies that were provided copies of the Draft Supplemental EA.

Federal Agencies

- Natural Resources Conservation Service, Department of Agriculture
- Federal Highways Administration
- Fish and Wildlife Service
- Army Corps of Engineers

State Agencies

- Dept of Health, Maui
- Dept of Health, Honolulu
- Dept of Transportation (3 copies)
- DLNR
- DLNR - Historic Preservation Division
- DAGS, Survey Division
- State Land Use Commission
- DBEDT
- DBEDT, Office of Planning
- Dept of Hawaiian Home Lands

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- Office of Hawaiian Affairs
- OEQC

County Agencies

- DPWWM
- DPWWM, LUCA (5 copies)
- Water Dept
- Parks and Recreation
- Fire Department
- Police Department
- Housing and Human Concerns
- Office of the Mayor

Businesses

- Maui Electric Company
- HC&S

VI. DETERMINATIONS

A: HAWAII REVISED STATUTES - CHAPTER 343

The Department of Transportation has reviewed the draft supplemental environmental assessment and comments received during the 30-day comment period for this project (which began on March 8th 2000 and ended on April 7th 2000). The Department has determined that this project will not have significant *environmental effects* and has issued a *Finding of No Significant Impact (FONSI)*. This determination has been made in accordance with the following significance criteria, which are outlined in section §11-200-12 of the Department of Health's rules and regulations relating to environmental impact statements.

- 1) *Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;*

The following statements from the previous environmental assessment are still valid with the planned additional improvements to the Project.

The proposed project will not impact scenic views of the ocean or any ridgelines in the area. The visual character of the area will change from the current agricultural land to an improved 4-lane highway which is compatible with the surrounding land use plans and programs being implemented for the region. The highway corridor is comprised of "Prime" agricultural land, which is an important resource. Development of drainage systems will follow established design standards to ensure the safe conveyance and discharge of storm runoff.

As previously noted, no substantial adverse effects are anticipated to historic sites due to the project, and no important archaeological sites are known to exist within the corridor. Should any archaeologically important artifacts, bones or other indicators of on-site activity be uncovered during the construction phases of development, their treatment will be conducted in strict compliance with the requirements of the Department of Land and Natural Resources.

- 2) *Curtail the range of beneficial uses of the environment;*

Although portions of the additional required right-of-way are suitable for agriculture, the land area adjoining Mokulele and Piilani Highways is naturally suited for transportation uses due to its location proximate to an

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existing highway system. Community plans, including the Kihei-Makena Community Plan have made specific recommendations that Mokulele Highway and Piilani Highway be widened to four lanes, indicating a preference for land use.

The additional actions will actually increase the beneficial uses of the environment. The landscaped bikeway/pedestrian path will provide a recreational resource through the project corridor.

- 3) *Conflict with the State's long term goals or guidelines as expressed in Chapter 344, HRS, and any revision thereof and amendments thereto, court decisions, or executive orders;*

The proposed development is consistent with the Environmental Policies established in Chapter 344, HRS, and the National Environmental Policy Act.

- 4) *Substantially affect the economic or social welfare of the community or state;*

By providing improved transportation and recreational resources within and between communities, the additional improvements of the Mokulele Widening Project will improve the social and economic welfare of the Kahului and Kihei Communities.

The addition of landscape planting along right-of-ways, especially the use of native plants is recommended in the existing and proposed Community Plans for Kahului and Kihei.

- 5) *Substantially affect public health;*

Short-term construction related impacts including air and noise will be increased due to the extension of improvements in Kihei and the additions of landscape planting and bikeway along the entire project.

These impacts, however, can be mitigated. Adherence to rules and regulations set forth by the County of Maui and the State Department of Health will reduce temporary construction impacts. Such mitigation measures and best management practices are detailed in the Hawaii Administrative Rules (HAR), Chapter 11-46, Community Noise Control and the Maui County Grading Ordinance.

The project is expected to have positive long-term impacts regarding air, noise, and traffic. Positive long-term impacts due to the additional improvements includes the aesthetic and recreational value of the landscaped bikeway/pedestrian path, and the improvement of traffic conditions in the North Kihei Area.

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- 6) *Involve substantial secondary effects, such as population changes or effects on public facilities;*

The additional improvements are likely to cause a slight positive impact on the local economy via construction-related jobs and the purchase of materials.

By situating the additional improvements along the existing transportation corridors, the project minimizes secondary effects on growth. By expanding existing infrastructure rather than creating new infrastructure in undeveloped areas, population growth and other development can be better managed with tools such as land-use zoning and community planning.

- 7) *Involves a substantial degradation of environmental quality;*

The application of landscape planting will have a positive effect on the visual resources along the highway.

Additional transportation improvements in the North Kihei area are expected to result in better traffic flow, and therefore have a positive impact on air quality.

No substantial impacts to environmental quality are anticipated as a result of the additional planned improvements.

- 8) *Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment to larger actions;*

The proposed Highway widening with additional actions is anticipated to have no substantial impacts to the environment. In addition, the planning of these infrastructure improvements was done in a manner to minimize secondary (or cumulative) effects of population growth and land development, and to maximize the long-range transportation planning.

By expanding the existing transportation infrastructure rather than creating new infrastructure in undeveloped areas, population growth and infrastructure development can be better managed with tools such as land-use zoning and community planning.

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

No rare, threatened, or endangered species are known to occupy the project boundaries.

- 10) *Detrimentially affects air or water quality or ambient noise levels;*

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

As documented, temporary construction-related air and noise impacts are expected and will be mitigated during the construction of the project.

The potential for water quality impacts during construction will be mitigated by the adherence to an erosion control plan drafted to be consistent with the Maui County Grading Ordinance.

Long-term impacts to air quality will be positive due to the greater efficiency of movement achieved along the transportation corridor. Projected long-term noise impacts are also anticipated to be less than or equal to the no-action alternative.

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

Although portions of the additional improvements are located within the flood and tsunami zones, roadway improvements are unlikely to be damaged or cause further hazard by such natural disasters.

- 12) *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies;*

Due to the topographical characteristics of the project corridor, views of the area to be developed are generally not prominent although they are visible. The majority of the proposed project will not be visible except from higher elevation. The public will benefit from the improved views along the roadway due to the landscape planting.

- 13) *Requires substantial energy consumption*

Improved traffic flow resulting from the improvements is likely to improve efficiency of motor vehicle travel and lower per-capita energy consumption. Construction of the proposed project will not require substantial energy consumption relative to other similar projects.

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

REFERENCES

County of Maui, Maui Planning Department. *The General Plan of the County of Maui*. 1990.

County of Maui, Maui Planning Department. *Wailuku-Kahului Community Plan*. 1990.

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County of Maui, Maui Planning Department. *Kihei-Makena Community Plan*. 1998.

Federal Emergency Management Agency, Maui County, Hawaii. *FIRM Flood Insurance Rate Map: Community-Panel Number 15003 0233B*. Revised June 1, 1981

Hawaii Revised Statutes, Section 205A (Coastal Zone Management)

Warren S. Unemori Engineering, inc. and PBR Hawaii. *Mokulele Highway/Puunene Avenue Widening - Environmental Assessment*. September 1997

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

LIST OF PREPARERS

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Federal Highway Administration
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Transportation Engineer

Domingo Galicinao, P.E.
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State of Hawaii
Department of Transportation
Highways Division
Applicant

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Phil Rowell & Associates
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Phil Rowell
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DL Adams and Associates
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Dave Adams
President

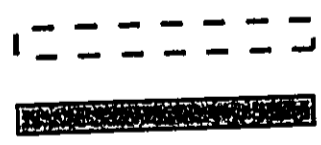
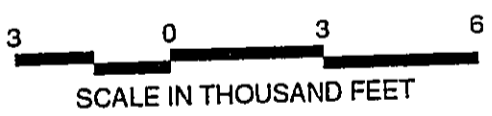
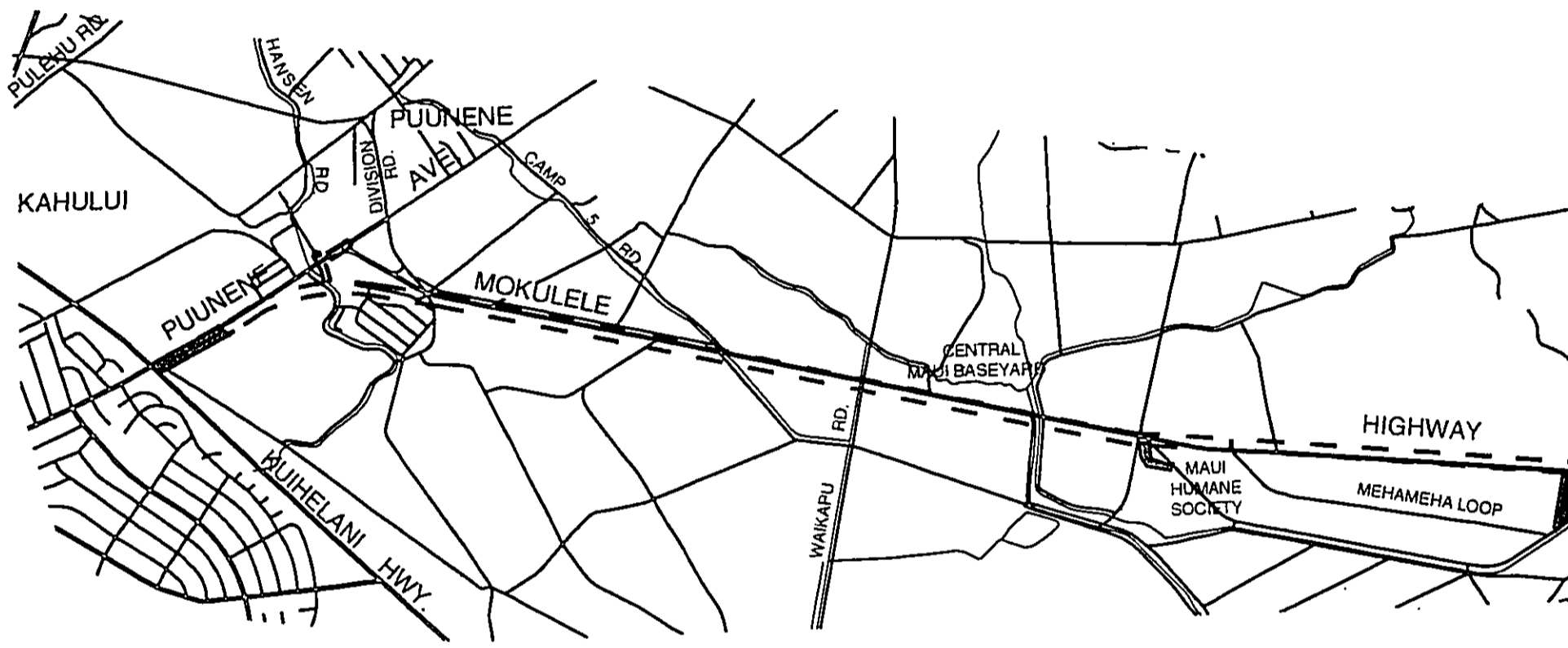
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

SCS Consulting
Archaeological Consultant

Bob Spear Ph.D.
President

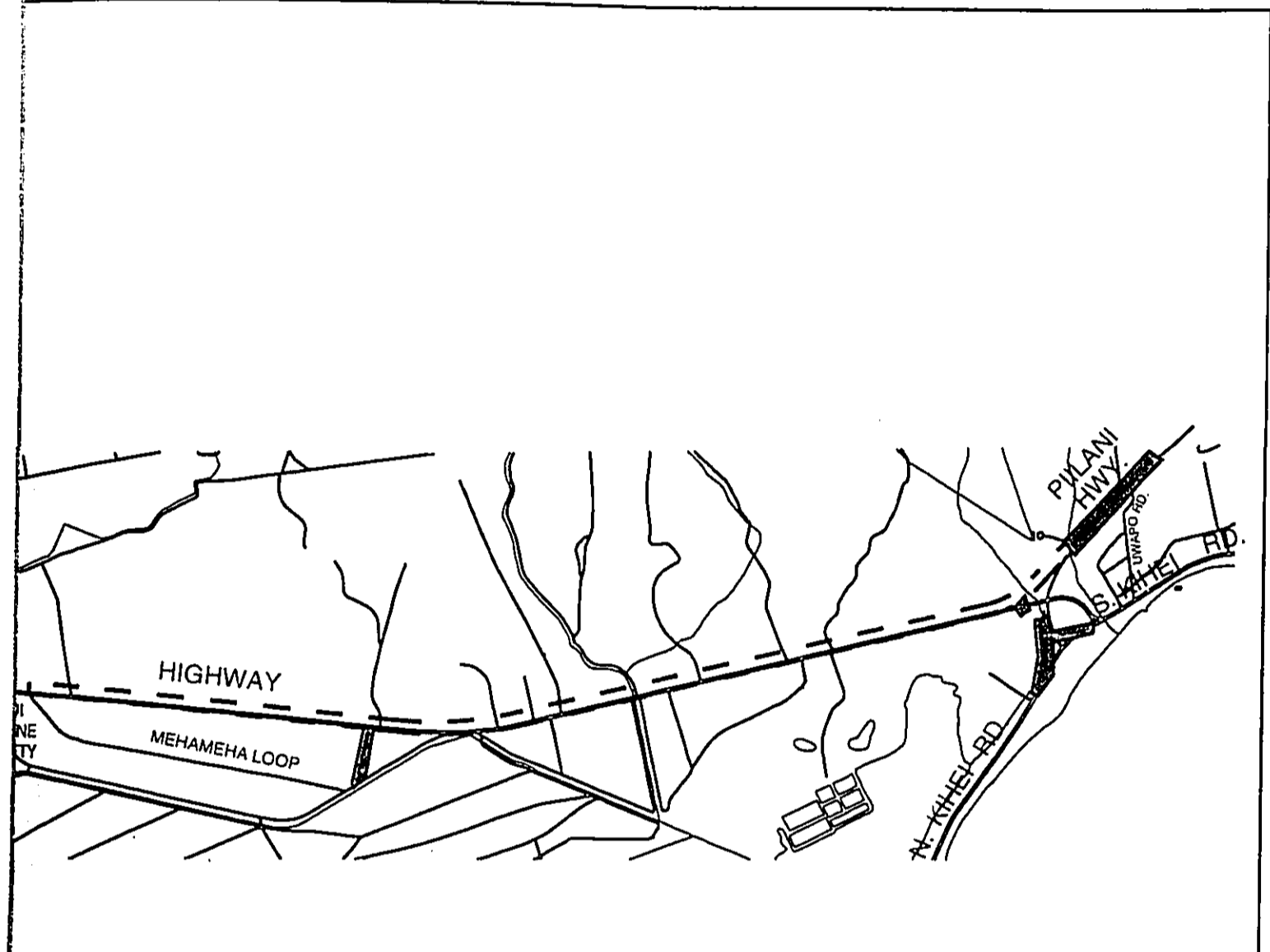
BD Neal and Associates
Meteorological Consultant

Barry Neil
President

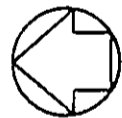


Original Project Corridor
Extended Project Area

Mokulele



Project Corridor
Project Area



NORTH

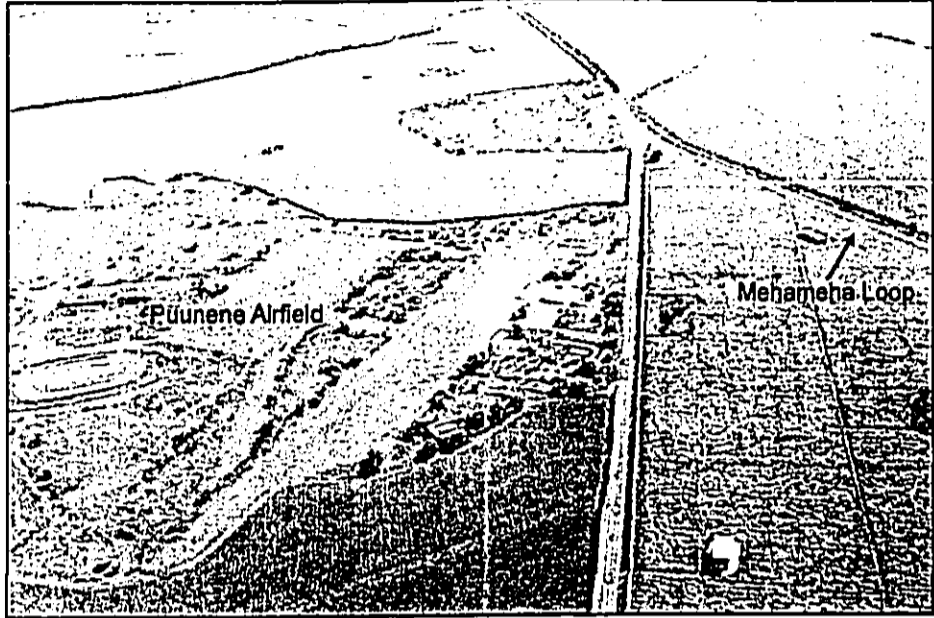


Mokulele Highway Widening Supplemental Environmental Assessment
PROJECT MAP

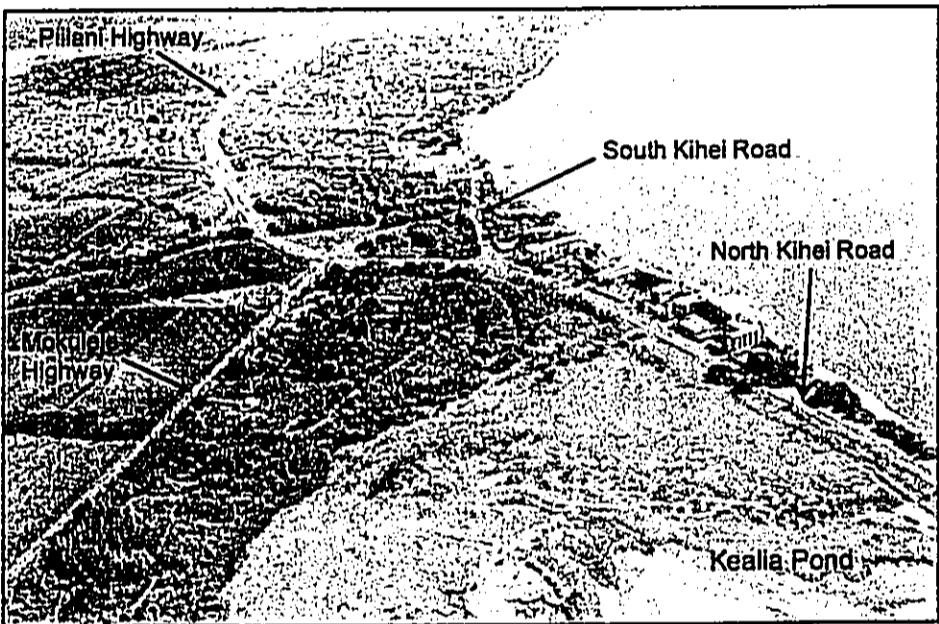
FIGURE
1



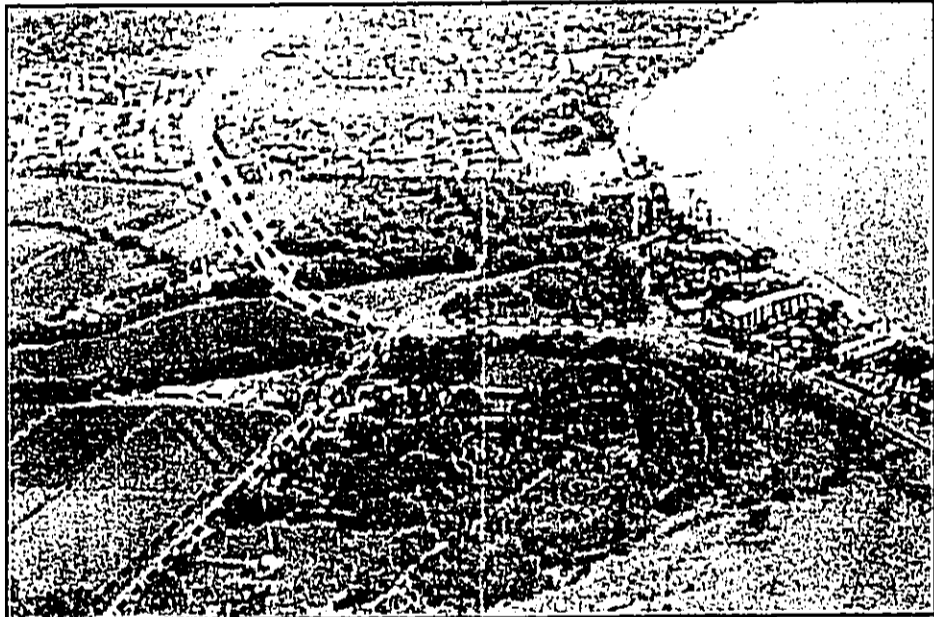
1 View facing southeast along Puunene Avenue



2 Looking South along Mokulele Highway near southern end of Mehameha loop. Puunene Airport visible in the left of photo.



4 Aerial view of Kihei Triangle. Kealia Pond visible in lower right of photo.

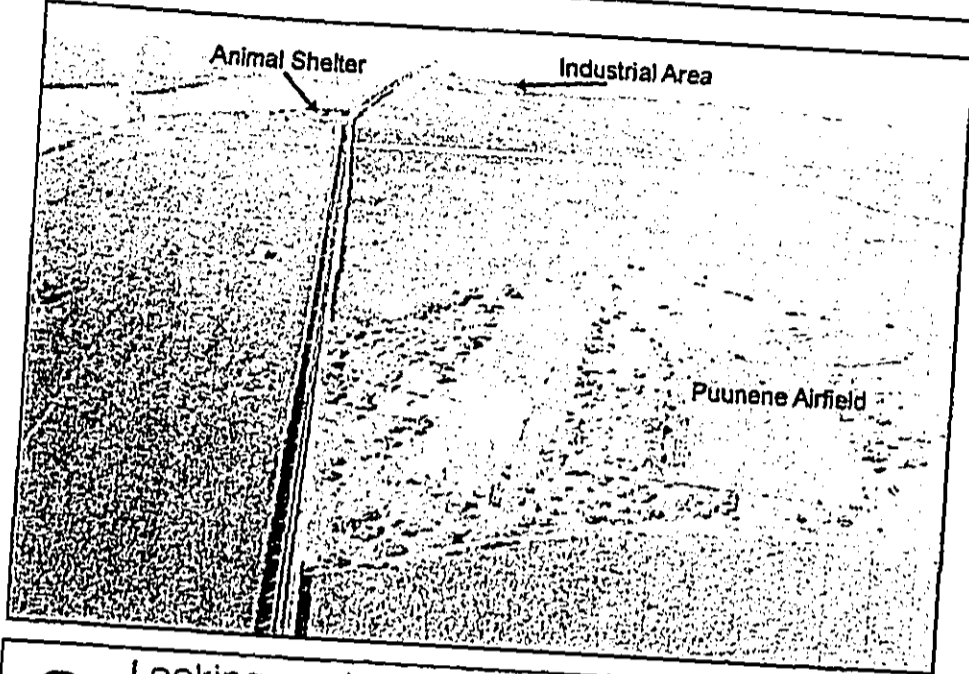


5 Enlarged view of triange showing new roadway alignment.

Mokulele Hig



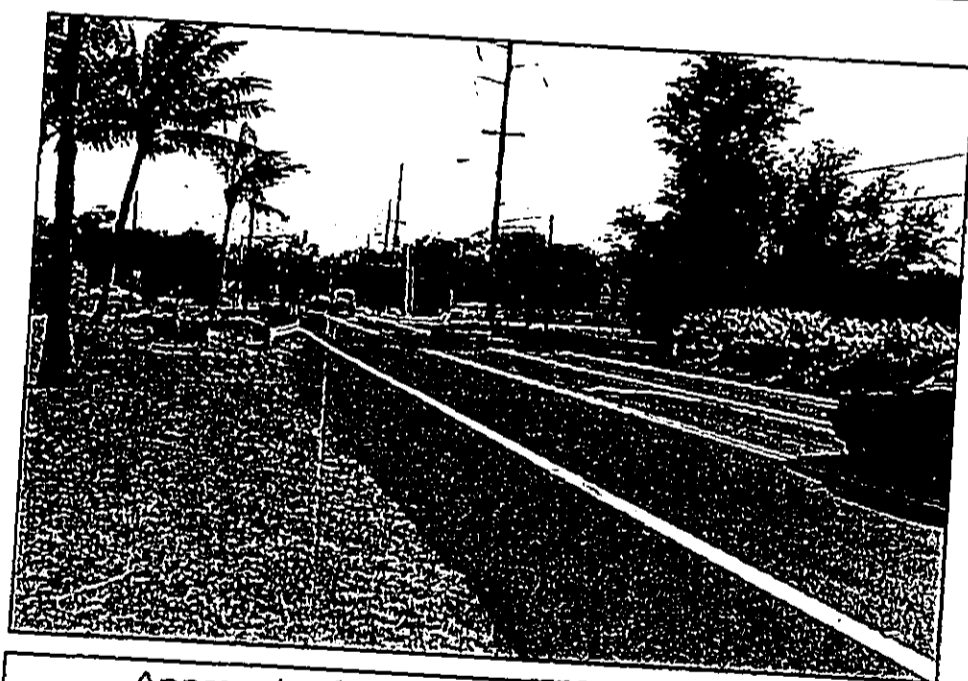
Mokulele Highway near Mehamaha loop. Puunene left of photo.



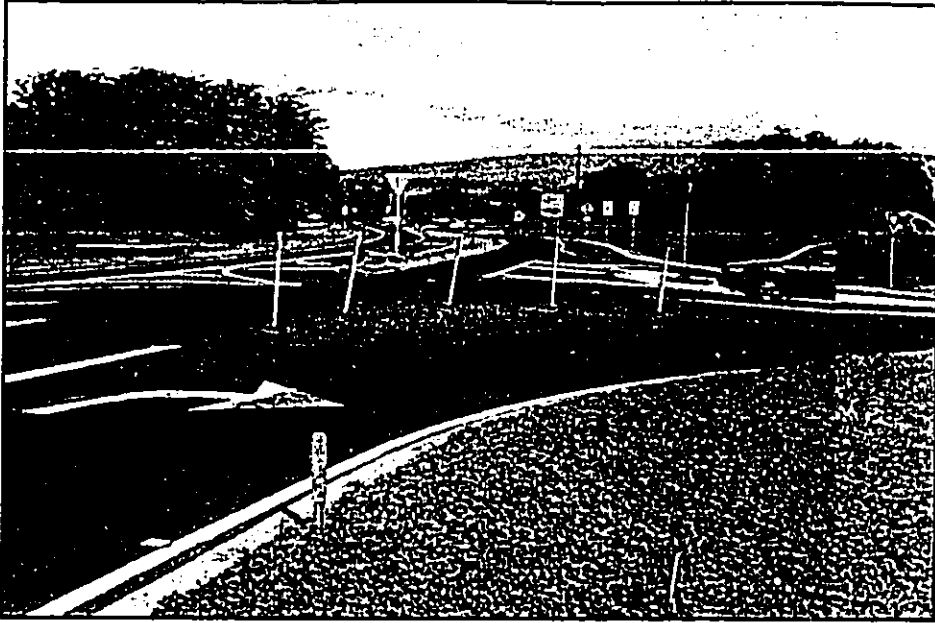
3 Looking north along Mokulele Highway. Northern end of Mehamaha loop visible in the upper left of photo.



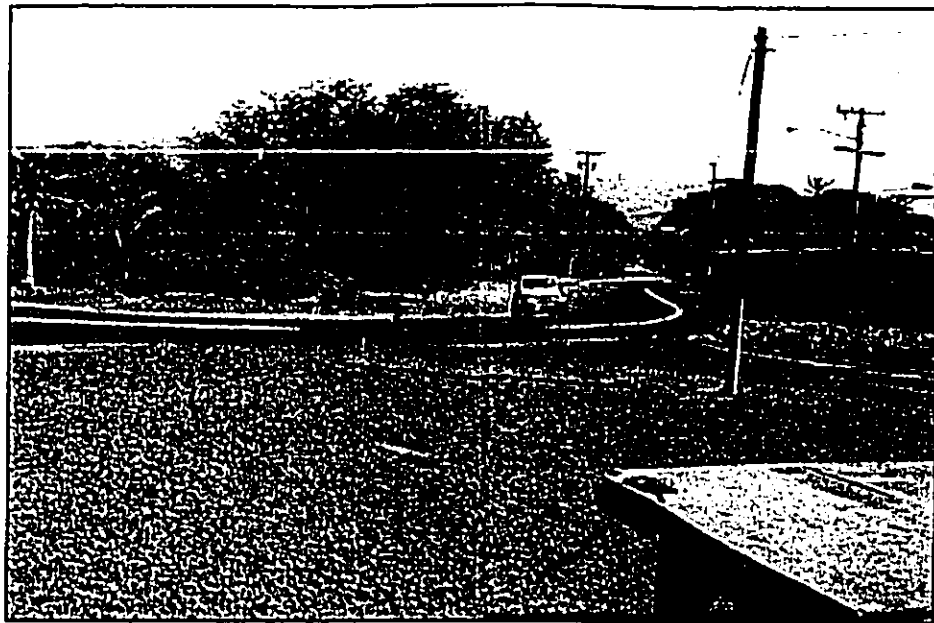
ge showing new



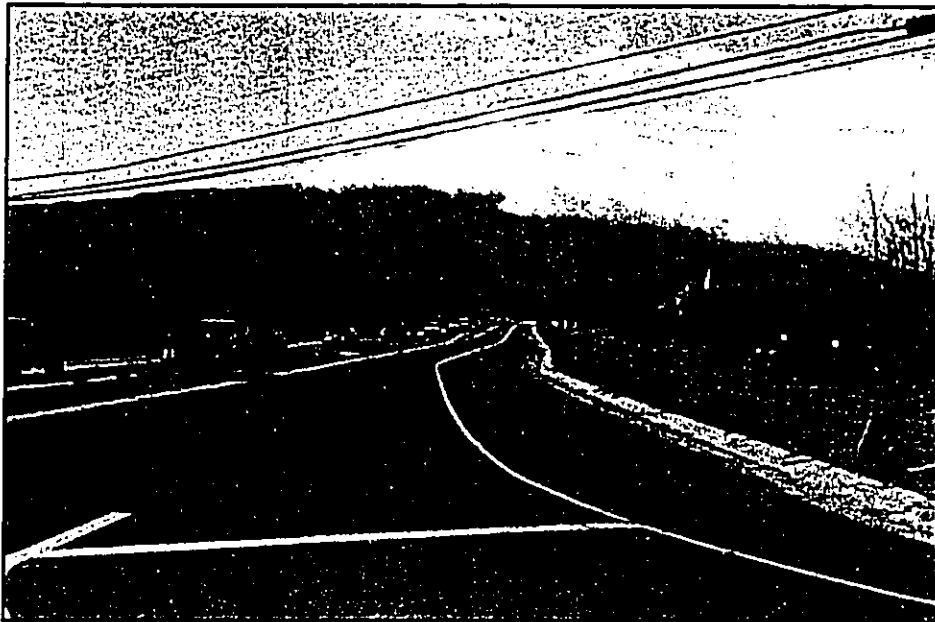
6 Approach of Mokulele Highway as it intersects Piilani Highway and North Kihei Road.



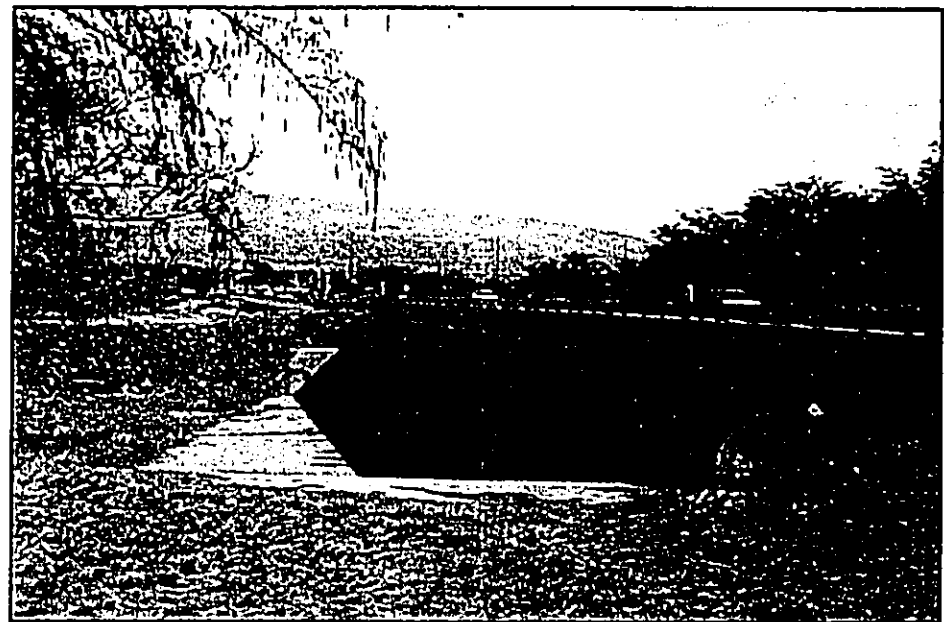
7 Looking eastward along North Kihei Road towards the intersection with Mokulele Highway. Intersection with South Kihei Road at right.



8 South Kihei Road. Condominium access road at right of photo.



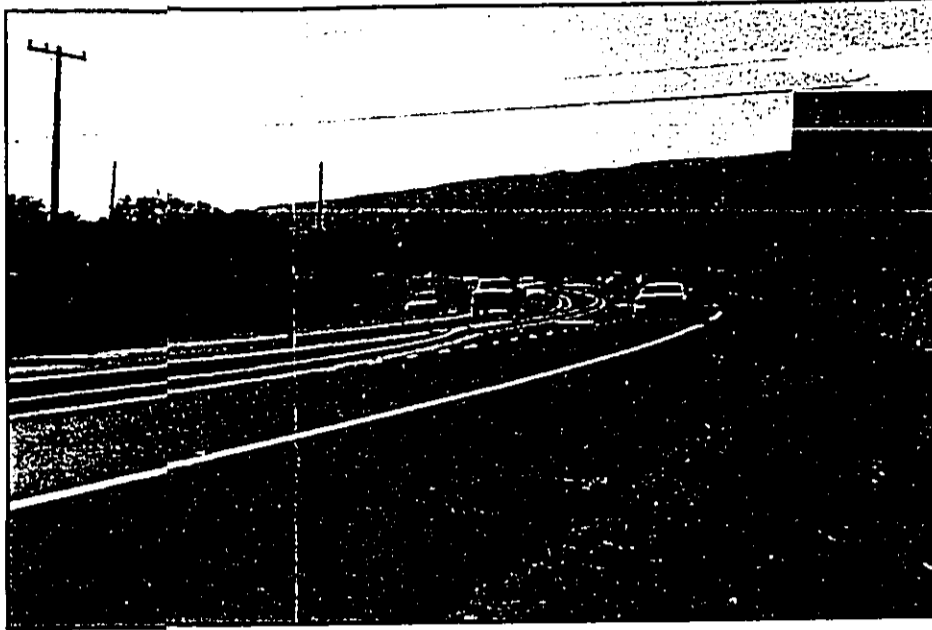
10 Northern view along Piilani Highway taken from intersection with Uwapo Road.



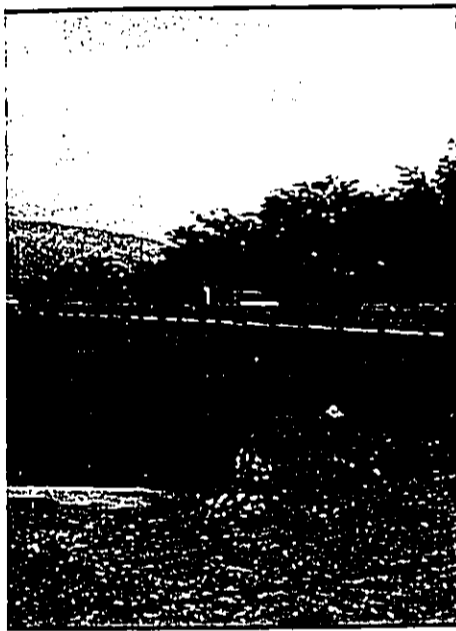
11 View of Waiakoa Stream and Bridge along Piilani Highway



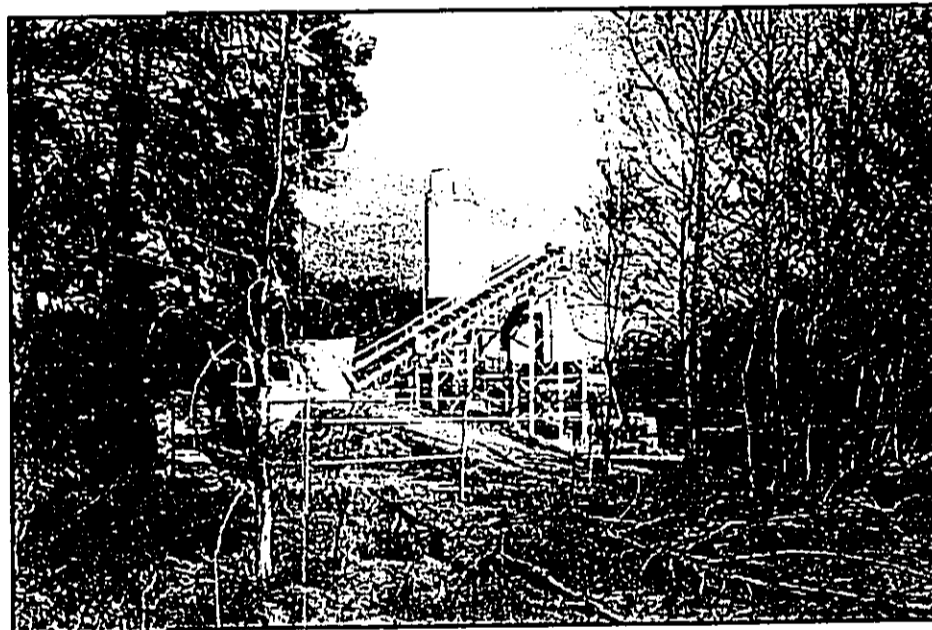
ndominium access road at



9 Northwest view along Piilani Highway looking towards intersection with Mokulele Highway.



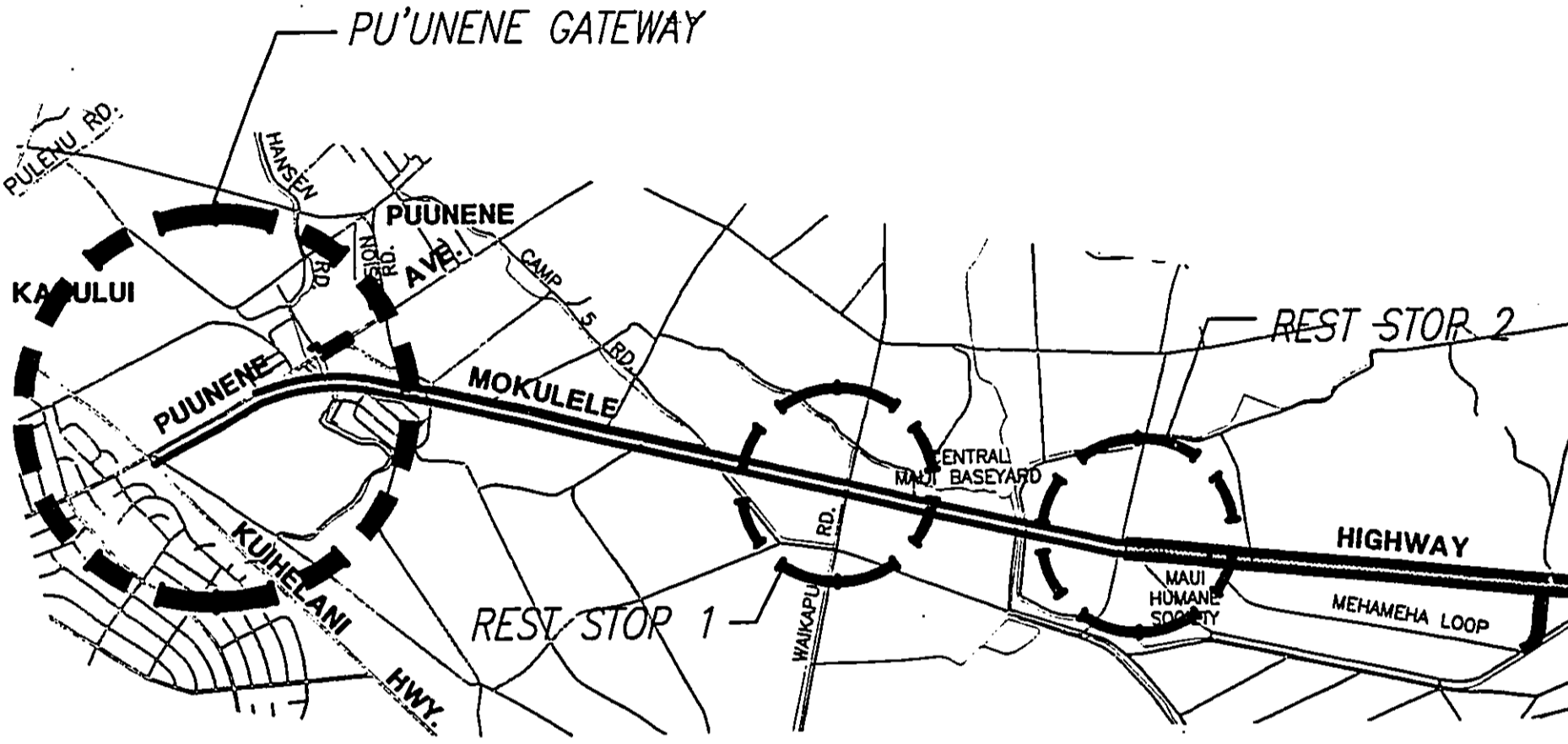
stream and Bridge along



12 Ameron concrete batching plant near Waiakoa Bridge.

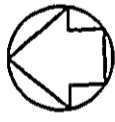
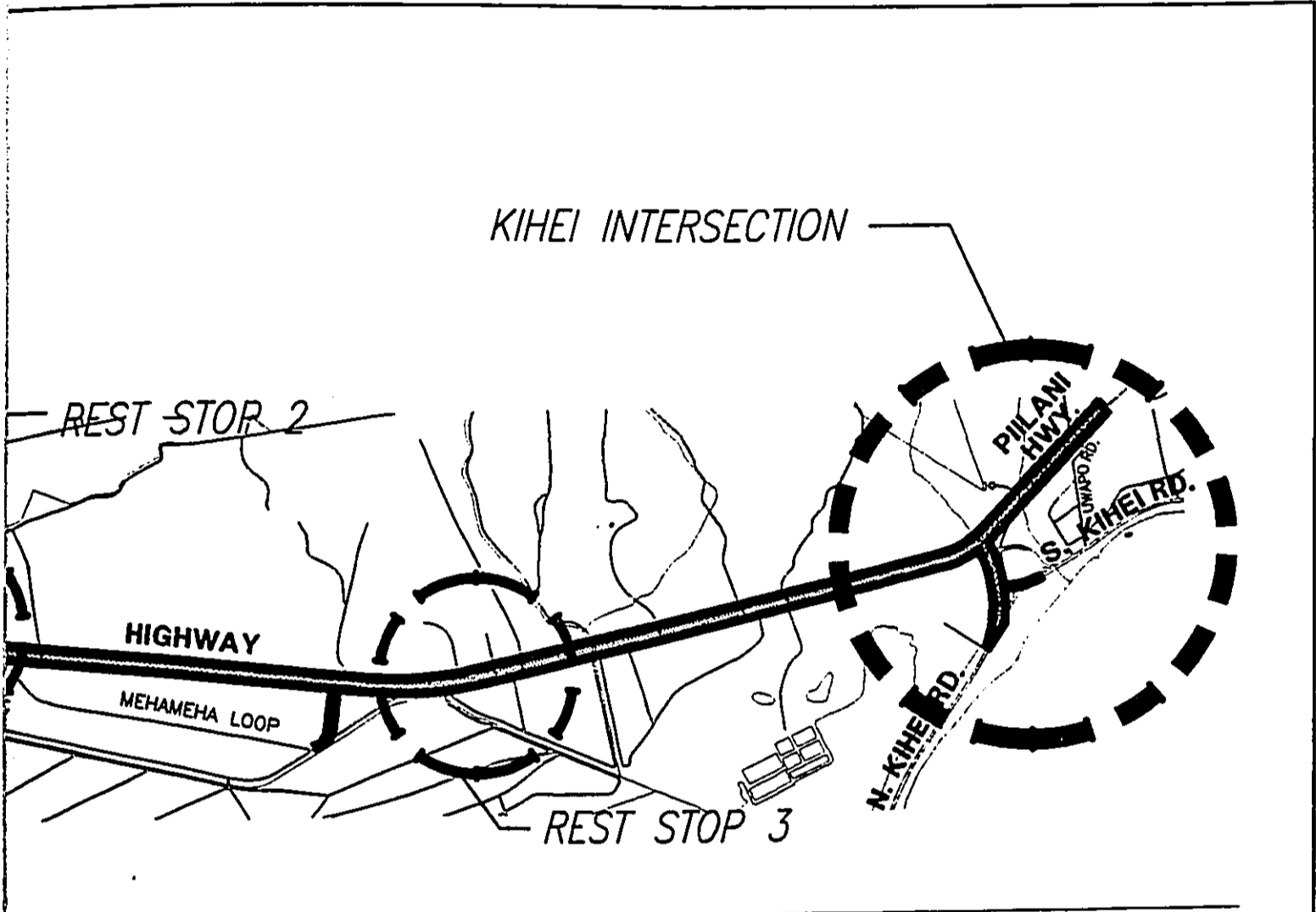


**FIGURE
2B**



Prepared By Hawaii Design Associates

Mokulele



NORTH

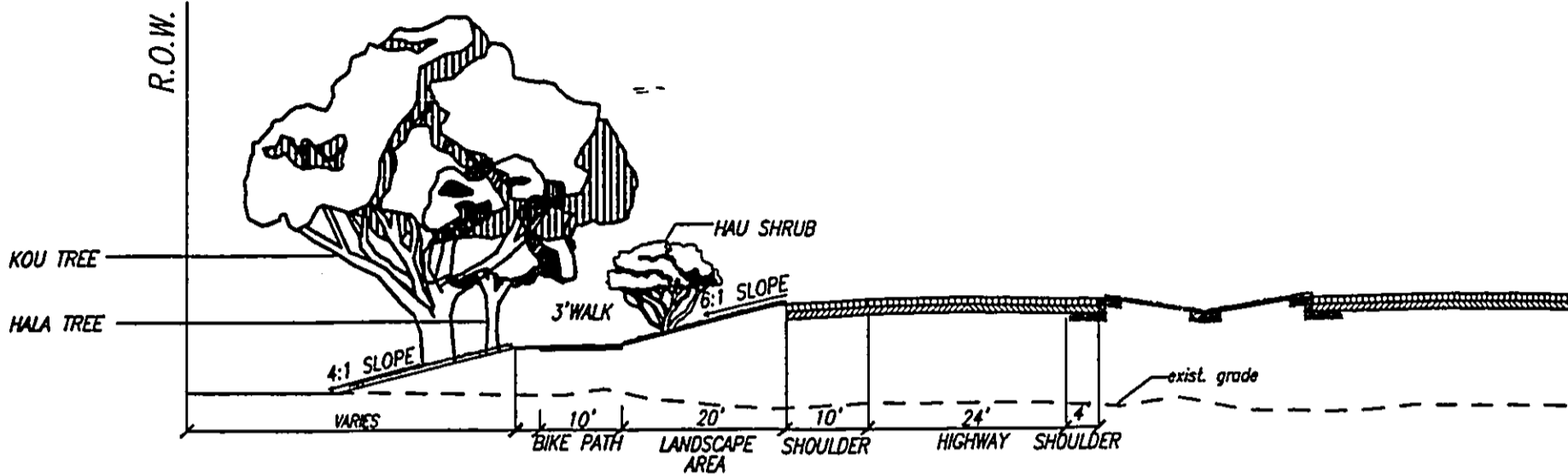
GROSS LENGTH OF PROJECT 4.58 MILES
 NET LENGTH OF PROJECT 4.58 MILES

CONCEPT DIAGRAM

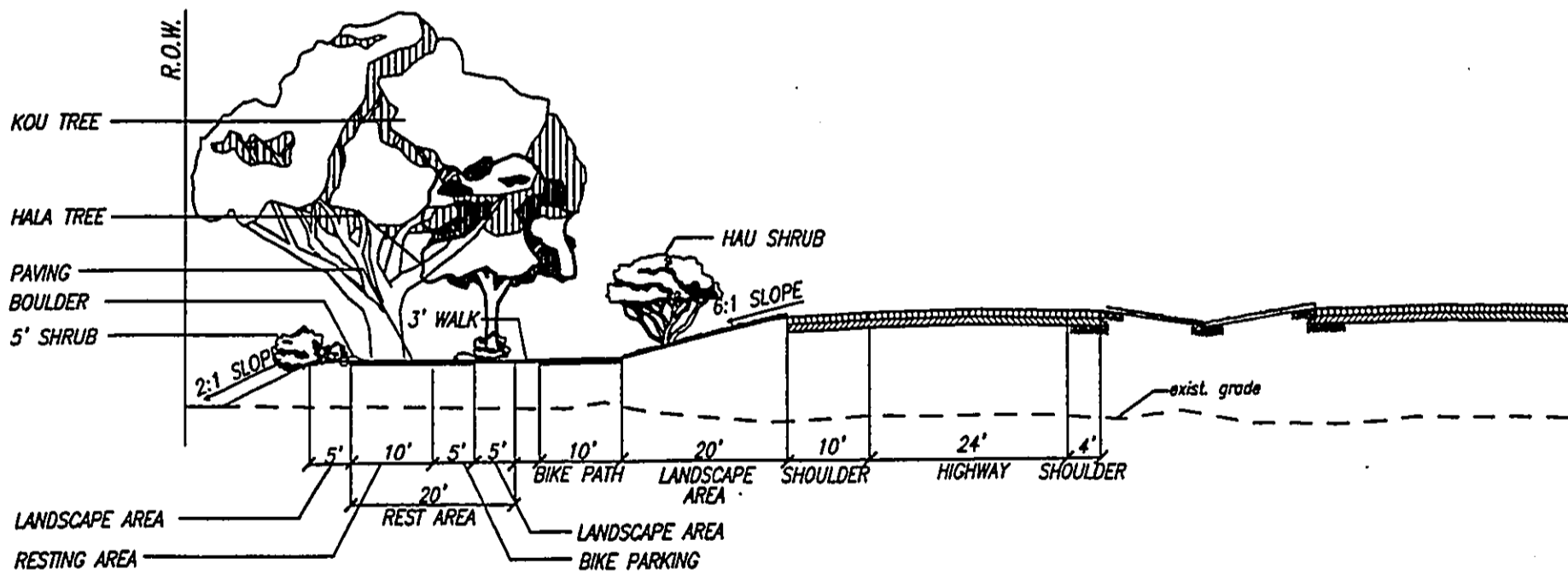
Mokulele Pu'unene Highway Widening



**FIGURE
3A**

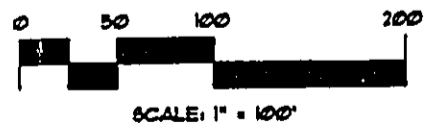


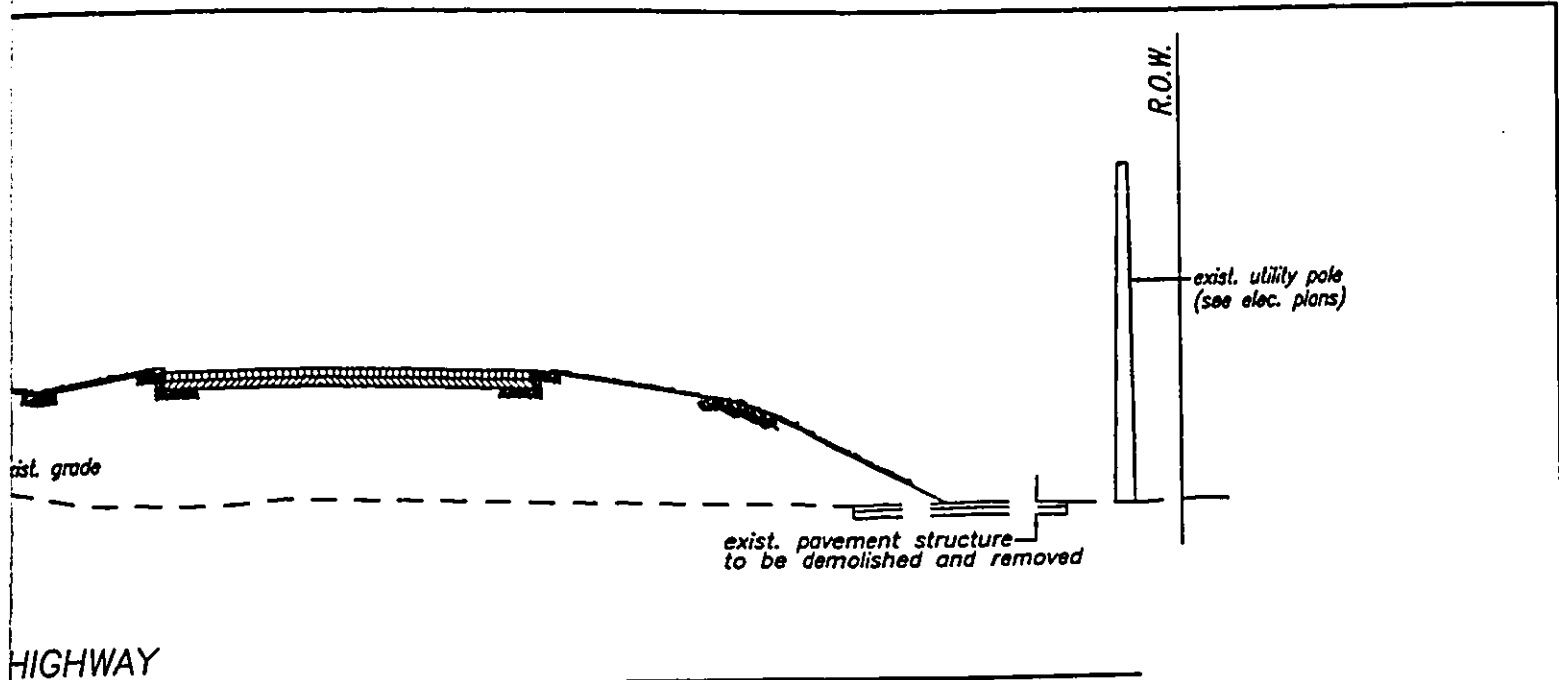
(A) TYPICAL SECTION ON TREE CLUSTER AREAS—MOKULELE HIGHWAY



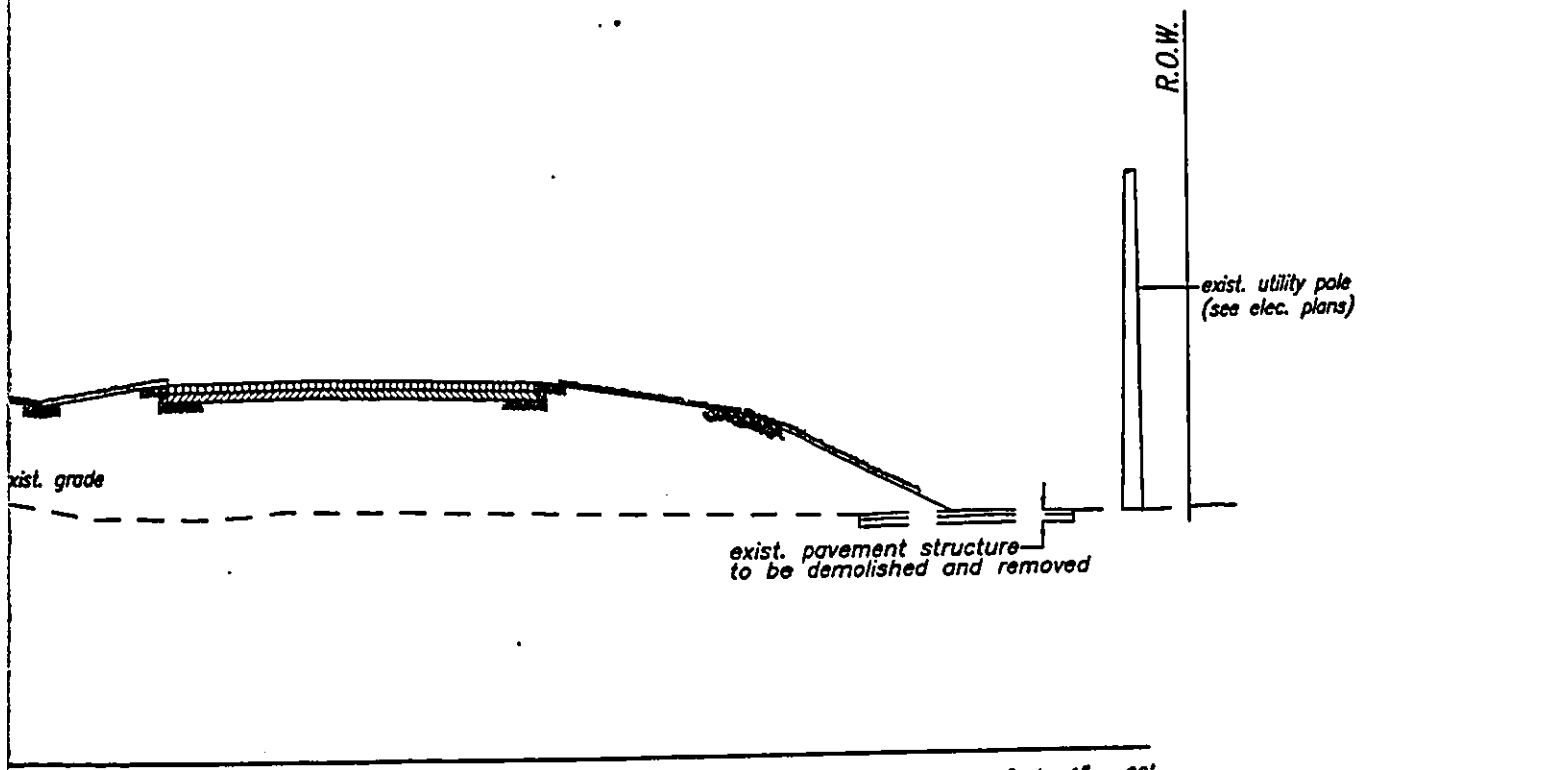
(B) TYPICAL SECTION ON REST AREAS—MOKULELE HIGHWAY

Prepared By Hawaii Design Associates





Scale: 1" = 20'



Scale: 1" = 20'

Typical Cross Section
Mokulele Pu'unene Highway Widening

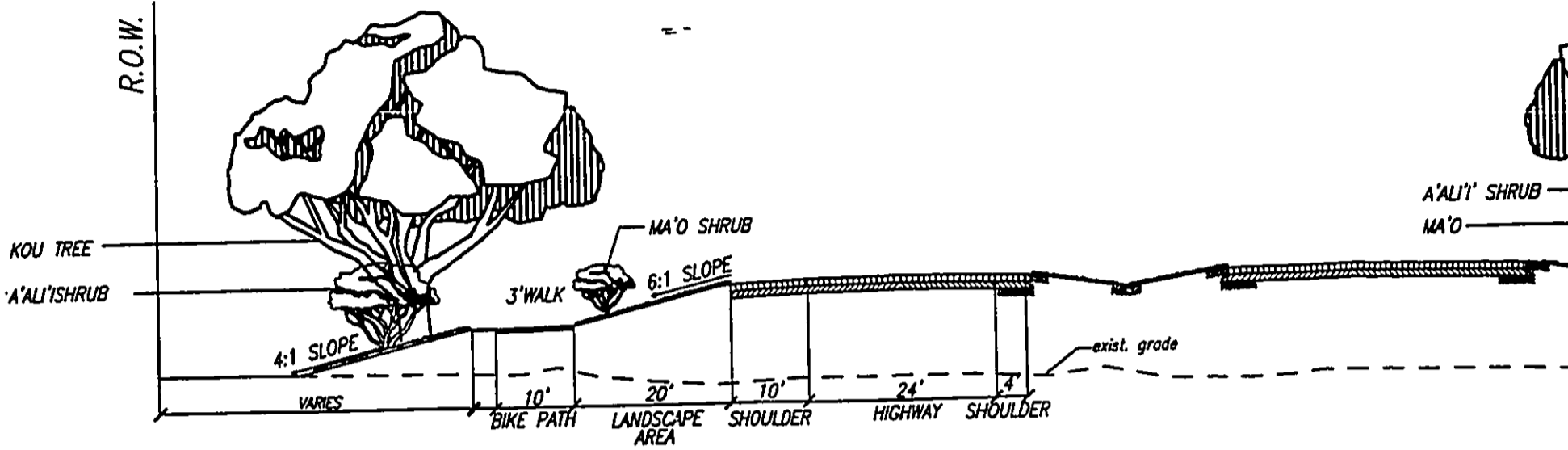


SCALE: 1" = 100'

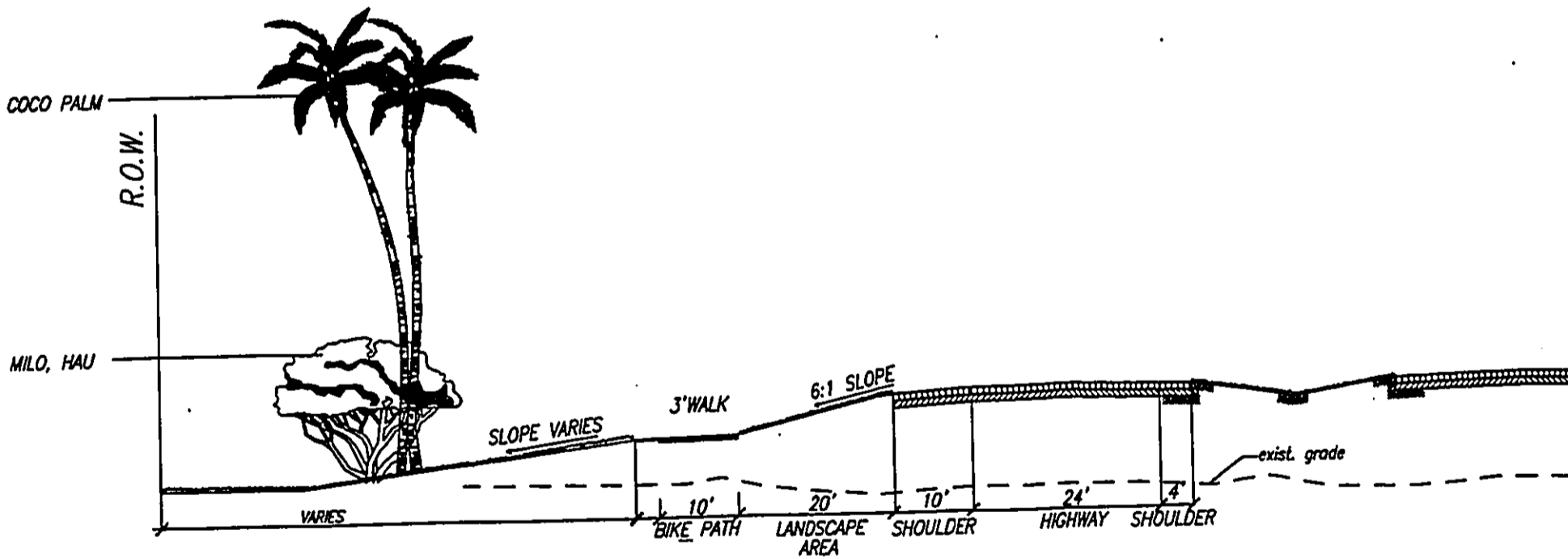


FIGURE
3B

Mokulele Highway Widening Supplemental Environmental Assessment
PROJECT DETAIL

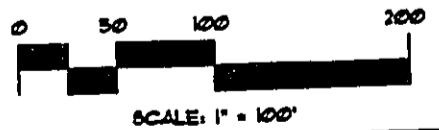


(C) TYPICAL SECTION ON PU'UNENE GATEWAY

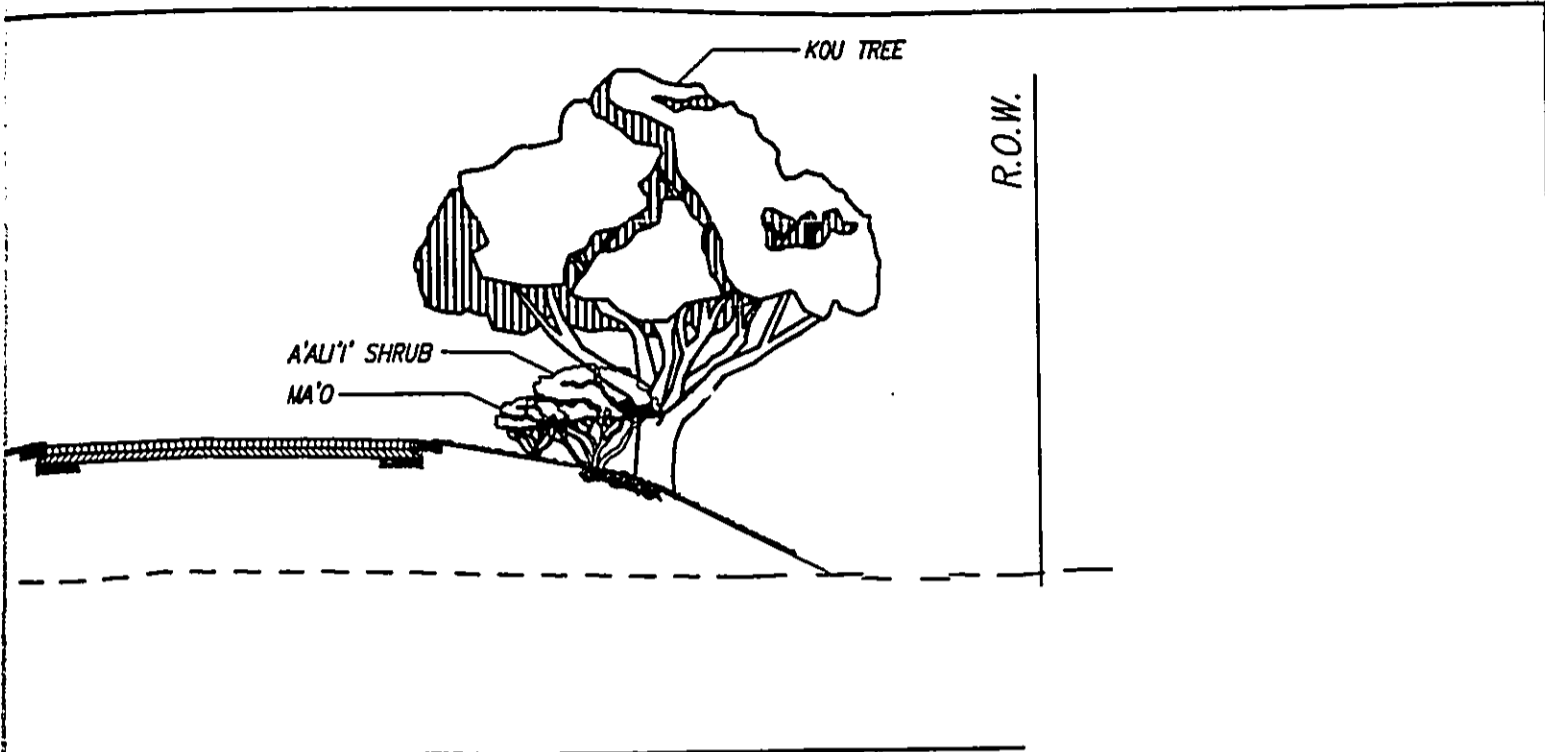


(D) TYPICAL SECTION ON KIHAI GATEWAY

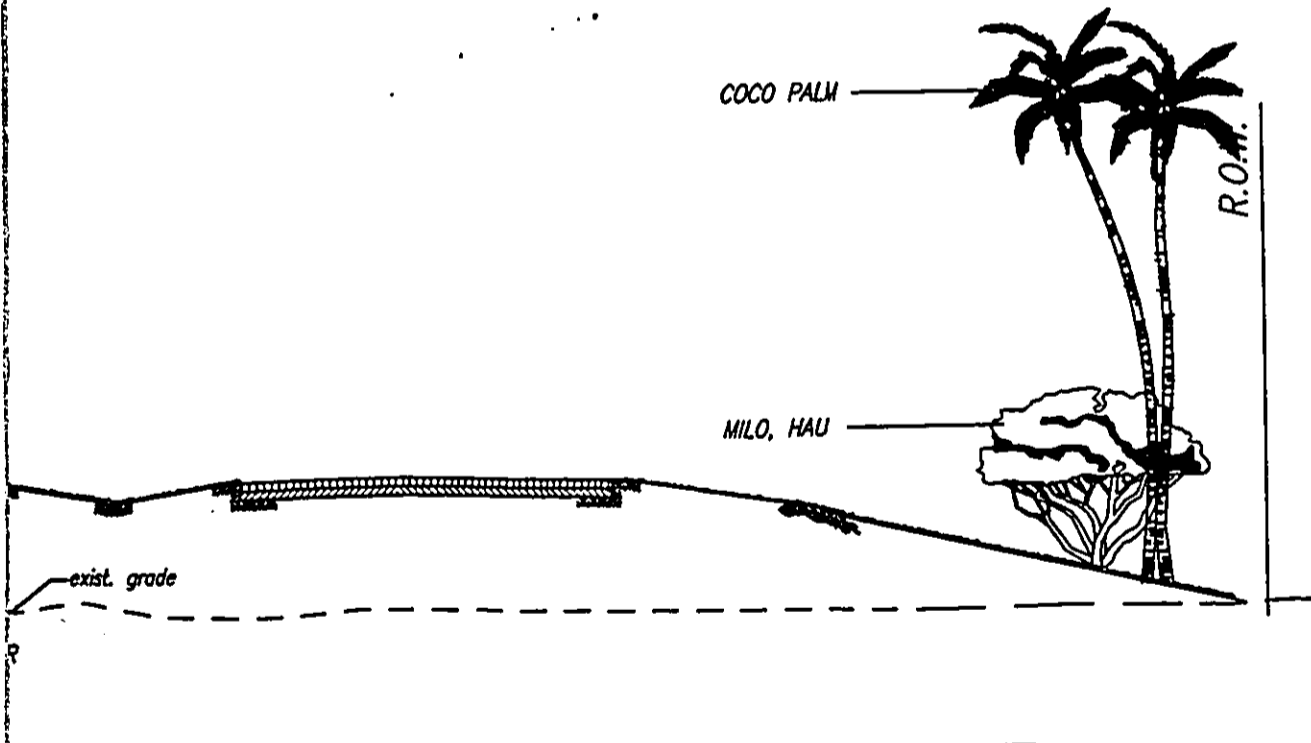
Prepared By Hawaii Design Associates



Mokulele

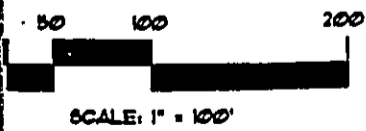


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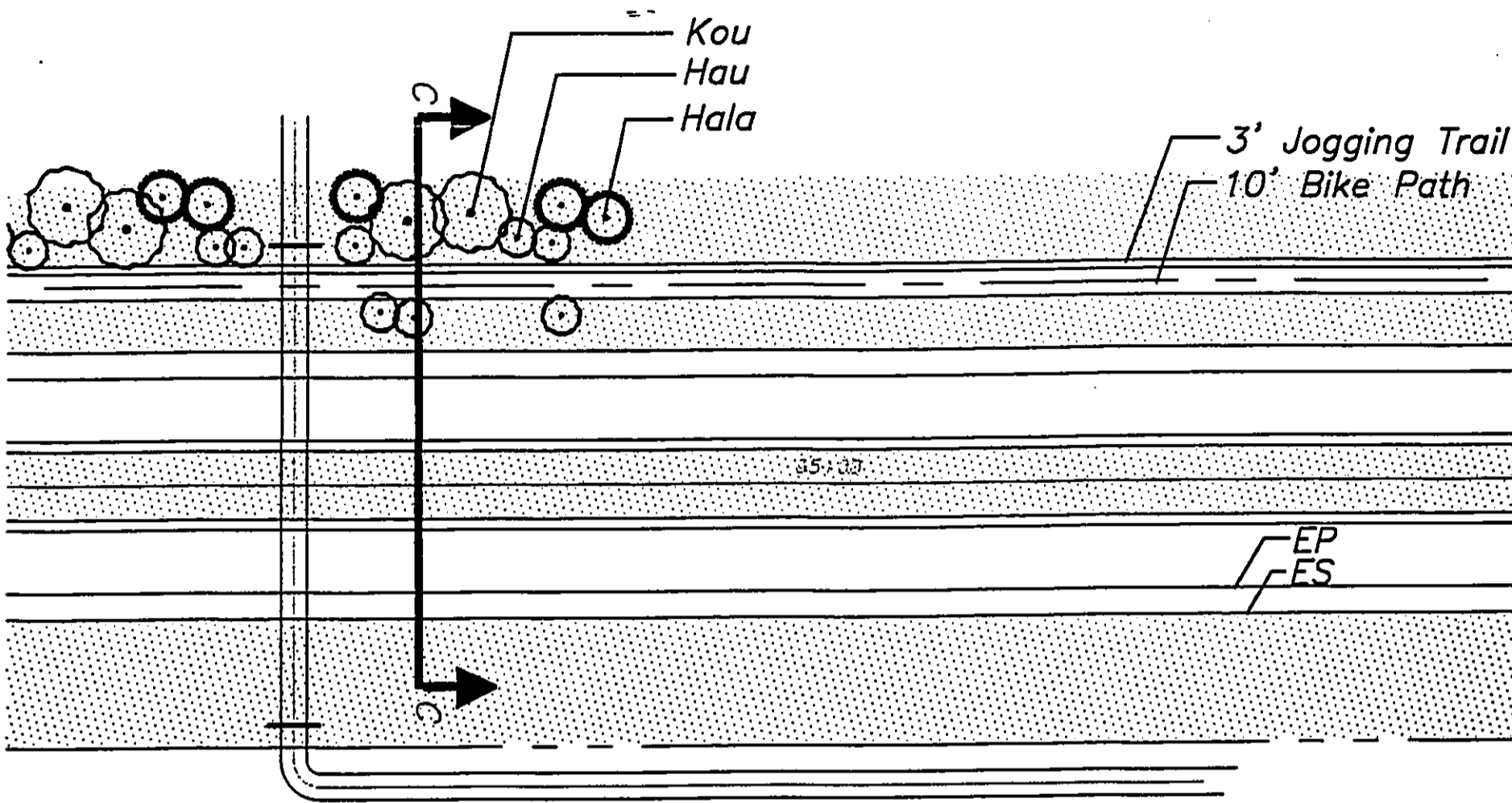
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Typical Cross Section
Mokulele Pu'unene Highway Widening

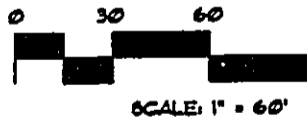


Mokulele Highway Widening Supplemental Environmental Assessment
 PROJECT DETAIL

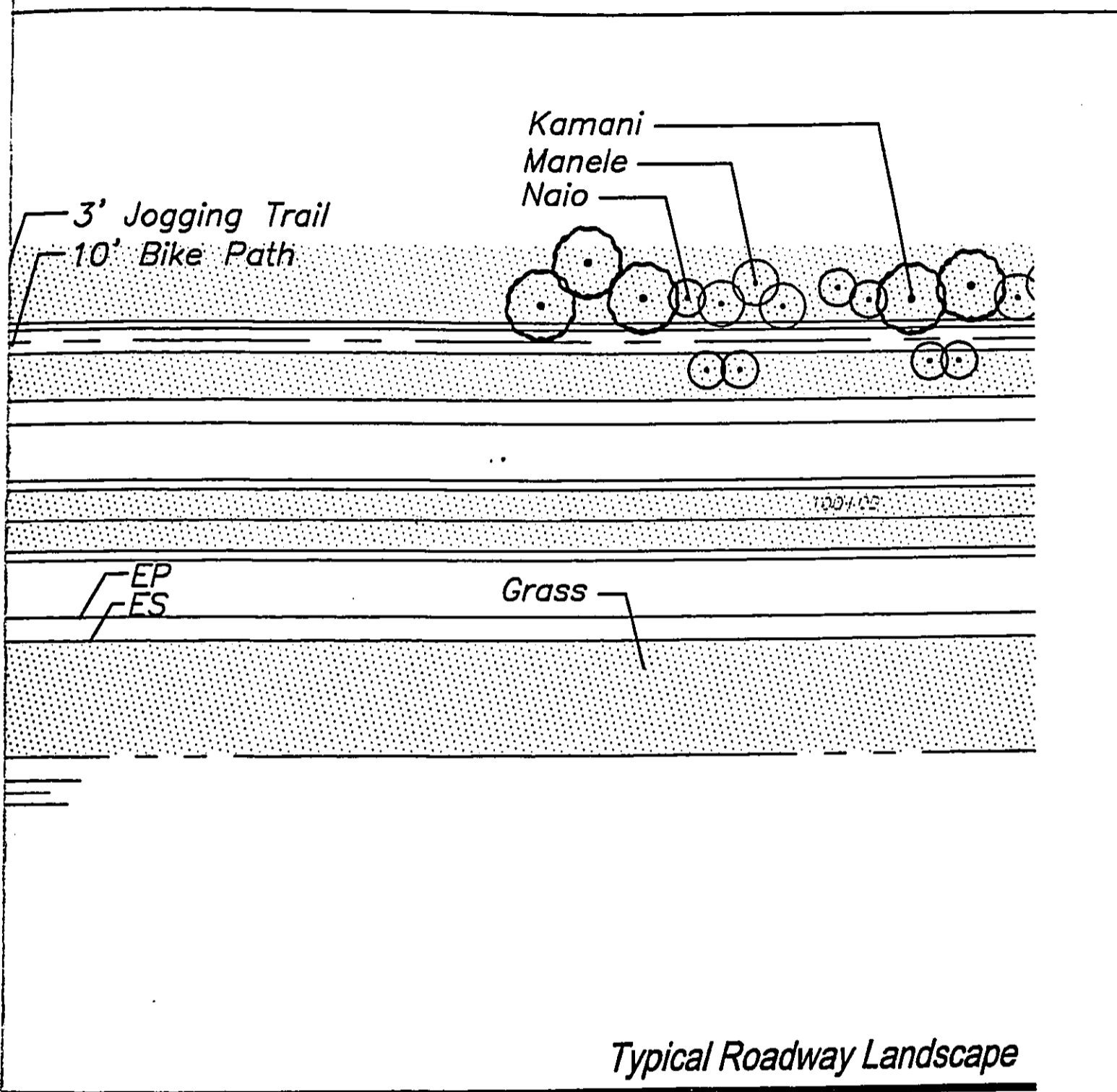
FIGURE
3C



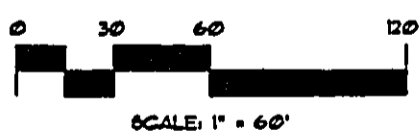
Prepared By Hawaii Design Associates



Mokulele

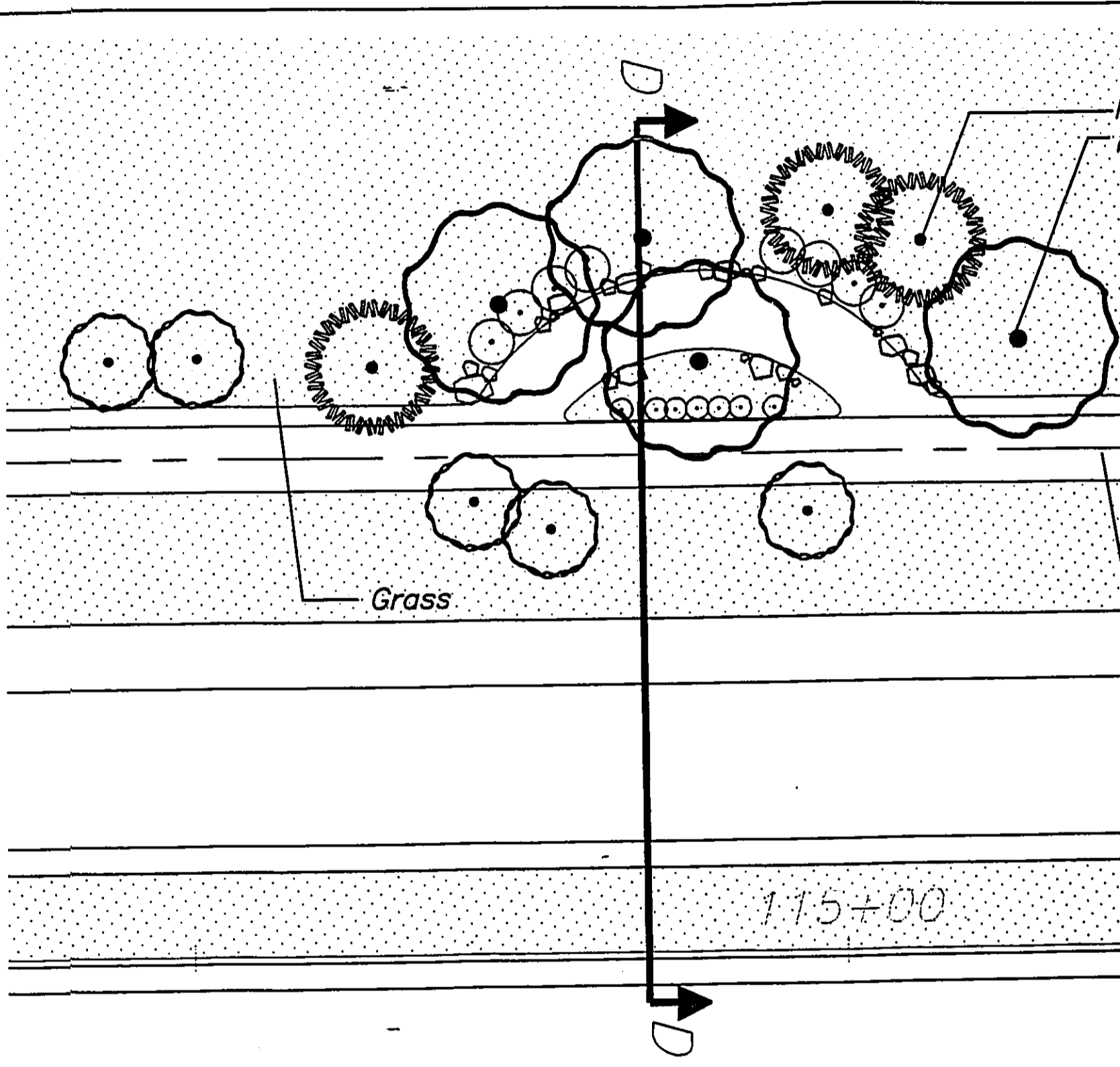


Typical Roadway Landscape
Mokulele Pu'unene Highway Widening

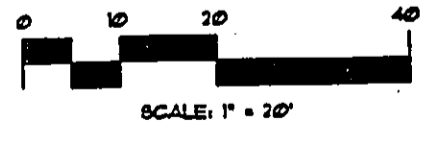


Mokulele Highway Widening Supplemental Environmental Assessment
PROJECT DETAIL

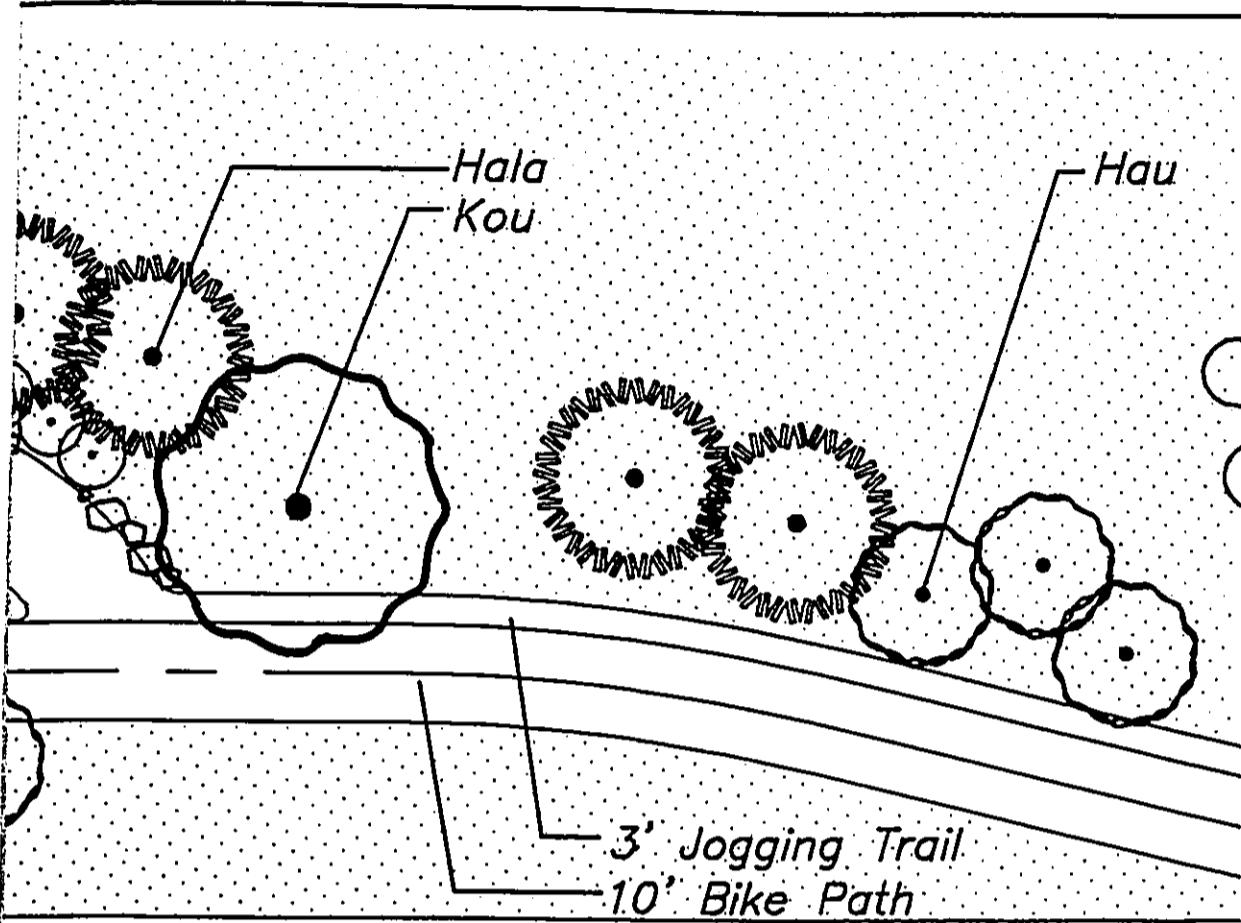
**FIGURE
3D**



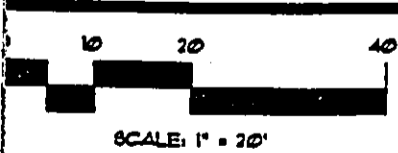
Prepared By Hawaii Design Associates



Mokulele

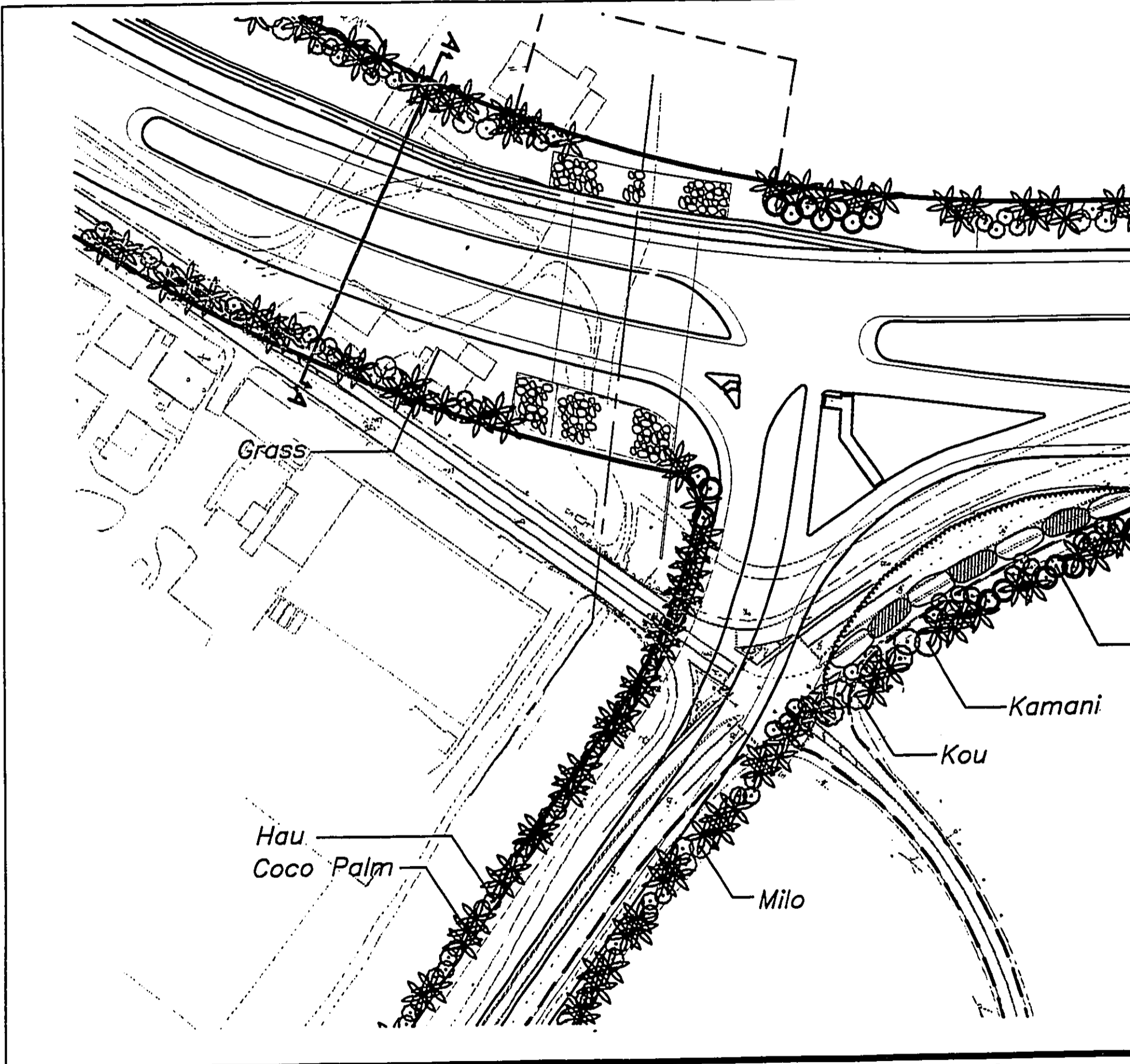


Typical Rest-Stop Area
Mokulele Pu'unene Highway Widening

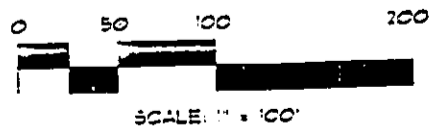


Mokulele Highway Widening Supplemental Environmental Assessment
 PROJECT DETAIL

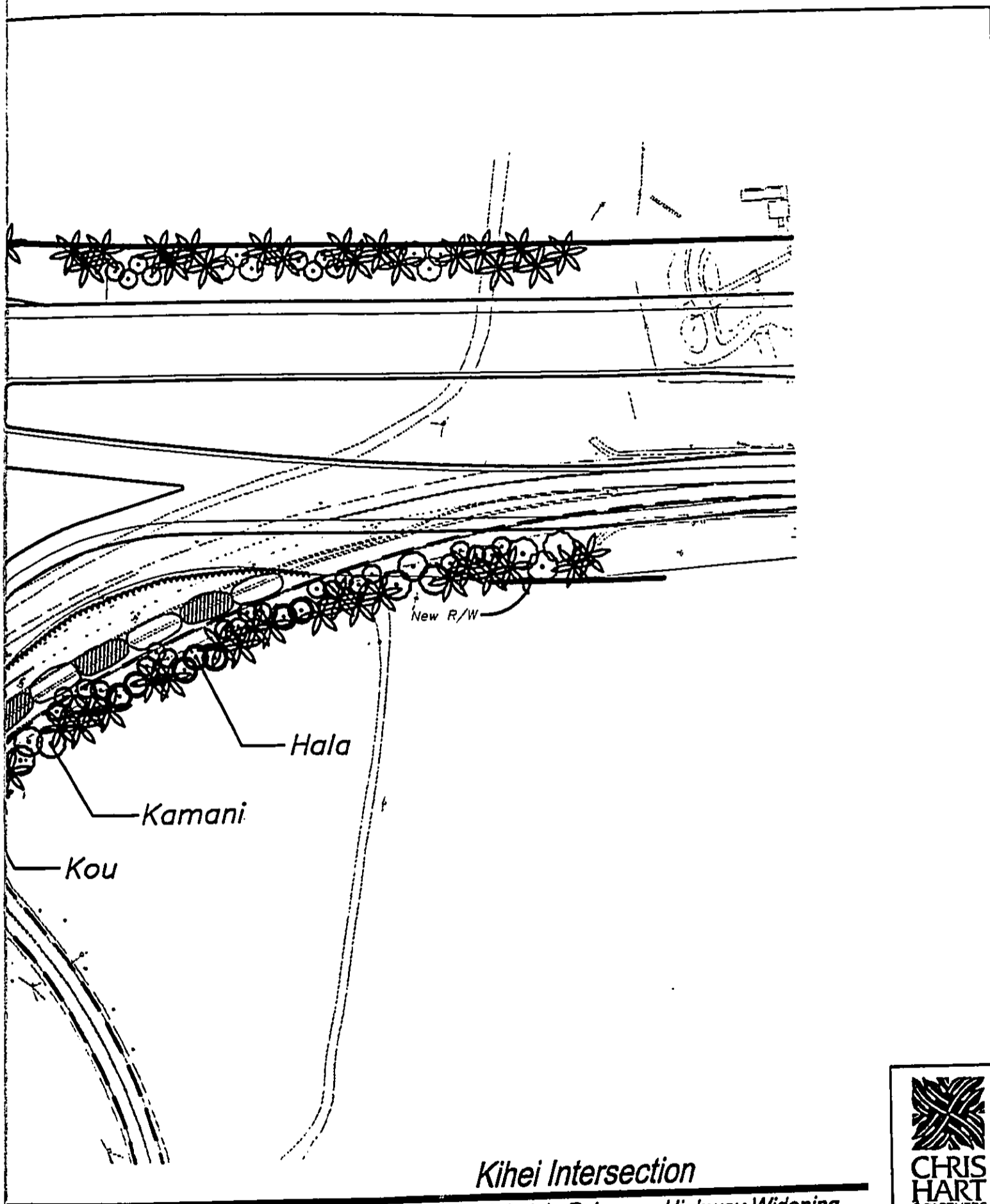
FIGURE
3E



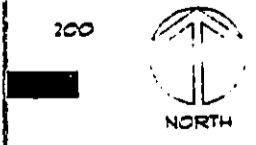
Prepared By Hawaii Design Associates



Moku

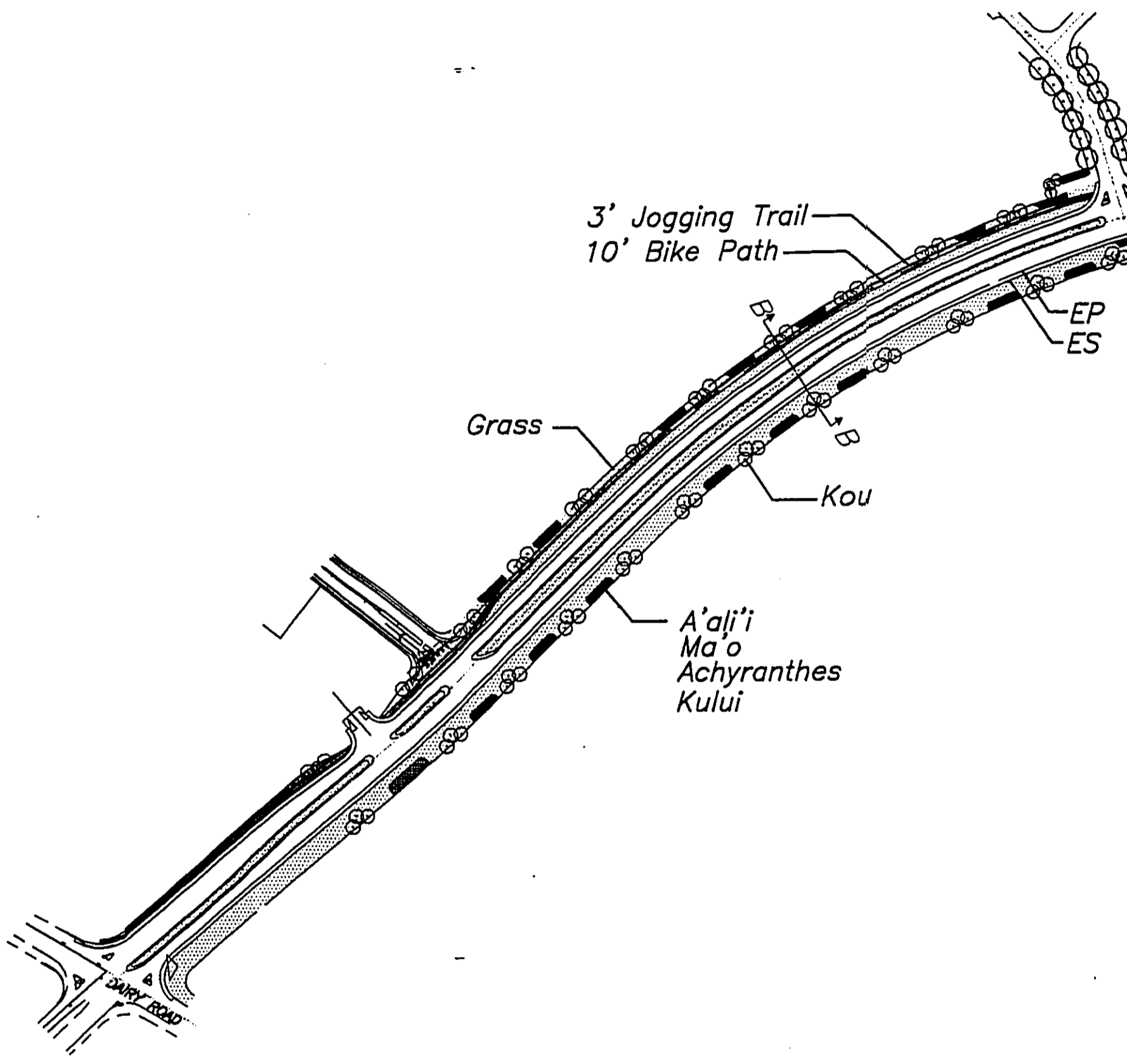


*Kihei Intersection
Mokulele Pu'unene Highway Widening*

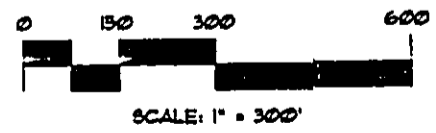


Mokulele Highway Widening Supplemental Environmental Assessment
PROJECT DETAIL

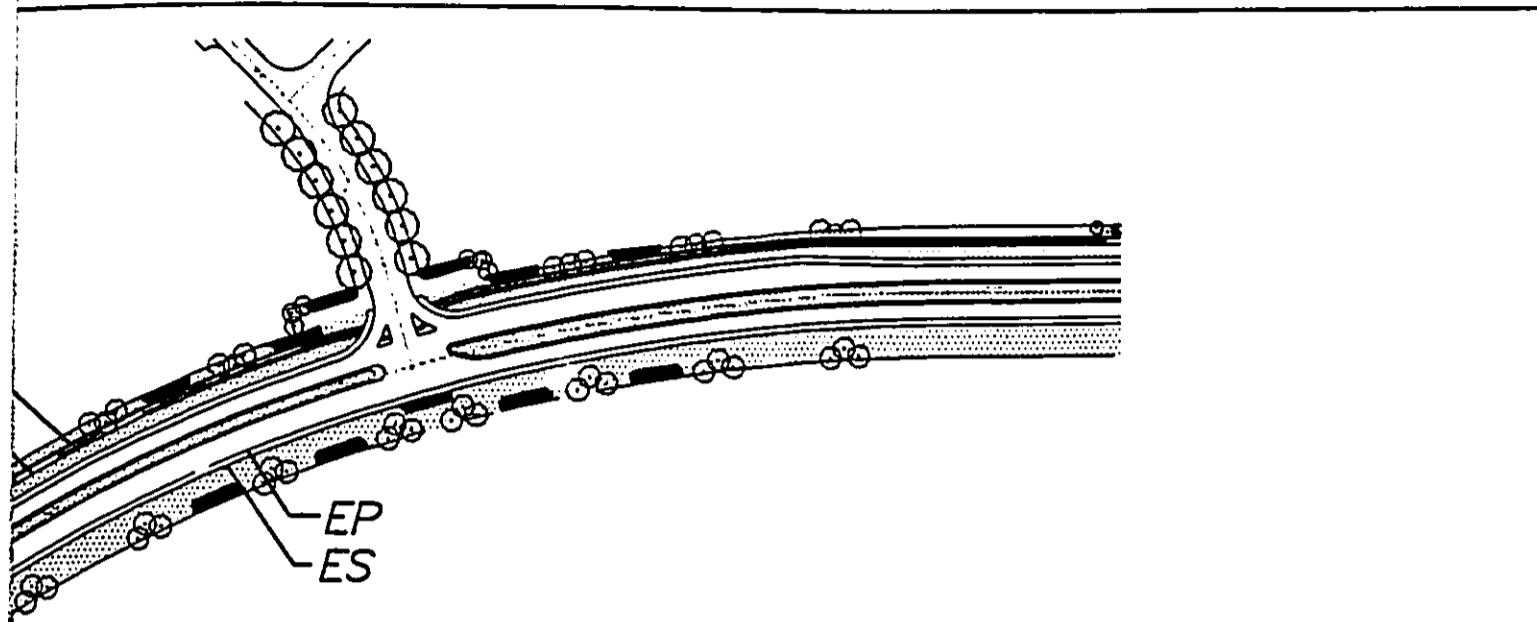
**FIGURE
3F**



Prepared By Hawaii Design Associates

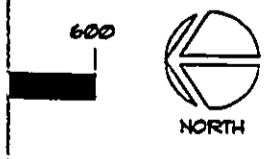


Mokul



Pu'unene Gateway

Mokulele Pu'unene Highway Widening



Mokulele Highway Widening Supplemental Environmental Assessment
PROJECT DETAIL

FIGURE
3G

**Appendix A:
Air Quality Study Addendum**



B. D. NEAL & ASSOCIATES
Applied Meteorology • Air Quality • Computer Science

August 12, 1999

Attn: Mr. Robb Cole
Chris Hart & Partners
1955 Main Street, Suite 200
Wailuku, Hawaii 96793

Subject: Mokulele Highway Widening Project
Air Quality Impacts

Dear Mr. Cole:

In accordance with your request, I have reviewed the changes in design of the Mokulele Highway Widening Project relative to the air quality study I prepared for the project in January 1997. The following provides a qualitative evaluation of the air quality impacts that may be associated with the proposed changes in the project design.

1) Addition of two signalized cane hauler road crossings:

When the signals are in operation, these will likely cause brief delays in traffic on Mokulele Highway/Puunene Highway, which will result in traffic queuing. Traffic queues will likely result in some excess idling emissions and local increases in air pollution levels. Avoiding the operation of the traffic signals during peak traffic hours would help to mitigate any impacts.

2) Addition of a signal at the Puunene Industrial Park Road intersection:

This will likely result in some impacts on air quality near the intersection due to traffic queuing and excess idle emissions. Air pollution levels will likely be lower than those projected for the intersection of Mokulele Highway and Hansen road since traffic volumes will be smaller at this location. Optimizing the signal timing will help to reduce traffic queuing and any impacts on air quality.

3) Realignment of (north) Mehamaha Loop with Mokulele Highway to make a single intersection with Quarry Road:

This will likely concentrate more traffic into a smaller area and could conceivably increase air pollution levels in the area. However, due to the relatively modest traffic approach volumes that are forecast for Mehamaha Loop (north), it is doubtful if the proposed realignment will have any significant impact on air quality.

- 4) Addition of a signal at the intersection of Mokulele Highway and Mehamaha Loop (north):

This will likely result in some impacts on air quality near the intersection due to traffic queuing and excess idle emissions. Air pollution levels will likely be lower than those projected for the intersection of Mokulele Highway and Hansen road since traffic volumes will be smaller at this location. Optimizing the signal timing will help to reduce traffic queuing and any impacts on air quality.

- 5) Realignment of (south) Mehamaha Loop with Mokulele Highway to make a single intersection with MEO/Raceway Park entrance:

This will likely concentrate more traffic into a smaller area and could conceivably increase air pollution levels in the area. However, due to the relatively modest traffic approach volumes that are forecast for Mehamaha Loop (south), it is doubtful if the proposed realignment will have any significant impact on air quality.

- 6) Realignment of roadways in the vicinity of Mokulele Highway/Piilani Highway transition and addition of a makai frontage road in this area:

If intersection approach volumes in this area are not significantly affected, the proposed realignment should not have any significant impact on air quality.

- 7) Construction of a new Haiakoa Bridge to accommodate double-lane Kahului (north) bound traffic:

Construction of the added lane may reduce traffic queue lengths in the area but may increase traffic density and could thus increase local air pollution levels. The projected traffic volumes are relatively moderate, and hence air pollution levels can be expected to be moderate.

- 8) Addition of double south-bound lanes through Uwapo intersection merging into one lane:

Construction of the added lane may reduce traffic queue lengths in the area but may increase traffic density and could thus increase local air pollution levels. The projected traffic volumes are relatively moderate, and hence air pollution levels can be expected to be moderate.

- 9) Addition of double left-turn lane for north-bound South Kihei Road at the intersection of North Kihei Road and addition of another west-bound lane on North Kihei Road to accommodate turning traffic:

Mr. Robb Cole
Mokulele Highway Widening Project

August 12, 1999
Page 3

Construction of the added lanes may reduce traffic queue lengths in the area but may increase traffic density and could thus increase local air pollution levels. The projected traffic volumes are relatively moderate, and hence air pollution levels can be expected to be moderate.

- 10) Realignment of the approach of South Kihei Road to North Kihei Road and use of the existing roadway as a frontage access road:

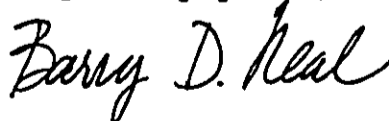
If intersection approach volumes in this area are not significantly affected, the proposed realignment should not have any significant impact on air quality.

Increasing the scope of the project will likely increase short-term impacts on air quality during the period of construction. After construction is completed, the proposed design changes will presumably result in an overall long-term improvement in traffic flow in the area and consequently an overall long-term improvement in air quality. However, carbon monoxide concentrations will likely increase in some specific areas where traffic signals are installed or roadway capacity is increased.

I should mention here that there have been some developments since my original report was prepared back in early 1997 that could change some of the conclusions in that report. In the study that was originally prepared for this project, the computer model CALINE4 was used to predict air pollution levels at selected locations in the project area. CALINE4 was developed some years ago by the California Department of Transportation and was in use in Hawaii and across the United States for several years. In late 1997, CalTrans recommended that the use of the model be discontinued because it was thought to be over-predicting, perhaps because the modal emission estimates had become outdated. Thus, the carbon monoxide concentration levels given in my report dated January 1997 are probably conservatively high.

Please call me if you wish to discuss this matter further.

Very truly yours,



Barry D. Neal
Certified Consulting
Meteorologist

**Appendix B:
Environmental Noise Assessment Study**

Project No. 99-64

ENVIRONMENTAL NOISE ASSESSMENT STUDY
MOKULELE HIGHWAY/PUUNENE AVENUE WIDENING
MAUI, HAWAII

February, 2000

Prepared for
Chris Hart & Partners
Maui, Hawaii

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6 Typical Sound Pressure Levels from Construction Equipment	
Project No. 99-64	Page <i>i</i>

1.0 SUMMARY

- 1.1 Four proposed roadway alignment alternatives were considered in the traffic noise analysis along Mokulele/Puunene Highway and in the Kihei triangle area; the "No-Build" Condition, Alternative A, Alternative B, and Alternative C as identified in the *Traffic Analysis for Supplemental Analysis for Mokulele Highway Widening Project in Maui, Hawaii*, Prepared by Phillip Rowell and Associates.
- 1.2 Four noise sensitive areas were identified within the project area--an animal shelter along Mokulele Highway, various condominiums in the Kihei area, a church on the corner of Puunene Avenue and Dairy Road, and the Kealia Pond National Wildlife Refuge. For Alternative A, only the condominiums and the wildlife refuge along North Kihei Road are expected to be impacted by traffic noise. For Alternative B and C, the condominiums along South Kihei and the condominiums and the wildlife refuge along North Kihei Roads may be impacted.
- 1.3 To reduce traffic noise levels along South Kihei and North Kihei roads, noise barrier walls are not effective due to the heights of the condominiums. However, a reduction in the posted speed limit from 45 mph to 35 mph would result in a decrease in traffic noise levels from the predicted "No-Build" alternative.
- 1.4 The dominant noise sources during project construction will probably be earth moving equipment, such as bulldozers and diesel powered trucks. The noise from construction activities could impact nearby residences. Noise from construction activities should be short term and must comply with State Department of Health noise regulations.

2.0 PROJECT DESCRIPTION

The proposed project, shown in Figure 1, is located on the island of Maui and involves the widening of Mokulele Highway and a portion of Puunene Avenue from two lane to four lane roadways. The re-alignments of the Mokulele Highway/Piilani Highway, Mokulele Highway/Mehameha Loop and Mokulele Highway/Puunene Avenue/Hanson Road intersections are also included in the project. An environmental noise assessment study for the project was submitted in 1997. However, due to changes in the project scope and traffic conditions, as well as the Federal Highway Administration (FHWA) Traffic Noise Model (TNM), a re-evaluation of the noise assessment study was required. Existing land uses near the project which may be impacted by the project include condominiums in the Kihei area, an animal shelter along Mokulele Highway, a church on the corner of Puunene Highway and Dairy Road, and the Kealia National Wildlife Refuge along North Kihei Road.

3.0 NOISE STANDARDS AND GUIDELINES

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

3.1 U.S. Federal Highway Administration (FHWA)

The current FHWA procedures for highway traffic noise analysis and abatement are contained in 23 CFR 772 [Reference 1]. These procedures specify the requirements that State highway agencies must meet when using Federal-aid funds for highway projects. FHWA noise abatement criteria, as a function of land use activity categories, are given in these procedures. The maximum hourly equivalent sound levels, L_{eq} , for traffic noise exposure for corresponding land use categories are listed in Table 1.

3.2 U.S. Environmental Protection Agency (EPA)

The U.S. EPA has identified a range of yearly day-night equivalent sound levels, L_{dn} , sufficient to protect public health and welfare from the effects of environmental noise [Reference 2]. The EPA has established a goal to reduce exterior environmental noise to an L_{dn} not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an L_{dn} not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

3.3 Hawaii Department of Transportation (HDOT)

The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 3]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15dB.

3.4 State Department of Health (DOH)

The State Department of Health defines a heavy vehicle as a vehicle which has a manufacturer's gross vehicular weight rating of ten thousand pounds or greater. Such vehicles shall not be operated on any trafficway in such a manner that it emits noise in excess of the limits specified in Reference 4. If these limits will be exceeded a permit from the DOH director is required.

3.5 U.S. Department of Housing and Urban Development (HUD)

HUD's environmental noise criteria and standards in 24 CFR 51 [Reference 5] were established for determining housing project site acceptability. These standards are based on day-night equivalent sound levels, L_{dn} , and are not limited to traffic noise exposure. However, for project sites in the vicinity of highways, the L_{dn} may be estimated to be equal to the design hour $L_{eq(h)}$, provided "heavy trucks (vehicles with three or more axles) do not exceed 10 percent of the total traffic flow in vehicles per 24 hours and the traffic flow between 10:00 p.m. and 7:00 a.m. does not exceed 15 percent of the average daily traffic flow in vehicles per 24 hours." For these same conditions, L_{dn} may also be estimated as 3 dB less than the design hour L_{10} .

HUD site acceptability criteria rank sites as Acceptable, Normally Unacceptable, or Unacceptable. "Acceptable" sites are those where exterior noise levels do not exceed an L_{dn} of 65 dBA. Proposed housing projects on "Acceptable" sites do not require additional noise attenuation other than that provided by customary building techniques. "Normally Unacceptable" sites are those where the L_{dn} is above 65 dBA, but does not exceed 75 dBA. Housing on "Normally Unacceptable" sites requires some form of noise abatement, either at the property line or in the building construction, to ensure the interior noise levels are acceptable. "Unacceptable" sites are those where the L_{dn} is 75 dBA or higher. The term "Unacceptable" does not necessarily mean that housing cannot be built on those sites. It means that more sophisticated sound attenuation will likely be needed.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Noise levels were measured at nine locations in the vicinity of the project area on Monday, December 13, 1999. The measurements were obtained using a Larson-Davis Laboratories, Model 800B, sound level meter. The weather during the measurements was partly sunny skies with temperatures in the upper 80's and trade winds at 5 to 10 miles per hour. The results of the measurements are presented in Table 2 and the measurement locations are shown in Figure 2. The dominant noise source at these locations was traffic. Other identifiable noise sources which were audible during the measurements are noted in Table 2.

Except for Location 6, vehicle counts and classification, i.e., number of automobiles, vehicles with two axles and six wheels (medium trucks) and vehicles with three or more axles (heavy trucks) were made during the measurements. This information was then used to calibrate the traffic noise model.

5.0 POTENTIAL NOISE IMPACT DUE TO THE PROJECT AND NOISE MITIGATION

5.1 Project Generated Traffic Noise

FHWA's most current traffic noise model, TNM Version 1.0b, and the traffic data provided by others [Reference 6] were used to calculate the existing and future year 2020 "no-build" and "build" traffic noise levels during morning and afternoon peak-traffic hours. The noise levels were calculated at the following noise sensitive locations (Figure 3).

- A - 100 Feet from the centerline of the proposed Alternate A, new South Kihei Road alignment between North Kihei and Uwapo Street.
- B - At closest condominiums along the North Kihei Road, 85 feet from Right-of-Way
- C - 100 Feet from the centerline of the proposed Alternate A, new Mokulele Highway alignment in front of the Animal Shelter.
- D - 100 Feet from the centerline of the proposed Alternate A, new Puunene Highway alignment.

The calculated existing and future peak hour noise levels are presented in Table 3. From these results, future AM and PM peak hour traffic noise level changes were determined and are presented in Table 4.

It is important to note that the difference between the Future No-Build and the Build traffic noise contours are due to the re-alignment of the existing roadways and the proposed widened roadways, and not completely due to changes in traffic volumes.

As shown in Table 3, for Alternative A, noise level decreases are expected at noise assessment locations A, C, and D. However, a small increase (less than 0.8 dB) over the predicted future, "No-Build" noise levels, is expected at noise assessment location B. A sound level increase of 3 dBA is considered "barely perceptible" by most people with normal hearing. In addition, an increase of 5 dBA is considered "readily perceptible" and a "substantial" increase is an

increase of 10 dBA or more. Based on these criteria, future traffic noise level increases as a result of the improvement at location B are not considered to be significant. However, they will exceed the FHWA's traffic noise abatement criteria (Table 1). Due to the height of the condominiums along North Kihei Road, a noise barrier wall would not be effective in reducing traffic noise levels for second story and above condominium units. However, it should be noted that these condominiums are all air-conditioned, allowing the occupants to close their windows. Thus, to reduce traffic noise levels to below the predicted "No-Build" noise levels, the posted speed limit could be reduced to 35 mph from the existing 45 mph. This would reduce future traffic noise levels at both the North Kihei condominiums and the Kealia National Wildlife Refuge by approximately 1.5 dB.

For Alternatives B and C, a traffic noise impact is expected at noise assessment locations A and B. Noise levels at location B can be reduced by lowering the posted speed limit to 35 mph as described for Alternative A. However, for assessment location A, the posted speed limit is already 30 mph. Reducing the speed limit to 25 mph along South Kihei road will not achieve the required 1.2 dB reduction at this location. As with Alternative A, a noise barrier wall would not be effective in reducing traffic noise impacting two-story or greater condominiums along South Kihei Road. Again, these condominiums are air-conditioned, allowing the occupants to close their windows.

5.2 Project Construction Noise

Development of project areas will involve excavation and grading. The various construction phases of the project may generate significant amounts of noise, which may impact residences and other noise sensitive areas. The actual noise levels produced will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 4. Earth moving equipment, e.g., bulldozers and diesel-powered trucks, will probably be the loudest equipment used during construction.

In cases where construction noise exceeds, or is expected to exceed the DOH's "maximum permissible" property line noise levels [Reference 7], a permit must be obtained from the DOH to allow the operation of vehicles, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible levels." Specific permit restrictions for construction activities are:

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels. . . before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."

"No permit shall allow any construction activities which emit noise in excess of

the maximum permissible sound levels . . .before 9:00 a.m. and after 6:00 p.m. on Saturday.”

“No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays.”

In addition, construction equipment and on-site vehicles or devices whose operations involve the exhausting of gas or air, excluding pile hammers and pneumatic hand tools weighing less than 15 pounds, must be equipped with mufflers, and construction vehicles using trafficways must satisfy the DOH’s vehicular noise requirements [Reference 4].

REFERENCES

1. *Department of Transportation, Federal Highway Administration Procedures for Abatement of Highway Traffic Noise*, Title 23, CFR, Chapter I, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 47 FR 29654, July 8, 1982.
2. *Toward a National Strategy for Noise Control*, U.S. Environmental Protection Agency, April 1977.
3. *Noise Analysis and Abatement Policy*, Department of Transportation, Highways Division, State of Hawaii, June 1997.
4. *Chapter 42, Vehicular Noise Control for Oahu*, Department of Health, State of Hawaii, Administrative Rules, Title 11, November 6, 1981.
5. *Department of Housing and Urban Development Environmental Criteria and Standards*, Title 24, CFR, Part 51, 44 FR 40860, July 12, 1979; Amended by 49 FR 880, January 6, 1984.
6. Facsimile Transmittal from Phillip J. Rowell and Associates, February 4, 2000, and *Traffic Analysis for Supplemental Environmental Analysis for Mokulele Highway Widening Project in Maui, Hawaii*, prepared by Phillip Rowell and Associates, September 14, 1999.
7. *Chapter 46, Community Noise Control*, Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.

APPENDIX A
ACOUSTICAL TERMINOLOGY

Sound Pressure Level

Sound or noise consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. It is measured in terms of decibels (dB) using precision instruments known as sound level meters. Noise is defined as "unwanted" sound.

Technically, sound pressure level (SPL) is defined as:

$$\text{SPL} = 20 \log (P/\text{Pref}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and Pref is the reference pressure, 20 micropascals, which is approximately the lowest sound pressure that can be detected by the human ear. For example, if P is 20 micropascals, then SPL = 0 dB, or if P is 200 micropascals, then SPL = 20 dB. The relation between sound pressure in micropascals and sound pressure level in decibels (dB) is shown in Figure A-1.

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound levels, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined level of 53 dB, not 100 dB; two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of a sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 5 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

A-Weighted Sound Level

The human ear is more sensitive to sound in the frequency range of 250 Hertz (Hz) and higher, than in frequencies below 250 Hz. Due to this type of frequency response, a frequency weighting system, was developed to emulate the frequency response of the human ear. This system expresses sound levels in units of A-weighted decibels (dBA). A-weighted sound levels de-emphasizes the low frequency portion of the spectrum of a signal. The A-weighted level of a sound is a good measure of the loudness of that sound. Different sounds having the same A-weighted sound level are perceived as being about equally loud. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

Appendix A
Acoustical Terminology (Continued)

Statistical Sound Levels

The sound levels of long-term noise producing activities, such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels developed. It is known as the Exceedence Level, L_n . The Exceedence Level, L_n , represents the sound level which is exceeded for $n\%$ of the measurement time period. For example, $L_{10} = 60$ dBA indicates that for the duration at the measurement period, the sound level exceeded 60 dBA 10% of the time. Commonly used Exceedence Levels include L_1 , L_{10} , L_{50} , and L_{90} , which are widely used to assess community and environmental noise. Figure A-2 illustrates the relationship between selected statistical noise levels.

Equivalent Sound Level

The Equivalent Sound Level, L_{eq} , represents a constant level of sound having the same total acoustic energy as that contained in the actual time-varying sound being measured over a specific time period. L_{eq} is commonly used to describe community noise, traffic noise, and hearing damage potential. It has units of dBA and is illustrated in Figure A-2.

Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level, L_{dn} , is the Equivalent Sound Level, L_{eq} , measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 pm and 7 am to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The L_{dn} is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations. Qualitative descriptions, as well as local examples of L_{dn} , are shown in Figure A-3.

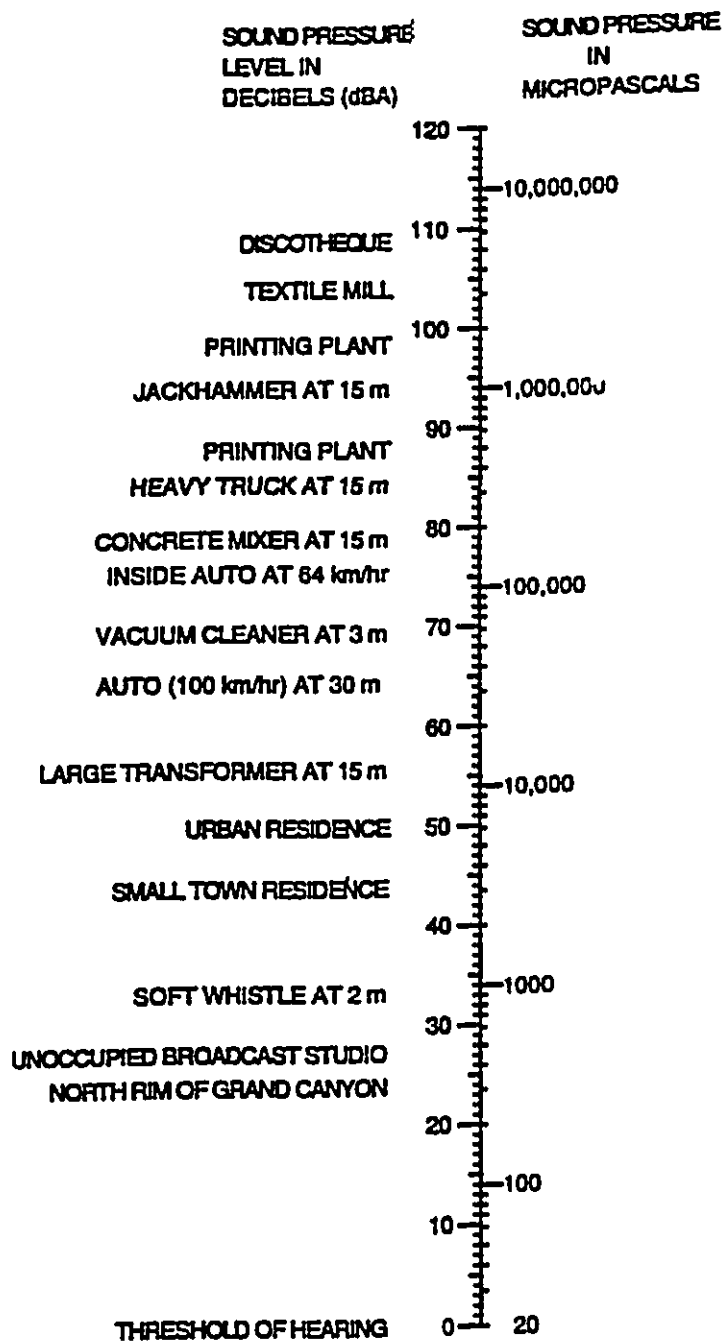
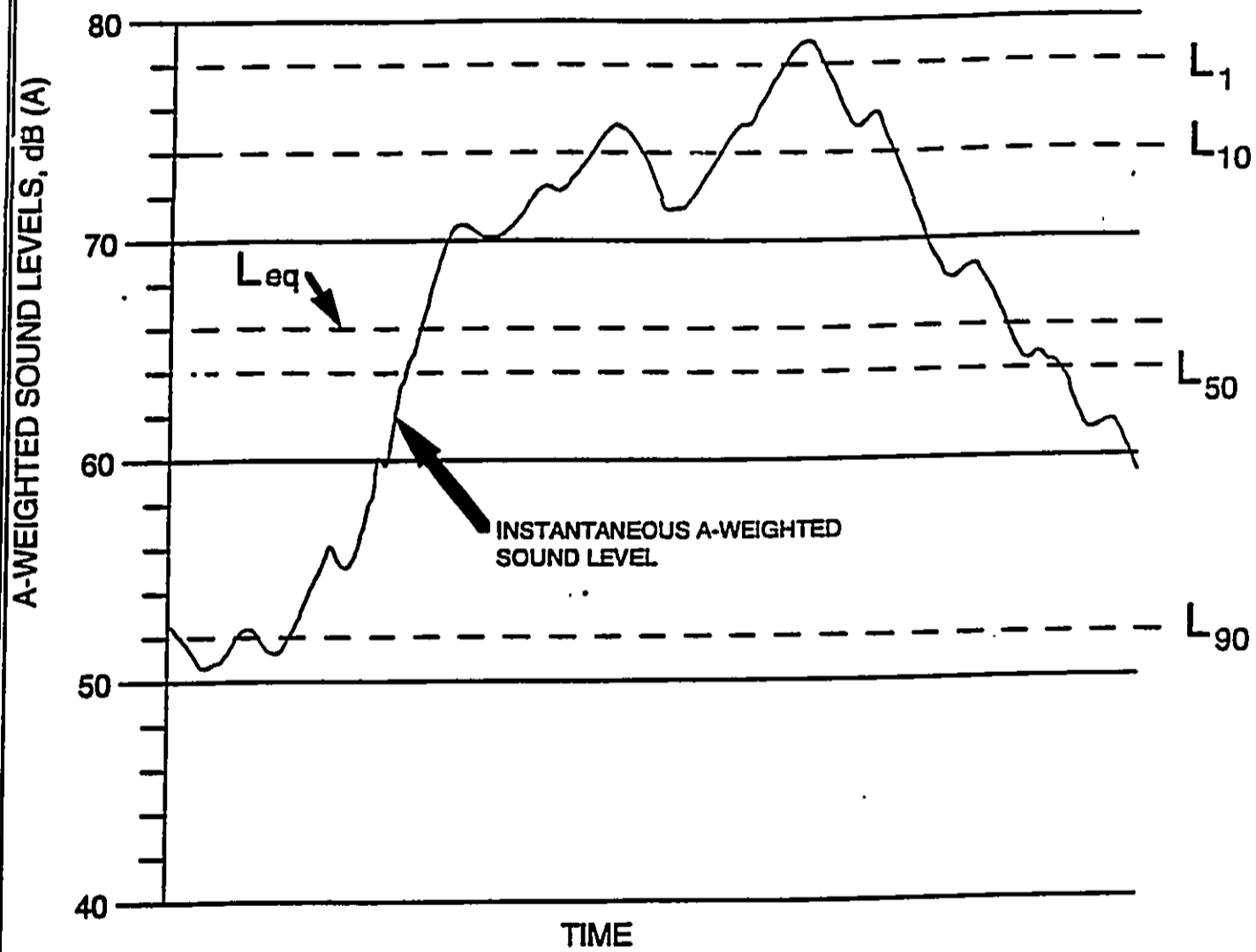


FIGURE A-1

THE RELATION BETWEEN SOUND PRESSURE, P, AND SOUND PRESSURE LEVEL, SPL, ALSO SHOWN ARE TYPICAL VALUES OF A-WEIGHTED SOUND LEVELS OF VARIOUS NOISE SOURCES.

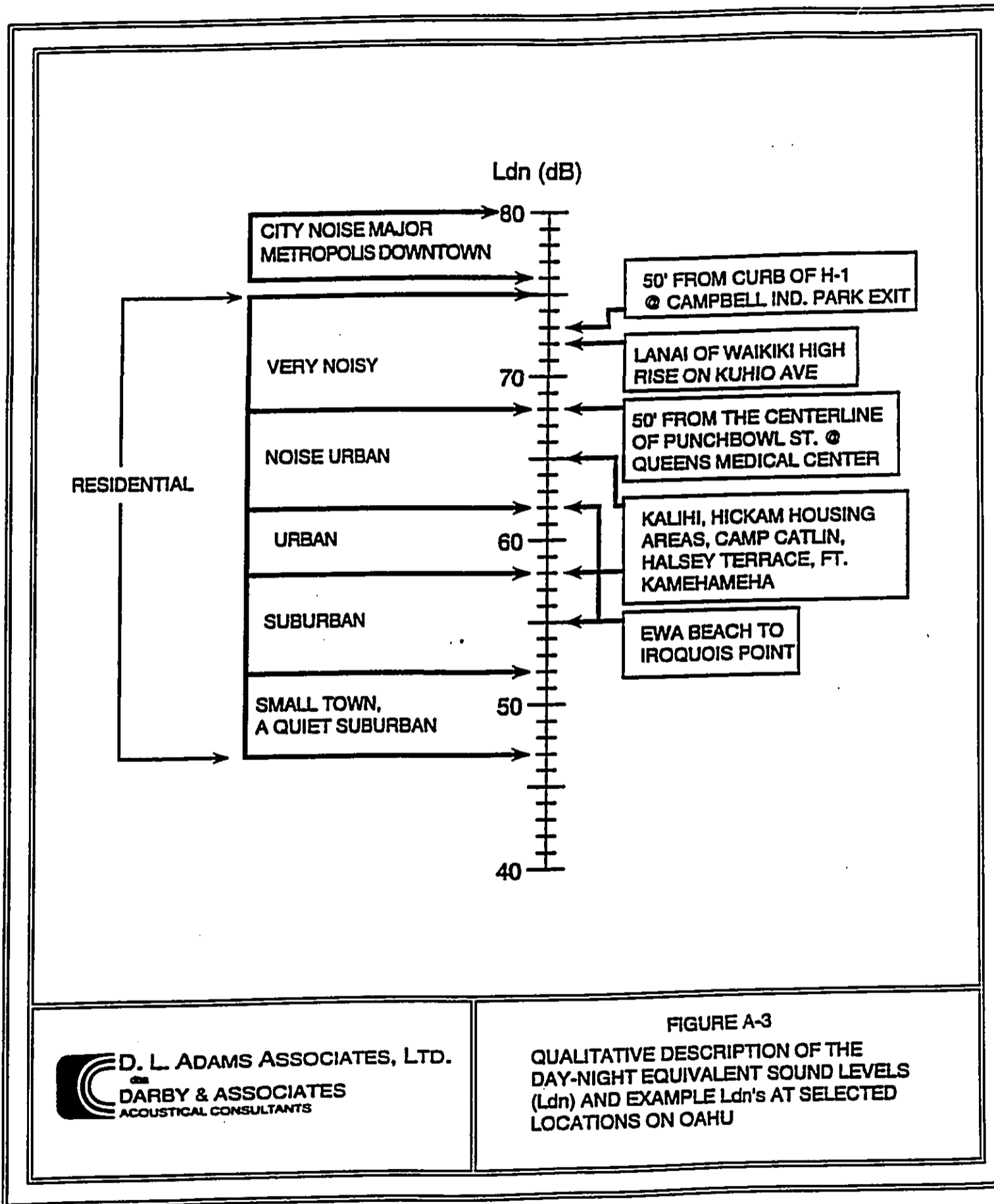


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FIGURE A-2
 COMPARISON OF AN INSTANTANEOUS
 SOUND LEVEL AND THE CORRESPONDING
 STATISTICAL SOUND LEVELS



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FIGURE A-3
 QUALITATIVE DESCRIPTION OF THE
 DAY-NIGHT EQUIVALENT SOUND LEVELS
 (Ldn) AND EXAMPLE Ldn's AT SELECTED
 LOCATIONS ON OAHU

TABLE 1
FHWA NOISE ABATEMENT CRITERIA

Activity Category	$L_{eq(h)}$ * (in dBA)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

* $L_{eq(h)}$ is the hourly equivalent sound level that represents a constant level of sound having the same total acoustic energy as that contained in the actual time-varying sound measured during the one-hour period.

TABLE 2
NOISE MEASUREMENT RESULTS

Measurement Location*	Measured L_{eq} ** (in dBA)	Duration of Measurement	Identifiable Noise Source
1	65.1	15 min.	Traffic on South Kihei Road, birds, ocean waves and distant aircraft.
2	70.4	15 min.	Traffic on local roadways and distant helicopter.
3	66.4	15 min.	Same as Location 2.
4	69.0	15 min.	Traffic on North Kihei Road, surf and distant aircraft.
5	73.8	15 min.	Traffic on Mokulele Highway.
6	50.9	15 min.	Distant traffic and barking dog.
7	73.3	15 min.	Same as Location 5.
8	70.2	15 min.	Traffic on Mokulele Highway, aircraft flyover and exhaust stacks from sugar mill plant.
9	65.3	15 min.	Traffic on local roadways and aircraft flybys.
10	68.5	15 min.	Traffic on Kuihelani Highway and aircraft flybys.

* See Figure 2

** L_{eq} is the equivalent sound level that represents a constant level of sound having the same total acoustic energy as that contained in the actual time-varying sound measured over a specific time period.

TABLE 3

CALCULATED EXISTING AND FUTURE AM PEAK HOUR TRAFFIC NOISE LEVELS
 CALCULATED AT 100 FEET FROM THE CENTER LINE OF THE NEW ROADWAY
 (Leq in dBA)

Location	Existing	Future Traffic Noise Levels			
		No-Build	Alternative A	Alternative B	Alternative C
A	66.2	69.1	69.0	69.9	70.1
B	67.7	69.8	70.6	70.1	70.3
C	77.0	79.3	74.8	74.8	79.3
D	74.3	77.8	72.5	72.5	77.8

CALCULATED EXISTING AND FUTURE PM PEAK HOUR TRAFFIC NOISE LEVELS
 CALCULATED AT 100 FEET FROM THE CENTER LINE OF THE NEW ROADWAY
 (Leq in dBA)

Location	Existing	Future Traffic Noise Levels			
		No Build	Alternative A	Alternative B	Alternative C
A	68.0	69.1	68.9	70.2	70.3
B	69.1	70.4	70.5	70.9	70.8
C	78.0	79.9	75.2	75.2	79.9
D	78.0	77.8	73.0	73.0	77.8

TABLE 4
PROJECTED FUTURE PEAK HOUR TRAFFIC NOISE
LEVEL INCREASES

	Traffic Noise Assessment Location							
	A		B		C		D	
	AM	PM	AM	PM	AM	PM	AM	PM
Future Increase No-Build	2.9	1.1	2.1	1.3	2.3	1.1	3.5	-0.2
Future Increase Alternative A	2.8	0.9	2.9	1.4	-2.2	-2.8	-1.8	-5.0
Future Increase Alternative B	3.7	2.2	2.4	1.8	-2.2	-2.8	-1.8	-5.0
Future Increase Alternative C	3.9	2.3	2.6	1.7	2.3	1.1	3.5	-0.2
Increase Due to Alternative A	-0.1	-0.2	0.8	0.1	-5.5	-3.9	-5.3	-4.8
Increase Due to Alternative B	0.8	1.1	0.3	0.5	-5.5	-3.9	-5.3	-4.8
Increase Due to Alternative C	1.0	1.2	0.5	0.4	0.0	0.0	0.0	0.0

Note: A negative number indicates a decrease in traffic noise level.

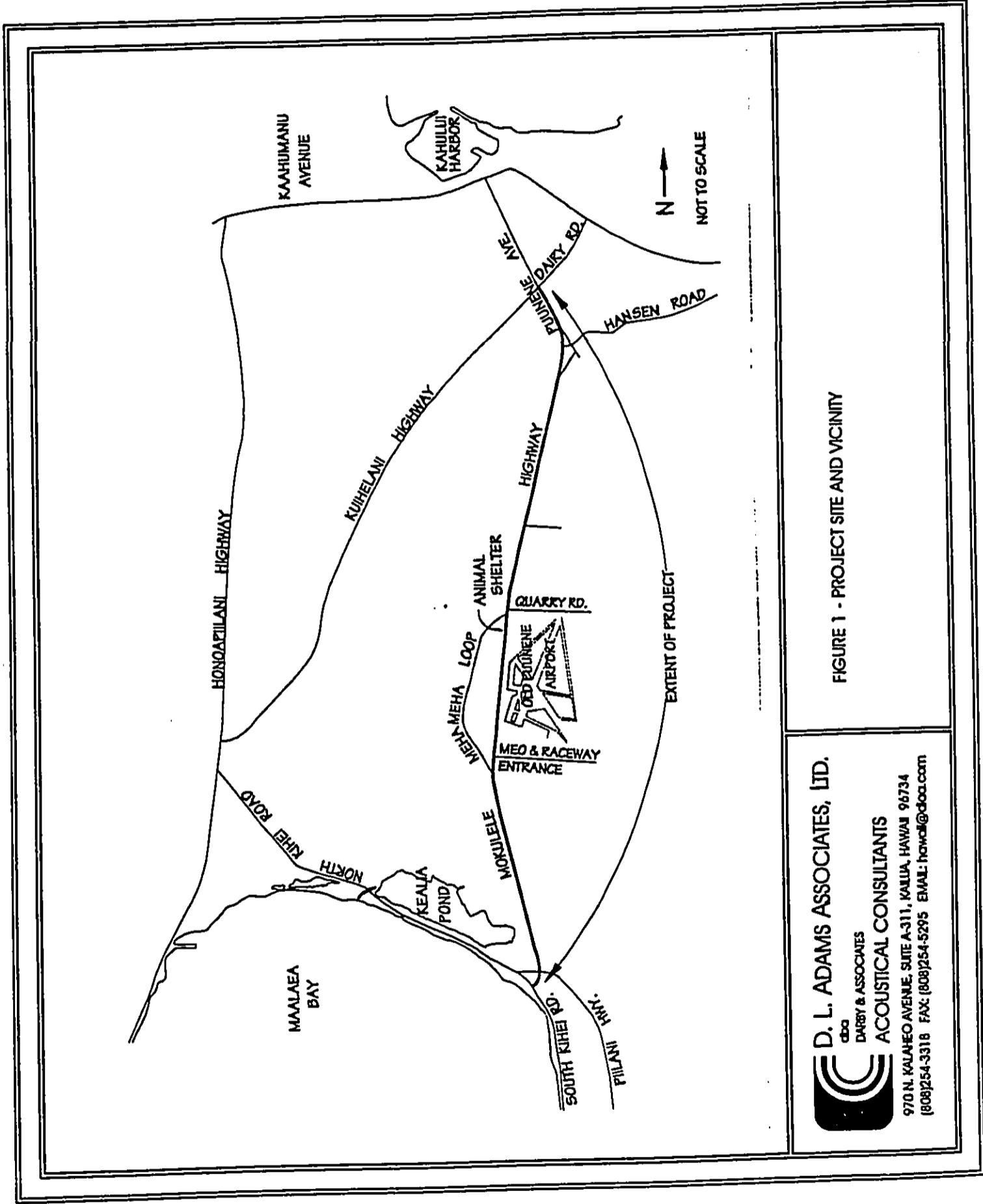


FIGURE 1 - PROJECT SITE AND VICINITY

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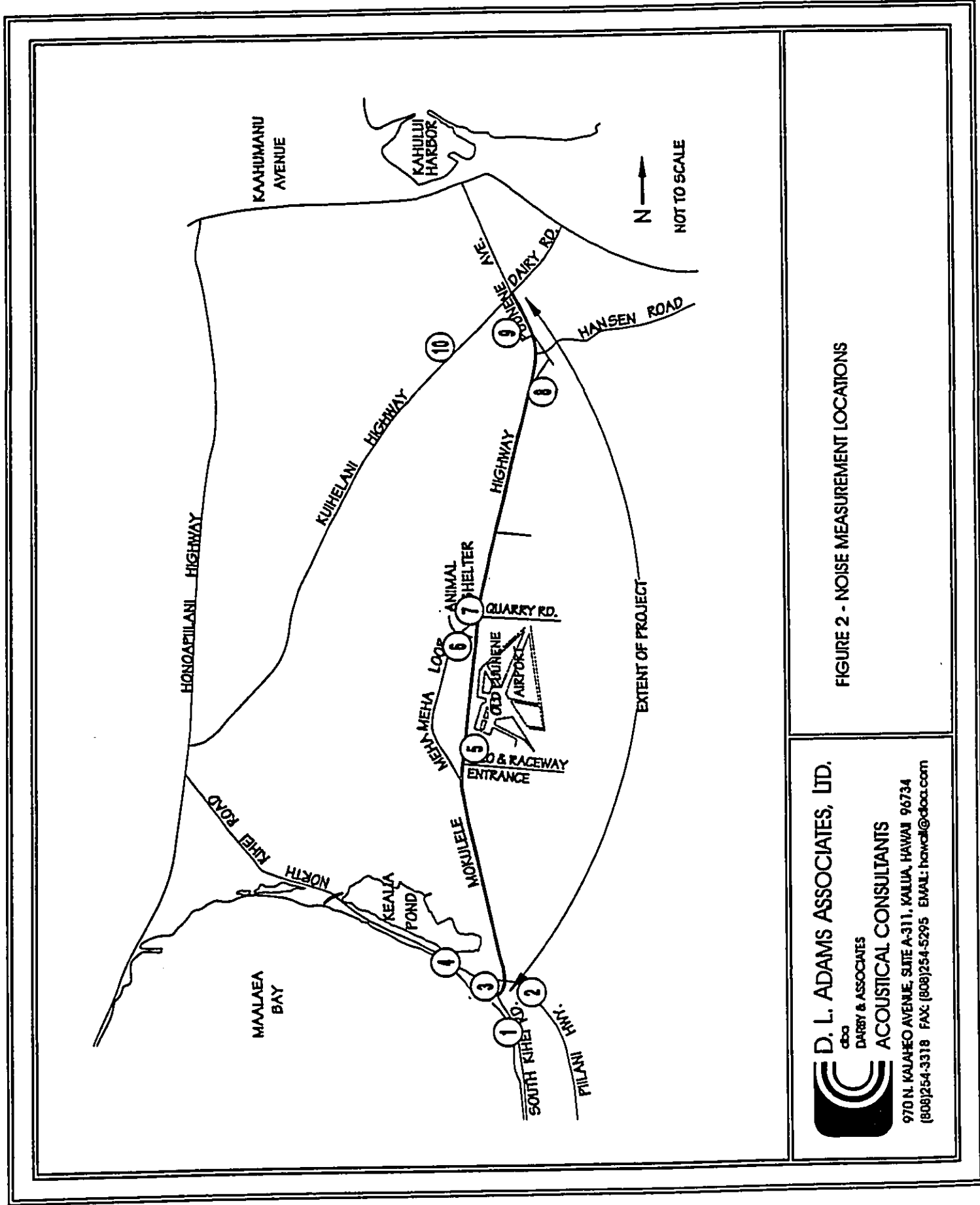


FIGURE 2 - NOISE MEASUREMENT LOCATIONS

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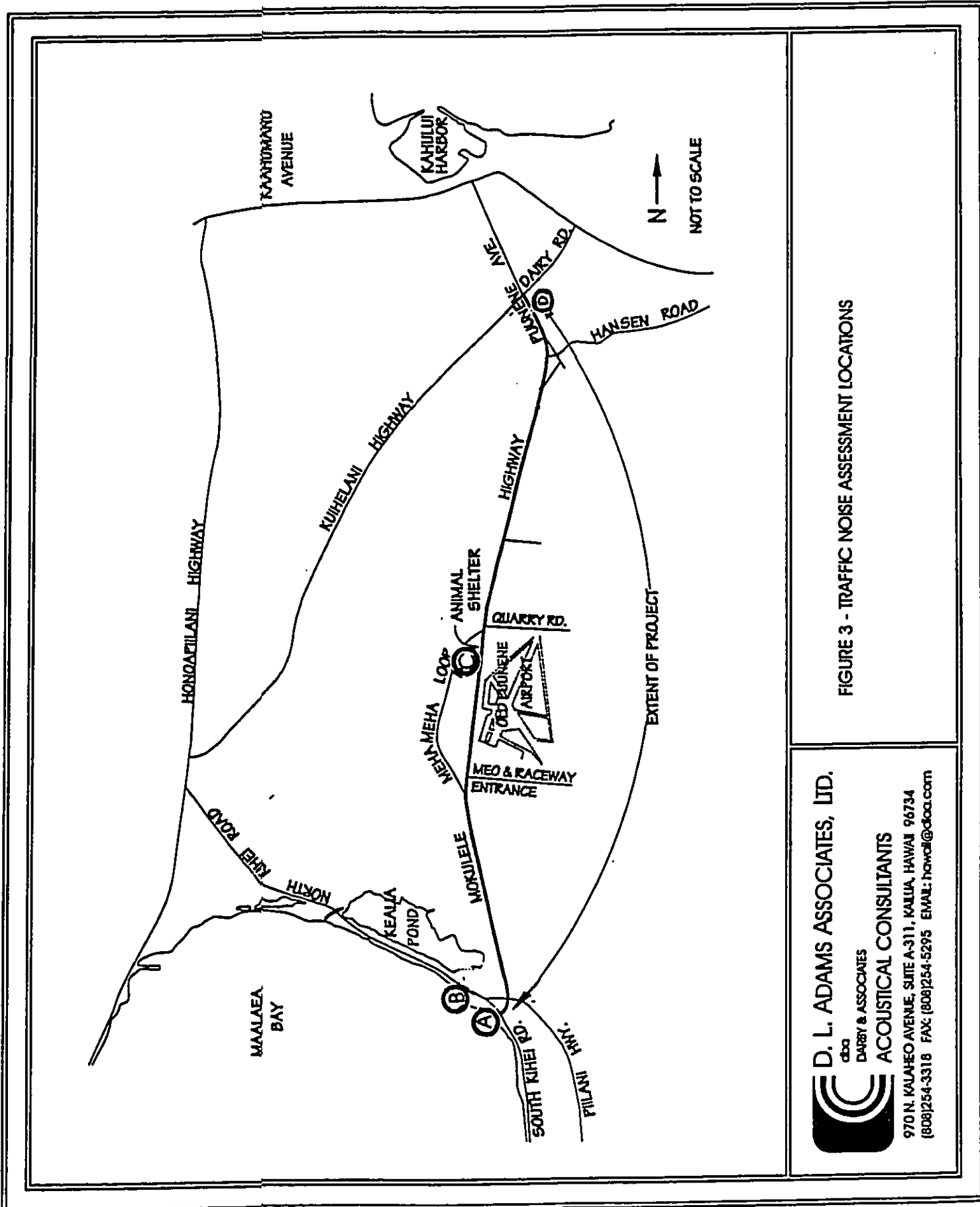

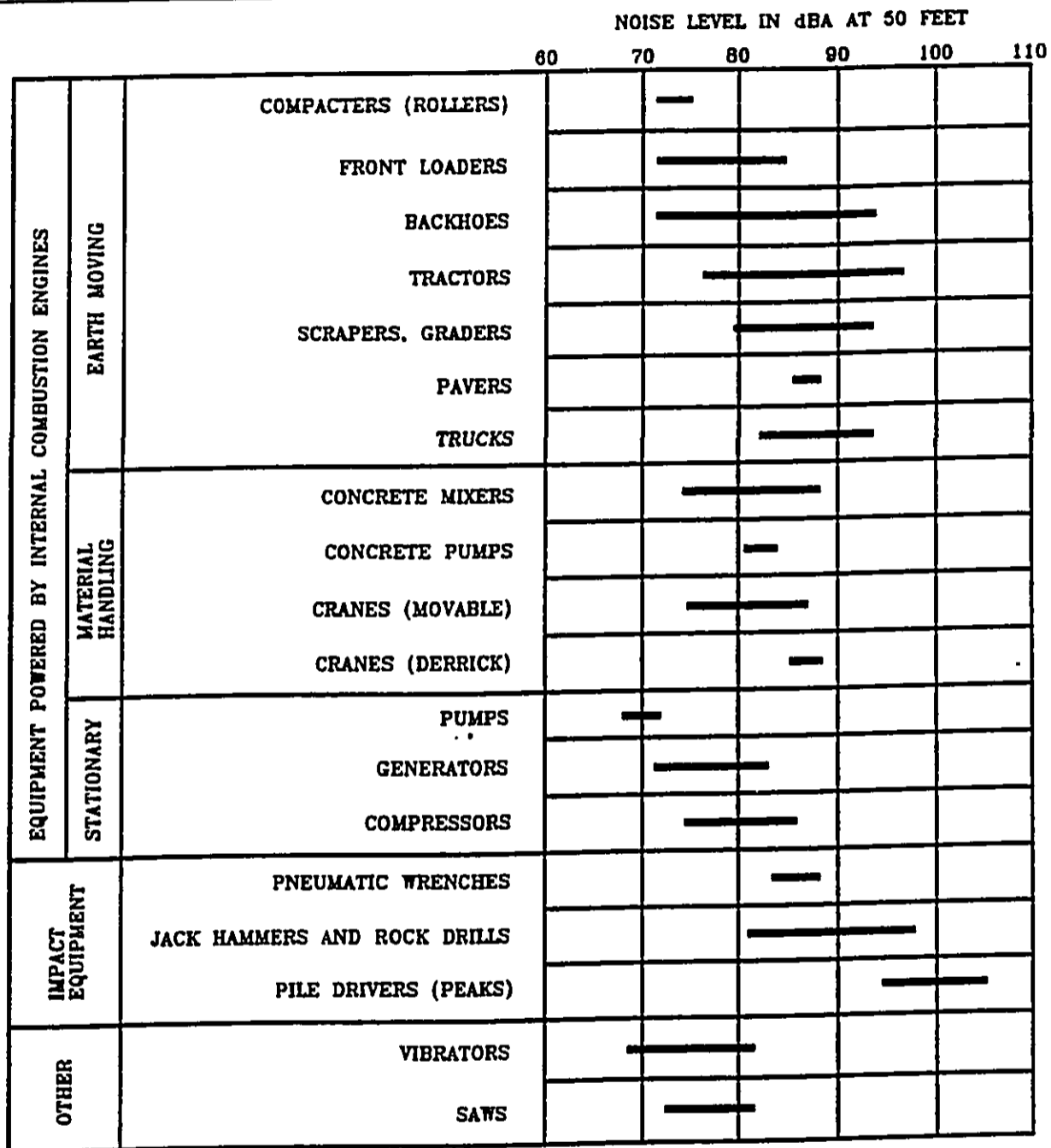


FIGURE 3 - TRAFFIC NOISE ASSESSMENT LOCATIONS


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NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES



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FIGURE 4 - CONSTRUCTION EQUIPMENT NOISE LEVELS

**Appendix C:
Pre-Final Drainage Report**

PRE-FINAL DRAINAGE REPORT
FOR
PUUNENE AVENUE/ MOKULELE HIGHWAY
WIDENING
FEDERAL AID PROJECT NO.: CMAQ-0900(57)

PREPARED FOR:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAUI DISTRICT
650 PALAPALA STREET
KAHULUI, MAUI, HAWAII

PREPARED BY:

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2115 WELLS STREET
WAILUKU, MAUI, HAWAII 96793

MARCH 2000

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I. INTRODUCTION

A. GENERAL

This report summarizes the results of 1) hydrologic analysis of offsite and onsite watersheds and 2) hydraulic calculations of major drainage structures, including bridges, culverts, concrete drop inlets, median and shoulder swales.

The analysis of storm runoff is conducted in accordance with "Design Criteria for Highway Drainage" (ref. 2), and Highway Hydrology (ref. 3).

Hydraulic calculations are in accordance with 1) Hydraulics of Bridge Waterways (ref. 4), 2) Hydraulic Design of Highway Culverts (ref. 5), "Storm Drainage Standards" (ref. 6) and "Drainage of Highway Pavements" (ref. 7).

Other standards and publications used in the analysis of storm runoff and hydraulic calculations are listed in Section VI - REFERENCES.

The proposed project consists of widening approximately 7 combined miles of Puunene Avenue and Mokulele Highway. The wider roadway will allow a higher level of service to motorists traveling between Central Maui and South Maui.

B. PROJECT DESCRIPTION

1. Location

The proposed project starts at the intersection of Kuihelani Highway and Puunene Avenue and extends southward along Puunene Avenue and Mokulele Highway to the intersection of Piilani Highway and Mokulele Highway. Piilani Highway will also be widened and realigned between South Kihei Road and Uwapo Road. See Exhibit A - Location Map.

2. Improvements

Improvements to Puunene Avenue and Mokulele Highway will consist of widening approximately 7 miles of the existing travelway from two lanes to four lanes. The widening will consist of 12' wide travel lanes, 2 in each direction, 4' and 10' wide paved shoulders, and a 26' wide grassed median. A 10' wide paved bikeway and, 3' wide gravel pedestrian path is also provided. The bikeway/pedestrian path will be sited on the mauka side (east) of the highway.

Drainage improvements consist of diversion swales, multiple concrete box culverts at major stream crossings and one new bridge structure at Waiakoa Gulch. The existing bridge at Waiakoa Gulch will remain. A new structure will be constructed upstream of the existing bridge. Roadway drainage improvements will consist of new concrete drop inlets, grassed median swale and shoulder swales.

Other improvements consist of landscaping, intersection improvements, striping and traffic signals.

3. Phasing

Construction of the project will be in two phases. For project phasing, see Location Map, Exhibit A. Phase I construction will begin at the Animal Shelter located at the Mehamaha Loop/Mokulele Highway north intersection. Phase I then extends southward to Piilani Highway, where improvements continue along Piilani Highway from the condominiums at Sugar Beach on North Kihei Road, through the Piilani Highway and Uwapo Road Intersection.

Phase II construction will begin at the intersection of Kuihelani Highway and Puunene Avenue and extend along Puunene Avenue and Mokulele Highway to the Animal Shelter at the Mokulele Highway/Meahameha Loop north intersection.

II. FLOOD AND TSUNAMI ZONE

A. GENERAL

Information relating to flood zones, Base Flood Elevations (BFEs) and tsunami zones are taken from the current effective Flood Insurance Rate Maps (FIRM) and the most recent Flood Insurance Study, 1995. The 1995 Flood Insurance Study lists gulches which were previously studied by detailed hydraulic methods. These areas are near developed regions and are shown on the FIRM as floodplains and floodways which have BFEs drawn across the floodplain. The flood zones which affect this project were studied by approximate methods. This method in most cases, establishes an approximate flood depth (instead of BFEs). The approximate method was used in areas where development was not anticipated. The flood depths listed in this report are only approximate

according to the most recent Flood Insurance Study, 1995. See Exhibit B - Flood Insurance Rate Map. It is not the intent of this report and calculations provided in the appendices to establish or imply BFEs for the areas studied.

B. PHASE I

A portion (approximately 2,600 ft.) of the project, near the beginning of Phase 1, between the north and south intersections of Mehamaha Loop, is located in flood Zone "B" (medium shading). Zone "B" designates areas between limits of 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 base flood.

An area from Kolaloa Gulch at baseline Station 272+00± to approximate station 314+00 is situated in Flood Zone "A". Zone "A" designates areas of 100-year flood; base flood elevations and flood hazard factors not determined.

The area from baseline Station 314+00± to the end of the proposed project at Uwapo Road is in Flood Zone "A0". Zone "A0" designates 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. Shallow flooding depth is shown on the FIRM to be one (1) foot.

C PHASE II

The entire Phase II portion of the proposed project is located within Flood Zone "C". Zone "C" designates areas of minimal flooding (Ref. 10).

III. HYDROLOGIC ANALYSIS

A. GENERAL

Runoff calculations conform to current engineering standards published by the State of Hawaii, Department of Transportation Highways Division (ref. 2).

1. Watershed Analysis and Determination

The watersheds used to determine storm runoff flows within the project limits are based upon the United States Geologic Services (USGS) contour maps and aerial and topographic survey maps prepared for the project. These maps indicate topographic features and elevations, gulches, and some man made features. These maps were used to determine existing terrain and watersheds. See Exhibit C - Watershed Map. This information was then used with other information to calculate storm runoff flows.

2. Peak Runoff Rate Calculations

Methods for determining storm runoff conform to the State of Hawaii, Department of Transportation, "Design Criteria for Highway Drainage", (ref. 4). The methods used were:

- a. Rational Method was used for watersheds with areas less than 200 acres. These include all onsite drainage areas, 1 through 36. For roadway storm runoff calculations, a design storm with a recurrence interval of 25 years and a duration of 1 hour was used. Refer to Appendix A.

- b. The Soil Conservation Service (SCS) Synthetic Unit Hydrograph Method was used for watersheds with areas greater than 200 acres. Two design storms were used. For watersheds I, II, III, and VIII which crosses the highway in Flood Zone C, the design storm recurrence interval is 50 year with a duration of 6 hours. For watersheds IV, VA, VB, VI and VII which crosses the highway in Flood Zones A, A0 and B the design storm recurrence interval is 100 years with a duration of 24 hours.

The SCS synthetic unit hydrograph method is used to determine runoff from ungaged watersheds and for watersheds that are gaged that have very short periods of historic stream flow records. The watersheds studied in this report are ungaged.

Input parameters for the Synthetic Unit Hydrograph (SUH) are the curve number, point rainfall, area of the watershed, the length of the watershed and slope. The Curve Number (CN) characterizes the watershed in terms of its soil cover complex (see Exhibit D - Soil Complex Map), which is a function of land use, hydraulic soil group, hydraulic condition and antecedent moisture condition. The point rainfall of a watershed is read from the appropriate rainfall map (ref. 9). Where a watershed crosses several point rainfall depths, a weighted point rainfall is calculated. The 50 and 100 year weighted point rainfall depths are 6.3 and 11.0 inches respectively. Calculations can be found in Appendix A - Hydrology, Figure A-1.

The calculated peak runoff was used as the design discharge to size drainage facilities, such as median swales, inlets culverts and bridges.

B. RUNOFF FROM MAUKA LANDS

Watersheds impacting this project are shown as Exhibit C - Watershed Map. For Mokulele Highway, Watersheds II through VI extend from the highway to the Haleakala Crater and National Park. Puunene Avenue's offsite watershed extends from the roadway to Waiko Road, approximately 13,500 ft. south. Table 1 - "Watershed Runoff Estimates" lists the 50-year and 100-year peak runoff flows calculated for each watershed. The hydrograph plots and hydrograph ordinates can be found in Appendix A.

TABLE 1

WATERSHED RUNOFF ESTIMATES			
WATERSHED	DESCRIPTION/GULCH	Q ₅₀ (CFS)(6HR)	Q ₁₀₀ (CFS)(24HR)
I.	Puunene Mill (Mauka Mokulele)	330*	630
II.	Pulehu Gulch	5,220*	8,630
III.	Old Maui Airport and Village (Abandoned)	970*	1,700
IV.	Kolaloa/Hopapa Gulch	3,270	5,540*
VA.	North Keahuaiwai (A)	900	1,491*
VB.	North Keahuaiwai (B)	214	945*
VI.	Keahuaiwai Gulch	3,930	6,580*
VII.	Waiakoa Gulch	4,310	7,070*
VIII.	Puunene Avenue (McGerrow Village to Waiko Road)	270*	530

* Design Discharge

The existing hydrologic conditions for each watershed are summarized in the following paragraphs. Each summary includes a general description of location, size, list of soil series with its hydraulic group in parentheses, land uses and estimated design storm runoff rate.

Watershed I is located near Puunene Mill and covers approximately 1,439 acres of sugar cane land. It extends approximately 11,500 feet mauka from Mokulele Highway and 11,700 south from Puunene Mill. The average slope is 1.5%. The watershed encompasses four soil series: Alae(B), Ewa(B), Pulehu(B) and Waikoa (C). For more detailed information, see the watershed network diagram, in Appendix A - Hydrology, Figure A.2. Runoff is estimated to be 330 cfs for the 50-year, 6-hour storm.

Watershed II is located south of Watershed I and shares its northern boundary with Watershed I's southern boundary. Watershed II contributes storm runoff to Pulehu Gulch and covers 7,813 acres of mixed land uses. Approximately 3,150 acres is pasture land, 1,638 acres is rural/urban, 1,213 acres is farmstead, 728 acres is sugar cane (contoured), 412 acres is sugar cane (straight row), and 671 acres is forest reserve. Watershed II extends approximately 90,000 feet mauka from Mokulele Highway to Haleakala Crater National Park and approximately 500 feet south from Watershed I. Watershed II encompasses ten different soil series: rVs, Kaipoi(B), Laumaia(B), Kula(B), Pane(B), Keahua(B), Ewa(B), Alae(B), Waiakoa(C) and Pulehu(B). The watershed network diagram should be referenced for more detailed information, see Appendix A, Figure A.3.1. Runoff is estimated to be 5,220 cfs for the 50-year, 6-hour storm.

Watershed III is located near the old Maui Airport and Village and shares its northern boundary with Watershed II's southern boundary. Watershed III covers approximately 3,389 acres of mixed land uses. Approximately 2,170 acres is sugar cane (contoured), 1,077 acres is sugar cane (straight row) and 142 acres is rural/urban which is above Kula Highway, approximately 5 miles upstream of Mokulele Highway. Watershed III extends approximately 52,000 feet mauka from Mokulele Highway and 10,500 feet south from the southern boundary of Watershed II. Watershed III is divided into 4 subwatersheds and 3 reach routes. Watershed III encompasses six soil series: Kamaole(B), Keahua(B), Waiakoa(C), Ewa(B), Pulehu(B) and Alae(B). The watershed network diagram should be referenced for more detailed information, see Appendix A, Figure A.4.1. The 50-year, 6-hour design storm runoff rate is estimated at 970 cfs.

Watershed IV is located south of Watershed III. Watershed IV contributes runoff to Hopapa and Kolaloa Gulches. It covers approximately 5,847 acres of land of various uses. Land use of pasture occupies 2,450 acres, sugar cane (straight row) occupies 1,693 acres, farmstead occupies 1,534 acres and forest reserve occupies 78 acres. Watershed IV extends 100,000 feet mauka from Mokulele Highway to Haleakala Crater National Park. It extends approximately 2,200 feet south from Watershed III. Watershed IV is divided into 4 subwatersheds and 2 reach routes. Watershed IV encompasses eleven soil series; rVs, Laumaia(B), Kaipoi(B), Kula(B), Pane(B), Keahua(B), Kamaole(B), Pulehu(B), Waiakoa(C), Ewa(B) and Alae(B). Refer to the watershed network diagram for more detailed information, see Appendix A Figure A.5.1. The 100-year, 24-hour design storm runoff rate is estimated at 5,540 cfs.

Watershed VA is located south of watershed IV and north of Keahuiwai Gulch in Kihei. Watershed VA covers approximately 2199 acres of sugar cane land. The watershed extends 29,520 feet mauka from Mokulele Highway and 4,600 feet south from Watershed IV. It encompasses four soil series: Waiakoa(C), Keahua(B), Alae(B) and Pulehu(B). Refer to the Watershed Network Diagram for more detailed information, see Appendix Figure A.6a.1. The 100-year, 24-hour design storm runoff rate is estimated at 1,491 cfs.

Watershed VB is located south of watershed VA and covers approximately 269 acres of sugar cane land. This watershed extends 6,500 mauka from Mokulele Highway. It encompasses two soil series: Pulehu(B) and Waiakoa(C). Refer to the Watershed Network Diagram for more detailed information, see Appendix A, Figure A.6b.1. The 100-year, 24-hour design storm runoff rate is estimated at 945 cfs.

Watershed VI is located just north of the intersection of Piilani and Mokulele Highways. It contributes runoff to Keahuaiwa Gulch. Watershed VI covers approximately 7,096 acres of land of various uses. The land uses and approximate areas are: sugar cane (straight row) at 2,435 acres, sugar cane (contoured) at 862 acres, pasture at 3,535 acres, forest reserve at 107 acres and farmstead at 156 acres. Watershed VI extends approximately 18.1 miles (95,600 feet) mauka from Mokulele Highway and 2,000 feet south of Watershed V. It encompasses eight soil series: Alae (B), Laumaia (B), Kaipoi (B), Kula (B), Keahua (B), Kamaole (B), Pulehu (B) and Waiakoa (C). Watershed VI is divided into 3 subwatersheds and 2 reach routes. Refer to the Watershed Network Diagram for more detailed information, see Appendix A figure A.7.1. The 100-year, 24-hour design storm runoff rate is estimated at 6,580 cfs.

Watershed VII is the southern most watershed and is located south of the intersection of Piilani and Mokulele Highways. It is the watershed of Waiakoa Gulch. Watershed VII covers approximate 6,904 acres of land of various uses. Land uses and approximate areas are: sugar cane (straight row) at 1,147.9 acres, sugar cane (contoured) at 33 acres, pasture at 1,939 acres, forest reserve at 1,304 acres and farmstead at 2,180 acres. Watershed VII extends approximately 14.8 (78,000 feet) mauka from Piilani Highway and 2,500 southward along Piilani Highway. Watershed VII is divided into 3 subwatersheds and 2 reach routes. It encompasses eight soil series: Alae (B), Laumaia (B), Kaipoi (B), Kula (B), Keahua (B), Kamaole (B), Pulehu (B) and Waiakoa (C). Refer to the Watershed Network Diagram for more detailed information, see Appendix A Figure A.8.1. The 100-year, 24-hour design storm runoff volume is estimated at 7,070 cfs.

Watershed VIII is the northern most watershed and is surround by Puunene Avenue to the north, Mokulele Highway to the east, Kuihelani Highway to the west and Waiko Road to the south. Watershed VIII covers approximately 1,324 acres of sugar cane (straight row) land. The length of this watershed is approximately 2.5 miles (13,000 feet). It encompasses four soil series: Waiakoa(C), Ewa(B), Jaucas(B) and Pulehu(B). Refer to the Watershed Network Diagram for more detailed information, see Appendix A Figure A.2. The 50-year, 6-hour design storm runoff volume is estimated at 270 cfs.

C. ROADWAY RUNOFF

Roadway runoff was estimated using the Rational Method. These areas are generally less than 200 acres in size. The design storm used has a return period of 25-years and a duration of 1-hour. Exhibit E - Roadway Drainage Area Maps (4 sheets) shows the location, size, and estimated runoff for each drainage area. Calculations for roadway runoff estimates are provided in Appendix A. Below, Table 2 - "Roadway Runoff Estimates" lists the drainage area number, size and runoff rate.

TABLE 2

ROADWAY RUNOFF ESTIMATES					
AREA NO.	SIZE (Ac)	Q (CFS)	AREA NO.	SIZE (Ac)	Q (CFS)
1	1.18	2.30	19	6.91	5.49
2	2.07	2.89	20	4.39	3.32
3	2.07	2.89	21	0.36	0.68
4	2.07	3.13	22	3.96	2.76
5	0.46	1.08	23	1.90	2.38
6	2.92	4.16	24	2.57	2.16
7	2.21	3.09	25	1.42	2.27
8	2.19	3.06	26	6.39	9.29
9	2.03	3.16	27	2.71	2.63
10	0.47	0.92	28	2.53	3.49
11	0.57	0.99	29	5.35	3.55
12	1.15	1.98	30	2.70	4.68
13	20.01	13.77	31	1.78	2.44
14	11.47	7.34	32	3.75	4.35
15	5.29	4.76	33	2.80	6.42
16	4.42	3.58	34	0.92	1.51
17	5.83	5.11	35	0.46	1.12
18	3.79	2.75	36	0.45	1.18

IV. HYDRAULIC ANALYSIS

A. GENERAL

Hydraulic calculation methods for various types of drainage structures are described in the following paragraphs. For the hydraulic analysis of bridge structures, the U.S. Army Corps of Engineers HEC-RAS "River Analysis System" software and its reference manuals were used.

Hydraulic performance of culverts is based on equations from Federal Highways Administration's 1985, "Hydraulic Design of Highway Culverts". The analysis includes calculations for inlet and outlet control losses at the culvert. The calculation producing the highest headwater elevation is the design water surface elevation. For a detailed description of the procedure refer to FHWA's 1985 "Hydraulic Design Series No. 5" (ref. 5).

Catch basin and inlet capacity analysis was performed using procedures described in HEC-12, "Drainage of Highway Pavements", by the U.S. Department of Transportation, Federal Highways Administration.

Drain pipe diameters were determined by hydraulic grade line calculations with the minimum requirements set in "Design Criteria for Highway Drainage", by State of Hawaii, Department of Transportation. Hydraulic grade line calculations are based on procedures described in the City and County of Honolulu's "Storm Drainage Standards" (ref. 6).

B. BRIDGES

Bridge hydraulics were calculated using the U.S. Army Corps of Engineers HEC-RAS "River Analysis System" software. Two design storms from Watershed VIII were analyzed: the 50-year, 6-hour storm with an estimated discharge of 4,310 cfs and the 100-year, 24-hour storm with an estimated discharge of 7,070 cfs. The analysis included hydraulic calculations for existing conditions of Waiakoa Gulch and the existing bridge. The second analysis included hydraulic calculations for proposed conditions, which included the proposed bridge, channel excavation and the existing bridge structure. A detailed discussion of the computational methods can be found in the Hydraulic Reference Manual, September 1998 by the U.S. Army Corps of Engineers (ref. 16).

1. Existing Hydraulic Conditions

Waiakoa bridge is located at Piilani Highway south bound ramp centerline station 16+80±. The channel shape is trapezoidal with side slopes of approximately 1.5 horizontal to 1 vertical. The average longitudinal slope is approximately 1.0%. The width of the channel's base is 112 feet, and has a clear opening height of 7 feet. The channel is lined on the bottom and sides with concrete.

At the upstream and downstream ends of the channel, Waiakoa Gulch has been excavated. This excavation provides a transition for the bottom width of the gulch. The base transitions from 20 feet to 112 feet at the bridge. The upstream and downstream transition lengths are 150 feet and 160 feet respectively.

Approximately 853 feet of Waiakoa Gulch has been studied, starting 267 feet downstream of the existing bridge and extending 586 feet upstream. The slope of the gulch varies from approximately 1.0 % downstream of the bridge to 3.3% at approach to the bridge, and to 0.5% upstream.

**Appendix D:
Addenda to Archaeological Inventory Survey**

SCS Project Number 166-1

**ADDENDUM II:
INVENTORY SURVEY OF
PUUNENE BYPASS/MOKULELE HIGHWAY
IMPROVEMENTS CORRIDOR
PULEHUNUI, AND WAILUKU AHUPUA`A
WAILUKU DISTRICT, ISLAND OF MAUI, HAWAII
TMK: 3-8: 04, 05, 06, 07**

By:
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Berdona Burgett, B.A.
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March 1999

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ABSTRACT

At the request of Mr. Rory Frampton of Chris Hart and Partners, Scientific Consultant Services, Inc., (SCS) conducted an expanded Archaeological Inventory Survey of both ends of the proposed Pu'unene Bypass and Mokulele Highway Improvements Corridor. The objective of the additional survey was to investigate the presence or absence of significant archaeological features within the modified boundaries of the beginning and end points of the highway corridor.

The beginning point of the highway corridor consists of the Kīhei Triangle. The entire area of the triangle interior appears to have been significantly altered at some time in the recent past.

The end-point of the project corridor concludes just north of McGerrow Village and Puunene Town, in a short segment (approximately 0.5 kilometer) of highway that connects Puunene Avenue to Dairy Road. This area has also been extensively altered by agriculture and nothing of intact cultural significance was identified.

No significant archaeological sites or features presently exist in the current project area and no further archaeological work is recommended.

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INTRODUCTION

At the request of Mr. Rory Frampton of Chris Hart and Partners, Scientific Consultant Services, Inc., (SCS) conducted an expanded Archaeological Inventory Survey of both ends of the proposed Pu'unene Bypass and Mokulele Highway Improvements Corridor (Figures 1, 2, and 3). The objective of the additional survey was to investigate the presence or absence of significant archaeological features within the modified boundaries of the beginning and end points of the highway corridor.

The project areas are located in the Pulehunui and Wailuku *ahupua'a*, Wailuku District, and are the beginning and end points of a road corridor that extends across the isthmus of Maui Island from northern Kīhei to a junction with Kuihelani Highway c. 3000 feet south of Kahului; an area approximately 9.5 miles long.

The field work consisted of a pedestrian survey of areas of the Kīhei Triangle on the southern end of the highway corridor section, and an inspection of the northern end of the project area corridor that concludes just north of McGerrow Village and Puunene Town, in a short segment (approximately 0.5 kilometer) of highway that connects Puunene Avenue to Dairy Road. The survey was conducted in February of 1999, by Project Director Berdena Burgett under the overall supervision of Robert. L. Spear, Ph.D.

For climate and soil information, and for historical background and previous archaeology in the current project area, the reader is directed to the original report for which this addendum is being written (Burgett and Spear 1996a).

PHYSICAL SETTING

The current project area's southern section is the Kīhei Triangle bounded by Piilani Highway on the east, Kīhei Road on the west, and an extension of the Mokulele Highway on the south. Approximately 110 feet of the area extending to the west of the junction of Kīhei road and Piilani Highway has been landscaped. The landscaping includes a strip of tended lawn, a wooden sign, and a small cultivated area of shrubs and trees with identifying signs. The plantings include *milo* (*Thespecia populnea*), plumeria (*Plumeria acuminata*), bougainvillea (*Bougainvillea spectabilis*), hibiscus (*Hibiscus rosa sinensis*), and Norfolk Pine (*Araucaria exelsa*).

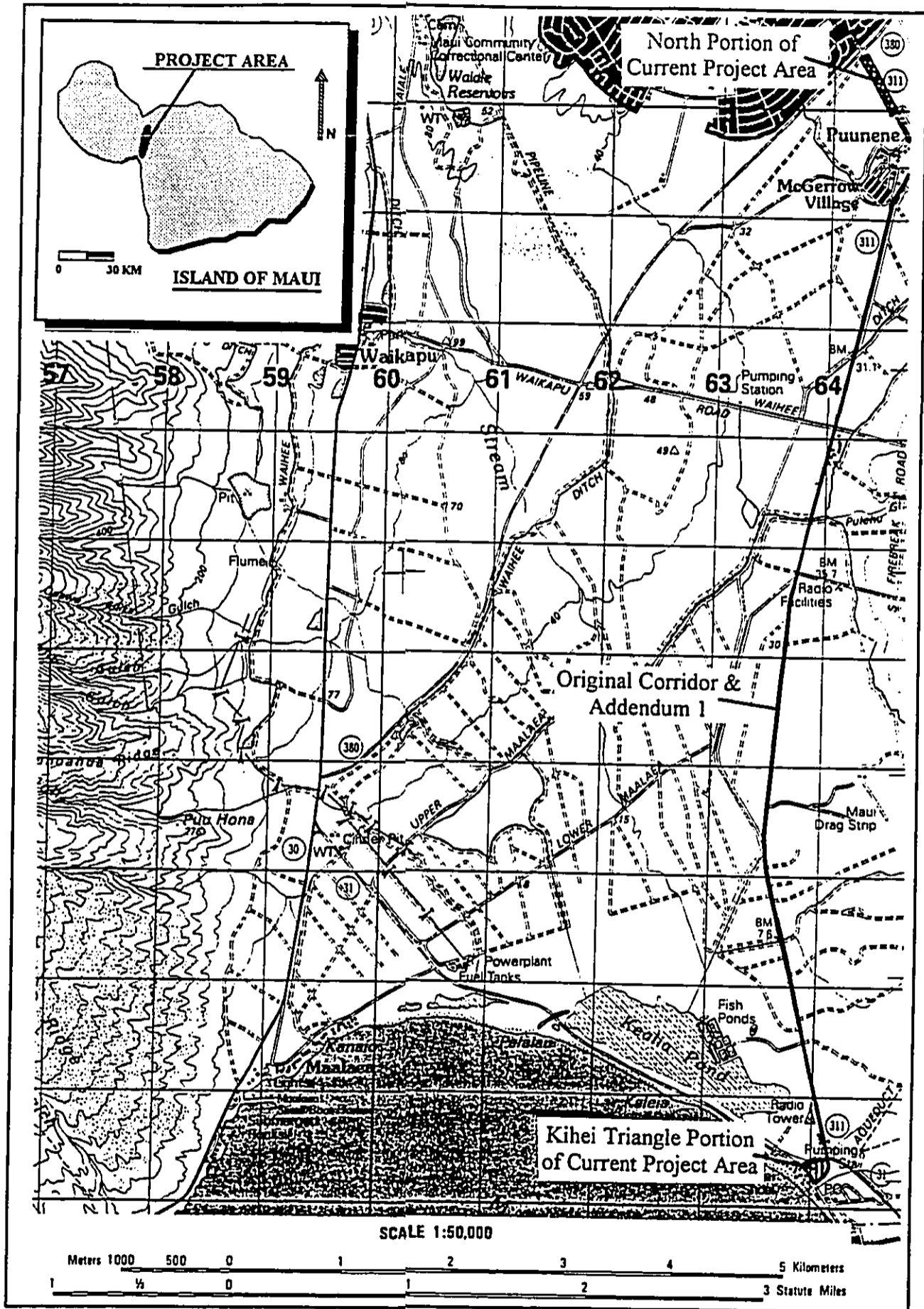


Figure 1: USGS Wailuku and Makawao Quadrangle Showing Project Area.

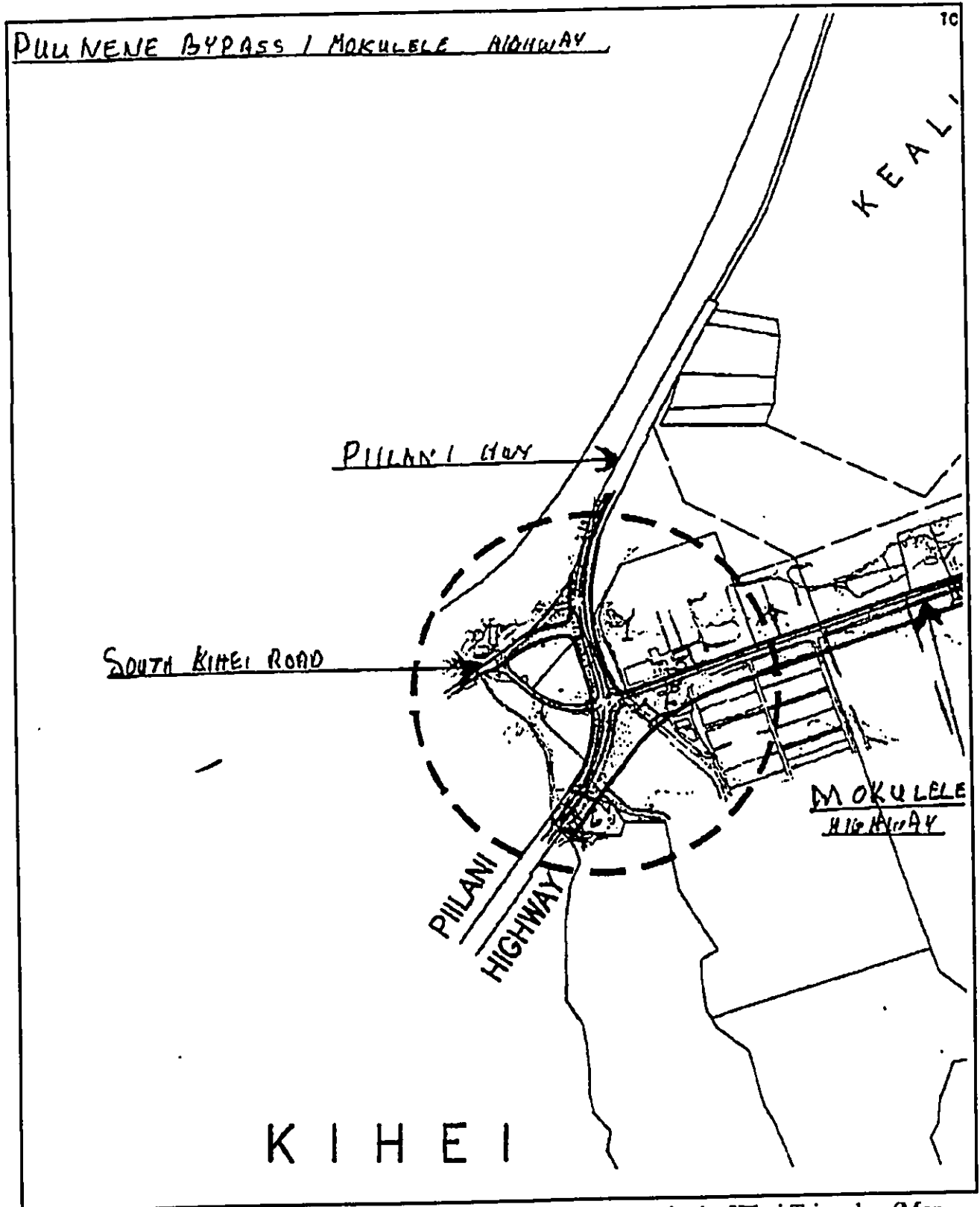


Figure 2: Planview Map of Southern Section of the Project Area in the Kīhei Triangle. (Map provided by Chris Hart and Partners 1998)

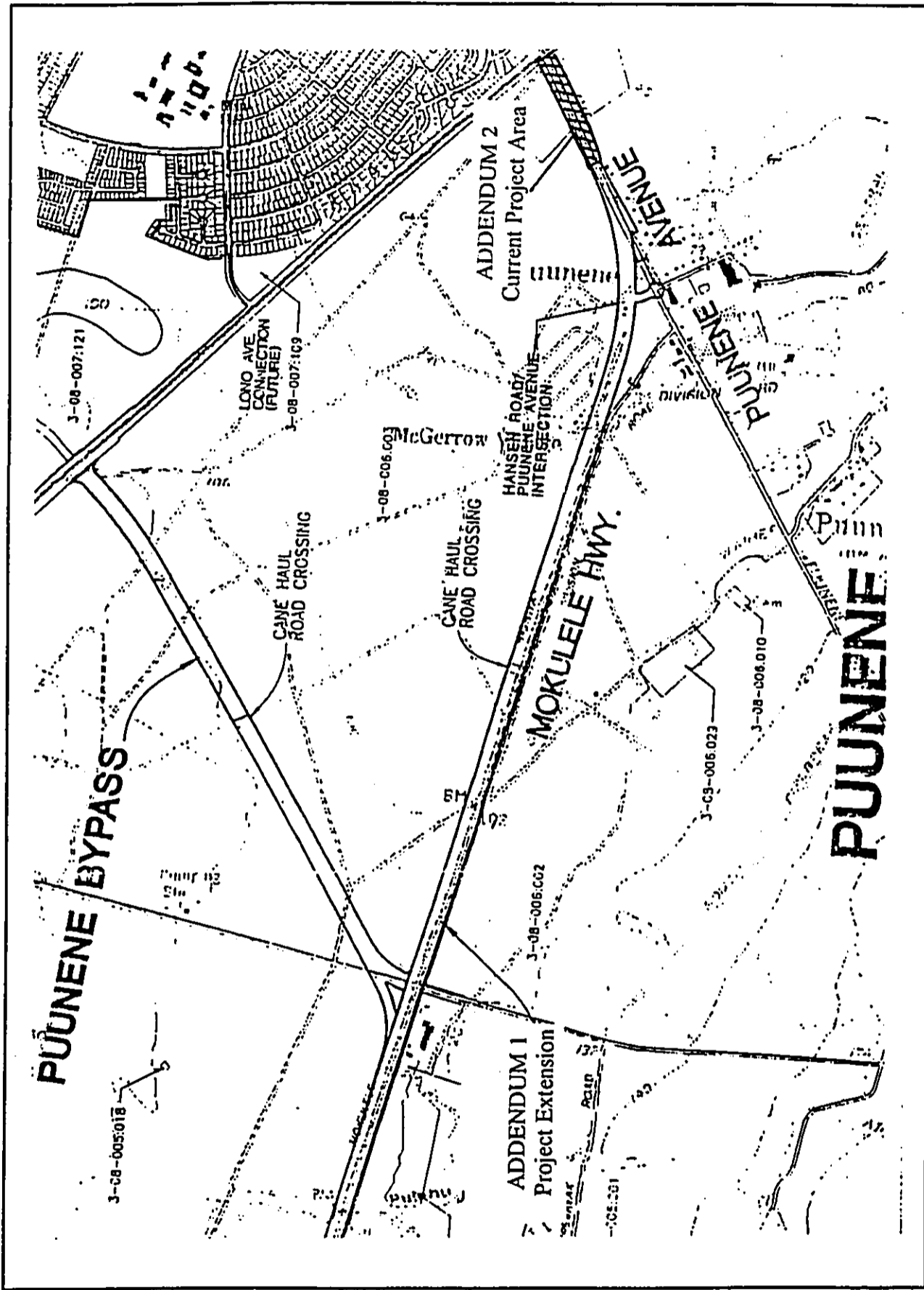


Figure 3: Planview Map of Northern Section of the Project Area.

The project area's northern section is a short segment (approximately 0.5 kilometer) of highway corridor that concludes just north of McGerrow Village and Puunene Town. It connects Puunene Avenue to Dairy Road. This area shows evidence of feral sugarcane (*Saccharum sp.*) and is the dominant vegetation within the entire Pu'unene/Mokulele Bypass Highway corridor. Also present are *koa haole* (*Lecucaena leucocepharia*), occasional *kiawe* (*Prosopis pallida*), and various weeds and grasses.

SURVEY EXPECTATIONS

Data collected from the initial highway corridor archaeology inventory survey's historical review indicated that if any evidence of archaeological remains were still present in either of the sections of the project area, that evidence would be located in the southern portion of the corridor, which is relatively close to the shoreline (Burgett and Spear 1996a). After reviewing area tax maps, historical accounts, and the extent of recent and past land modifications, both within and bordering the narrow road corridors, it was considered likely that little, if any, evidence of archaeological features would be identified during the survey.

Several factors may account for the lack of archaeological remains: extensive disturbance associated with prior sugarcane cultivation, highway and private construction activities at the southern end of the Improvements corridor, and/or little or no prehistoric occupation or use of the area. The absence of documentary references to prehistoric occupation located on the inland portion of the project area crossing the isthmus, would seem to indicate that the region was not populated or cultivated prehistorically (Burgett and Spear 1996a).

FIELDWORK RESULTS

KĪHEI TRIANGLE PORTION

An inspection of the Kīhei Triangle showed no evidence of archaeological remains. The area was inspected by walking as much of the terrain as was possible. The thick shrubbery ground cover over much of the southern portion prevented pedestrian survey of limited portions of the interior of the triangle. For the most part, the surface of the triangle from Mokulele Highway on the south to the landscaped portion facing the northeast end of Kīhei Road, is covered with an even growth of an unidentified shrub. The shrub ground cover appears to grow

to a maximum height of approximately five feet and extends from the south edge of the landscaped area to Mokulele Highway. A number of immature *kiawe* trees and several coconut palms are also present in the interior portion.

Large, mature *kiawe* trees, a short section of wooden fence, trash piles, and linear tree stump piles are present along the perimeter of the northwestern portion of the triangle facing Kīhei Road. A Short dirt road and linear piles of apparently dozed trees, stumps and pushed soil extended eastward from Kīhei Road to immediately west of the landscaped area. Several isolated *kiawe* trees were present among the vegetation piles at the end of the short dirt road, and recent trash and camping articles in the same area would seem to indicated the presence of campers living in the area at one time (Figure 4). The road provides the only easy access to the interior of the triangle (Figure 5). The thick ground cover on the rest of the triangle makes entry into other portions virtually impassible (Figure 6).



Figure 4: Photograph of Modern Refuse and Camping Debris. View to North.

The entire area of the triangle interior appears to have been bulldozed at some time in the recent past. Although push piles are still evident in the northwestern portion, and several large trees have been left standing, it appears that the terrain throughout the area has been leveled (Figure 7).



Figure 5: Photograph of Road into the Interior of the Kīhei Triangle. View to Northwest.

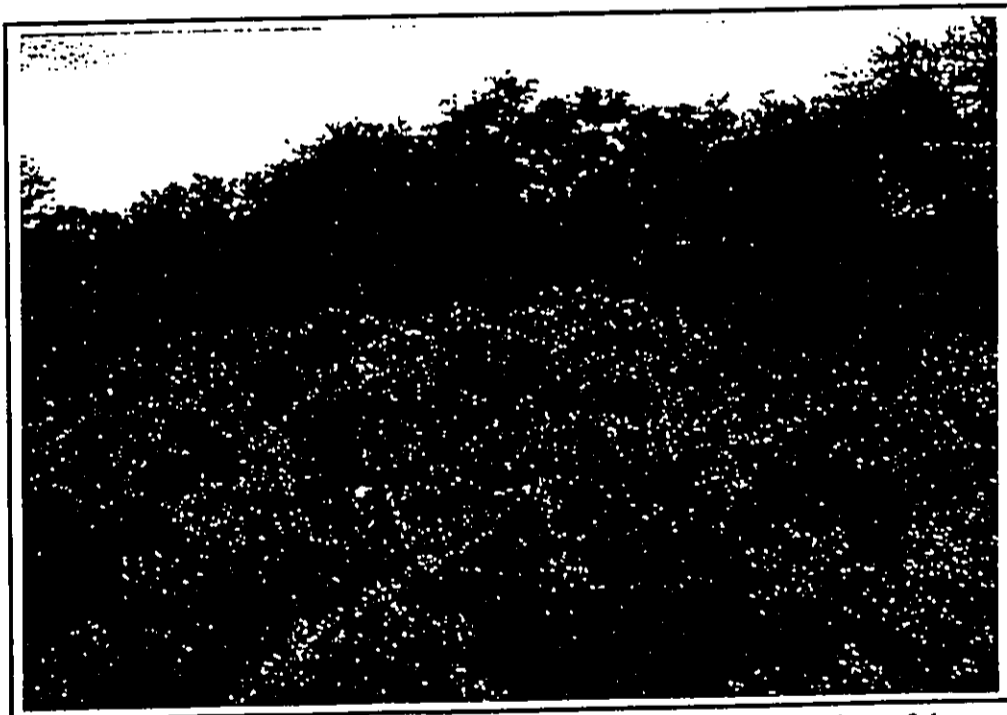


Figure 6: Photograph of Thick Vegetation in the Triangle Portion of the Project Area. View to Southeast.



Figure 7: Photograph of Push Piles of Vegetation in the Triangle Portion of the Project Area. View to Southeast.

ROAD SEGMENT CONNECTING PUUNENE AVENUE TO DAIRY ROAD PORTION

This approximately half kilometer segment of Puunene Avenue has been extensively impacted by agriculture and modern development (see Figure 3). Most of the extensive land alteration in this area has been the result of sugarcane cultivation. The plantation structures may have once stood in this area, the outer edges of Puunene Plantation Camp, have either been destroyed or moved (Burgett and Spear 1996b).

No archaeological features or sites are present in this portion of the current area of study.

DISCUSSION AND CONCLUSION

Although no sites were identified the absence was not unexpected; other archaeological studies in the general area identified no prehistoric remains. Sinoto and Pantaleo (1992) conducted an archaeological inventory survey of a proposed location for the Kīhei Gateway Complex, on the *makai* side of the Piilani-Mokulele Highway junction. One historic site, the remains of concrete footings from a bridge across Waiakoa Stream, was identified. The bridge,

Site 50-50-09-31, was probably related to a narrow gauge cane railroad that ran through the area and/or to Kihei Camp 1. The entire highway corridor and both segments of the current study area show extensive disturbance associated with prior sugarcane cultivation, highway construction, and private construction activities.

RECOMMENDATIONS

No pre-historic archaeological sites or features were identified within, or adjacent to, the current areas of study.

As no pre-historic sites were discovered, and no sugar-era or WWII-era site will be impacted in the project area, it is determined that the presently proposed road corridor modifications will have "no adverse affect" on historic sites.

REFERENCES

Burgett, B.B., and R.L. Spear

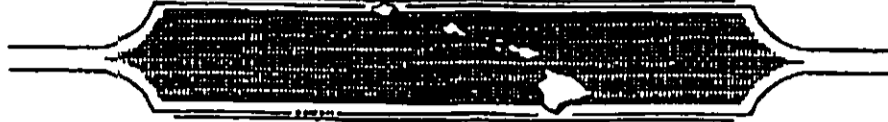
1996a *Inventory Survey of Puunene Bypass/Mokulele Highway Improvements Corridor Pulehunui, and Wailuku Ahupua`a Wailuku District, Island of Maui, Hawai`i Tmk: 3-8: 04, 05, 06, 07.* Scientific Consultant Services, Inc. Honolulu.

1996b *Addendum to: Inventory Survey of Puunene Bypass/Mokulele Highway Improvements Corridor Pulehunui, and Wailuku Ahupua`a Wailuku District, Island of Maui, Hawai`i Tmk: 3-8: 04, 05, 06, 07.* Scientific Consultant Services, Inc. Honolulu.

Sinoto, A. and J. Pantaleo

1992 *Archaeological Inventory Survey of the Proposed Kīhei Gateway Complex.* Aki Sinoto Consulting, Honolulu.

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Rory Frampton
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2/25/00

Dear Rory:

As you requested, a member of my staff, Bee Burgett, conducted a reconnaissance of two areas located in the southern section of the project area. Area 1 lies north of North Kihei Road and is approximately 160 by 240 ft in area. This area contains a dry washway which extends under Mokulele Highway in an east/west direction. North of the wash is a nursery, with two greenhouses partly within Area 1. To the south of the wash, the area is bordered by a small strip of vegetation and the graded shoulder of North Kihei Road.

Area II extends northwest along Pi'ilani Highway from Uwapo St. to beyond the existing bridge over Waiakoa Stream. A HC&S unsurfaced roadway runs approximately parallel to the highway from Uwapo Street to the stream bed. A wide bulldozed swath lies to the east of the HC&S road, and cultivated fields extend for an indeterminate distance east from the dozed area.

Based on field observations, both areas appear to be extensively impacted by mechanical alteration. Inspection of the two areas, with special attention paid to the drainages, found no evidence of any surface cultural remains. Given the highly disturbed nature of the two areas, and their topography, subsurface deposits are extremely unlikely to be found within Area 1 or Area 2.

Sincerely,

Robert L. Spear, Ph.D.
President
Scientific Consultant Services, Inc.

**Appendix E:
Traffic Analysis Report**

TRAFFIC ANALYSIS FOR SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
FOR

MOKULELE HIGHWAY WIDENING PROJECT

IN MAUI, HAWAII

Prepared For

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1. INTRODUCTION

Phillip Rowell and Associates has been retained by Sato & Associates, Inc. to prepare a traffic analysis for a proposed widening of Mokulele Highway in Maui, Hawai'i. The following report has been prepared to describe the traffic characteristics of the project, likely impacts to the adjacent roadway network, and describe the recommended roadway and intersection configurations to accommodate projected traffic levels.

This introductory chapter presents the project description, the purpose of the traffic analysis and the study methodology.

Project Description

The proposed project consists of widening Puunene Avenue between Kuihelani Highway and Mokulele Highway and Mokulele Highway between Puunene Highway and Piilani Highway from two lanes to a four lane divided highway. Included in the project is the realignment of the Puunene Highway/Mokulele Highway/Hansen Road and the Mokulele Highway/Piilani Highway intersections. The realignment of these intersections will improve traffic flow by making the heavy turning movements the new through movements. This will reduce delays and improve the levels-of-service. These improvements are described further in the following report.

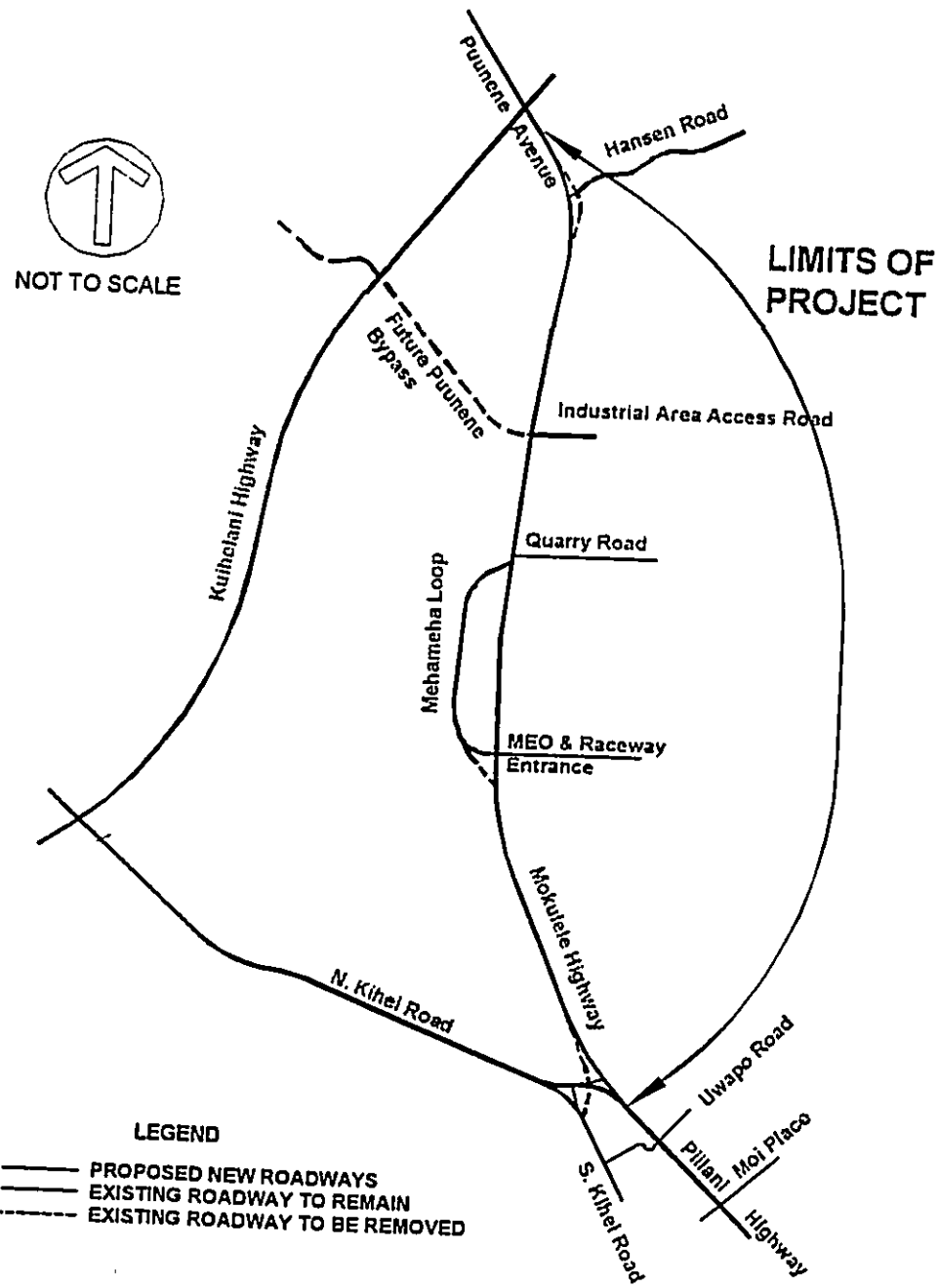


Figure 1

PROJECT LOCATION MAP

Purpose and Objectives

The objectives of the report is as follows:

1. Determine the required lane configurations at the intersections within the study area.
2. Determine the right-of-way controls (signals or STOP signs) for the study intersections.
3. Provide the traffic impact analysis required for the Supplemental Environmental Assessment (EA). Several intersections within the project limits were not included in the EA. Therefore, the supplemental EA is required to address these locations.

Study Methodology and Order of Presentation

In order to conduct this traffic study, a number of tasks were performed. These tasks are discussed in the following paragraphs.

1. Data Collection

Existing traffic data was obtained from recently completed traffic studies where available. Otherwise, traffic counts were conducted for this study. In addition, existing intersection geometry and traffic signal timing and phasing data was collected.

2. Determine existing traffic operating conditions.

Using the data collected, existing traffic operating conditions in the vicinity of the project were determined. The methodology described in the 1997 *Highway Capacity Manual (HCM)* was used to determine the level-of-service (LoS) at the study intersections.

Existing traffic conditions and the LoS concept are presented in Chapter 2.

3. Define Alternatives

In addition to the proposed project as previously described, other alternatives for the intersections in the Kihei Triangle area were analyzed to comply with the requirements of the environmental review process, to insure that the optimum design was selected, and to provide a thorough review of the options available.

4. Analyze and Evaluate Alternatives

The alternatives were evaluated relative to the following:

- a. Right-of-way control (traffic signals or STOP signs) were evaluated using the warrants for traffic signals described in the *Uniform Manual of Traffic Control Devices (UMTCD)* prepared by the Federal Highway Administration,
- b. The required lane configurations for the intersections were determined using the planning method described in the 1997 *Highway Capacity Manual (HCM)*,

- c. Storage lane requirements were determined using the HCM calculations and criteria described in *A Policy of Geometric Design of Highways and Street* prepared by the American Association of State Highway and Transportation Officials (1990), and
- d. The level-of-service provided by the proposed improvements using the operations method described in the HCM.

5. Recommendations and Conclusions

The conclusions of the evaluation and recommendations to optimize the proposed design are provided in Chapter 5. This information is used to design the proposed geometry and traffic signals for intersections.

2. ANALYSIS OF EXISTING CONDITIONS

This chapter presents the existing traffic conditions and volumes on the roadways adjacent to the proposed project. The level-of-service concept is also presented. The purpose of this analysis is to establish the base conditions for the determination of the impacts of the project which are described in a subsequent chapter.

Description of Existing Streets Network

The intersections analyzed and existing lane configurations are shown on Figure 2. Characteristics of traffic along Puunene Highway and Mokulele Highway are summarized in Table 1.

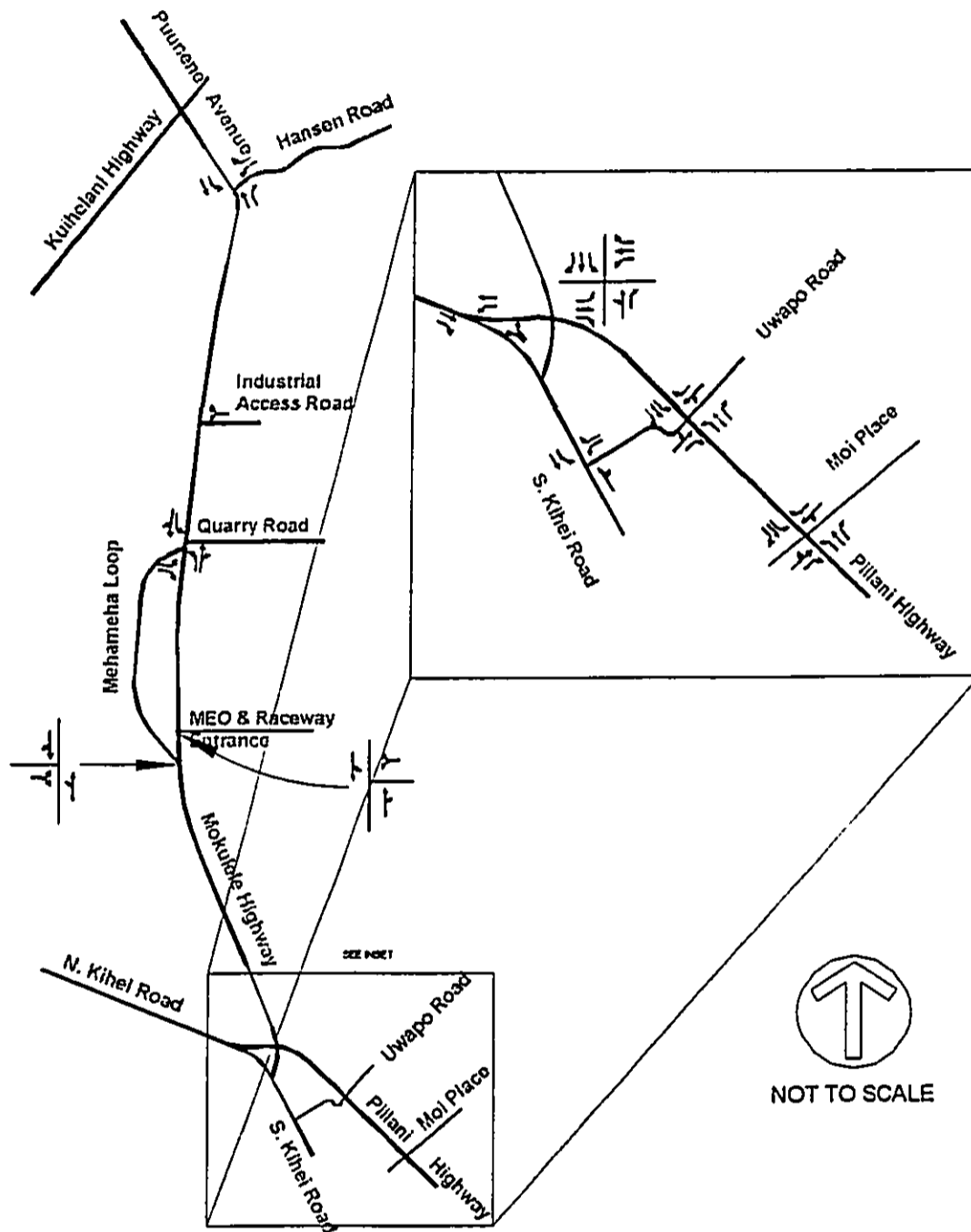


Figure 2

EXISTING ROADWAY NETWORK

Table 1 Existing Traffic Characteristics⁽¹⁾

Roadway	Puunene Highway		Mokulele Highway		Mokulele Highway	
Location	South of Dairy Road		South of Puunene Highway		North of Piilani Highway	
Direction	NB	SB	NB	SB	NB	SB
ADT ⁽²⁾	11,356	11,598	12,307	12,292	11,555	11,664
AM Peak Hour	7:15 to 8:15 AM		7:15 to 8:15 AM		7:00 to 8:00 AM	
AM Peak Volume	987	607	1037	734	1016	644
K (%)	8.7	5.2	8.4	6.0	8.8	5.5
D (%)	62	38	NOT AVAILABLE		61	39
T (%)	8.4	5.8	NOT AVAILABLE		1.8	5.4
PM Peak Hour	2:30 to 3:30 PM		4:15 to 5:15 PM		3:15 to 4:15 PM	
PM Peak Volume	933	910	906	990	815	1071
K (%)	8.2	7.8	7.4	8.1	7.1	9.2
D (%)	50	50	NOT AVAILABLE		43	57
T (%)	5.7	3.0	NOT AVAILABLE		2.9	0.8

NOTES:

- (1) Source: Hawaii Department of Transportation, May 1997
- (2) ADT = Average Daily Traffic

Level-of-Service Concept

Signalized Intersections

The planning method described in the *1997 Highway Capacity Manual (HCM)* was used to analyze the operating efficiency of the signalized intersections adjacent to the study site. This method involves the calculation of a volume-to-capacity (V/C) ratio which is related to a level-of-service.

"Level-of-Service" is a term which denotes any of an infinite number of combinations of traffic operating conditions that may occur on a given lane or roadway when it is subjected to various traffic volumes. Level-of-service (LoS) is a qualitative measure of the effect of a number of factors which include space, speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience.

There are six levels-of-service, "A" through "F", which relate to the driving conditions from best to worst, respectively. The characteristics of traffic operations for each level-of-service are summarized in Table 2. In general, LoS "A" represents free-flow conditions with no congestion. LoS "F", on the other hand, represents severe congestion with stop-and-go conditions. Level-of-service "D" is typically considered acceptable for peak hour conditions in urban areas.

Table 2 Level-of-Service Definitions for Signalized Intersections⁽¹⁾

Level of Service	Interpretation	Volume-to-Capacity Ratio ⁽²⁾	Stopped Delay (Seconds)
A	Uncongested free flow conditions.	0.000-0.600	<10
B	Uncongested operations; all vehicles clear in a single cycle.	0.601-0.700	>10 and ≤20
C	Light congestion; occasional backups on critical approaches	0.701-0.800	>20 and ≤35
D	Congestion on critical approaches but intersection functional. Vehicles must wait through more than one cycle during short periods. No long standing lines formed.	0.801-0.900	>35 and ≤55
E	Severe congestion with some standing lines on critical approaches. Blockage of intersection may occur if signal does not provide protected turning movements.	0.901-1.000	>55 and ≤80
F	Total breakdown with stop-and-go operation	>1.001	>80

Notes:

(1) Source: *Highway Capacity Manual*, 1997, p. 9-7.

(2) This is the ratio of the calculated critical volume to Level-of-Service E Capacity.

Corresponding to each level-of-service shown in the table is a volume/capacity ratio. This is the ratio of either existing or projected traffic volumes to the capacity of the intersection. Capacity is defined as the maximum number of vehicles that can be accommodated by the roadway during a specified period of time. The capacity of a particular roadway is dependent upon its physical characteristics such as the number of lanes, the operational characteristics of the roadway (one-way, two-way, turn prohibitions, bus stops, etc.), the type of traffic using the roadway (trucks, buses, etc.) and turning movements.

Unsignalized Intersections

Like signalized intersections, the operating conditions of intersections controlled by stop signs can be classified by a level-of-service from "A" to "F". However, the method for determining level-of-service for unsignalized intersections is based on the use of gaps in traffic on the major street by vehicles crossing or turning through that stream. Specifically, the capacity of the controlled legs of an intersection is based on two factors: 1) the distribution of gaps in the major street traffic stream, and 2) driver judgement in selecting gaps through which to execute a desired maneuver. The criteria for level-of-service at an unsignalized intersection is, therefore, based on delay of each turning movement. Table 3 summarizes the definitions for level-of-service and the corresponding delay. A subsequent calculation to determine an overall LoS was made, and these results are presented in tables to summarize traffic conditions using parameters similar to those used for signalized intersections.

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For Mokulele Highway Widening Project*

Table 3 Level-of-Service Definitions for Unsignalized Intersections⁽¹⁾

Level-of-Service	Expected Delay to Minor Street Traffic	Delay (Seconds)
A	Little or no delay	≤ 10
B	Short traffic delays	> 10 and ≤ 15
C	Average traffic delays	> 15 and ≤ 25
D	Long traffic delays	> 25 and ≤ 35
E	Very long traffic delays	> 35 and ≤ 50
F	See note (2) below	> 50

Notes:

(1) Source: *Highway Capacity Manual*, 1997, p. 10-25.

(2) When demand volume exceeds the capacity of the lane, extreme delays will be encountered with queuing which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement of the intersection.

3. NO BUILD ALTERNATIVE

This chapter presents a brief overview of the anticipated 2020 traffic conditions along Mokulele Highway if the proposed project is not constructed. It is the determination of future levels-of-service and queues at the key intersections for existing roadway conditions versus anticipated future traffic levels. The results of this evaluation is typically justification for the project. Once it has been established that future conditions will be unacceptable, the next step is to develop potential alternatives, evaluate those alternatives and select the most viable relative to need, benefit, cost and future levels-of-service. These evaluations are typically compared to conditions estimated for the no-build alternative, which are presented in this chapter.

2020 Traffic Volumes

2020 peak hour traffic volumes were estimated from various sources. Where possible, traffic projections were extracted from studies accepted by HDOT and/or the County of Maui. The sources of traffic projections by intersection are listed in Table 4. Peak hour traffic projections are presented in Figures 3 and 4.

Table 4 Sources of Traffic Projections

<u>Intersection</u>	<u>Source</u>
Mokulele Highway at Piilani Highway	PBQD
N. Kihei Road at S. Kihei Road	PRA
S. Kihei Road at Mokulele Highway	PBQD
S. Kihei Road at Uwapo Road	PRA
Piilani Highway at Uwapo Road	PRA
Mokulele Highway at Mehamaha Loop (South)	PRA
Mokulele Highway at MEO/Raceway Entrance	WOA ⁽³⁾
Mokulele Highway at Mehamaha Loop (North)	PRA
Mokulele Highway at Quarry Road	PRA
Mokulele Highway at Industrial Access Road	PRA
Mokulele Highway at Hansen Road	PBQD

NOTES

- (1) PBQD - Parsons Brinckerhoff Quade & Douglas, *Traffic Alternative Analysis, Mokulele Highway Widening*, January 1997
- (2) PRA - Phillip Rowell and Associates, March 1999
- (3) WOA - Wilson Okamoto & Associates, Inc., *Traffic Impact Report for the Maui Economic Opportunity Transportation Facility*, September 1997.

Traffic projections for the intersections of Mokulele Highway at Quarry Road and Mokulele Highway at Industrial Access Road were based on counts of the existing intersections to estimate morning and afternoon trip generation rates and trip distribution percentages. Rates calculated were applied to future development levels provided in the *Maui Long-Range Master Transportation Plan*.

The projected Average Daily Traffic (ADT) along Puunane Avenue, Mokulele Highway and Piilani Highway are shown in Table 5.

Table 5 Average Daily Traffic Projection

<u>Highway</u>	<u>1997</u>	<u>2000</u>	<u>2020</u>
Puunane Avenue	23,000	24,150	33,750
Mokulele Highway	23,200	25,000	40,650
Piilani Highway	24,700	26,600	43,220

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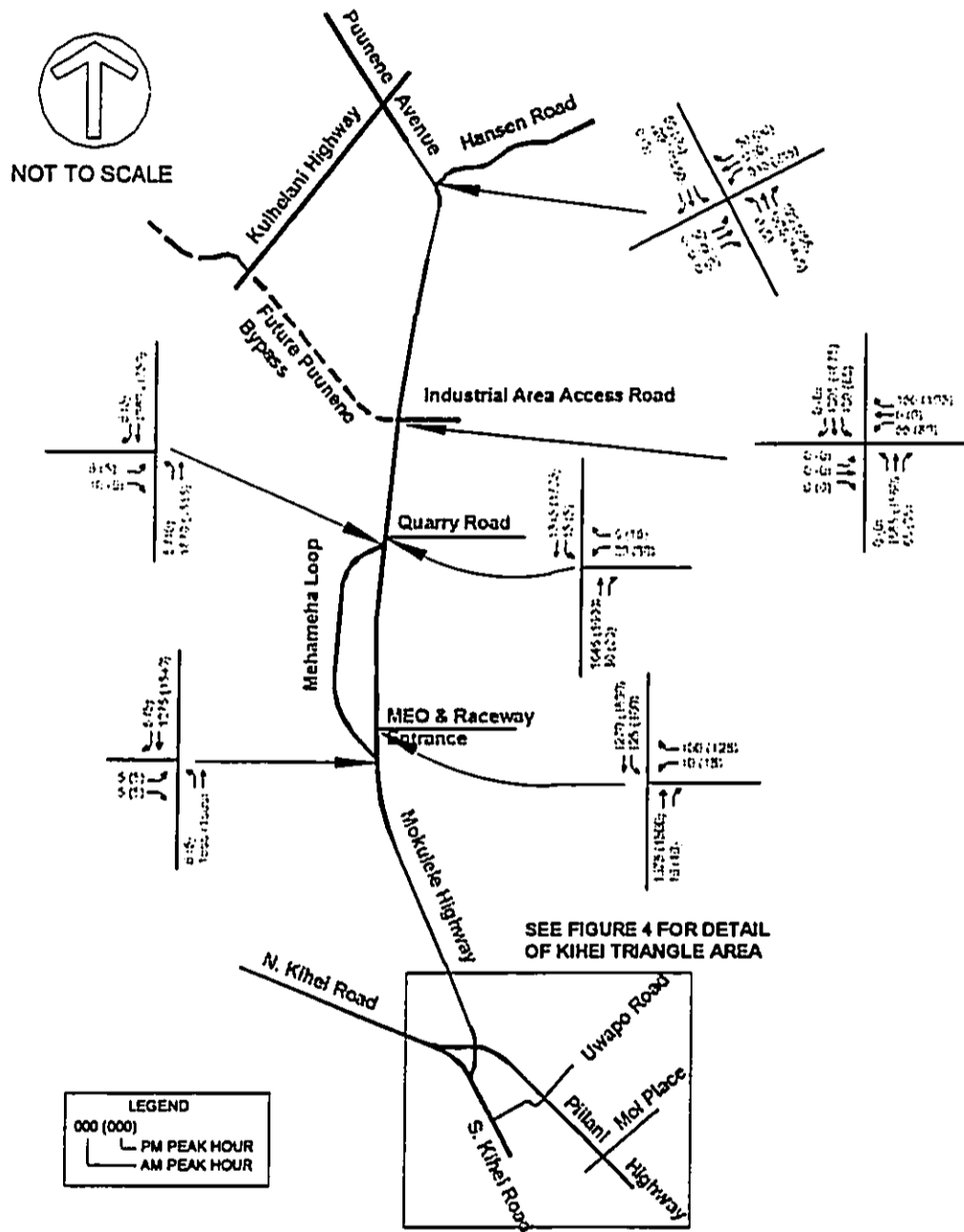


Figure 3

PEAK HOUR TRAFFIC VOLUMES FOR NO-BUILD ALTERNATIVE

Traffic Analysis for Supplemental Environmental Assessment
For Mokulele Highway Widening Project

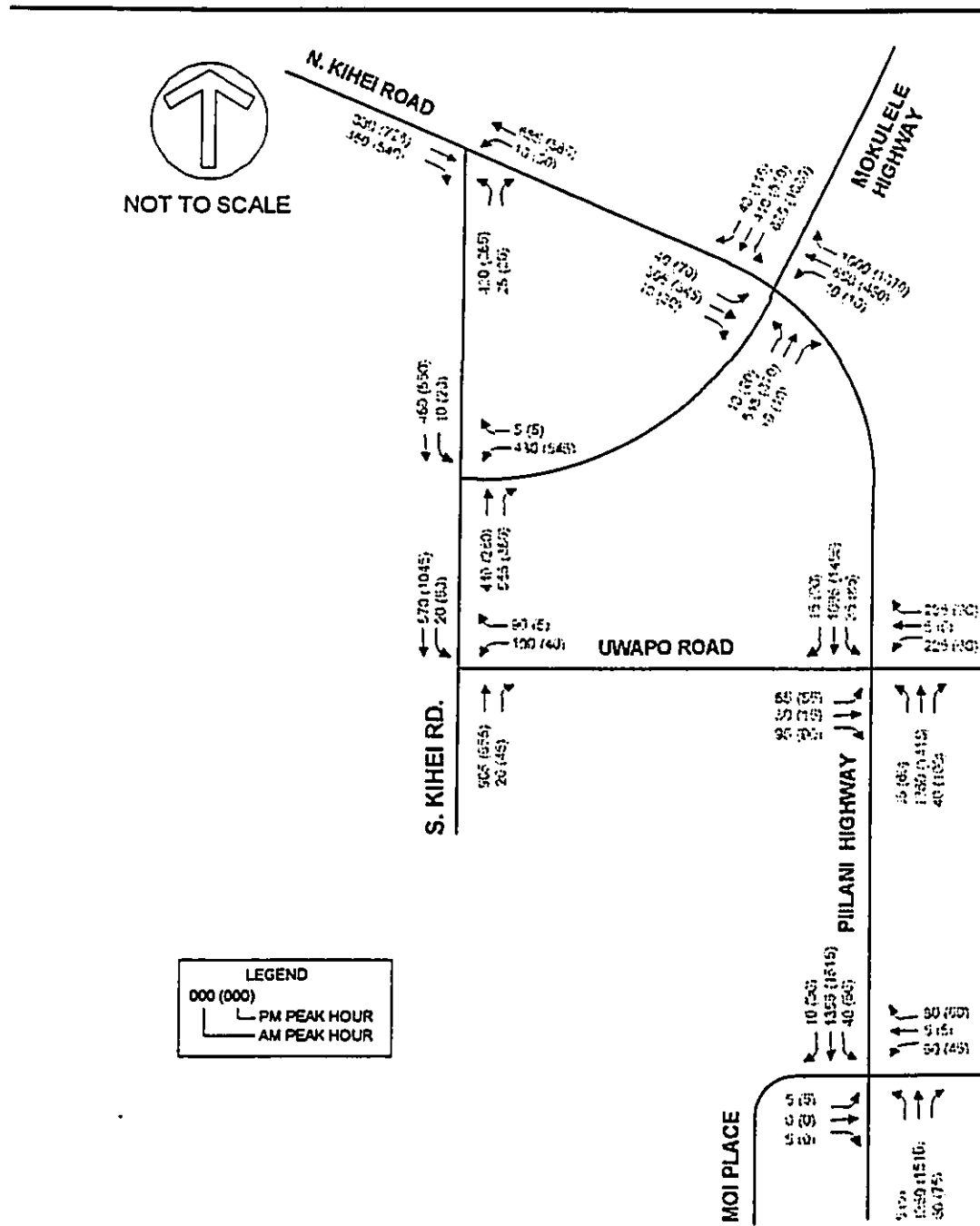


Figure 4

**PEAK HOUR TRAFFIC VOLUMES FOR NO-BUILD
ALTERNATIVE
DETAIL OF KIHEI TRIANGLE AREA**

The results of the level-of-service analysis for the no-build alternative to summarized in Table 6. As shown, without improvement of the Mokulele Highway corridor, all the major intersections are expected to operate at Level-of-Service F. This poor level-of-service indicates that major roadway improvements are warranted.

Table 6 Level-of-Service Analysis for No Build Alternative ⁽⁵⁾

Intersection	AM Peak Hour			PM Peak Hour			Calculation Method
	V/C ¹	Delay ²	LOS ³	V/C	Delay	LOS	
Mokulele Highway at Piilani Highway	> 1.2	(4)	F	> 1.2	(4)	F	Signalized
N. Kihei Road at S. Kihei Road		501.0	F		332.1	F	Unsignalized
S. Kihei Road at Mokulele Highway		807.9	F		>999.9	F	Unsignalized
S. Kihei Road at Uwapo Road		75.4	F		3.4	A	Unsignalized
Piilani Highway at Uwapo Road	> 1.2	(4)	F	> 1.2	(4)	F	Signalized
Mokulele Hwy at Mehameha Loop (South)		>999.9	F		>999.9	F	Unsignalized
Mokulele Hwy at MEO/Raceway Entrance		139.5	F		272.5	F	Unsignalized
Mokulele Hwy at Mehameha Loop (North)		1.4	A		3.2	A	Unsignalized
Mokulele Hwy at Quarry Road		19.4	C		64.5	F	Unsignalized
Mokulele Hwy at Industrial Access Road		>999.9	F		>999.9	F	Unsignalized
Mokulele Hwy at Hansen Road		>999.9	F		>999.9	F	Unsignalized

NOTES:

- (1) V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
- (2) Delay is in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in Highway Capacity Manual
- (4) Calculation of delay is infeasible when V/C is greater than 1.2.
- (5) See Appendix B for detailed calculations of each traffic movement.

4. DESCRIPTION & EVALUATION OF ALTERNATIVES

The purpose of this chapter is to describe the alternatives that have been developed and the results of the evaluation of the alternatives. Alternatives were designated A, B and C. 2020 traffic projections are presented for each of the alternative. Traffic projections for the proposed alternative were extracted from the traffic study prepared by PBQD. These projections were adjusted for the other alternatives analyzed. Following the projections is the traffic signal warrant analysis and storage lane analysis for each intersection.

Alternative A

Alternative A is the proposed project. The improvements associated with Alternative A are:

1. Realign the Mokulele Highway/Piilani Highway intersections. The purpose of the realignment is to alter the configuration such that the heavy traffic movements, which are the southbound to eastbound left turn and the westbound to northbound right turn, become through movements.
2. Demolish Mokulele Highway between Piilani Highway and South Kihei Road.
3. Realign Mehamaha Loop (South) to intersect Mokulele Highway at the MEO/Raceway to create a four-leg intersection.
4. Realign Mehamaha Loop (North) to intersect Mokulele Highway at Quarry Road, also creating a four-leg intersection.
5. Realign the Mokulele Highway/Puunene Avenue intersection to provide a larger radius and extend Hansen Road to intersect the new alignment of Puunene Highway.

Traffic projections for Alternate A are shown in Figures 5 and 6.

Alternative B

Realign the South Kihei Road/Mokulele Highway intersection to divert northbound traffic from South Kihei Road to Mokulele Highway. This traffic would then use the signalized intersection of Mokulele Highway at Piilani Highway rather than the unsignalized intersection of North Kihei Road at South Kihei Road. This will allow the intersection of Mokulele Highway at Piilani Highway to operate more efficiently and reduce the number of northbound left turns at the intersection of North Kihei Road at South Kihei Road. The improvement affects, traffic projections for the following intersections:

- a. Mokulele Highway at Piilani Highway/North Kihei Road,
- b. Mokulele Highway at South Kihei Road, and
- c. North Kihei Road at South Kihei Road.

Traffic projections for these intersections are shown in Figure 7.

Alternative C

Maintain the existing intersection configurations and increase the capacity of the study intersections to accommodate 2020 traffic to the best possible level-of-service. Projections for Alternative C are the same as the No-Build Scenario described in the previous chapter.

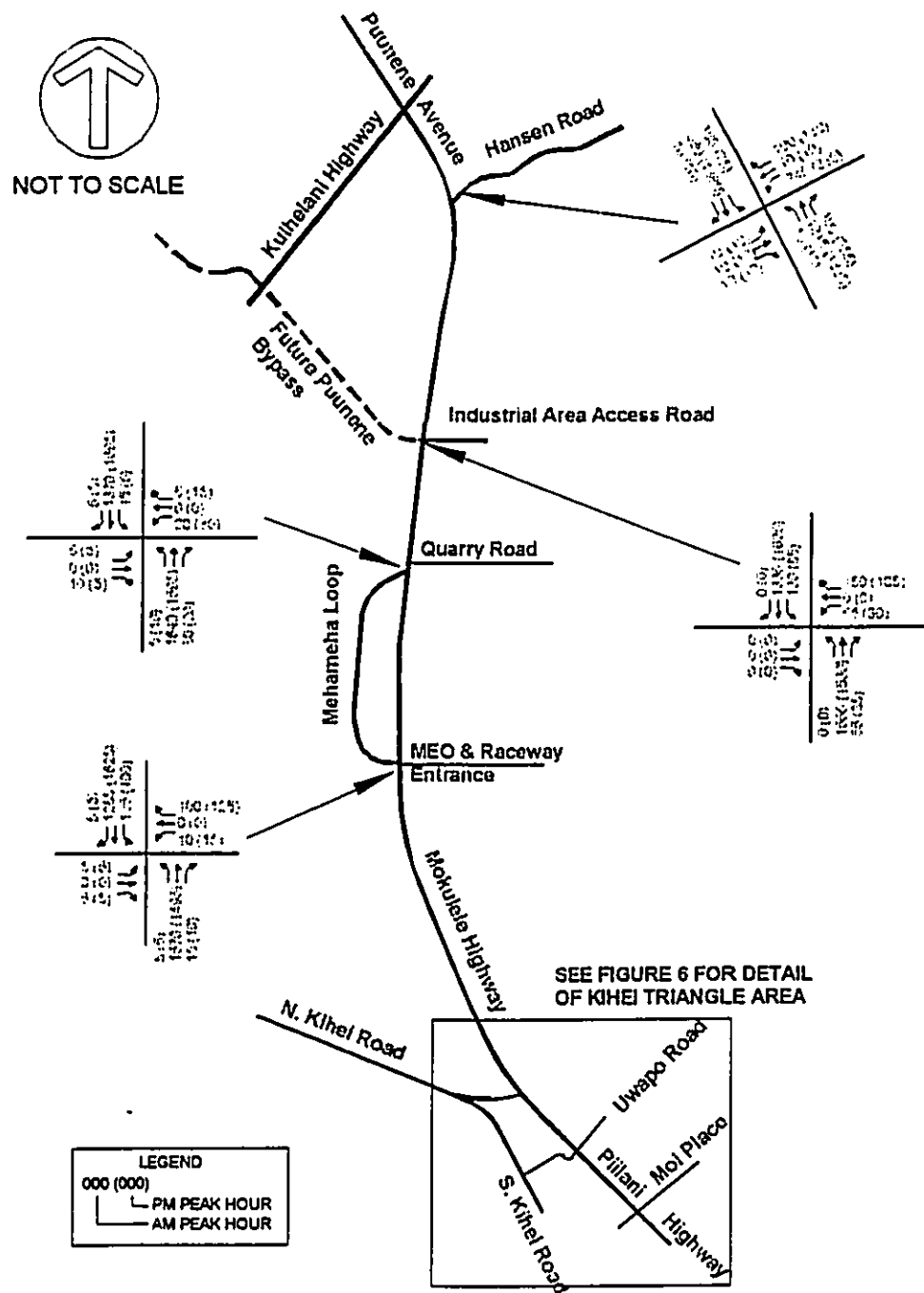


Figure 5

2020 PEAK HOUR TRAFFIC VOLUMES FOR ALTERNATE A

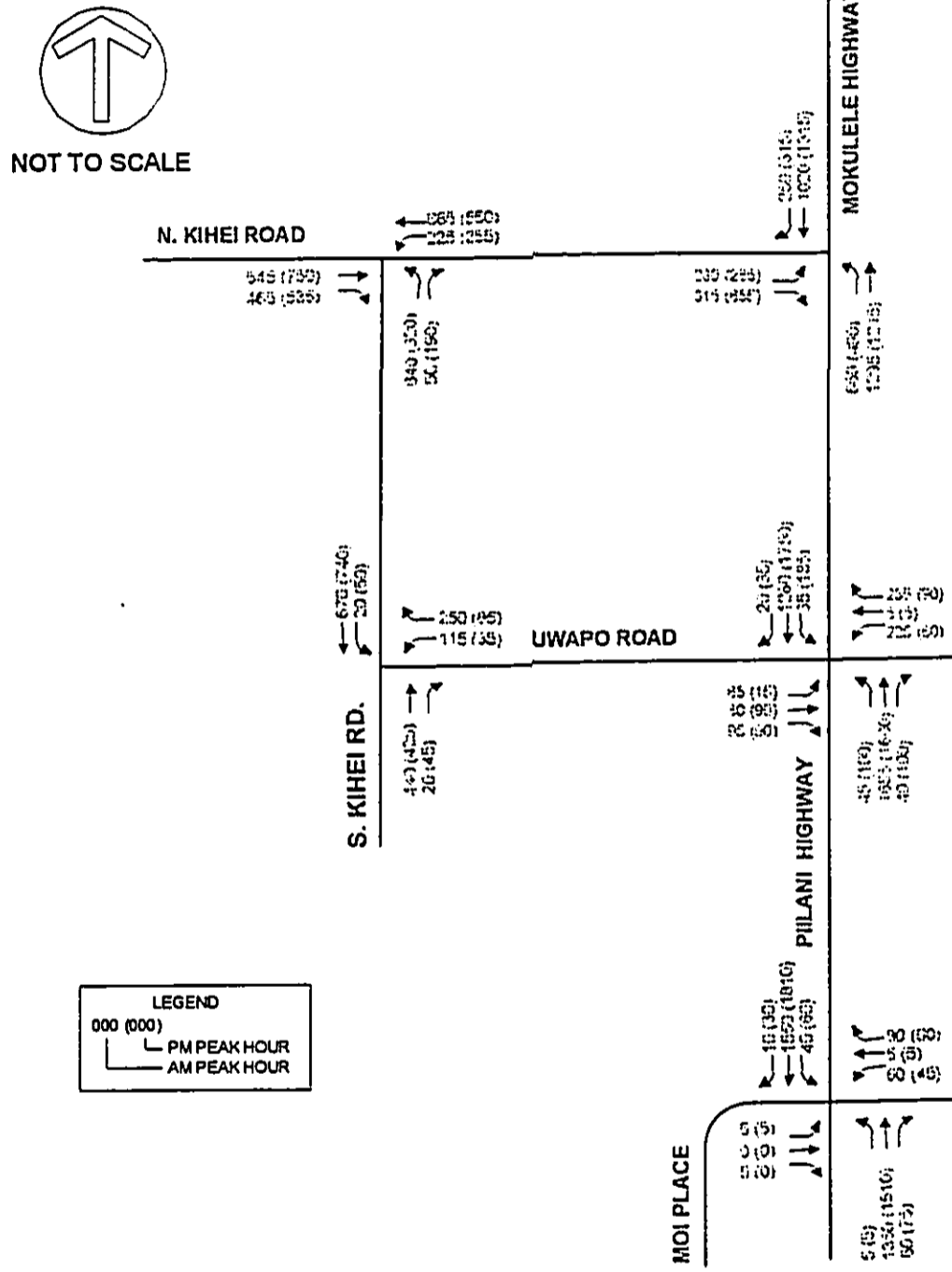


Figure 6

2020 PEAK HOUR TRAFFIC PROJECTIONS FOR ALTERNATE A - DETAIL OF KIHEI TRIANGLE AREA

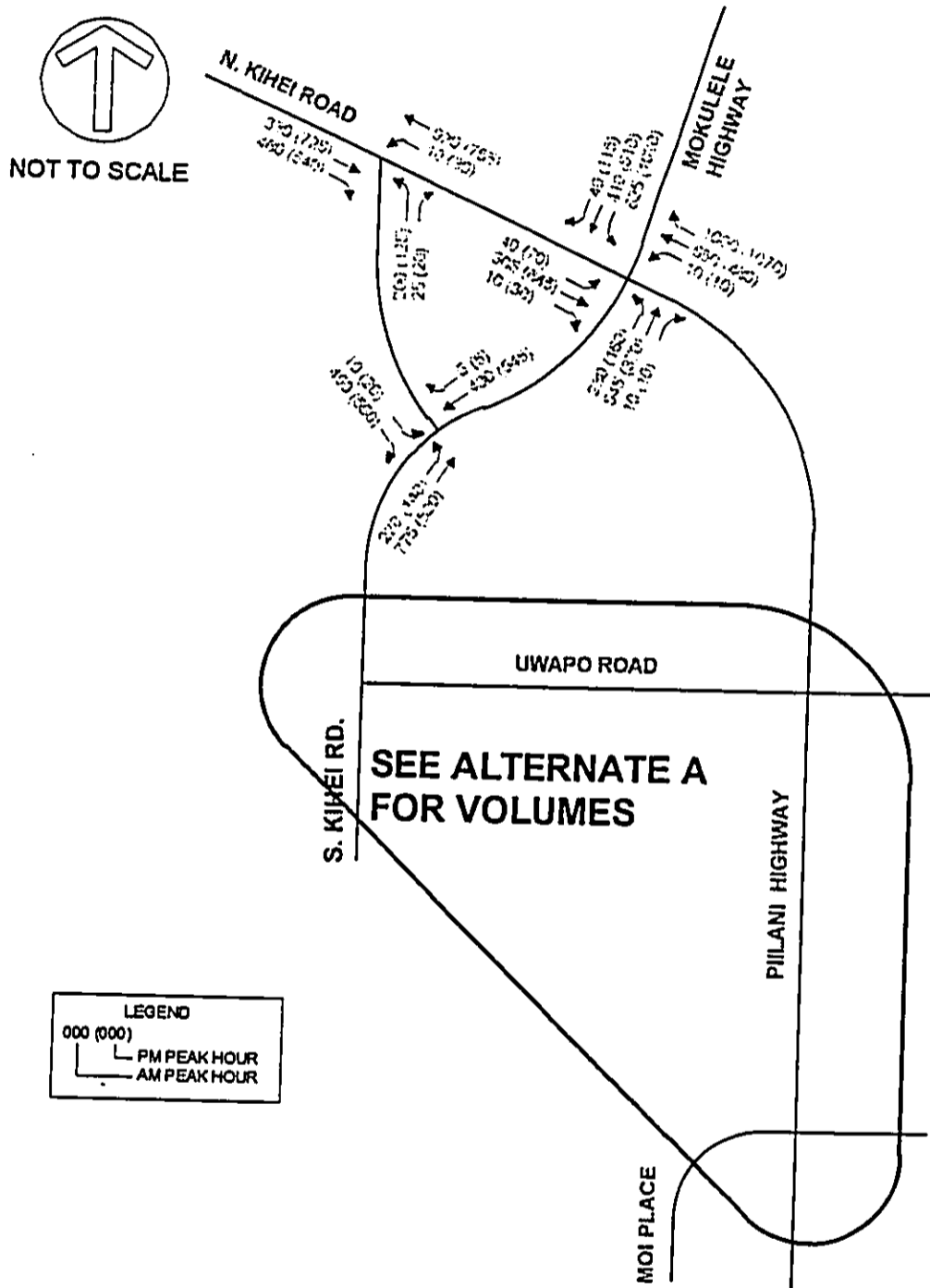


Figure 7

**2020 PEAK HOUR TRAFFIC VOLUMES FOR
ALTERNATE B - DETAIL OF KIHEI TRIANGLE AREA**

Traffic Signal Warrant Analysis

A traffic signal warrant analysis was performed for the study intersections. The traffic signal warrant analysis was performed using the warrants and procedures described in the *Manual of Uniform Traffic Control Devices* (MUTCD) published by the U.S. Department of Transportation, Federal Highway Administration.

There are eleven warrants described in the MUTCD. These warrants are:

Warrant 1	Minimum Vehicular Volume
Warrant 2	Interruption of Continuous Flow
Warrant 3	Minimum Pedestrian Volume
Warrant 4	School Crossing
Warrant 5	Progressive Movement
Warrant 6	Accident Experience
Warrant 7	Systems Warrant
Warrant 8	Combination of Warrants
Warrant 9	Four Hour Volume
Warrant 10	Peak Hour Delay
Warrant 11	Peak Hour Volume

These warrants and the warrant worksheets are presented in Appendix B.

If the traffic conditions satisfy any of the warrants, then a traffic signal should be considered. The MUTCD and traffic manual clearly states that satisfaction of a warrant is not necessarily justification for a traffic signal. Conversely, a signal may be warranted even though no warrants may be satisfied. Other considerations may require signals to address safety and geometric issues. Delay, congestion, confusion or other evidence of the need of right-of-way assignment must also be shown.

Table 7 is a summary of the results of the traffic signal warrant analysis.

*Traffic Analysis for Supplemental Environmental Assessment
For Mokulele Highway Widening Project*

Table 7 Results of Traffic Signal Warrant Analysis⁽¹⁾

Intersection	Signal Warranted			Warrants Satisfied											Comments
	Alt A	Alt B	Alt C	1	2	3	4	5	6	7	8	9	10	11	
Mokulele Hwy at Piilani Hwy	Yes	Yes	Yes	✓	✓			✓	✓	✓	✓	✓		✓	
N. Khei Road at S. Khei Road	Yes	Yes	Yes	✓	✓			✓		✓	✓	✓	✓	✓	
Mokulele Highway at S. Khei Road	(2)	Yes	Yes												
S. Khei Road at Uwapo Road	Yes	Yes	Yes	✓	✓			✓			✓	✓		✓	
Piilani Highway at Uwapo Road	Currently signalized														
Mokulele Hwy. at Mehamaha Loop (South)/MEO Raceway Entrance	No	(3)	(3)		✓							✓	✓	✓	(4)
Mokulele Hwy. at Mehamaha Loop (North)/Quarry Road	No	(3)	(3)												(5)
Mokulele Hwy. at Industrial Access Road	Yes	(3)	(3)	✓	✓						✓	✓	✓	✓	(6)
Puunene Avenue at Hansen Road	Yes	(3)	(3)	✓	✓						✓	✓	✓	✓	

Notes:

- (1) See Appendix B for Traffic Signal Warrant Worksheets.
- (2) Demolished
- (3) Same as Alternate A
- (4) Signals are not warranted without the MEO development. Traffic generated by the MEO development warrants traffic signals.
- (5) Signals are not warranted based on volumes but are recommended because of type of traffic using Quarry Road and potential safety concerns.

Level-of-Service Analysis

The results of the level-of-service analysis for the three alternates are shown in Tables 8, 9 and 10. The level-of-service analysis concludes that only Alternate A provides a level-of-service of D or better for all of the study intersections. LOS of D or better is considered acceptable. An evaluation of the detailed calculations provided in the Appendices will show that left turns at some of the intersections will operate at Level-of-Service E or F during peak hours even though the volume-to-capacity ratio is low. This is because of the traffic signal cycle length is so long that vehicles must wait longer than desired. Shorter cycle lengths would mitigate this problem but the cycle lengths are established by the minimum pedestrian crossing lengths at the intersections and cannot be shortened.

Table 8 Results of Level-of-Service Analysis for 2020 Conditions - Alternate A

Intersection	AM Peak Hour			PM Peak Hour		
	V/C	Delay	LOS	V/C	Delay	LOS
1 Mokulele Highway at Piilani Highway	0.859	22.8	C	0.917	25.1	D
2 N. Kihei Road at S. Kihei Road	0.561	15.7	C	0.527	12.9	B
3 Mokulele Highway at S. Kihei Road	Demolished			Demolished		
4 S. Kihei Road at Uwapo Road	0.568	11.5	B	0.490	8.4	B
5 Piilani Highway at Uwapo Road	0.861	18.4	C	0.797	23.0	C
6 Mokulele Highway at Mehamaha Loop (South)/MEO-Raceway Entrance	0.737	8.4	B	0.759	9.5	B
7 Mokulele Highway at Mehamaha Loop (North)/Quarry Road	0.643	8.8	B	0.665	10.6	B
8 Mokulele Highway at Industrial Access Road	0.777	10.7	B	0.761	10.7	B
9 Puunene Avenue at Hansen Road	0.756	23.8	C	0.589	20.2	C

NOTES:

- (1) V/C denotes ratio of volume to capacity. V/C ratio is not calculated for unsignalized intersections.
- (2) Delay is in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*.
- (4) See Appendix D for detailed calculations of each traffic movement

Traffic Analysis for Supplemental Environmental Assessment
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Table 9 Results of Level-of-Service Analysis for 2020 Conditions - Alternate B

Intersection	AM Peak Hour			PM Peak Hour		
	V/C	Delay	LOS	V/C	Delay	LOS
1 Mokulele Highway at Pilihi Highway	> 1.2	NA	F	>1.2	NA	F
2 N. Kihei Road at S. Kihei Road	0.371	10.5	B	0.345	10.7	B
3 Mokulele Highway at S. Kihei Road	0.679	18.7	C	0.758	22.7	C
4 S. Kihei Road at Uwapo Road	SAME AS ALTERNATE A					
5 Pilihi Highway at Uwapo Road	SAME AS ALTERNATE A					
6 Mokulele Highway at Mehamaha Loop (South)/MEO-Raceway Entrance	SAME AS ALTERNATE A					
7 Mokulele Highway at Mehamaha Loop (North)/Quarry Road	SAME AS ALTERNATE A					
8 Mokulele Highway at Industrial Access Rd	SAME AS ALTERNATE A					
9 Puunene Avenue at Hansen Road	SAME AS ALTERNATE A					

NOTES:

- (1) V/C denotes ratio of volume to capacity.
- (2) Delay is in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*.
- (4) See Appendix E for detailed calculations of each traffic movement

Table 10 Results of Level-of-Service Analysis for 2020 Conditions - Alternate C

Intersection	AM Peak Hour			PM Peak Hour		
	V/C	Delay	LOS	V/C	Delay	LOS
1 Mokulele Highway at Pilihi Highway	> 1.2	NA	F	> 1.2	NA	F
2 N. Kihei Road at S. Kihei Road	0.694	15.5	C	0.641	27.5	D
3 Mokulele Highway at S. Kihei Road	0.579	14.1	B	0.706	16.2	C
4 S. Kihei Road at Uwapo Road	SAME AS ALTERNATE A					
5 Pilihi Highway at Uwapo Road	SAME AS ALTERNATE A					
6 Mokulele Highway at Mehamaha Loop (South)/MEO-Raceway Entrance	SAME AS ALTERNATE A					
7 Mokulele Highway at Mehamaha Loop (North)/Quarry Road	SAME AS ALTERNATE A					
8 Mokulele Highway at Industrial Access Rd	SAME AS ALTERNATE A					
9 Puunene Avenue at Hansen Road	SAME AS ALTERNATE A					

NOTES:

- (1) V/C denotes ratio of volume to capacity.
- (2) Delay is in seconds per vehicle.
- (3) LOS denotes Level-of-Service calculated using the operations method described in *Highway Capacity Manual*.
- (4) See Appendix E for detailed calculations of each traffic movement

Left Turn Storage Lane Analysis

The left turn storage lengths required to accommodate estimated traffic volumes were calculated using guidelines in *A Policy on Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials, 1990 edition. There are separate policies for unsignalized and signalized intersections. Based on this policy, the assumptions used to determine the required lengths of the left turn storage lanes are:

1. For signalized intersections, the length of the left turn storage lane should be based on 2.0 times the average number of vehicles arriving during a signal cycle during the peak hour.
2. The average length required per vehicle is 25 feet.
3. The traffic signal cycle length is 120 seconds.
4. The minimum storage length must accommodate at least one passenger size vehicle and one truck, or approximately 60 feet.

The calculation of the left turn storage lanes is shown in Table 11.

*Traffic Analysis for Supplemental Environmental Assessment
For Mokulele Highway Widening Project*

Table 11 Left Turn Storage Lane Analysis - Alternate A

Intersection	Approach	Design Volume	Average Queue Length		Min. Queue Length Req'd ⁽¹⁾	
			Vehicles	Feet	Vehicles	Feet
Mokulele Hwy at Pilihi Hwy (Signalized)	NB	660	22	550	33	825
	EB	285	10	250	15	375
N. Kihei Rd at S. Kihei Rd. (Signalized)	NB	640	21	525	32	800
	WB	255	9	225	14	350
S. Kihei Rd at Uwapo Rd. (Signalized)	SB	50	2	50	3	75
	WB	115	4	100	6	150
Pilihi Hwy at Uwapo Rd (Signalized)	NB	100	3	75	5	125
	SB	185	6	150	9	225
	EB	65	2	50	3	75
	WB	225	8	200	12	300
Mokulele Hwy at Mehamaha Loop (South)/MEO-Raceway Entrance (Signalized)	SB	125	4	100	6	150
	EB	5	0	0	0	60
Mokulele Highway at Mehamaha Loop (North)/Quarry Road (Signalized)	SB	15	1	25	2	60
	EB	10	0	0	0	60
Mokulele Highway at Industrial Access (Signalized)	NB	0	0	0	0	60
	SB	130	4	100	6	150
	EB	NA	0	0	0	0
	WB	80	3	75	5	125
Puunene Avenue at Hansen Road (Signalized)	NB	10	0	0	0	60
	SB	165	6	150	9	225
	EB	10	0	0	0	60
	WB	345	12	300	18	450

Reference: *A Policy on Geometric Design of Highways and Streets* published by the American Association of State Highway and Transportation Officials, 1990 edition

5. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations are as follows:

2. Alternative A, the proposed realignment of the Mokulele Highway/Piilani intersection, provides the best overall level-of-service in the Kihei Triangle area.
3. The intersection of Piilani Highway at Uwapo Road will operate at poor levels-of-service because of the heavy traffic flow directed southbound on Piilani Highway by the reconfiguration of the Mokulele Highway/Piilani Highway intersection. Extension of the two southbound through lanes will permit this intersection to operate acceptably.
4. A traffic signal warrant analysis determined that traffic signals should be installed at the following intersections:
 - a. Mokulele Highway at Piilani Highway
 - b. North Kihei Road at South Kihei Road
 - c. South Kihei Road at Uwapo Road
 - d. Mokulele Highway at Industrial Access Road
 - e. Mokulele Highway at Hansen Road
5. Based on the traffic study prepared for the MEO project, traffic signals are warranted at the intersection of Mokulele Highway at the MEO/Raceway Entrance as a result of traffic generated by the proposed MEO development. Without this development, signals are not justified.

6. Traffic signals are not justified at the intersection of Mokulele Highway at Quarry Road based on the warrant analysis. However, signals should be provided due to the nature of traffic, which is heavy trucks. This condition results in unsafe traffic maneuvers.
7. The realignment of the Mokulele Highway/Piilani Highway intersection and demolition of Mokulele Highway between Piilani Highway and South Kihei Road may divert traffic to Uwapo Road and/or other streets connecting Piilani Highway and South Kihei Road. It is recommended that traffic volume data along these streets be collected prior to start of construction and that periodic counts be performed after completion of the widening project to monitor and quantify changes in traffic patterns.
8. The recommended lane configurations and storage lane requirements are shown in Figures 8 through 12.
9. The construction phasing and traffic management plan, including temporary roadways and detours as needed, should be developed during the design process. The plan should be developed along the following guidelines:
 - a. No traffic movements must be prohibited at the intersections of Piilani Highway at Uwapo Road, Mokulele Highway at Piilani Highway, Mokulele Highway at Quarry Road, Mokulele Highway at Industrial Access Road and Mokulele Highway at Hansen Road.
 - b. A minimum of one through lane in each direction along Piilani Highway, Mokulele Highway and Puunene Avenue must be maintained at all times.
 - c. Traffic control officers should be stationed at the intersections during construction hours while work is occurring and other traffic control devices are not in operation.

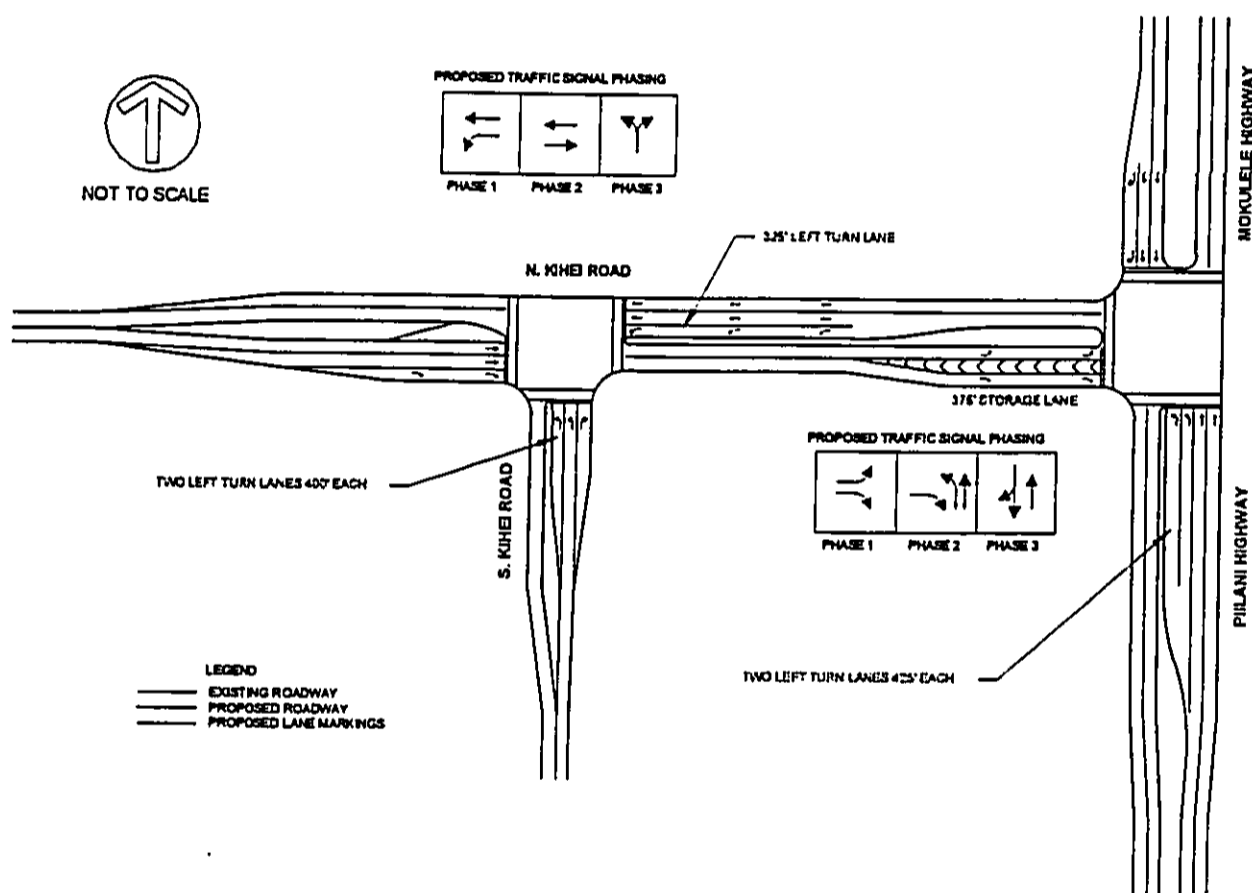


Figure 8

SCHEMATIC OF INTERSECTION CONFIGURATION KIHEI TRIANGLE AREA

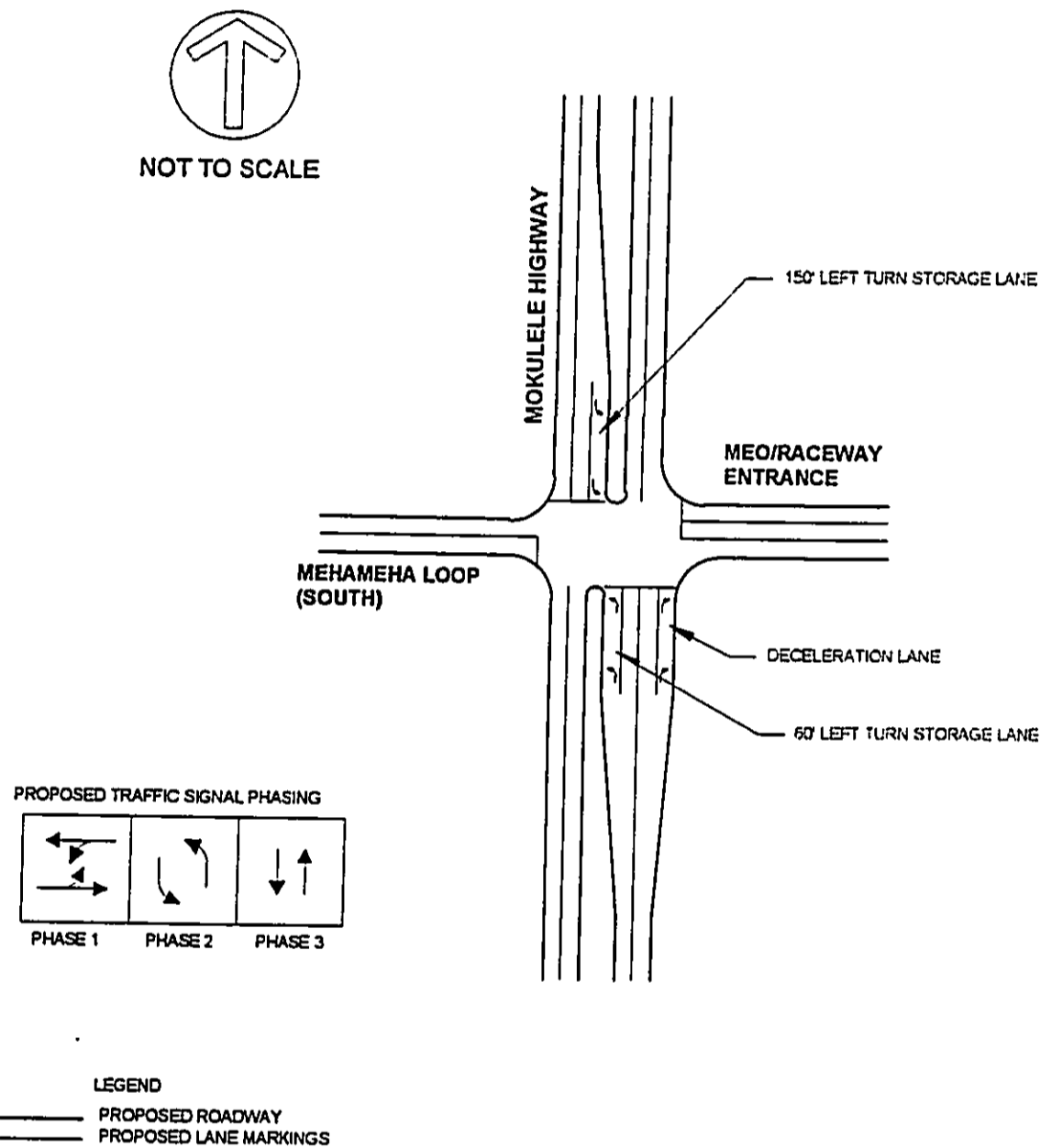


Figure 9

SCHEMATIC ON INTERSECTION CONFIGURATION MOKULELE HIGHWAY AT MEHAMEHA LOOP (SOUTH) AND MEO/RACEWAY ENTRANCE

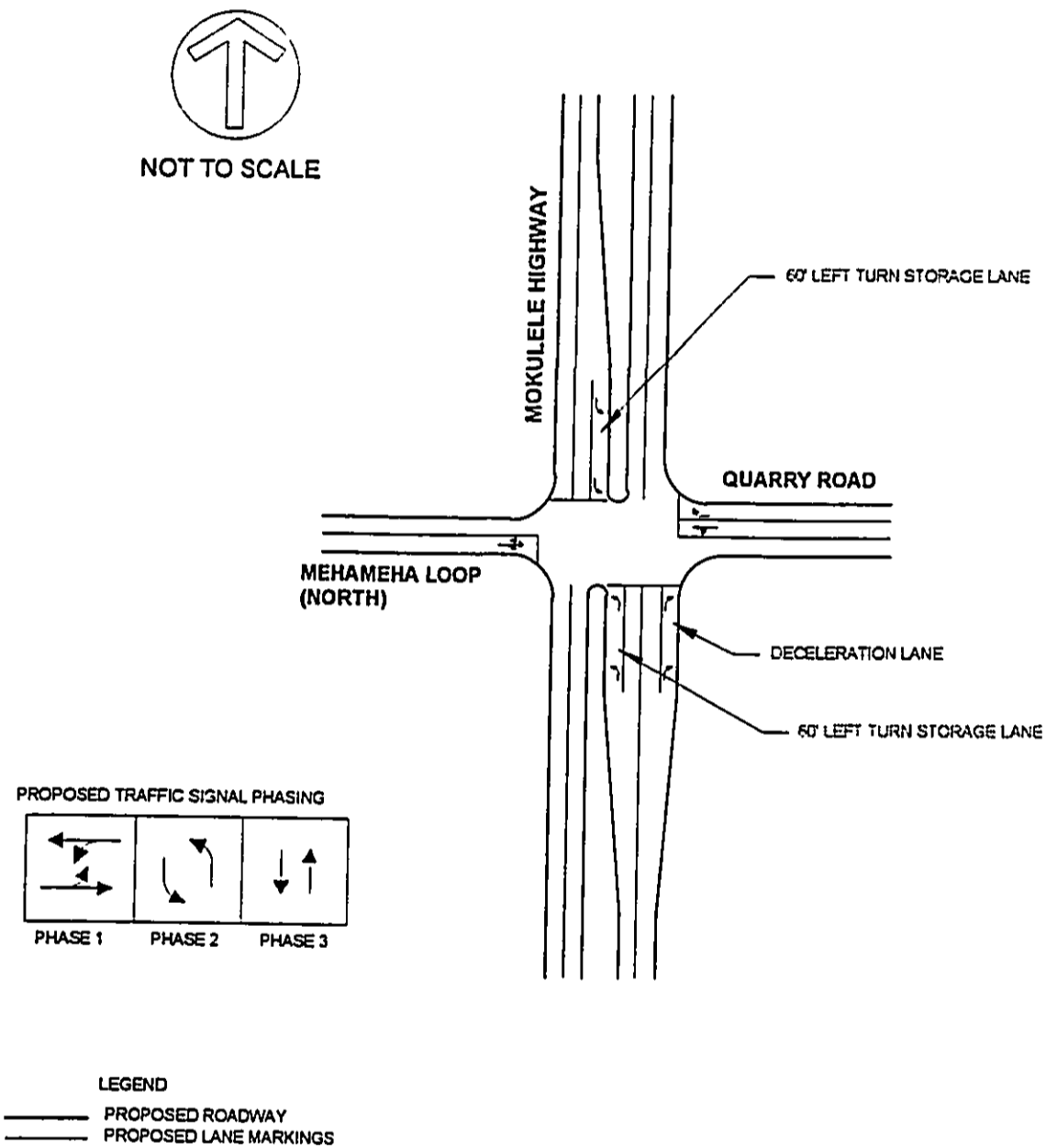
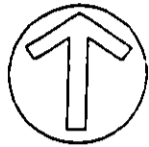
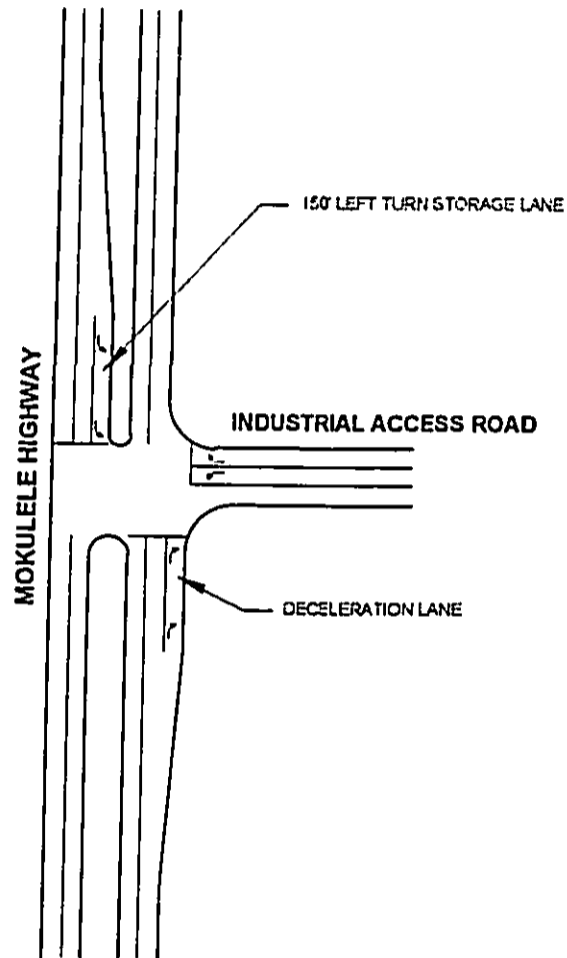


Figure 10

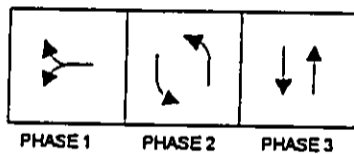
**SCHEMATIC OF INTERSECTION CONFIGURATION
MOKULELE HIGHWAY AT MEHAMEHA LOOP
(NORTH) AND QUARRY ROAD**



NOT TO SCALE



PROPOSED TRAFFIC SIGNAL PHASING



PHASE 1 PHASE 2 PHASE 3

LEGEND

— PROPOSED ROADWAY
— PROPOSED LANE MARKINGS

Figure 11

SCHEMATIC OF INTERSECTION CONFIGURATION MOKULELE HIGHWAY AT INDUSTRIAL ACCESS ROAD

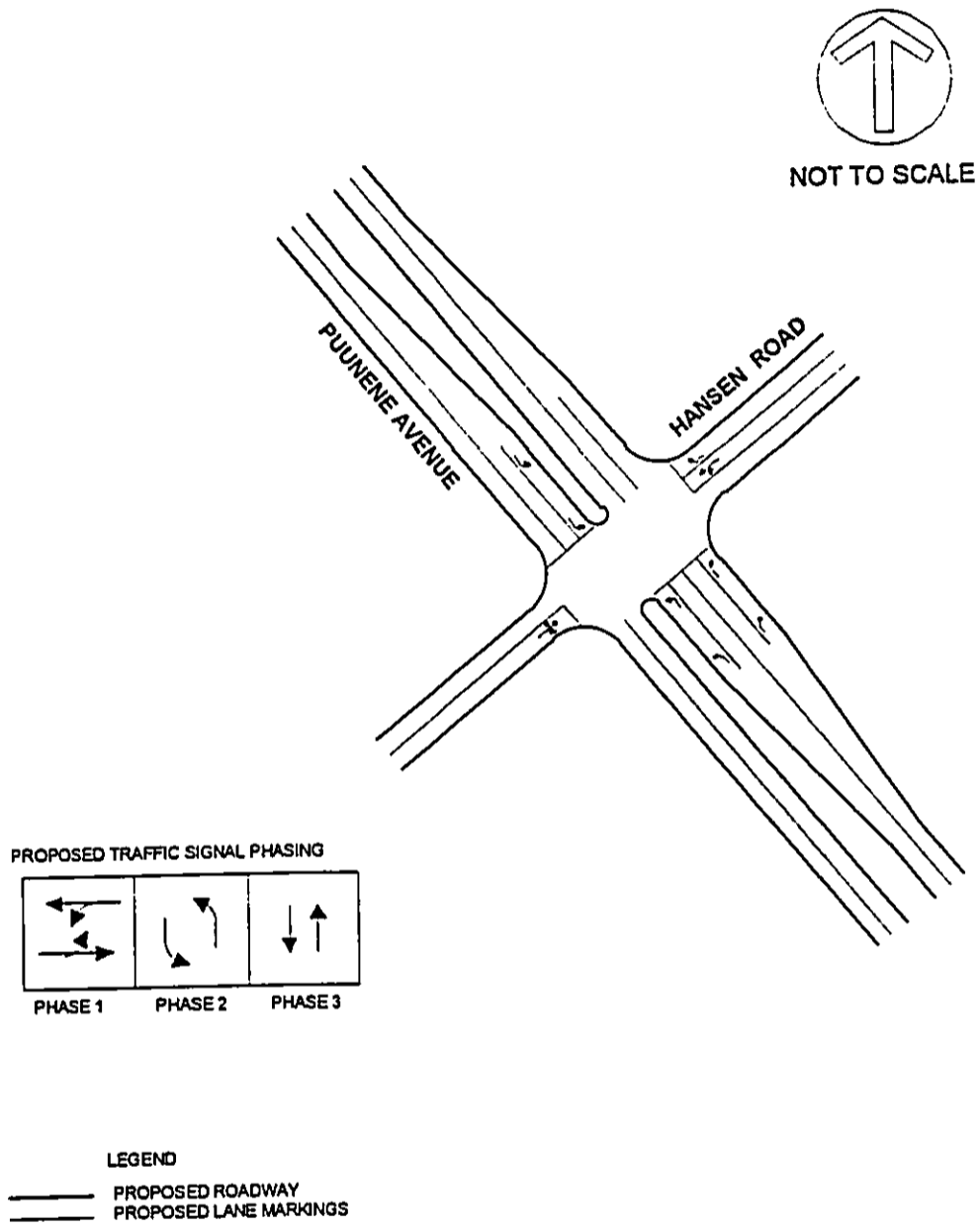


Figure 12

SCHEMATIC OF INTERSECTION CONFIGURATION PUUNENE AVENUE AT HANSEN ROAD

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



TIMOTHY E. JOHNS
CHAIRPERSON
BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR.
LINNELL T. NISHIOKA
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

P.O. BOX 621
HONOLULU, HAWAII 96809

FEB 16 1999

Mr. Loren G.S. Lau, AIA
Sato & Associates, Inc.
2046 S. King Street
Honolulu, Hawaii 96826

Dear Mr. Lau,

This is in response to your letter dated January 31, 2000 requesting whether the Kolaloa and Keahuaiwi Gulches are considered streams, subject to stream channel alteration permits pursuant to Hawaii Revised Statutes §174C-71.

Based on the photographs you submitted, Kolaloa and Keahuaiwi Gulches lack sufficient water to support instream uses, therefore are not considered streams. Alteration of these gulches will not require stream channel alteration permits.

Thank you for your cooperation. If you have any questions please call David Higa at 587-0249.

Sincerely,

A handwritten signature in black ink, appearing to read "Linnell T. Nishioka".

LINNEL T. NISHIOKA
Deputy Director

DH:sd

RECEIVED
FEB 17 2000

SATO & ASSOC., INC.

BENJAMIN J. CAVETANO
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 607
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS
CHAIRPERSON
BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS JR.
LINNELL T. NISHIOKA
DEPUTY DIRECTOR

Ms. Loreen Lau
Sato & Associates, Inc.
2046 South King Street
Honolulu, Hawaii 96826

Dear Ms. Lau:

Stream Channel Alteration Permit Applicability
Proposed Highway Widening Project,
Pulehu, Kololoa, Keahuaiwi and Waiakoa Gulches, Maui

This is in response to a facsimile dated January 13, 2000, requesting we determine if stream channel alteration permits are required for proposed highway widening in four gulches at unspecified locations. The determination as to whether a watercourse is considered a "stream" is site specific and dependent on a number of factors, such as whether it is a "natural watercourse" and if the watercourse contains sufficient water to sustain instream uses. Instream uses include, but are not limited to, maintenance of aquatic life and habitats, conveyance of irrigation and domestic water supplies, etc. Locations of the proposed crossing at Kololoa and Keahuaiwi Gulches as well as photographs showing these watercourses at the road widening sites are needed to make a determination.

Our prior experience with Pulehu and Waiakoa Gulches suggest that these gulches do not contain sufficient water to support instream uses, therefore the unnamed watercourses in Pulehu and Waiakoa Gulches are not considered to be 'streams' as defined in the Hawaii Revised Statutes §174C-3. A stream channel alteration permit will not be required for the proposed work at Pulehu and Waiakoa Gulches.

Thank you for consulting with us on our permit requirements. If you have any questions, please call David Higa at 587-0249.

Sincerely,

Handwritten signature of Linnell T. Nishioka.
LINNELL T. NISHIOKA
Deputy Director

SKS:sd



DEPARTMENT OF
HOUSING AND HUMAN CONCERNS
COUNTY OF MAUI

JAMES "KIMO" APANA
Mayor
ALICE L. LEE
Director
PRISCILLA P. MIKELL
Deputy Director

200 SOUTH HIGH STREET • WAILUKU, HAWAII 96793 • PHONE (808) 270-7805 • FAX (808) 270-7165

March 13, 2000

RECEIVED
MAR 16 2000

PLANNING DEPARTMENT
HAWAII COUNTY OFFICE

Mr. Robert Siarot
District Engineer, Highways Division
State of Hawaii
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Siarot:

Subject: Mokulele Highway/Puunene Avenue
Roadway Widening
I.D. No. - SM1 2000-0007

We have reviewed the February 2000 Draft Supplemental Environmental Assessment and the Special Management Area (SMA) Use Permit Application for the subject project and wish to inform you that we have no comments to offer.

Thank you for the opportunity to comment.

Very truly yours,

ALICE L. LEE
Director of Housing and
Human Concerns

ETO:hs

c: Director of Planning
Housing Administrator
✓Chris Hart & Partners

TO SUPPORT AND ENHANCE THE SOCIAL WELL-BEING OF THE CITIZENS OF MAUI COUNTY

PRINTED ON RECYCLED PAPER ♻️

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR
DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Ms. Alice L. Lee,
Director
County of Maui
Department of Housing and Human Concerns
200 South High Street
Wailuku, Hawaii 96793

Dear Ms. Lee:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your letter dated March 13 2000 which indicated that you had no comments on the above referenced project. We will be including a copy of your letter in our final EA.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

BENJAMIN J. CAYETANO
GOVERNOR



ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION

P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

March 14, 2000

Mr. Robert A. Siarot
District Engineer
Highways Division
Department of Transportation
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Siarot

Subject: Draft Supplemental Environmental Assessment (DSEA)
for Mokulele Highway Puunene Avenue Roadway
Widening, Kahului, Maui

We have reviewed the DSEA for the subject project and find that the extended project site, as represented on the Project Map (Figure 1), is primarily designated within the State Land Use Agricultural District. A small portion of the project, specifically the roadway improvements, including ROW acquisition of .1 acre from TMK 3-8-77: 9, as represented on the map showing the improvements within the SMA, is designated within the State Land Use Urban District.

We have no further comments to offer at this time. We appreciate the opportunity to comment on the subject DSEA.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

A handwritten signature in cursive script, appearing to read "Esther Ueda".

ESTHER UEDA
Executive Officer

EU:aa

xc: Rory Frampton

200 MAR 17 PM 3:23
DISTRICT

RECEIVED
APR - 5 2000

OFFICE OF THE ATTORNEY GENERAL
HONOLULU, HAWAII

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Ms. Esther Ueda,
Executive Officer
State of Hawaii
Department of Business, Economic Development & Tourism
Land Use Commission
PO Box 2359
Honolulu, Hawaii 96804-2359

Dear Ms. Ueda:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Attention: Bert Saruwatari

Thank you for your letter dated March 14 2000, which confirmed the State Land Use designations for the extended project area. We will be including a copy of your letter in our final EA.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

BENJAMIN J. CAYETANO
GOVERNOR



RAYMOND H. SATO

XXXXXXXXXX
EUGENE S. IMAI
COMPTROLLER

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING
AND GENERAL SERVICES

SURVEY DIVISION
P.O. BOX 119
HONOLULU, HAWAII 96810

FILE NO: _____

March 15, 2000

RECEIVED
MAR 17 2000

Chris Hart & Partners
Landscape Architecture & Planning

Mr. Robert A. Siarot
District Engineer
State Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Siarot:

Subject: Project Name: Mokulele Highway/Puunene Avenue -
Road Widening

I.D.: SM1 2000-007

Applicant: State Department of Transportation

Location: Mokulele Highway and portions of
Puunene Avenue, Piilani Highway,
South Kihei Road, North Kihei Road,
Mehameha Loop and Hansen Road

We have reviewed the Supplemental Environmental Assessment/Special Management Area Use Permit Application for the above subject.

Please be advised that our records indicate that there are five (5) National Geodetic Survey Benchmarks located near or within the project area. The following are the Benchmark designations P5 1950, J22 1979 RESET 1986, S5 1950, K22 1979, and L22 1979 (See enclosed maps and descriptions).

Please be further advised that if there is a possibility that any of the Benchmarks will be disturbed or destroyed during road improvements, the Benchmark(s) must be referenced and eventually replaced. Copies of field notes, descriptions and new values of the replaced Benchmark should be sent to our office for filing.

Very truly yours,

Randall M. Hashimoto
RANDALL M. HASHIMOTO
State Land Surveyor

Enclosure

cc: Mr. Rory Frampton, Planner, Chris Hart & Partners
Mr. Clayton Yoshida, Deputy Director of Planning (Maui)

CC: Robb Cole 3/20/00

BENJAMIN J. CAYETANO
GOVERNOR



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

April 27, 2000

RAYMOND H. SA...

~~XXXXXXXXXX~~
COMPTROLLER

Resonse Refer to:

L.F. 183-
FILE NO: SMI 2000-

RECEIVED
MAY - 1 2000

Mr. Robert A. Siarot
District Engineer
State Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

Dear Mr. Siarot:

Subject: Project Name: Mokulele Highway/Puunene Avenue -
Road Widening
I.D.: SM1 2000-007
Applicant: State Department of Transportation
Location: Mokulele Highway and portions of
Puunene Avenue, Piilani Highway,
South Kihei Road, North Kihei Road,
Mehameha Loop and Hansen Road

This is in reference to the letter sent to you dated March 15, 2000 regarding the above subject.

I have been informed by Mr. Richard S. Cohen of the National Geodetic Survey that Bench Marks J22 and K22 will be destroyed during road improvements.

Enclosed are two (2) replacement brass disks and replacement procedures which have been supplied by the National Geodetic Survey. Mr. Cohen has advised that Third-Order Leveling is sufficient.

Also, please send copies of the Level Notes and Report on Relocation of Bench Marks to our office for filing.

Very truly yours,

Randall M. Hashimoto
RANDALL M. HASHIMOTO
State Land Surveyor

Enclosure

cc: Mr. Rory Frampton, Planner, Chris Hart & Partners
Mr. Clayton Yoshida, Deputy Director of Planning (Maui)

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR
DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Randall M Hashimoto,
State Land Surveyor
State of Hawaii
Department of Accounting and General Services
Survey Division
PO Box 119
Honolulu, Hawaii 96810

Dear Mr. Hashimoto:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your comments dated March 15 and April 27 2000. We will continue to work closely with your Department to ensure that the National Geodetic Survey Benchmarks located near or within the project site that may be disturbed or destroyed will be adequately referenced and replaced.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners



RECEIVED
MAR 21 2000

March 16, 2000

Mr. Robert A. Siarot, District Engineer
State of Hawaii Department of Transportation
650 Palapala Drive
Kahului, HI 96732

Dear Mr. Siarot:

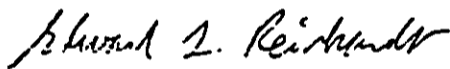
Subject: Mokulele Highway/Puunene Bypass – Roadway Widening
Subject ID: SM1 2000-0007

Thank you for allowing us to comment on the subject project.

In reviewing the information transmitted and our records, we have no objection to the subject project. We encourage the state's consultant to inform us of any revisions to the plans for the project as soon as practical to ensure proper and timely planning for any action to change existing pole locations and configurations.

If you have any questions or concerns, please call Dan Takahata at 871-2385 or Greg Kauhi at 871-2366.

Sincerely,


Edward L. Reinhardt
Manager, Energy Delivery

cc: Rory Frampton, Lead Planner
John E. Min, Planning Director

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Edward L. Reinhardt,
Manager, Energy Division
Maui Electric Company, Ltd.
PO Box 398
Kahului, Hawaii 96733-6898

Dear Mr. Reinhardt:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Attention: Dan Takahata

Thank you for your comments dated March 16 2000. We will continue to coordinate with Maui Electric Company throughout the design and construction phases of this project.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Benton Pang,
Fish and Wildlife Biologist
U.S. Department of the Interior
Fish and Wildlife Service
Pacific Islands Ecoregion
300 Ala Moana Boulevard
PO Box 50088
Honolulu, Hawaii 96850

Dear Mr. Pang:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your message received March 16 2000 indicating that the Fish and Wildlife Service has no comment on the subject project.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot". The signature is stylized and cursive.

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

BENJAMIN J. CAYETANO
GOVERNOR

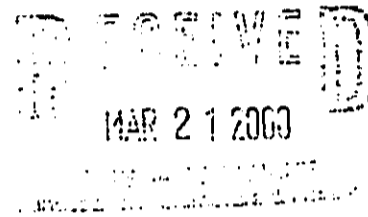


GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 588-4188
FACSIMILE (808) 588-4188

March 17, 2000



Kazu Hayashida, Director
Department of Transportation
869 Punchbowl St.
Honolulu, HI 96813

Attn: Bob Siarot

Dear Mr. Hayashida:

Subject: Supplemental Draft Environmental Assessment (EA) for Mokulele Highway, Puunene Avenue Highway Widening, Maui

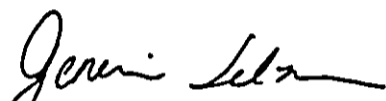
1. Two-sided pages: In order to reduce bulk and save on paper, please consider printing on both sides of the pages in the final document.
2. Determination: A determination stating that an environmental impact statement will not be required is listed in the draft EA in section IV.D. The EIS law prohibits a determination of significant impact or lack of significant impact before the end of the 30-day public comment prior to receipt, response and analysis of all written comments. For a draft EA the proper determination is *anticipated FONSI* (Finding of No Significant Impact).
3. Cumulative Impacts:
The Environmental Impact Statement law requires that full disclosure of cumulative impacts be made on projects that are geographically related. Several proposed projects in the Puunene area include a heliport, development of large-scale recreational uses (such as drag racing) of the old Puunene airport area, and Maui Nui Park. In the final EA, provide a full analysis and discussion of these and any other area projects.
Such an analysis would include, but not be limited to, the cumulative impacts of *all projects* on air quality, traffic, drainage patterns, visual impacts and induced population growth. The Maui Planning Department should be able to advise you of projects being considered for this area.
4. References to appendices: In sections III.A.8 and III.D.2, the references to the appended reports on drainage and on archeological/cultural resources are transposed. Please make this correction in the final EA.

Kazu Hayashida
March 17, 2000
Page 2

5. Air quality reduction: Section III.A.3 on air quality states that "the proposed highway improvements were modeled to reduce overall carbon monoxide emissions by 82%." How was this very high percentage calculated?
6. Funding: Please disclose the source(s) of funding for this project, including any federal funds flowing through the state or county.

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

Sincerely,


GENEVIEVE SALMONSON
Director

c: Rory Frampton

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Ms. Genevieve Salmonson, Director,
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street
Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Attention: Ms. Nancy Heinrich

Thank you for your comments dated March 17, 2000. Below are the responses to your comments and questions:

Document Layout

The Final EA will utilize double-sided pages and correct the transposed references.

Determination

Please note that in the first sentence of section IV, we stated that a FONSI determination is "expected". A final determination of the proposed project will be made only after the receipt and analysis of comments on the Draft Supplemental EA.

Cumulative Impacts

A full discussion of cumulative impacts for the entire project was presented in the original EA prepared for the project in 1997. Since the scope of this supplemental EA is only covering those portions of the project which have been amend or refined, we do not see the need to fully addresses all of the cumulative impacts which you have identified in your letter. For your information the transportation planning documents utilized for the project did anticipate growth both from an island wide as well as regional perspective until the year 2020. As such, impacts resulting from future projects were

Letter to Ms. Genevieve Salmonson
Mokulele Highway - Puunene Avenue Roadway Widening Project
May 11, 2000
Page 2

anticipated. Since the intent of the project is to accommodate the interregional transportation needs for Maui, the specific growth patterns within each region is not as critical. The updated traffic study did take into account anticipated or proposed projects for which plans were available at the time that the traffic study was conducted. Specifically, the planned uses of the Old Puunene Airport were included in the evaluation, however, since the proposed temporary use of the facility as a heliport was not presented at the time of traffic impact assessment, it's use was not included. Any such projects which are proposed after the completion of the traffic study for this project will have to perform an independent assessment to determine how the project will specifically impact the State's facility. However, these assessments will be more concerned with site specific geometrics rather than overall highway capacity, since the project was designed to accommodate long-term regional growth.

Air Quality

The Air Quality Study prepared for the original Environmental Assessment (dated January 1997) calculated carbon monoxide emissions to be around 82% lower with project improvements than the without-project estimates for the year 2020. The author utilized the MOBILE5A computer model, which was described within the report as "the most recently released version of the EPA mobile emission model".

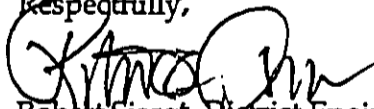
The primary reason for such a significant decrease is that no-build traffic forecasts for the year 2020 indicate extreme traffic congestion.

Funding

Funding for the project will be provided through the State Department of Transportation and the Federal Highway Administration. It is anticipated that the Federal government will contribute up to 80% of the project costs. The Federal Aid number for the project is CMAQ-0900(57).

If you have any further comments, please contact me at 808 873-3535.

Respectfully,



Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners



United States
Department of
Agriculture

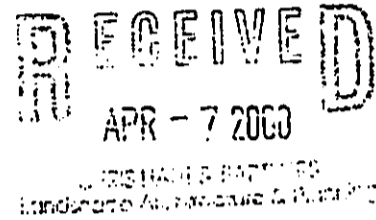
Natural
Resources
Conservation
Service

P.O. Box 50004
Honolulu, HI
96850

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

March 28, 2000

Mr. Robert A. Siarot, District Engineer
State Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Hawaii 96732



Dear Mr. Siarot:

Subject: SM1 2000-0007 – Mokulele Highway/Puunene Avenue Roadway Widening,
Maui

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
State Conservationist

Cc:
Mr. Rory Frampton, Lead Planner, Chris Hart & Partners, Landscape Architecture &
Planning, 1955 Main Street, Suite 200, Wailuku, Maui, Hawaii 96793
Mr. John E. Min, Director, Department of Planning, 200 South High Street,
Wailuku, HI 96793

The Natural Resources Conservation Service works hand-in-hand with
the American people to conserve natural resources on private lands.

AN EQUAL OPPORTUNITY EMPLOYER

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR
DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Kenneth M. Kaneshiro,
State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
PO Box 50004
Honolulu, Hawaii 96850

Dear Mr. Kaneshiro:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your letter dated March 28 2000 which indicated you have no comments regarding the subject project. We will be including a copy of your letter in our final EA.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners



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

REPLY TO
ATTENTION OF

March 31, 2000

Civil Works Technical Branch

Mr. Rory Frampton, Lead Planner
Chris Hart and Partners
1955 Main Street, Suite 200
Wailuku, Maui, Hawaii 96793

RECEIVED
APR - 4 2000

Dear Mr. Frampton:

Thank you for the opportunity to review and comment on the Special Management Area Permit Application and Draft Supplemental Environmental Assessment (DSEA) for the Mokulele Highway to Puunene Avenue Improvements Project, Kihei, Maui. The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Based on the information provided, a DA permit will not be required for the project.

b. The flood hazard information provided on pages 9 and 10 of the DSEA is correct.

Sincerely,

James Pennaz

James Pennaz, P.E.
Chief, Civil Works
Technical Branch



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

REPLY TO
ATTENTION OF

March 13, 2000

Regulatory Branch

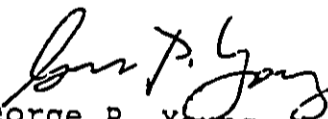
Mr. Loren G.S. Lau, A.I.A.
Sato & Associates, Inc.
2046 S. King Street
Honolulu, Hawaii 96826

Dear Mr. Lau:

This letter responds to your application for a Department of the Army permit, dated February 22, 1999, for work in four gulches in connection with the Pu'unene Avenue and Mokulele Widening Project. Based on the information, including photographs, provided in the application, along with the environmental assessment, it appears that the gulches where crossed by Mokulele Highway are ephemeral streams that do not show evidence of an ordinary high water mark. The gulches in this location are therefor not jurisdictional waters of the United States and work in them will not require a Department of the Army permit.

If you have any questions concerning this matter, please contact Mr. William Lennan of my staff at 438-6986 and reference File No. 200000112.

Sincerely,


George P. Young, P.E.
Chief, Regulatory Branch

Copies Furnished:

Mr. John Nakagawa, Office of Planning, Coastal Zone Management Program, P.O. Box 2359, Honolulu, Hawaii 96804
Mr. Denis Lau, Clean Water Branch, State of Hawaii Department of Health, P.O. Box 3378, Honolulu, Hawaii 96801

RECEIVED
MAR 16 2000

SATO & ASSOC, INC

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. James Pennaz, P.E.,
Chief, Civil Works Technical Branch
United States Department of the Army
U.S. Army Engineer District, Honolulu
Fort Shafter, Hawaii 96858-5440

Dear Mr. Pennaz:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

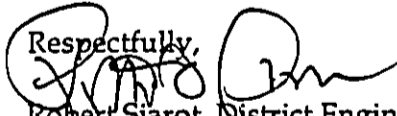
Thank you for your letter dated March 31 2000 which confirmed:

- The flood hazard information provided in the EA was correct
- A Department of the Army (DA) permit would not be required for the project

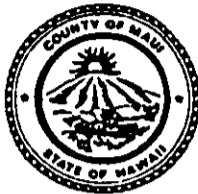
We will be including a copy of your letter in our final EA.

We also note receipt of a letter dated March 13 2000 from Mr. George P. Young, Chief of your department's regulatory branch which has confirmed that a DA permit will not be required for work within 4 gulches within the project area.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners



**DEPARTMENT OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1109
WAILUKU, MAUI, HAWAII 96793-7109
Telephone (808) 270-7816 • Fax (808) 270-7833**

April 4, 2000

Mr. Robert Siarot, District Engineer
State Department of Transportation, Highways Division
650 Palapala Drive
Kahului, Hawaii 96732

Re: Supplemental Environmental Assessment/Special Management Area Use Permit for the
Mokulele Highway/Puunene Avenue Roadway Widening Project

Dear Mr. Siarot,

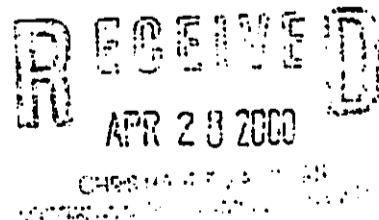
Thank you for the opportunity to review this Environmental Assessment (EA) and Special Management Area (SMA) Use permit application. Please find attached a copy of our comment letter to this project dated August 12, 1997. We provide the following additional comments:

The applicants are coordinating construction details with the DWS Engineering Division. If there are any changes in construction plans, these need to be reviewed by the Department.

The Final EA should include expected potable and non-potable water usage. The applicants states that non-potable water may be used for dust-control purposes. If any potable water will be used, the applicants are required to submit irrigation calculations at the time of meter application. Water availability will be reviewed at the time of application for meter or meter reservation. We encourage the applicants to make arrangements to use non-potable water, where possible, for irrigation of landscaped areas.

We are very pleased to see the landscaping plan of this project including native shrubs and trees. Native plants adapted to the area, conserve water and further protect the watershed from degradation due to invasive alien species.

By Water All Things Find Life



Should you have any questions, please call the Water Resources and Planning Division at: 270-7199.

Sincerely,



David Craddick
Director
emb

cc: Chris Hart & Partners
Maui County Department of Planning

attachment:
Letter dated 8/12/99

By Water All Things Find Life



**BOARD OF WATER SUPPLY
COUNTY OF MAUI
P.O. BOX 1108
WAILUKU, MAUI, HAWAII 96793-7108**

August 12, 1997

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

Attn: Mr. Kazu Hayashida

Re: Final Environmental Assessment - Mokulele Highway/Puunene Bypass.

Dear Mr. Hayashida,

Thank you for the opportunity review this assessment. The Board of Water Supply has the following comments.

Source and System

The Board of Water Supply owns and maintains a several transmission lines, including major 18" and 36" lines, within the right-of-way along the length of highway improvements. These lines provide the vast majority of public water to Kihei, Wailea, and Makena. The applicants should contact our engineering division at (808) 243-7835 to coordinate construction details, possible pipeline relocation, and to minimize the potential for disruption of water service. We have included a copy of our water system map of the project area for your reference.

Water Resources Generally

To protect both surface and groundwater resources in the area, we ask that the applicant and/or contractor consider best management practices (BMPs) for the design and construction of roads, highways, and bridges. We have attached sample BMPs for these activities from the EPA guidance document for coastal nonpoint pollution control programs as a reference to the applicant and contractor.

Conservation

Use Non-Potable Water: - The applicants have stated that non-potable water will be used if potable water is not available. We ask that the applicants assist in water conservation of potable supplies by making arrangements to use non-potable water, where possible, for all construction-related activities.

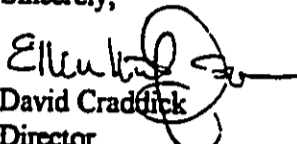
Use Climate-adapted Plants: When the highway corridor is revegetated, the applicants should consider revegetating with native or Polynesian climate-adapted and salt-tolerant plants, where applicable. Native plants adapted to the area, conserve water and further protect the watershed

"By Water All Things Find Life"



from degradation due to invasive alien species. The project site is located in "Maui County Planting Plan" - Plant Zone 3. Please refer to the "Maui County Planting Plan", and to the attached documents, "XERISCAPE: Water Conservation Through Creative Landscaping" and "Some of Maui's Native and Polynesian Plants."

Sincerely,


David Cradick
Director

wef

attachments:

- "Some of Maui's Native and Polynesian Plants" - Maui
- "XERISCAPE - Water Conservation through Creative Landscaping"
- Sample BMPs from "Guidance Specifying Management Measures For Sources of Nonpoint Pollution In Coastal Waters." EPA.
- "Fire Protection and Water Distribution Map - Puumene." Maui Board of Water Supply.

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

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

Dear Mr. Craddick:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007


Thank you for your comments dated April 4 2000.

We have been coordinating our project with Ms. Dyan Ariyoshi and Mr. Myles Fujinaka of your department, and will continue to communicate any subsequent design changes.

Use of Potable & Non-Potable Water

Sources and use estimates for irrigation and dust control are not available at this time. The project contractor will propose the source of water and distribution methods only after the award of contract. However, we do not anticipate the need to use potable water and anticipate a convenient source of not-potable water from adjacent HC&S agricultural operations will be utilized. Under current plans, landscape irrigation will only be provided for a three-year "establishment" period.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

BENJAMIN J. CAVETANO
GOVERNOR
STATE OF HAWAII



RAYNARD C. SOON
CHAIRMAN
HAWAIIAN HOMES COMMISSION

JOBIE M. K. NI YAMAGUCHI
DEPUTY TO THE CHAIRMAN

COPY

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

APR 4 2000

April 4, 2000

To: The Honorable Kazu Hayashida, Director
Department of Transportation

Attn: Robert Siarot, District Engineer
Highways Division

From: Raynard C. Soon, Chairman
Hawaiian Homes Commission

Daniel Ornellas

Subject: Draft Supplemental Environmental Assessment, Mokulele
Highway / Puunene Avenue - Roadway Widening, SM1 2000-
0007, Central Maui, Dated February, 2000

RECEIVED
DOT-HWAYS
MAUI DISTRICT OFFICE
200 APR - 4 PM 2:37

Thank you for the opportunity to review the subject application.

Please note that the planned highway right-of-way includes State lands to be subdivided for conveyance to DHHL. The conveyance was approved on October 28, 1994, by the Board of Land and Natural Resources, under Agenda Item H-6, as part of a 16,518 acre transfer of lands to the Department of Hawaiian Home Lands (DHHL). Selected lands include a 646 acre portion of TMK 3-8-8:01 and a 80 acre portion of TMK 3-8-8:08. This should be noted on page 5 & 6 under section three (3) of the subject application.

Furthermore, the department will be identifying access points along Mokulele highway for new DHHL lands. The department recommends that the Department of Transportation work with DHHL to coordinate necessary improvements to allow for right and left turn egress and ingress as well as the relationship of access points to other existing and proposed improvements along Mokulele highway.

If you have any questions, please call Daniel Ornellas of our Planning Office at 586-3836.

0248

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Raynard C. Soon,
Chairman, Hawaiian Homes Commission
Department of Hawaiian Home Lands
State of Hawaii
PO Box 1879
Honolulu, Hawaii 96805

Dear Mr. Soon:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

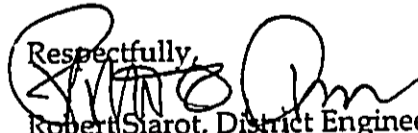
Attention: Mr. Daniel Ornellas, Planning Office, DHHL

Thank you for your comments dated April 4 2000.

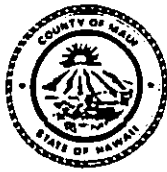
We are noting in our Final Environmental Assessment that the planned right-of-way includes lands conveyed to the DHHL from the Department of Land and Natural Resources.

We will continue to coordinate future access points to DHHL property with your Department and State Surveyor, Randy Hashimoto.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners



JAMES "KIMO" APANA
MAYOR

OUR REFERENCE
YOUR REFERENCE

POLICE DEPARTMENT
COUNTY OF MAUI

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

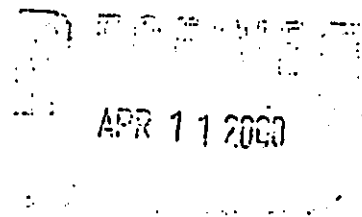


THOMAS M. PHILLIPS
CHIEF OF POLICE

DEPUTY CHIEF OF POLICE

April 5, 2000

Mr. Rory Frampton
Chris Hart & Partners
1955 Main Street, Suite 200
Wailuku, Hawaii 96793



Dear Mr. Frampton:

**Subject: Draft Supplemental Environmental Assessment (DEA)
Mokulele Highway/Puunene Avenue Widening Project**

Thank you for your letter requesting comments on the above subject.

We have reviewed the project summary and have enclosed our comments and recommendations. Thank you for the opportunity to comment on this project.

Very truly yours,

Assistant Chief Robert Tam Ho
for: Thomas M. Phillips
Chief of Police

Enclosure

c: John Min, Planning Department

TO : THOMAS PHILLIPS, CHIEF OF POLICE
VIA : CHANNELS
FROM : BARBARA KNOEPPLE, P.O., III, KIHEI C.P.O.
SUBJECT : PERMIT SUBMITTED BY STATE DEPARTMENT OF
TRANSPORTATION, for WIDENING OF MOKULELE HIGHWAY

AC [Signature]
4/4/00

Sir,

With regard to the above referenced project, following are my comments with regard to police related concerns:

PROJECT:

Establishing a 4-lane divided highway which will incorporate adjacent bike and pedestrian paths.

COMMENTS:

If my interpretation of the submitted sketches is correct, it appears as though the highway construction will actually be raised with a 6:1 slope upwards from the bikepath and walkway. The highway will be separated from the bike path and walk way by shrub type landscaping. On the outermost side of the walk path, will be tree and shrub landscaping sloping downar on a 4:1 slope.

There are a few concerns with regard to the bike path safety. Due to the high speeds on the highway, I think it is a good idea that the bike path and walk path is adequately separated from the highway. I am concerned, however about the following issues;

LIGHTING:

Lighting for the walkway and bikepath must be adequate for nighttime usage. The landscaping and downward slope from the walkway, along with the adjacent cane fields would make this a potential problem area for criminals targeting lone joggers or bicyclists at night. Lighting and design should be such that a person has an unobstructed view of their pathway and an ability to identify other parties from at least 50 feet away.

LANDSCAPING/ACCESS:

Is landscaping designed to function as a guardrail/barrier between the shoulder and the bikepath? If so, will this landscaping be sufficient to prevent motorcyclists from exiting and entering onto the bike lane from the highway to bypass traffic. Is a guardrail merited?

PAGE 2

VISIBILITY:

Will pedestrians and bicyclists be visible to motorists, including first responders, should they become disabled or injured, especially during the evening hours.

ROLLERBLADES/SKATBOARDING:

It is inevitable and should be expected that this will be highly desirable arena for participators in these sports, regardless of whether it is intended for same. If these forms of transportation are not going to be permitted, note that enforcement will be difficult and surface design should incorporate features to discourage rollerblading and skateboarding. Otherwise, be aware that there will be usage of this nature.

NOISE PROBLEMS/COMPLAINTS:

The permit application cited allowable noise with respect to the current configuration of the community and the changes in volume when widening to a 4 lane highway. They pointed out that only a couple of condos near North Kihei Road would be affected, citing the remainder of the area as undeveloped land. It should be noted that the MAUI NUI PARK development has plans for both a wedding/chapel, and a dolphin institute to be constructed on the side of the complex bordered by Piilani Highway, near Mokulele Highway, which could affect these requirements.

TRAFFIC

The MAUI NUI PARK is a large development project. The permit requested an employee entrance from the Mokulele Extension, which should be considered in this widening project. The construction of both projects may overlap, making a traffic nightmare for the North Kihei Triangle. The timing of the construction of both projects should be evaluated.

Respectfully submitted,

Signature
4/3/00 1143
Signature
1/24/00

Signature
Barbara KNOEPPEL, #2120
04-03-00 at 0950 hours

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR
DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

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

Dear Mr. Phillips:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Attention: Mr. Robert Tam Ho, Assistant Chief
Barbara Knoepfel, #2120

Thank you for your comments dated April 5 2000. Below are the responses to your comments and questions:

Landscaping and Lighting in regards to Safety Issues

In general, we are in agreement with you that separating the pathway from the Highway is important from a safety perspective.

In your comments you mentioned that "the highway will be separated from the bike path and walk way by shrub type landscaping". To clarify our plans, landscaping will not be consistently planted along the highway, but sporadic and concentrated at three locations, coincident with the Highway's intersections with Mehamaha Loop and the Industrial Access Road. These intersections will be lighted.

Therefore, the majority of the Highway will consist of non-planted sections where persons using the pathway will be generally visible and illuminated from traffic throughout the corridor.

Letter to Mr. Thomas M. Phillips
Mokulele Highway - Puunene Avenue Roadway Widening Project
May 11, 2000
Page 2

While extensive lighting along the entire highway may provide additional safety for nighttime users, it is impractical and inefficient to illuminate all of our travelways. Within nationally accepted design guidebooks and the Maui community itself, there is a strong opposition to extensive lighting in rural areas. The reasoning behind this opposition includes minimizing impacts to wildlife areas (the Kealia National Wildlife Refuge Area is nearby), protecting our rural areas from "light pollution", and a general resource conservation ethic which dictates that we consider all impacts of a project before committing our future resources (such as funding and electricity). Lighting along the entire corridor between Kihei and Kahului would involve a tremendous commitment of capital resources. Given the high level of usage of the roadway during all times of the day as well as the clear line of site to the pathway along the majority of the corridor, we felt that safety concerns for nighttime users were minimal.

Use of the Bikeway

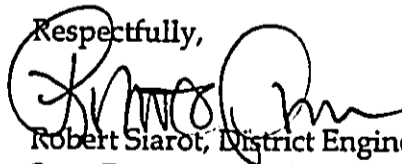
We have no objection to the use of skateboards or rollerblades on the adjacent bike/pedestrian way. Pathway signage will reflect that motor vehicles, including motorcycles are not permitted. We do not feel that a guardrail is warranted to prevent motorcycle access.

Maui Nui Park

Traffic noise levels at the proposed Maui Nui Park are anticipated to decrease along Piilani Highway due to the relocation inland of the Piilani/Mokulele intersection. Traffic engineering for Maui Nui Park is currently being re-assessed in order to resolve any conflicts between the projects.

Please note that Maui Nui Park is still under design and has yet to receive any development approvals. We are aiding the project planners by providing them with recent traffic and noise projections.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

FAXED
873-3544
4/12/00



OFFICE OF HAWAIIAN AFFAIRS: 4 PM 1: 59

April 7, 2000

EIS #368

Mr. Robert A. Siarot, District Engineer
State Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Maui Hawai'i 96732

Subject: Mokulele Highway/Puunene Avenue - Roadway
Widening ID: SM1 2000-0007

Aloha Mr. Siarot:

We are in receipt of the Supplemental Environmental Assessment/Special Management Area use Permit Application for the Mokulele Highway/Puunene Avenue Roadway Widening Project. After review of the document we agree that the project will not impact the environment and cultural resources.

Mahalo for allowing us to review and comment. Should there be any questions regarding our comments, please contact Ms. Píkake Pelekai, policy analyst, at (808) 594-1954. She can also be reached by e-mail at ppelekai@oha.org.

Sincerely,

Colin C. Kippen, Jr.
Deputy Administrator

cc: BOT
Maui CRC

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Colin C. Kippen, Jr.,
Deputy Administrator
State of Hawaii
Office of Hawaiian Affairs
711 Kapiolani Boulevard, Suite 500
Honolulu, Hawaii 96813-5249

Dear Mr. Kippen:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Attention: Ms. Pikake Pelekai

Thank you for your letter dated April 7 2000 indicating that you agree that the project will not impact the environment and cultural resources.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

4/13/00



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

RECEIVED
DOT-HWAYS
DISTRICT OFFICE

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

2000 APR 13 PM 2:04

In reply, please refer to:
File:

April 7, 2000

97-063A/epo

Mr. Robert Siarot, District Engineer
State of Hawaii Department of Transportation
Highways Division
650 Palapala Drive
Kahului, Maui, Hawaii 96732

Dear Mr. Siarot:

Subject: SUPPLEMENTAL DRAFT ENVIRONMENTAL ASSESSMENT (SDEA)
SPECIAL MANAGEMENT AREA PERMIT APPLICATION
(SM1 2000-0007)
Project: Mokulele Highway/Puunene Avenue-Roadway
Widening
Location: Kahului to Kihei, Maui, Hawaii
TMK: 3-8-4: Por. 23, 24, 27, various others

Thank you for allowing us to review and comment on the subject project. We do not have any comments to offer:

Sincerely,

GARY GILL
Deputy Director for Environmental Health

xc: Sato & Associates
R. Frampton

0333

BENJAMIN J. CAYETANO
GOVERNOR



BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

ALFRED M. ARENSDORF, M.D.
DISTRICT HEALTH OFFICER

STATE OF HAWAII
DEPARTMENT OF HEALTH
MAUI DISTRICT HEALTH OFFICE
54 HIGH STREET
WAILUKU, MAUI, HAWAII 96793

March 22, 2000

Rory Frampton, Planner
Chris Hart & Partners
1955 Main Street, Suite 200
Wailuku, Hawaii 96793

RECEIVED
MAR 24 2000

CHRISTINE S. PATTERSON
Land Use Planning & Development

Dear Mr. Frampton:

**Subject: Mokulele Highway/Puunene Avenue Roadway
Widening Project**
TMK: (2) 3-8-4: 02, 023, 024, & 030; 3-8-5: 01, 02, 019,
021, 022, 027, 029, & 034; 3-8-6: 02, 03, 069, & 071; 3-8-8:
01, 07, 08, 014, & 032; 3-8-77: 09

Thank you for the opportunity to comment on the proposed Road Widening Project. Comments from this office were transmitted to our Honolulu Office. A coordinated response is forthcoming.

Should you have any questions, please call me at 984-8230.

Sincerely,

A handwritten signature in black ink, appearing to read "H. Matsubayashi".

Herbert S. Matsubayashi
District Environmental Health Program Chief

c: Art Bauckham

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. Gary Gill,
Deputy Director for Environmental Health
State of Hawaii
Department of Health
PO Box 3378
Honolulu, Hawaii 96801

Dear Mr. Gill:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your letter dated April 7 2000 indicating that you have no comment on the subject project. We will be including a copy of your letter in our final EA.

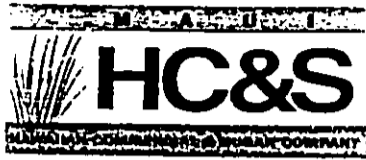
If you have any further comments, please contact me at 808 873-3535.

Respectfully,

A handwritten signature in black ink, appearing to read "Robert Siarot".

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

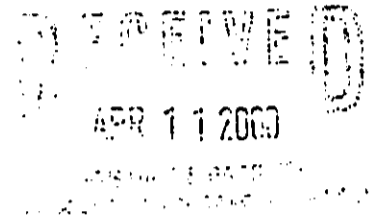


G. Stéphen Holaday
Plantation General Manager, HC&S
Vice President, Alexander & Baldwin, Inc.

April 7, 2000

VIA FAX (873-3544)

Mr. Bob Siarot
Department of Transportation
869 Punchbowl Street
Honolulu, HI 96813



Subject: Mokulele Highway Widening Draft Environmental Assessment (Supplemental)

Dear Mr. Siarot:

Hawaiian Commercial & Sugar Company (HC&S) has reviewed the Supplemental Draft Environmental Assessment (SEA) for the Department of Transportation's Mokulele Highway Widening project. HC&S is concerned about the proposed highway widening as it will have impacts on the existing sugar cane operations in the area. Accordingly, we offer the following comments on the SEA:

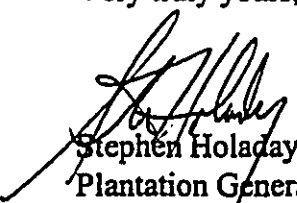
1. The north and south termini of Mehamaha Loop will be relocated to align with the existing Hawaiian Cement Road and the future MEO facility access road. These new alignments will require additional agricultural land and will affect our field layout. Irrigation systems will need to be relocated and concrete cane hauler and equipment crossings will be needed where the new roads isolate portions of a field.
2. At Piilani Highway, near the Ameron concrete batching plant, the new highway will block the existing access road to HC&S' Well 1. A new access road to the well will be required. Furthermore, the well has underground tunnels that must not be affected by the construction work.
3. The latest plan shows two on-grade crossings (with traffic lights) for the sugar cane haulers and other HC&S trucks and equipment. As we have discussed, HC&S requests one underpass and one on-grade crossing (with traffic lights) in order to minimize the impact of the highway widening on the movement of HC&S traffic. Public and employee safety is always a concern when crossing the highways. As the added lanes will allow for traffic and speed to increase on this highway, crossings by HC&S vehicles become increasingly problematic and dangerous for all involved. One underpass would provide the best alternative for the public as well as for the HC&S employees.

Mr. Bob Siarot
April 7, 2000
Page 2

4. Appendix A, Air Quality Study Addendum, indicates that the two signalized cane hauler road crossings will result in traffic queues and an increase in air pollution levels. The report states that "Avoiding the operation of the traffic signals during peak traffic hours would help to mitigate any impacts." Since the sugar mills operate 24 hours per day, they rely on a steady supply of cane from the field to the mill. The mills cannot shut down during peak traffic hours to mitigate this problem. As shown in section three above, one underpass would provide the best alternative for the public (no traffic delays and reduced air pollution) as well as for HC&S' operations.

Thank you for the opportunity to comment on the SEA. We want to continue working with you on this project to mitigate the impacts of this project on our operations.

Very truly yours,



Stephen Holaday
Plantation General Manager

cc: OEQC
Chris Hart & Partners

BENJAMIN J. CAYETANO
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

Mr. G. Stephen Holaday,
Plantation General Manager, HC&S
Vice President, Alexander & Baldwin, Inc.
PO Box 266
Puunene, Maui, Hawaii 96784

Dear Mr. Holaday:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your comments dated April 7 2000.

We have been coordinating our improvements with Mr. Randall Moore or your company. Below are answers to your specific questions.

Irrigation and Cane Hauler Crossings Near Mehamaha Loop

We have been working with your project-engineering manager to relocate your main service lines and provide for new cane hauler/ equipment crossings at the specified locations.

We will continue to work with your staff in order to minimize potential disruptions to your agricultural operations. Loss of land areas and/or irrigation systems will be mitigated via the policies set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended by the Uniform Relocation Act of 1987) CFR Title 49 Part 24.

HC&S's Well 1

A new access to Well 1 will be provided approximately 300 feet north of Waiakoa Stream.

Letter to G. Stephen Holaday
Mokulele Highway - Puunene Avenue Roadway Widening Project
May 11, 2000
Page 2

We will work with your staff to minimize impacts to the underground tunnels associated with Well 1. Toward this end, please provide Sato & Associates with details on the underground tunnel system so that we may adequately plan for construction in those areas.

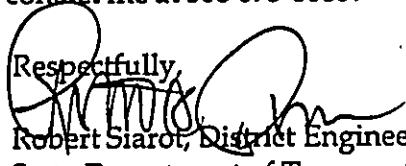
On Grade Crossing

We do not debate that overpasses or underpasses increase safety, reduce travel times, and allow for higher travel speeds (and thus reduce certain auto-emissions), however the net benefits of such projects need to address the associated costs and technical obstacles of building such a structure.

In consideration of the development costs and substantial engineering required for an underpass of the magnitude you had specified in our previous correspondence, we find that the public's best interest is provided for by two signalized on-grade crossings. These crossings should provide additional safety to your employees who now are utilizing non-signalized crossings.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,


Robert Siarot, District Engineer
State Department of Transportation

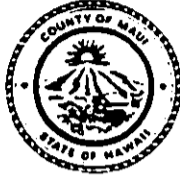
CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners

JAMES "KIMO" APANA
Mayor

CHARLES JENCKS
Director

DAVID C. GOODE
Deputy Director

Telephone: (808) 270-7845
Fax: (808) 270-7955



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

RON R. RISK, P.E.
Wastewater Reclamation Division

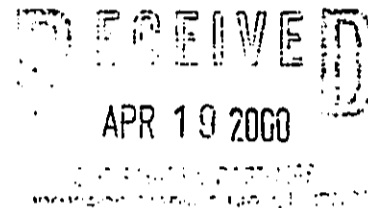
LLOYD P.C.W. LEE, P.E.
Engineering Division

BRIAN HASHIRO, P.E.
Highways Division

ANDREW M. HIROSE
Solid Waste Division

April 12, 2000

Mr. Rory Frampton, Lead Planner
Chris Hart & Partners
1955 Main Street, Suite 200
Wailuku, Hawaii 96793



Dear Mr. Frampton:

**SUBJECT: DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
MOKULELE HIGHWAY & PUUNENE AVENUE
ROADWAY WIDENING
SM1 2000/0007**

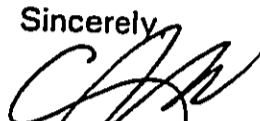
We have reviewed the supplemental draft environmental assessment and have the following comments:

1. It would be useful to have a plan showing all improvements, including the affected intersections and a description showing modifications to the intersections. Will Hansen Road be a through road with the traffic coming from the mill on Puunene Avenue now being required to stop at the intersection?
2. The proposed Maui Nui Park project road improvements will conflict with the modifications proposed in this project. The developer of the Maui Nui Park should meet with the State to revise their plans accordingly.
3. Right-of-way widening shall comply with the provisions of Title 18, Maui County Code, "Subdivisions."
4. The drainage design shall comply with the provisions of the "Rules for Design of Storm Drainage Facilities in the County of Maui" and shall verify that the grading and runoff water generated by the project will not have an adverse effect on adjacent and downstream properties.

Mr. Rory Frampton
April 12, 2000
Page 2

If you have any questions, please call David Goode at 270-7845.

Sincerely,



CHARLES JENCKS
Director of Public Works
and Waste Management

DG:msc/mt
S:\LUCA\CZM\mokulele.wpd

BENJAMIN J. CAYETANO
GOVERNOR



**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

MAUI DISTRICT
650 PALAPALA DRIVE
KAHULUI, HAWAII 96732

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

IN REPLY REFER TO:

May 11, 2000

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

Dear Mr. Jencks:

Subject: Mokulele Highway - Puunene Avenue Roadway Widening Project:
Kahului-Kihei, Maui, Hawaii
Draft Supplemental Environmental Assessment
Special Management Area Permit Application SM1 2000-007

Thank you for your comments dated April 12 2000. We have been coordinating with Mr. Lloyd Lee of your Department regarding the intersection of State and County Roadways. Answers to your specific questions are below.

Intersections Maps

The Traffic Impact Analysis Report included as Appendix E of the Supplemental EA does include proposed configurations to the affected intersections, with the exception of the Hansen Road/ East Puunene Avenue intersection. Hansen Road will be a through road with the traffic coming from the mill on Puunene Avenue now being required to stop at the intersection. Detailed intersection maps have been provided to your office as part of the construction plans prepared by Sato & Associates.

Maui Nui Park

Traffic engineering for Maui Nui Park is currently being re-assessed in order to resolve any conflicts between the projects.

Subdivisions

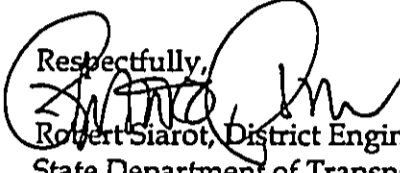
Since this is a project of the State Department of Transportation, with the assistance of federal funding, ROW acquisition (including condemnation) will be in accordance with the State DOT ROW Branch Policies.

Letter to Mr. Charles Jencks
Mokulele Highway - Puunene Avenue Roadway Widening Project
May 11, 2000
Page 2

Drainage

Design of the project's drainage infrastructure is consistent with State DOT drainage standards and should not have an adverse effect on adjacent and downstream properties.

If you have any further comments, please contact me at 808 873-3535.

Respectfully,

Robert Siarot, District Engineer
State Department of Transportation

CC: Federal Highway Administration, U.S. Department of Transportation
Department of Planning, County of Maui
Sato & Associates
Chris Hart & Partners